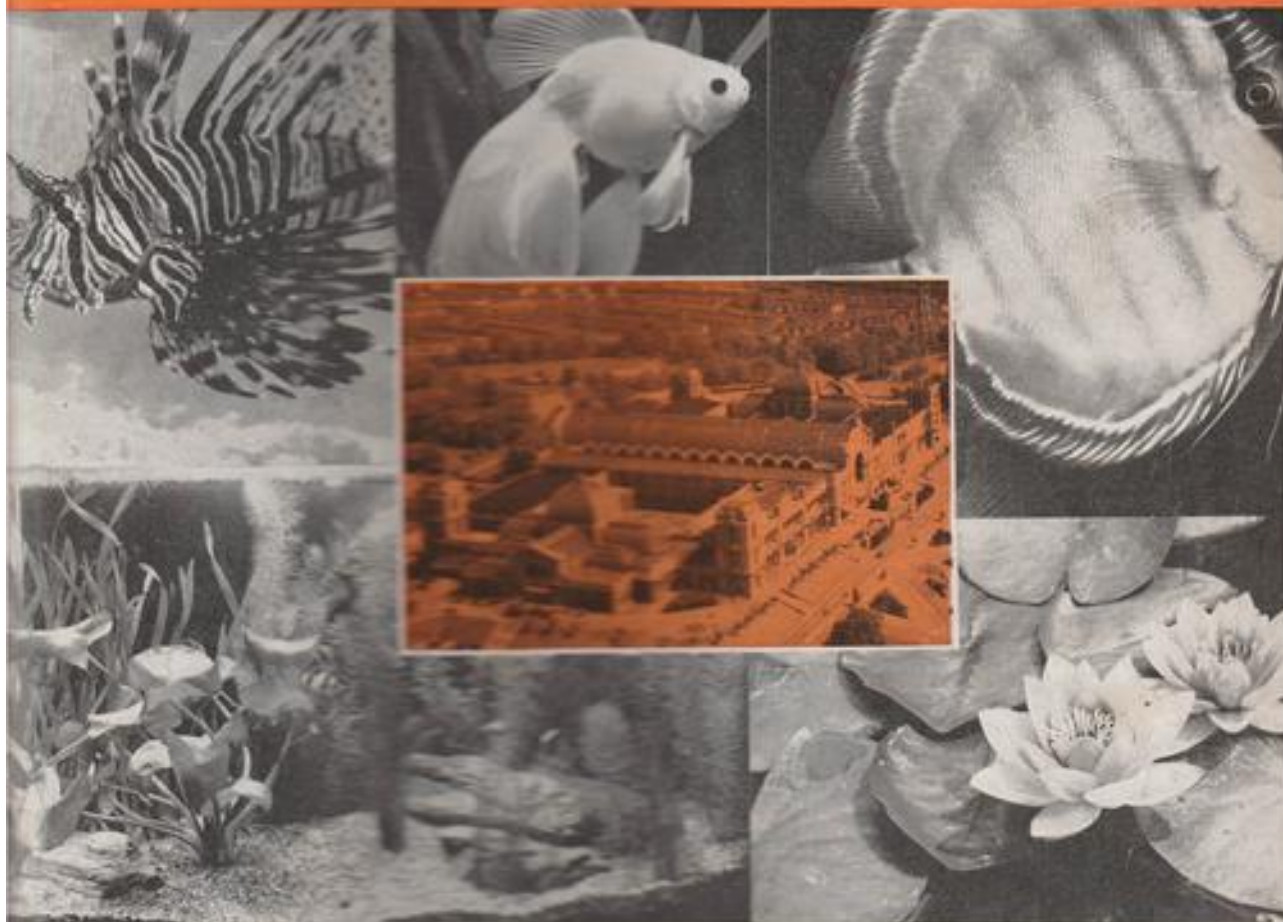


July
1970

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OUR COVER

A reminder of the big exhibition on July 10-12
(Photo by Aerofilms Ltd.)

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The Editor accepts no responsibility for views expressed by contributors.

Editor: Laurence E. Perkins

July, 1970

113

THE CARP (*Cyprinus carpio*)

By A. BOARDER

THE CARP belongs to a very large family of fishes, the *Cyprinidae*, which has many representatives all over the world. In this family are found most of our British fresh water fishes. The Carp can be distinguished from the other types by the four barbels and the rather slimmer body. It also has a very long dorsal fin which is not as high as other fishes of the group. The body is covered with hard scales and the colour is a bronze-green. The upper parts are dark and this colour fades to quite a pale one under the belly. There are varieties of this fish called the Leather Carp, which appears to be devoid of scales and the Mirror Carp, which has a few very large scales. It is thought that these two fishes are sports from the Carp, and can occur at various times from the normal type.

Although the Carp is found in many British waters today, it is not a natural inhabitant but was introduced from the Continent many years ago. It is considered by many to be a good food fish and this is probably why it was brought to this country by the monks who bred them in special ponds. Many of these ponds exist today and still have descendants from the original introductions. Nowadays the Carp is not used much in this country as a food but on the Continent it is still appreciated.

The Carp prefers rather still waters and does not usually inhabit rivers unless they are fairly slow running. It seems to thrive in warmer waters especially those with a muddy bottom. The food consists of a mixed diet of vegetable and animal matter. Much soft vegetation is eaten and this is supplemented by live foods such as worms, insect larvae and various small crustaceans. Much of the food is taken in by sucking mouthfuls of mud from the bottom, which is strained off by the fish after any edible matter is taken. The larger fish will usually keep to the deepest water but the younger ones may often be found near the sides in shallower water.

The breeding period is between May and June and

the male then develops the usual raised white tubercles on the head and pectoral fins. The female fish is very



Mirror Carp



Crucian Carp

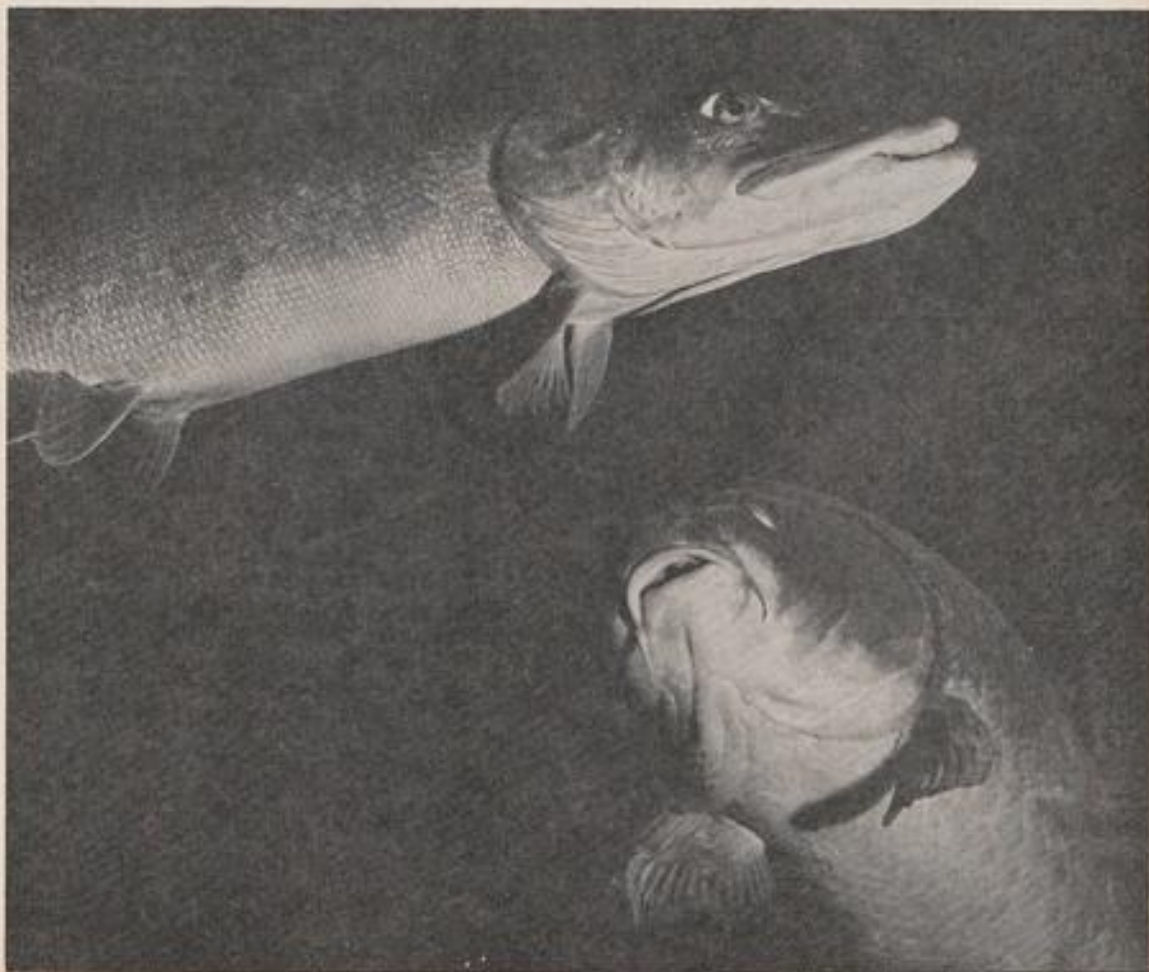
prolific and it is said that one can contain as much as 64,000 eggs to each pound in weight of the fish. The Carp can grow to huge sizes and on the Continent have been reported as over 70 lb. in weight. The largest caught in this country so far weighed 44 lb., and no doubt many readers have seen this actual fish in the Aquarium at the London Zoo, where it still exists as far as I know. These large Carp are not easy to catch as they are very shy, and very large ones are not often caught even by very experienced anglers. Before the large one was caught as described above, one of 20 lb. was near the record for one taken on rod and line in the British Isles.

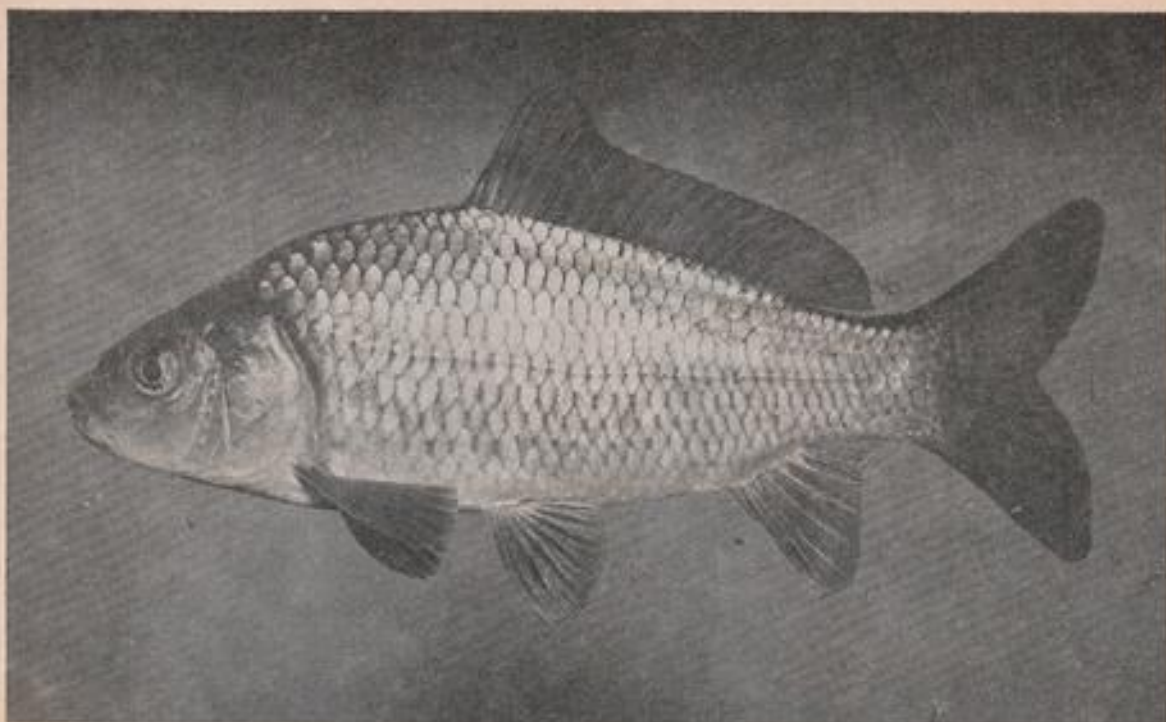
The method of spawning is as for most of the

Cyprinidae. The males chase the females and by constant nudging, force them through thick water plants. The eggs are laid in numbers but singly, and stick to the water plants. The hatching time depends on the temperature of the water but as the eggs are usually laid in shallow water near the sides of ponds or lakes, the temperature of the water can be much higher than that further out or deeper. The fry can hatch out in about a week in fair weather, but take longer if the water is cold. Their food is tiny infusoria and they then progress to larger types such as small *Daphnia*, etc.

The rate of growth of the youngsters depends on the amount of food available, which also usually

44 lb. common Carp at London Zoo Aquarium and tank-mate. Note Barbels which distinguish common Carp from Crucian Carp





Common Carp

depends on the space to allow for many fish. I remember about forty years ago I was fishing in an old monk's pond at Harefield, Middlesex, and catching dozens of Carp and Tench, but none weighed more than about a couple of ounces. The pond was so over-stocked that there was not enough food; the fish were ravenous and took the bait as soon as it entered the water. I introduced some of these young fish to a large flooded gravel pit not far away which had become well-planted with various water plants, too much for my liking as I used to swim there. I have heard that some years after when the pit was taken over by an Angling Society, some specimen fishes were caught. The fish should have thrived well as there was plenty of space and food for them.

As a fish for the garden pond the Carp is not very ornamental, as the very dark back means that it is not seen very easily. However it can become quite tame and will take food offered at the surface, especially in warm weather. During very cold weather the fish is not likely to be seen as it will remain in the deeper water in an almost torpid condition. However it is a very hardy fish and can put up with water which is not particularly well charged with oxygen, and so can

survive when fish like Golden Orfe would succumb.

The Crucian Carp (*Carassius carassius*) can be recognised from the Carp by the fact that it has no barbels. It does not grow as large as the Carp and one of just over 4 lb. would be considered a good catch by any angler. This fish is also very hardy and can even be sent long distances wrapped in wet moss. It can also remain alive in mud at the bottom of a pond which has almost dried up. The fish is more handsome than the ordinary Carp and so as a small fish makes a very good aquarium inhabitant. The lower part of the body has a golden-yellow hue and the fins area yellow-red in colour. The young show the dark mark on the caudal peduncle like the young of Green Tench.

The Prussian Carp differs from the former fish in that the body is more shallow and the scales are larger. It does not carry the dark patch on the caudal peduncle. It is from this fish that the goldfish is said to have been developed. The absence of the dark mark on the goldfish is a pointer to this belief. The method of breeding is the same for these two kinds as for the normal Carp and the rate of growth in the young is similar.

From a Naturalist's Notebook

Alpine Aquatics: Delayed Fertilisation: Poisons: How Pond-Snails Get About

By Eric Hardy

FROM THE A5 at the bottom of Lake Ogwen, we reached Cwm Idwal along the bed of its outfall stream in this April's inhospitable weather. Here little tufts of alpine quillwort, brighter green stems of water-lobelia hollow and leafless, and thread-like growths of hairgrass were unassuming plants of great aquatic interest.

More still covered cold Llyn Idwal's clear, shallow, stony bed, with its shores littered with torn-out quills of quillwort where the incoming water had washed away the silt in which they find anchorage on the bottom. Here grew the very similar awlwort, a crucifer which flowers and fruits under water, also wiry, emerald stems of starwort, and where the lake narrows in the middle, the rare pillwort. Shoreweed, in thinner-based tufts than quillwort, was plentiful. In this mist-draped amphitheatre, buttressed with seemingly naked walls of rock where later we climbed up the Devil's Kitchen to pink-studded pincushions of purple mountain-saxifrage, grow more interesting alpine plants than in any other area of comparable size in Britain, or the Alps.

I've seen water-lobelia growing higher still, above the Kitchen, in Llyn Cwn, towards Glyder Fawr, where the highest bogbean grows, at 2,300 ft. It also grows in Caernarvonshire's Llyn Irddyn, Merioneth's Llyn Coae and the lakes up Cader Idris. The quillwort, *Isoetes lacustris*, grows in many lakes, such as Merioneth's Llyn Mair, Eiddon Maur, Cumbychan, Crogenen Lake, Gader Aran, Cynwch, Llyn Llymbran on the eastern slope of Aran Benllyn, as well as the Cader Idris lakes like Llyn Gadir, stony Llyn Arddu at the foot of "Cloggy" in sight of the Snowdon railway, even Anglesey's Llyn Llewennan and Flintshire's Llyn Helyg. Lakeland haunts include Devoke Water and Coniston Lake below Brantwood.

Its smaller, scarcer relative, *echinospora*, grows in Llyn Bochlywyd above Ogwen, and Llyn Irddyn (a haunt of bladderwort too), as well as Montgomery-

shire's Llyn Maur, Crafnant above Trefwr, Anglesey's Llewennan, and Lakeland's Derwentwater. *Littorella*, the shoreweed, is a common aquatic along the marginal beds of Snowdonian tarns. It also grows at the south end of Lake Bala. Water-lobelia, which formed a floating island on Derwentwater in 1874, is supposed to be so distasteful as to prevent swans nesting on Ullswater. It has been known in Windermere since at least 1898, as well as at Rydal, Coniston, Dock Tarn and the rivers Brathay and Rothay. In North Wales it ranges from Anglesey's llynau of Llanfaillig and Dinarn, and tarns in the Shropshire hills, to Cader Idris.

Subularia, the awlwort, ranges through three Caernarvonshire waters to north-east Anglesey and Ireland, and Lochan Lairig Fala at Perthshire's Killin Station, ascending 2,000 ft. high in Wester Ross.

With the largest nerve fibres of all animals, squids are most useful for neurological research and for the biological studies of behaviour, learning and memory. Until Edward T. LaRoe recently raised *Sepioteuthis sepioides*, a summer visitor to the west Atlantic, from egg to full maturity in 5 months in a Miami university aquarium, these fast-moving, excitable molluscs seldom survived long in captivity. They suffer shock or injury on capture, and collide with the glass sides of aquaria. LaRoe's success came from his discovery that the young squid fed largely upon small, shrimp-like Mysids.

The phenomenon of female animals storing sperm, for fertilisation long after mating, was first found in bats. It is now known to occur in several animals, and not always to overcome the rigours of a winter birth. Delayed implantation occurs in martens, stoats, roe deer and skinks. In Australia, Smyth at Adelaide University found that female skinks, *Hemiergis peronii*, inseminated in autumn, store the sperm until they ovulate in spring. This is because the

continued on page 121

Experiences in keeping Piranhas—3

by W. Mellor

ON SUNDAY, 14TH DECEMBER, I noticed that one of the piranhas had a white mark in the middle of its dorsal fin; this is either fin congestion or a bite mark, and none of the other fish show any similar marks. It cleared up in a couple of days. The "marked" fish is the "left hand corner male" of the previous chapter. The piranhas are behaving just as they have for the past six months; if anything they are getting rougher and tougher.

On Saturday I neglected the electricity meter, and when I returned three hours later, the shilling had "gone" and the tank temperature was below 70°F. After hurriedly feeding the meter, I put a goldfish in the tank, just to see what would happen, and at 9' below their normal temperature the piranhas ate the fish as if nothing was wrong. Just recently I have been experimenting with the type of lighting above the tank in order to observe the fishes' reaction:

- (a) With a 40-watt Gro-lux the water assumed a bluish tinge, everything stood out very clearly, the piranhas' colours paled and then became very strong, especially the red belly and red fins; however, this light is very strong and seems somewhat unnatural. The fish settled down easily enough but were more nervous than usual, as if the bright light were "exposing" them in some way; this light is excellent, however, for showing their colours, but otherwise I would not use it.
- (b) With the above tube painted with a light coat of matt black paint, the water assumed a reddish tinge; the piranhas rushed about the tank showing great fear, or huddled in a corner. Their colours faded, especially the body-spots, so I removed the tube.
- (c) With a 40-watt warm-white tube the light is very strong, the piranhas are terrified, and their colours fade away almost completely.
- (d) With the above tube painted sparingly with matt black paint, the water becomes a yellowy-brown colour, and the piranhas definitely prefer this to any other type of lighting I have used; under this light they eat well, hardly show any signs of nervousness, their colours are well defined and "natural," they swim around

unconcernedly, even when I am cleaning the tank, and they are literally a joy to behold; therefore I am persisting in using this light. Unfortunately this light seems to have a derogatory effect on my plants, which are slowly rotting away (indian fern); also, I get very little algae on the sides of the tank, and that which does appear is mostly grey to look at but when scraped off is green coloured(?).

I have found that if I miss my tank-cleaning schedule by even one day, the tips of the piranhas' anal and tail fins become edged with white, due to the build up of body wastes and acid in the water; these white marks disappear a couple of hours after cleaning the tank.

The fins of piranhas have remarkable regenerative powers; if one of my fishes loses part of its fin (usually tail fin) it does not lose the rest of the damaged member by gradual fraying and rotting away; it heals up, even to the extent that the "new" part is of the same colour as the one that has gone a-missing. However, I have found that the shape of the piranha's tail fin changes shape as the fish gets older; this is, without a doubt, due to the persistent attention of its tank-mates. Piranhas kept on their own retain the pointed tips to their fins that are characteristic of young specimens, but the fins of specimens kept together become gradually smaller and rounded at the furthest edges. This is not so apparent in young piranhas of up to two or three months, but it is noticeable that as the fish ages this regenerative action becomes less powerful. In the Edinburgh Zoo, at least the last time I was there, they had two largish piranhas, *Serrasalmus spilopleura* and *Serrasalmus nattereri*. These fishes had perfect finnage; they are in one tank, but are kept apart by a thick sheet of glass. The *S. spilopleura* has been there for quite a few years, and the tips of its fins are beginning to fold over, they are so long. The keeper told me that he feeds them on horse meat; they look healthy and very vicious and downright dangerous, but at the same time "lumpy" and full of fat—they may not be, but I get that impression. Piranhas are remarkably rugged creatures; they have to be!

The most important fact, apart from food of course,

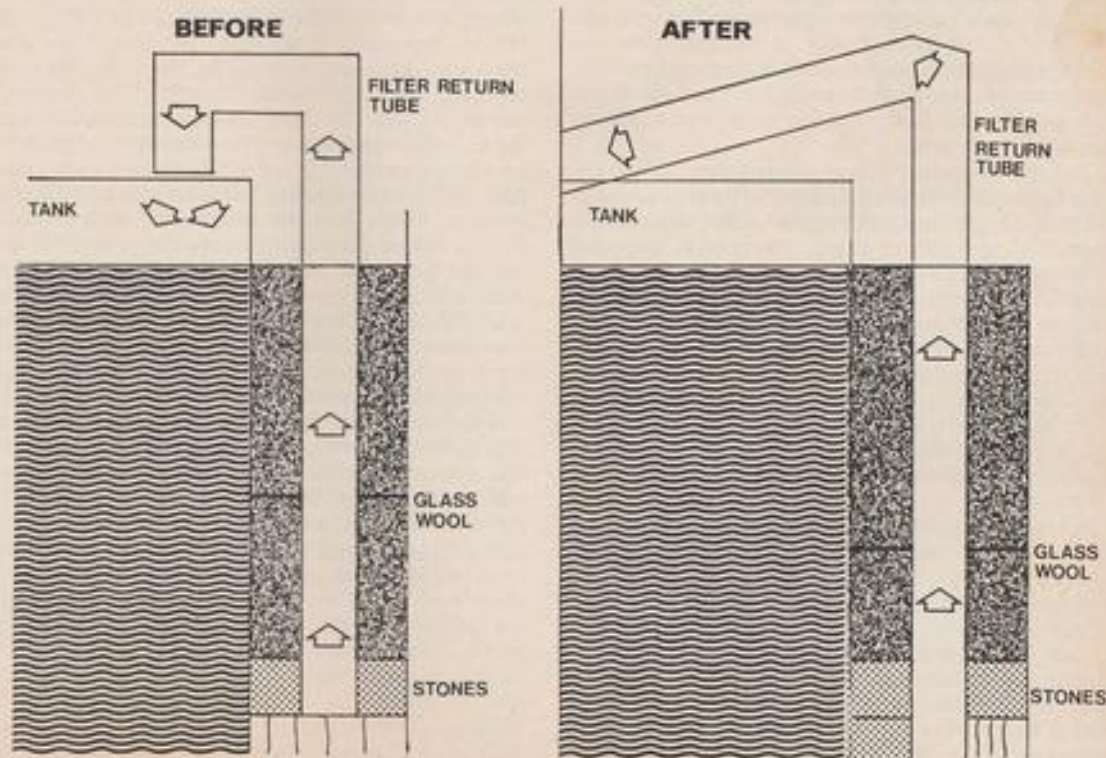
is to keep their tank, which should be as large as possible, clean; that means heavy filtration, and constant changes of water, not all at once, but gradually, thus refreshing their "home." I change the water in my tank once a week, half on Wednesday half on Sunday, straight from the tap. I don't know the mineral content of my water supply, but it is very soft, as I find by the amount of soapy suds when I wash; and my piranhas thrive in this water (not the soapy suds kind, incidentally!). When I change their water they become tremendously active and their appetite and whole physical condition is stimulated.

It is strange that piranhas, with their reputation for savageness and voracious eating habits, are very fussy eaters when kept and raised in captivity; mine are at least. Maybe they realise they've got a soft touch. As an experiment, when the piranhas were 4 in. long, I didn't feed them for two days and then offered them raw liver on the morning of the third day; they nudged it around, took a few half-hearted bites at it and then ignored it completely. I removed the liver and put in a couple of goldfish. The goldfish were immediately torn to pieces and completely eaten. I put in

two more five minutes later and they, too, were entirely consumed. My piranhas will attack and rip asunder any goldfish, even if they have just been fed. It is their natural instinct; "kill it before it kills you" is their motto.

Piranhas will also eat during the night when the tank lights are off. I can put a couple of goldfish in the tank at 8 p.m., and they will perhaps be half-eaten and left, sometimes still alive, lying on the gravel or floating on the surface of the water. The tank lights will be switched off at 10 p.m. with the torn up goldfish still untouched, and when I put the lights on the following morning not a trace of any goldfish will be seen anywhere in the tank.

I have noticed that piranhas often come to the surface to take gulps of air; when a piranha does this, it will swim around in a couple of circles and suddenly rocket up to the surface, sometimes leaving the water in its unchecked rush, causing much commotion and splashing; when it comes down again, bubbles escape from its gills, and for a brief second it is in a dazed condition. While they do this sometimes for no apparent reason, it happens mostly about half an hour



after they have been fed. While they might do this as an aid to digesting their food, several other possibilities arise:

- (a) piranhas have perhaps an auxiliary breathing organ similar to, e.g., fishes of the *Anabantid* family.
- (b) They do this in order to pressurise their bodies against the weight of water surrounding them.
- (c) They do this to maintain their balance and swimming positions. Piranhas swimming at high speeds seem to "ghost" through the water.

I think the explanation lies in a combination of (b) and (c). However, I have no knowledge of the internal workings of a piranha, nor do I have the knowledge to find out by way of cutting one open and making a report; however, I have written to the Smithsonian Institute of America, for an American doctor is supposed to have written about the swim-bladder of the *Serrasalminae* some years ago, and I am awaiting this information, plus information of the breeding of *Serrasalmus nattereri* a few years ago in a public aquarium in Chicago, which was reported in an issue of "Tropical Fish Hobbyist" some years ago, and which I have not managed to obtain a copy of yet.

Recently I have been reading of vitamin supplements to the diets of fishes kept in captivity, and this subject demands further study as its application could only lead to the better health of our fishy pets and perhaps their subsequent ease of keeping and breeding, for they most certainly lack certain foods and stimulants that are abundant in their native waters and which we cannot as yet provide.

For the past week I have noticed that one of my piranhas is rather full-bellied even when it hasn't been fed for a day; this may be a sign that its filling up with eggs, I hope! This piranha is one I suspected of being a male a few months ago. We live and learn. Just lately the piranhas have been very aggressive towards each other and to me when put my face close to the tank. Every now and again I notice small semi-circles of damaged scales on their sides where they have tried to bite each other. I think that now I maybe have three males and two females, although my opinion changes every time I sit down and watch their antics. The only thing they do with any regularity is eat and try to bite each other. I am basing my opinion on the assumption that the males of the species are the most aggressive and territory-conscious although the opposite at times seems just as valid and perhaps is, therefore I can only theorise.

For a short while I have been feeding them on sprats and earthworms and they have been very healthy and colourful and aggressive; the red belly and anal fin have been really conspicuous, and the upper half of the body has been a velvety brown-green colour; added to this are the body spots which come and go

according to the fishes' moods, the keen, ever-hungry eyes, and the occasional glimpse of a set of silvery white, needle sharp teeth, and there you have a fish to attract anyone's attention. I can remember reading of a piranha spawning in America where the fishes' bodies were smoky brown coloured prior to spawning, so I have great hopes for my own piranhas.

I have rearranged the tubes on my filter via which the water flows back into the tank; instead of the water flowing downwards into the aquarium, it now flows at an angle, as shown in diagram, page 119.

The idea is that a flowing stream is simulated, better water circulation is ensured, and the water surface is constantly moving to enable the intake of oxygen and outlet of unwanted gases; plus the fact is that piranhas come from flowing water and this sets up may come close to their requirements.

On Saturday, 24th January, I offered the piranhas raw kidney and they wouldn't touch it, but they ate a seven-inch sprat, the remains of which rather messed the tank up. My fish now need a larger tank than the 40-gallon one they are in; unfortunately my parents cannot let me have one as we live in a first floor flat and the consequences would be disastrous if it ever sprung a leak; and anyway I don't think the floor could stand the weight of 80 to 100 gallons.

On Friday, the 30th, I tried the piranhas with a baby white mouse; they didn't touch it; in fact they were rather frightened. Even when the mouse was dead they paid little attention to it; they ate some raw haddock soon afterwards, though. The following morning I put the lights on and the piranhas were fighting like tomcats; maybe they were sparring for breeding partners. They were circling each other, fins and bodies quivering, sometimes almost standing on their heads in their excitement, and gradually floating up to the surface where they would usually try and bite each other or ram each other's flanks; these injuries are superfluous, however, and soon heal up. No matter what may happen, I would rather have them behaving like this in one big tank, than split them up into separate containers where I could not witness their natural urges and instinctive drives; and their colours are really brilliant at times like these. Red bellies, velvety brown backs and scales glittering like golden and silver sparks; their black eyes glitter with an orange red border, and their jaws gape wide open. What a beautiful sight!

On Monday night, the 2nd of February, I came home from work, looked into the tank, and saw that one of the piranhas had a thin scratch across its right eye, the result of a fight no doubt; obviously the fish couldn't see as well as usual, and I was worried in case the wound became infected as a result of which the fish might lose its eye (and its life as well if its tankmates suspected that there was anything wrong with it!). One good sign was that it wasn't trying to

scratch or rub it on the gravel or the sides of the tank; as a matter of fact, it was still fighting with the other piranhas and not showing the least concern. The damage healed up in about five days and the fish was none the worse for wear. I once had a small piranha which had a fight with half a dozen black widow tetras that I foolishly put in its tank to keep it company; the next morning five black widows were dead and the piranha was swimming around with its left eye hanging out, dangling at the end of a sliver of flesh. The fish succeeded in rubbing free the damaged eye, and the empty socket was soon covered over with hard silvery flesh; thereafter I had to drop in food on its good side so that it could see it. Later, I gave the fish to the local petshop, and all the kids use to go in and see "Napoleon," the one-eyed piranha. It bit its way through three or four plastic bags when they were shifting it from one shop to the other, but it finally arrived safely.

Now I have two large Malayan Sword plants floating in the tank in case the piranhas want to spawn on them; they've taken a few experimental bites at them and like to hang about underneath them. A friend of mine has bought a half dozen young piranhas and is at present feeding them tubifex worms, a food which my piranhas would never touch. This friend

has about two dozen tanks, all home made in a large shed in his back green. Among other things he has bred cardinal tetras, and at present has a spawning of *Pelmatachogomys kribensis*.

On Friday morning, the 13th February, one of the heaters in the piranha tank burned out and the temperature was 64°F. The fish were rather sluggish and their colours somewhat pale; unfortunately I didn't have a spare heater, so they had to hang on until the same night before I could buy a new one and fit it up and get their temperature back to the normal 76-78°. When the temperature was alright again, they ate goldfish as if nothing had ever happened, and swam around with a "come what may" look in their eyes.

Piranhas are naturally aggressive and inquisitive creatures, and make passes at my finger if I press it to the glass; they also make advances to my coffee cup if I'm sitting drinking in front of them. Its shininess must attract them. However, their own reflection in a small hand mirror scares them and excites them at the same time. The picture of any other type of fish, except their own kind, stuck to the front glass attracts them with a hungry look in their eyes. Even as I am typing this they are only a yard away and watching me suspiciously. I'm rather glad that a sheet of glass separates us.

From a Naturalist's Notebook

Continued from page 117

male's testes are small and without sperm in spring, but enlarge to their maximum in late summer, then decrease again in winter. Cuellar at Colorado University discovered delayed fertilisation in the lizard *Uta stansburiana*, the female storing sperm for at least 81 days. He concluded that stored sperm increased the reproductive potential of this lizard population.

The classic example is the queen hive bee, storing the drone's sperm in a special sac for the rest of her lifetime, though she will take a second mating if necessary.

The unpalatability of toadspawn to birds and most fish is well known. At Vancouver University, Licht found that both white mice and the frog *Rana pipiens* died a little more than 8 hours after injection with ovarian eggs of the toad *Bufo valliceps*. Non-toad-eating snakes died just over 5 hours after being forced to eat them whereas toad-eating snakes showed no after effects. Incidentally, badgers eat toads. At Ontario Veterinary College, Lars Karstad fatally poisoned a fox snake (*Elaphe vulpina*) by feeding it on the common American toad. In the U.S.A.,

Mosher and others isolated from the Californian newt a nonprotein substance called tarichatoxin-tetrodotoxin, which is the same as the poison from the famous Japanese puffer-fish or Fugu which is 150,000 times more effective as a local anaesthetic than cocaine. The U.S. has several venomous amphibia, turtles, and lizards, as well as snakes, the gila monster's bite being notorious.

Pond-hunters know that freshwater snails get around the countryside in various ways. Their eggs are distributed on the feet of birds like ducks, waders and moorhens. Sometimes shelled pondsnails of small size are transported on birds too, attached to the legs or feathers of water and water-side birds. Bog-arum, *Calla* (not *Caltha*) *palustris* is one of the few plants pollinated by pondsnails, attracted by its odour to crawl along its stems. Our scavenging native green-banded snail *Paludina contecta* differs from most others in being a live-bearer. It is often used to clean up aquaria, where it is generally harmless to plants, and has an attractively golden-yellow body. A commoner, more oval, shell is *P. vivipara*, of lighter greenish-yellow.

OUR EXPERTS' ANSWERS TO YOUR QUERIES



READERS' SERVICE

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

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

TROPICAL QUERIES

By Jack Hems

I have just bought some Buenos Aires tetras. Can you tell me something about this fish?

This characin is native to Argentina and was first introduced into aquarium circles in 1922. It was given the scientific name of *Hemigrammus caudovittatus* by Dr. Ernst Ahl, a great German ichthyologist, a year later. It attains a length of about 3 in. and the male is the brighter coloured of the two. *H. caudovittatus* is one of the easiest tetras to keep and breed but it has one failing: in its larger sizes it chases after and nips at smaller fishes.



Buenos Aires Tetra

I would like to know whether a hatchet fish would be a suitable occupant for my community tank?

Hatchet fishes do no harm to other fishes in a community tank, but one hatchet fish would look out of place and probably pine for the company of its own kind. Therefore I suggest you buy a couple at least to place in your aquarium.

I have been told that the only way to keep tropicals alive and well is to fit a tank with an undergravel filter to take care of the harmful bacteria. Is this true?

Tropical freshwater fishes were kept alive and well in aquarium tanks long before undergravel filters were ever put on the market. The art of keeping tropicals in a healthy condition is a matter of a few basic rules: plenty of plants, no overcrowding, no overfeeding, no mixing of incompatible species, regular siphoning of the bottom to get rid of excessive dirt, and topping up with boiled or well-matured tapwater.

I am thinking of constructing a sealant-sealed all-glass aquarium. Can you tell me whether such a tank would stand up to the pressure exerted by about twelve gallons of water without falling apart?

Provided you use the sealant according to the instructions supplied by the manufacturer, the glass sides will not come apart. But make certain the sealant has set properly before you fill the tank with water.

Would distilled water stored in an iron tank be suitable for adding to an aquarium?

A lot depends on the species of fish, the age of the iron tank, and how long the water is stored in it before use. The best thing you can do is to mix some of this distilled water with ordinary tapwater and then try out some inexpensive fishes or, say, live *Daphnia*, in it. If fish or *Daphnia* stay alive and well in it for above a month then it would be reasonable to assume that the water from the iron tank is safe to add to an aquarium housing a collection of the hardier tropicals.

My blue gouramis spawned and I soon had what appeared to be hundreds of lively fry. But now some five weeks later, I cannot see more than about seven baby fish in the tank. Can you tell me what went wrong?

There are quite a few reasons why gourami fry start to die off soon after they reach the free-swimming stage. One is lack of the right size and quantity of food. Another is too low a surface-temperature when the fry take their initial gulp of air (always keep a close-fitting glass cover on the rearing tank). Yet another is undetected pollution of the water brought about by feeding filth instead of infusoria, or allowing uncaten prepared food to turn sour on the bottom. It is important, too, to maintain an even temperature.

Can you recommend an easily understood, yet informative and inexpensive book on genetics which would help me to produce desired strains of fish.

A paperback that would help you is *The Language of Life*, by G. and M. Beadle (Panther Science, 8s. 6d.).

How can one sex neon tetras?

Perhaps the most reliable way is to compare body contours of a number of well-developed specimens seen swimming in a tank. The female is more rotund-sided and markedly more bulky than the male.

Please supply me with a list of non-toxic and easily come across trees and shrubby plants, the dead wood of which could be used to decorate the interior of an aquarium.

The alder, hazel, willows in all their amazing variety; hawthorn, common honeysuckle and beech are all quite suitable. But bear in mind, also, that any dead branches or roots must be given a good soaking in several changes of water before they are introduced into a fish-tank.

Where can I buy a lime-free grit?

The better dealers sell lime-free grit. As you live in London try, for instance, Broad Green Aquarium or Tachbrook Tropicals for first-quality lime-free grit.

At what age will angel fish spawn?

The angel fish is capable of spawning when it is about a year old, or when it has attained a body-length of from 2 to 2½ in.

Do I stand a chance of breeding a true pair of emperor tetras in an 18 in. by 10 in. by 10 in. tank?

You stand a very good chance of breeding this lovely fish in an 18 in. by 10 in. by 10 in. tank. Cram it with feathery foliaged plants, maintain a temperature in the lower to middle seventies (°F), feed the fish well and then watch their behaviour as often as you can.

COLDWATER QUERIES

By A. Boarder

I have recently bought a 12 × 6 × 6 in. tank. What fish would breed best in it?

A tank of this size will hold not more than three inches of fish and as a breeding tank would be quite useless. I suspect that the query has come from a juvenile, and I do not wish to discourage any young aquarist but it is impossible to breed any coldwater fish in such a small tank. If the tank was just double the size all over, it could be used for breeding goldfish or one or two of the fancy varieties. Even so, it is not easy for anyone to be successful at breeding these in a tank of the size stated. The usual trouble is that once the breeding fish have spawned they then start to eat the eggs. Even if some eggs escape the attentions of the parent fish, any fry which might hatch out would have to run the gauntlet of the large fish and would no doubt be eaten. The only chance of breeding in a tank measuring even 24 × 12 × 12 in.

would be to have it very fully planted with fine-leaved water plants to give plenty of cover for eggs or fry.

I wish to restock my pond and can get plenty of Densa water weed. Can this be grown in the pond and will it stand the winter? I can also get Hornwort and wonder how many bunches of it I should use in my pond, roughly 16 × 8 × 2 feet?

The plant you refer to as Densa is no doubt *Egeria densa*, previously known as *Elodea densa*. This plant is quite suitable for your pond and usually grows well. Half a dozen bunches would be enough as once this plant gets going it soon sends out long shoots. The Hornwort, *Ceratophyllum demersum*, can be just weighted and dropped into the pond and as it makes no roots it need have no base compost. When planting

in the spring, there is no need to use too much plant life as most types grow at a good rate once they get established.

Please can you give me any information on the Peacock-eyed Bass, as I have been unable to find any books dealing with them?

The chief information necessary to enable one to be successful at keeping these Sun bass, is to note that they are essentially carnivorous. The provision of enough live food for them can become a problem to some aquarists. They like earth worms, Tubifex, Daphnia, White worms and in fact any of the usual live foods as used by aquarists. They will also take pieces of raw meat and fish. However, if it is difficult to provide enough live food it is possible to gradually educate the fish to take dried food. The best way to do this is to feed with chopped worms for a time, then gradually add some good type flaked food mixed with it. If this is incorporated with the worm the fish will eat it and then the amount of dried food can be increased until it is possible to get the fish mainly on to dried food. Even then it is necessary to give some live food at intervals. One should remember that most good dried flaked foods contain plenty of meat and fish in a dehydrated form, and so the fish should be able to get sufficient nourishment from it.

I have a one and a half inch Gudgeon which has lived for the past eighteen months in a cold-water tank with three goldfish. I also have a tropical tank with a varied assortment of tropical fishes, kept at 74°F. Would it be possible to introduce the Gudgeon into the tropical tank?

Do not put the Gudgeon into the tropical tank. These fish are essentially coldwater fish and would not be likely to thrive in a tropical tank. Even with good aeration the temperature of the water would be too high for this fish to remain in it and be healthy.

I have been keeping a small green Tench, a small mirror Carp and two small Hi-gai for some time. After treating them successfully for white spot disease they all contracted finrot. What is the cure for this?

Fin rot is a form of Fungus disease and will attack any fish which is in bad health or one which has been damaged in any way. It may be that when treating the fishes for the white spot disease you destroyed some of the protective mucus covering on the fish. This left them open to attack from the Fungus. The disease can usually be cured by the salt treatment as long as it can be caught in time. Once a fish becomes very badly affected with the disease it is difficult to effect a cure. I have always found that, providing the disease is caught in good time, the salt will do the trick. I have repeatedly given my advice as to the use

of the salt bath but it may be worth repeating again. The starting solution is at the rate of a tablespoon of sea salt to a gallon of water. The fish is placed in the water and the salt added. Allow the salt to dissolve gradually so that the strength of the solution is not at its fullest when the fish is put in. After two or three days if the fish shows no signs of improvement a little more salt may be added. Keep the fish out of the sun and if possible some aeration can be used. Never use a deep container, the shallowest one possible is best as this ensures that the water remains well oxygenated. A shallow bowl will mean that artificial aeration is unnecessary. If the water starts to smell badly, it should be changed to a solution of the same salt strength. Once the fish shows signs of improvement the solution can be gradually lessened in strength, either by the addition of fresh water or by changing the whole solution to a weaker one. There are many reputed cures for the disease advertised but as I have never tried any of them I cannot pass any comment, but if one is not successful at curing a fish by the means I have recommended there is no harm in trying out other cures. By the way, never use packet table salt but sea salt like Tidmans.

You have asked for information on a pump capable of clearing a pond of mulm. Why not use the suction end of an ordinary water pump as used for a fountain or waterfall? The outlet end could be directed to the garden.

The idea appears to be all right but the usual intake tube of such a pump would be too small and would become blocked up before the pump had been running for long. Among the mulm would be small pieces of roots of water plants, which would tend to choke the pipe worse than ever.

I cannot seem to keep goldfish in my pond throughout the winters. Each time I lose them. Why is this as you stated recently in "The Aquarist" that you have kept fantails in your pond for three winters?

I have kept fantails in my pond throughout the winters of the past thirty-three years and had very few losses and put my success down to the fact that I make sure that the pond water remains pure all through the bad months of the year. This is done by being very careful with the feeding once the water begins to cool down. It is not the cold alone which kills goldfish in ponds during severe winters. It is only the state of the water which is so fatal to them. As long as the water contains enough oxygen the fish will be all right. Once decaying matter in the pond turns the water foul by encouraging the formation of bad gases, the fish will soon be in trouble. I am sure that one of the worst plants to encourage the fouling of the water during the early winter is the plant most

prized in the pond, the beautiful water lily. Make no mistake about it, once the leaves and flowers die down they soon decay and nothing is worse for polluting the water than such decaying matter. One should not wait until the water starts to get foul before doing something about it. As soon as water lily leaves start to decay they should be removed. You have only to touch such a leaf on the surface and a quantity of oil will appear. The smaller the pond the worse can be the effect of the decaying vegetation. If you can keep the water in your pond in a pure state there should be no further losses during a winter.

Some time ago in "The Aquarist," a mention was made referring to the use of sharp sand as a help to clear pond water. This was in connection with the use of a waterfall pool as a form of filter. What is sharp sand?

Sharp sand is very coarse as opposed to the soft type sometimes used by builders. This soft sand tends to pack down fairly hard and so would not allow the water to drain away through it. Sharp sand is sometimes called washed river grit.

We are digging for a garden pond to be lined with Butyl. The sub-soil is clay and after a slight rain during the night, a quantity of water was covering the bottom of the pond. As this seems to hold water so well, need we use the lining sheet?

A good base of clay is very good for a pond but the trouble would be that the top soil will not hold water and so no matter how well the clay held, water would seep away above the clay line. Even if one could bring up clay to line the upper parts it is very doubtful if it would hold water above the normal clay line. The fact that the base is clay will mean that there should be no fear of small sharp stones puncturing the sheeting.

I am interested in getting some good shubunkins but they are not available in Canada. Can you let me know of anyone who would be prepared to ship eggs of good shubunkins to me here?

I do not think that the hope of getting eggs sent to you is likely to materialise. I doubt if any aquarist would care to take the chance and the trouble to send eggs to you. In the first place, providing the temperature was fairly high, the eggs could hatch in four days. The fry would then die before they could reach you. Also the sending of eggs, even in this country, would be a very chancy procedure. One never knows for sure when the eggs are laid whether they are fertile or not. Then one would have to be on

hand to collect the eggs soon after they were laid. You could contact dealers who advertise in "The Aquarist" to see if they would be prepared to send you fish, as many do send abroad, usually by plane.

Last year I made a pond in the garden with a glass fibre shape. I stocked it with adult pairs of breeding fish. However I have had nothing but trouble with them. Can you give a reason please?

I would never recommend any one beginning with the fishkeeping hobby to make a start with expensive pairs of fish. It is much better to buy a few young, cheap fish and then gain experience at keeping them healthy before branching out with dearer fish. Where many people go wrong is that when they buy fish they rarely ask at what temperature they have been kept. Many imported fancy goldfish have been bred and reared at fairly high temperatures. If they are bought and placed into an outdoor pond at a much lower temperature it is probable that they will soon get out of condition. The mucus protective covering is then upset and the fish are liable to contract various diseases, chief of which is the Fungus disease. Any fish bought for the pond should be gradually accustomed to the temperature of the pond before being added to it.

We have a glass fibre pool with goldfish but have never been able to enjoy it as the water remains green. What can we do about it?

It is probable that every pondkeeper has some trouble with green water at some time or another. This green is caused by a tiny single-celled plant called Algae. This can only thrive in good light. Any water covered so that no light ever reached it would never go green in years. Any water exposed to the light and air would soon become green in colour due to the formation of Algae. Once a covering of much of the pond surface can be provided, the Algae will be choked out. This covering is best supplied by water lily leaves or surface floating plants such as duck weed. Any pond with a good supply of growing water plants is rarely troubled by Algae. However it is not easy to get such a pond for a start. Most ponds will go through stages of discoloration of the water when they are first set up. This is to be expected. The changing of the water is not always a cure but it does help very often by allowing the water plants to take over and become stronger. Once a fair amount of plant life is in the pond the green Algae will disappear. A fountain or waterfall will often help to keep the water clear but the main cure is to have plenty of healthy water plants.

MARINE QUERIES

By Graham Cox

How soon can I introduce marines to a newly-established marine aquarium?

No reputable synthetic sea-water formula that I know of is safe for delicate marine animals until at least a full week of filtration and aeration has elapsed. However, most of the reliable formulae produce a solution which is acceptable to *Damselfishes* after as little as 3-4 days of aeration and filtration. Quite frankly, any rank beginner in this hobby who doesn't spend his first two or three months with *Damsels* only has been ill-advised. The hastening of sea-water maturation can be effected by adding approximately one level mustard spoonful of a good marine vitamin compound to each 20 gallons of newly-mixed synthetic sea-water. After 12 hours this will produce a slight turbidity in the water which will have disappeared two days later, leaving the water in first-class condition for all the more delicate coral fishes such as *Butterflies*, *Angels* and *Surgeonfishes*, etc.

What is the commonest cause of death in coral fishes?

One would like to say that the answer to this question is—"Old Age." However, at this stage in our marine hobby's history, such an answer would be untrue. We are at a stage where raw beginners to the science of marine aquariology vastly outnumber the "old hands," and as a consequence, many lovely marine animals are lost through two principal causes:—

(1) *A high level of nitrites and ammonia in the sea-water.* This highly toxic (poisonous) condition of the sea-water may be achieved in several ways, but the most common are:—

- (a) the use of unbleached corals and/or shells in the tank.
- (b) the use of unbleached filter-gravel in the tank. Both (a) and (b) require 5 days in a 25 per cent Brobat/water solution and then washing.
- (c) over-feeding of the animals in an unmaturing system.

(2) *Oodinium disease.* This, the most common of diseases amongst marine animals, is particularly lethal to immature fishes, but will kill any fish suffering from a heavy infestation. The pathogens responsible are protozoan organisms which may be of several species. They find it most easy to parasitize the gills at first, but quickly debilitate the fish and then establish themselves on the skin tissues when, with difficulty, they

can be seen as minute greyish to fawnish cysts. Unfortunately, when the disease has advanced to this stage, it may well be too late to cure it since the gills will be badly damaged. Accordingly, I have often written, and always made a point of stressing during lectures, that the inexperienced beginner SHOULD AUTOMATICALLY TREAT NEW PURCHASES FOR OODINIUM DISEASE within 24 hours of introducing them to his tank. In this way, the difficult-to-spot disease will be destroyed before attaining a foothold. The new hobbyist should use that oodinium disease-cure used by his local trader. If the trader uses the cure on his own stock it should be an effective treatment, since this man's living depends on his ability to keep his stocks healthy.

Can you tell me the principle problems involved in keeping Sea-horses and recommend any reading matter on the subject?

The following books are the only ones I know of which deal with the problems of keeping *Sea-horses* in captivity.

Sea-horses do very well in an invertebrate aquarium i.e. with anemones, sea-urchins, starfishes, shrimps, small crabs, living corals, etc.

The major problem involved is that of feeding these otherwise trouble-free hardy animals. Unfortunately, owing to their refusal to accept everything except small living crustaceans, e.g. *Artemia* (brine shrimp) and *Daphnia*, they do not do at all well in community with other fishes. This sad fact is due to the *Sea-horse's* very slow locomotion. By the time he sees the food and has started to swim towards it, it is usually eaten by another, swifter occupant of the tank.

Books:—

"*Sea-horses in your Home*" by Mildred D. Bellamy.

"*Keeping Sea-horses*" by R. P. L. Straughan.

"*Don't get saddled with a Sea-horse*" by James Atz, *Aquarist and Pondkeeper*, article March 1963.

In my marine aquarium I have discovered some small reddish-brown creatures which move around on the inside of the tank glass. Also, two of the tanks occupants have small whitish spots on them. The fishes thus affected—a *Malayan Angel* and a *Clownfish*—do not seem to be ill and the number of spots is not

increasing. Can you please explain the nature and cause of these two problems?

The small animal which you found in your aquarium tank sounds very much like a *copepod nauplius*. These tiny and largely harmless crustaceans are scavengers which feed on detritus and uneaten food within the aquarium. They often appear in quite large numbers after a period of abnormally heavy feeding, and will disappear again when a lighter feeding regimen is adopted. The eggs of these tiny creatures are probably ubiquitous, being carried many miles from the sea by wind currents. I established a marine tank in Central Africa, over 2,000 miles from the sea, using my own formula of sea-water and fully sterilized equipment. After two weeks, I had countless thousands of nitrifying bacteria in the filter gravel and, on adding various vitamins to the water, produced hundreds of copepod within a month. This experience is quoted to indicate the distance which these minute marine organisms can travel through the atmosphere.

The small greyish spots which you mention on the Malayan Angel and Clownfish are almost certainly ecto-parasites. They usually disappear within a few weeks, having in no material way damaged their erstwhile hosts. The fact that the white spots have not increased numerically rules out the probability of marine *ichthyophthirius* (white spot) disease.

I have read a book written by a famous expert on marine fishes and, on this author's advice selected the following fishes as being most suitable for a beginner—*Anthias squamipinnis*, (Lyretail Coral fish), Royal Gramma (*Gramma loreto*), Lemon-peel (*Centropyge flavissimus*), Blue/green Chromis (*Chromis cyanae*). My local dealer, however, asserts that these are not suitable species for a beginner. Who am I to believe—the "Expert" or the Dealer?

In my experience the advice of most "paper experts" is extremely unreliable and this is an excellent example of this situation. The fishes which you have are, with one possible exception (*Chromis cyanae*) are extremely unsuitable for a beginner. *Chromis cyanae* is only tough when compared with the other fishes in your list. This is in fact, one of the least hardy of the Demoiselle fishes.

Generally speaking, the advice of a fair-minded and experienced dealer cannot be beaten. He may not be able to write an impressive book, but he does know what he's talking about and will not deliberately lead you astray.

May I suggest that you spend your first three months making the inevitable mistakes on such fishes as Humbug, Domino, Cloudy, Electric-blue and Dusky Damsels, etc. (one of each species only). These fishes are cheap, and unbelievably tough, and will survive almost any hazards you can expose them to.

During this twelve week period, two important things will happen as follows:—

(1) Your system and water will have nicely matured, and

(2) You will have acquired the basic training more likely to ensure success with Angels, Surgeons, Tangs, Butterflies, etc.

I have been successful with freshwater tropical fishes for sometime now and would like to try my hand at tropical marines. Can you recommend a good book for the beginner in this field?

There is a multiplicity of books which purport to explain to the beginner how to keep tropical marine fishes. Unfortunately, however, the excellence of the colour plates therein is not matched by either the quality or quantity of the technical advice offered.

May I make the following suggestions:—

For the Non-Technical Man

"Enjoy a Saltwater Aquarium" 3s. Published by the Pet Library Ltd.

"A Guide to Marine Aquarium Keeping" 7s. 6d. Published by T.F.H. Publications.

For the Technically Minded

"The Marine Aquarium" W. Wickler. Published by Studio Vista at 10s. 6d.

"The New Seaquarium System" Published by Seaquariums Ltd. at 10s. 6d.

I have recently purchased a new marine fish and suspect it is diseased. How can I treat it? Does charcoal remove salt from solution? What types of marine algae are most suitable for the marine aquarium?

Since you do not mention any of the symptoms which your fishes are exhibiting, it is not possible to describe a treatment. The most common pathogens which attack coral fishes are *Protozoans*. (*Oodinium* and *Ichthyophthirius*, etc.) *Bacteria* and *Viruses*. Viral diseases amongst marine fishes are extremely rare, the only one being seen occasionally is *Lymphocystis*. This is fortunate since there are at present no effective medications against viruses, the only way of curing *Lymphocystis* being to cut the large white cysts away with a razor-blade or scalpel and sterilize the wound with acriflavine solution before returning the fish to the water. The few bacterial infections found amongst coral fishes are best cured by light *ozonisation* of the sea-water using a wooden diffuser.

The protozoan-caused diseases are easily cured by using a good proprietary oodinium cure.

Charcoal is not able to remove salt from sea-water. Check the accuracy of your hydrometer. The higher marine algae suitable for culture in the marine aquarium are few and far between. Probably the best ones are—*Udotea* and *Halimeda* and *Codium*. All require strong overhead lighting and the periodic addition of a good algal fertilizer solution to the water.

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Chelmon rostratus

ANGELS AND BUTTERFLIES

THE *Chaetodontoidae*

By Graham F. Cox

Photos by Laurence E. Perkins by courtesy of Sea Aquariums Ltd.

THE CORALFISHES of the order *Chaetodontoidae* are amongst the most spectacular of all salt water fishes. On the reef, a habitat crowded with this planet's most attractive and colourful creatures, nine times out of ten it is the fishes from these two groups which first catch the eye of the underwater swimmer. It is natural, therefore, that when the newcomer to the fascinating hobby of sea aquarium-keeping establishes his first tropical marine aquarium, he usually wants to stock the tank with a collection of

fishes which includes at least one Angel fish and one Butterfly fish. Let me say straight away that unless the beginner has been lucky enough to begin the marine hobby with a large tank of say, 40 gallons plus (the smallest marine tank I would recommend for the beginner would be a 36 in. × 12 in. × 15 in. or equivalent gallonage), a good filtration system and an ozoniser, he should not spend any of his hard-earned cash on these species. A much wiser course of action for the average beginner without a lot of

money to throw about, would be to begin with several Damsel fishes, one of each species (**VERY IMPORTANT**—groups of Damsels of the same species usually fight bitterly in small aquaria). Clown fishes are **not** the beginners fish. They may be the second-easiest family, but cannot compare with the Demoiselles for toughness.

After the beginner has spent an initial three month period making all his inevitable mistakes on these cheap, forgiving little fishes, he should *then* begin to think about the purchase of fishes in the order *Chaetodontoidae*.

In view of the writings of many authors suggesting the advisability of purchasing all one's fishes at the same time, a well-read beginner may at this stage be wondering whether the present author knows what he's talking about. In fact, I have found on

terologically, conveying a colossal nitrifying ability to the tank's filtration system. (*Author's note*: I am presuming here that my oft-repeated advice that a *powerful* undergravel filter is a *de règle* requirement in an efficient marine aquarium is a universally-accepted truism). This will ensure that, even after a heavy feeding session the nitrite (**POISON!**) content of the sea-water never increases beyond 1-2 ppm.

NEITHER BUTTERFLIES NOR ANGELS WILL TOLERATE A HIGH NITRITE LEVEL FOR VERY LONG.

Let us halt temporarily here and see how we have progressed in outlining the conditions which we need to be successful in the culture of the *Chaetodontoidae*. We need a large tank, minimum size 36 in. ×



Forcipiger longirostris



Pomacanthus maculosus

questioning many authors, that what they meant to say is "If you can *afford it*, buy your stock at the same time, (assuming the ownership of the large tank, etc., etc., mentioned above). Alternatively, it is quite acceptable to buy small fishes first, i.e., Damsels and Clownfishes, and then subsequently add larger show fishes at a later date". This is sound advice for several reasons as follows:

- (1) The beginner will have acquired one or two "salty fingers" during this time with the tougher species.
- (2) The tougher, "cheap and cheerful", Damsels and Clowns will have taken the raw edges off the synthetic sea-water solution if the aquarist is *not* using the new pre-aged sea-water formula.
- (3) **MOST IMPORTANT**—the filter gravel and the other media used will have ripened bac-

12 in. × 15 in., and the larger and deeper (vertically) this tank is, the better. The tank, since it is to contain that most corrosive of solutions—sea-water, will be either—(a) All glass, or (b) Fibre glass and glass or (c) Nylon-coated steel and glass, with a silicone rubber seal preventing access of salt water to the glazing putty.

The water will be either well-matured normal synthetic salt water or alternatively, a pre-aged formula synthetic sea water. The tank will contain a complex "jungle" of *well-cured* corals, large shells and rockwork, in order to simulate the extreme spatial complexity of these fishes' natural environment, but will leave several open swimming spaces.

The filtration will contain, as a *minimum*, a powerful under-gravel filter giving at least a turnover rate* of *one* (i.e., 1 hour) ideally, the nearer the turnover rate approaches 0.5 (=30 minutes), the better. If

financial considerations permit the purchase of a power filter as well as the undergravel filter, this is most excellent.

Purchase of stock

In self protection, one must state that the maxims stated below regarding behavioural characteristics of the *Chaetodontidae*, must only be taken as broad outlines, so variable are the temperaments of individual fishes within this family. I am always being pressed by customers, publishers and lecture audiences into making definite statements regarding certain aspects of tank stocking. This is unfair. One day I shall succumb to the temptation to publicly state something like "No more than one Clown Trigger should be kept in a tank unless the tank is more than 1,000 gallons". The following morning



Pomacanthus chrysurus

my mail will contain a letter from a gentleman in Grimsby who claims to have kept three adult Clown Triggers in a half-filled pint milk-bottle for nine years without mishap!

When buying Angels and Butterflies, or for that matter any marine fish, from a dealer, the great secrets are to know what to look for and secondly to have a great deal of time in which to look for it. Never go out to buy coralfishes if you are short of time. The anticipation and act of buying an animal as gorgeous as a coralfish should be an integral part of the pleasure of actually keeping and studying the fish. Buying a Butterfly or an Angel, whether it be your first or twentieth such purchase, is a rare and sensuous enjoyment which should be savoured like the bouquet of a good wine.

In the case of Butterflies in particular, familiarise yourself thoroughly with the normal coloration

pattern of the various species. This can be done quite easily by studying contemporary illustrated literature, preferably of European origin (e.g., the works of Kahl, van den Nieuwenhuizen, Paysan, Laurence Perkins and Timmerman, etc.), since many American photographers tend to photograph dead fishes showing atypical coloration. A Butterfly which is ill will almost invariably show darkened patches in what should be pale areas. The phenomenon is not so noticeable amongst the darker coloured Angelfishes, but both Angels and Butterflies always hold the pelvic fins permanently clamped to the body when feeling below par. A healthy specimen may well tuck the pelvics tightly into the body when swimming rapidly but, as he stops periodically to scrutinise corals and rocks, etc. for a tasty morsel, the pelvic fins will nearly always drop into a relaxed position away from the body.

The respiratory, or breathing rate is also an excellent barometer as to the animal's condition. A fish which is healthy and not in a state of shock, will usually show around 80-110 gill movements per minute in sea-water which is in good heart and at normal temperature.

Heart-Felt Plea

Please do not hammer, tap or bang on the glass of the aquarium housing your prospective purchase or you will thus be likely to rob both yourself and your dealer of a beautiful creature.

When you arrive home with your new fish, remember that it has already gone through a most frightening experience in being netted and packaged. Please avoid all further traumatic exposure for your fish by observing the following simple rules:

- (1) Put out all but the most subdued lighting in the room where the transit box is to be opened, and certainly switch off the aquarium lights.
- (2) Remove the oxygen-inflated bag gently from the box and float it in your sea-aquarium for 15 minutes to allow temperatures to equalise.
- (3) Without exerting any pressures on the sides of the bag, gently untie the elastic band around the neck and roll the mouth back on itself to form an air-filled raft.
- (4) Carefully depress one corner of the floating bag, allowing approximately an egg cupful of your sea-water to mix with that of your dealer.
- (5) Repeat (4) above, 6-9 times before allowing the new fish to swim out into the tank. The room and the aquarium in it, should now be left in darkness until the following day, or, if the fish is purchased in the morning, until 8 or 9 p.m. on the day of purchase.

* **TURNOVER RATE**—This is the number of hours taken for all the water in the aquarium to pass through the filtration system.

Feeding

This is seldom a problem if all the foregoing precautions and provisions have been observed. If the tank decor is satisfyingly natural, the sea water is of good formulation and adequately matured and if the right foods are offered, few Angels and Butterflies will refuse food, OTHER THAN THOSE HYPER-DIFFICULT SPECIES SPECIALLY MENTIONED BELOW.

The following foods are listed in order of attractiveness to the majority of the members of the order *Chaetodontoidae*.

(1) Prawn eggs; (2) Chopped squid; (3) Chopped mussel flesh; (4) Whiteworm; (5) Earthworm; (6) Prawn flesh; (7) Chopped liver; (8) Chopped heart; (9) Chopped steak; (10) Dried food.

Of all the above foods, suitably sized pieces of earthworm are probably the most nutritious and safe on the list.

In order to keep these fishes in continued good health for a period of several years, a good vitamin concentrate should be added to the food or directly to the water at least once per week.

Unless one has the patience and the facilities for continual brine-shrimp-hatching very small Butterflies (e.g., size 1 in.) should be avoided.

At this size the extra nutrition needed for growth, in addition to that for supplying the needs of basal metabolism, is so great that these baby fishes need to be fed almost continually. Without a twelve hours per day feeding programme, it is terrible to



Pygoplites discanthus

see these small animals wasting away and slowly "burning up".

Angelfishes for the Sea Aquarium

Pomacanthus maculosus—

The Purple Moon Butterfly

This excellent Angel is not the most colourful member of its genus by any means, but for ease-of-



Holacanthus trimaculatus

culture and non-aggression it has few equals. Although found as far south as Mozambique, it is only really common in the Red Sea. Once settled into its new home, all foods, even dried foods, are accepted greedily.

Pomacanthus chrysurus—

The Kikuyu Angel

This Angelfish is quite rare throughout its range in the Indian Ocean. Whilst individuals may be aggressive, the majority of specimens are placid and excellent community fishes. In coloration, this species is a Rolls-Royce version of the Koran Angel, having more brilliant vertical stripes and a bright yellow tail.

Pomacanthus imperator—

The Emperor Angelfish

A young adult of this species is, once seen, a haunting memory which can only be exorcised by ownership. However, the species is not common anywhere, and always commands a high price. In consequence one would advise a year or two's study of the cheaper and hardier species before buying an *imperator*.

This advice would also be extended to include the following species:

Angelfishes

Euxiphipops nevarchus—Majestic Angel.

Euxiphipops xanthometapon—Bluefaced Angel.

Chaetodontoplus mesoleucas—Butterfly Angel.

Pygoplites diacanthus—Regal Angel.

Gentropyge flavissimus—Yellow dwarf Angel.

Butterflyfishes

Megaprotodon sps.

Chaetodon mesoleucas.

Chaetodon larvatus.

Chaetodon trifasciatus.

Chaetodon collare.

Pomacanthus annularis—

Blue-ring Angel

This Angelfish, like all others, becomes prone to *Benedenia* infection if exposed to a high nitrite level for too long a period. This disease is easily cleared by transferring the sufferer to low-nitrite level water and treating with a good Oodinium cure. So automatic is this outbreak, that an Angelfish developing *Benedenia* may be taken as a certain indication of a high nitrite content in the sea aquarium water.

Feeding this lovely species can be difficult initially but once the Blue-ring is settled in, it takes many foolish mistakes to prematurely terminate its life. Initially, the Blue-ring may refuse all nutrients other than live foods. Good starters are white

worms or/and live mussel. N.B.—Mussels should first be sterilized for 48 hours in a solution of one teaspoonful of acriflavine to two gallons of sea-water. When aquarium acclimatisation is complete, even good dried foods are taken with relish.

Pomacanthus semicirculatus—

The Koran Angel

The markings on the tail of this magnificent species are said to repeat a quotation from the Holy Book of the Musselmans, hence the trivial name. If the marine aquarist possesses only a small tank, say 36 in. × 12 in. × 15 in., he would be well advised to buy one of the Dwarf Angels (*Gentropyge* species) rather than a juvenile Koran, unless he is also lucky enough to own an ozoniser. The reason for stating this is that juvenile Korans, in less than perfect conditions, tend to fall foul of a "White Patch" disease. This curious affliction is usually described as "fungus", although the author suspects that the primary infection is probably bacterial in origin. In any event, whether fungi or bacteria are the causal organisms, the disease swiftly proves terminal unless the water is ozonised. Once up to 3 in. or larger, the Koran, even in non-ozonised water seldom suffers from "White Patch" disease.

P. semicirculatus is probably the easiest Angelfish for the beginner after *P. maculosus* and *H. xanthurus*, even juveniles quickly learning to accept dried foods as well as the usual fresh protein or live foods.

All large Angelfishes, and especially *P. semicirculatus* specimens, once thoroughly established in an aquarium are seldom agreeable to the introduction of others of the *Chaetodontoidae* sps. to their quarters. It is very unwise to attempt to add a new Butterfly or Angelfish to an aquarium which already contains a large, well-established member of this Order.

Holocanthus xanthurus—

The Yellow-Tailed Butterfly

This fish is only really common in the waters surrounding Ceylon. It is an ideal beginners' fish, quickly settling down to aquarium life and accepting all foods. It is particularly resistant to disease in an uncrowded aquarium. Most specimens are relatively non-aggressive.

Holocanthus trimaculatus—

The Flagfin Angel

The Flagfin is the most gracious newcomer of any corallfish family to become available in Britain in recent months. Almost all specimens come from the Philippines. By choice they will accept spinach and lettuce rather than any form of animal protein, although they soon learn to accept the latter, and dried food, after a few weeks of tank acclimatisation.

The Butterflyfishes

This family of coral-fishes is numerically enormous. It is probable that the total number of species and sub-species exceeds one hundred. Here, however, we have concerned ourselves only with those species which are easy to obtain and which are good "doers".

Hemiochus acuminatus—

The Wimple Fish

A very successful species, *H. acuminatus* ranges from the East coast of Africa right around the equatorial reefs of the World to the Easternmost atolls of the Pacific. It is absent from the tropical Atlantic area and rare in the Red Sea.

As one would expect with a species so adaptable as to be able to colonise 5/7th's of the world's reef area, the Wimple is tough, long-lived and very undemanding in its feeding requirements. Youngish specimens may demand live foods such as brine shrimps, chopped worms, daphnia and chopped mussel-mantle. Within a few days, tank acclimatisation will be complete and dried foods will be taken gluttonously. The simple, but distinct coloration of black and white stripes with a yellow dorsal fin is very striking.

Forcipiger longirostris—

Yellow Longnose Butterflyfish

This fish was branded in the early days by many aquatic journalists as being impossible to keep. This could only mean that, never having studied the fish at first hand they became unreasonably depressed by the length and shape of the jaws, and assumed that this species had to eat unobtainable reef crustaceans, worms and polyps, etc., in order to survive. In reality, nothing could be further from the truth. Although such exotic diet items undoubtedly are the staple diet of this species in the wild state, in the aquarium, *Forcipiger* is characterised by its readiness to eat all that is offered. Non-aggressive, it is non-the-less always well able to defend itself from attack by adopting a head-down pose facing the aggressor and erecting its formidable dorsal spines. Faced with such a display of passive resistance even a rampant Triggerfish will usually decide to seek lunch elsewhere. Its only drawback as an aquarium fish is its price. It is not really a commonly-found species anywhere throughout its range in the Indo-Pacific and is thus seldom available for less than £10 per specimen.

Chelmon rostratus—

Copper-banded Butterflyfish

This gorgeous Butterfly is very similar in shape to *F. longirostris*, but, as the photograph shows, coloration is totally different. Unfortunately, in this species, the jaw-shape is indicative of a somewhat choosy disposition with regard to foods, although once a

Chelmon has learnt to accept aquarium foods, it never looks back. The specimen featured in this photograph has been with the author for nearly two years, and was fully adult when imported in 1968.

Specimens originating from the Philippines are usually easier to feed than Singapore *Chelmons* although the latter are always much cheaper.

Newly-imported specimens are often prone to attack by the virus which causes Lymphocystis disease and it is a good idea to patiently leave the fish with your dealer for at least seven days prior to buying it. It is a relatively commonplace Butterfly-fish so that even if someone else purchases the fish you had your eye on, another one will be along next week.

Chaetodon kleini—The Sunburst Butterfly

Chaetodon lunula—The Moon Butterfly

Chaetodon auriga—Golden Butterfly

Chaetodon vagabundus—Vagabond Butterfly

THESE FOUR SPECIES ARE THE MOST COMMONLY AVAILABLE, LOW-PRICED "COOKING" BUTTERFLIES. THEY ARE LISTED IN ORDER OF INCREASING DIFFICULTY OF CULTURE.

The Sunburst Butterfly

This coral-fish is a beautiful butter-yellow colour with a purple-blue dot on each scale. Most specimens settle down to eating a good dried food within two hours of importation. The species cannot be too strongly recommended for someone about to try Butterflies for the first time. It also has a high tolerance of its own species and several specimens can be kept in the same aquarium.

The Moon Butterfly

Although not nearly so tolerant of its own species unless a mated pair is obtained, the Moon Butterfly is attractive in its patterns of green, black and white and soon learns to accept all the common aquarium foods.

The Golden Butterfly

This is probably the most common Butterfly of all. Coloration is a white background with two sets of black parallel bars meeting each other almost at right angles. The posterior portions of the body are bright yellow. In all other respects other comments are as for preceding species.

The Vagabond Butterfly

The coloration of this species is superficially very similar to that of the *auriga*, but the overall impression is of a much darker fish. This is a somewhat variable species with regard to feeding; some specimens settle down quickly to accept all foods whilst others

in the same shipment may be fussy about foods all their lives.

Chaetodon semilarvatus—

The Adis Butterfly

A most excellent "doer", this beautiful creature hails from the Red Sea area, where it is moderately common. It is rarely obtainable smaller than 4 in. in length and is consequently expensive owing to the high freight costs incurred in the importation of such large specimens. The Adis Butterfly has a panda-like appearance caused by the purple-black patch round each eye. Soft orange vertical bars gently break up the brilliant yellow body.

I sincerely hope that the above will serve to simultaneously excite the interest of the marine aquarist

who hasn't yet ventured into keeping *Chaetodontidae* species, and smooth the path of the uninitiated, allowing them to swell the rapidly growing numbers of those who enjoy the pleasures of owning a sea aquarium, without too much expense and initial difficulty.

Final Note

Experienced marine aquarists will be disappointed to note that I have not featured any of the *Chaetodontidae* sps. from the Tropical Atlantic. This has been a deliberate omission owing to the present difficulties in obtaining these species in Europe and the limitations of space available for this article. The dwarf Angelfishes have also been omitted for the latter reason but will be covered in a later article.

The Phantom Midge

(*Chaoborus
crystallinus*)

By B. T. G. Wall



The Phantom Midge

This diminutive member of the family *Culicidae* (which also includes *Anopheles*, the malaria-carrying mosquito) provides aquarists with a valuable, though little known, source of live food. It is in the larval stage that *Chaoborus* is of particular interest, the larvae providing nutritional qualities considered to be superior to *daphnia*, etc. Most aquarists who "fish" for *daphnia* will have noticed, from time to time, the numerous transparent "wrigglers" included in their catch, generally only after arriving home. The larvae, as their name implies, are glassily transparent, and appear to have a bubble of air near each end. Closer examination, preferably with a hand-lens, will reveal two pairs of air-sacs, a beak-like proboscis and a fan-shaped series of antennae with which small crustaceans such as *daphnia* are trapped.

Unlike other larvae of the same family, *Chaoborus* hang horizontally at all water levels, and propel themselves with astonishing rapidity through the water by

curious jack-knifing hops. They appear not to need frequent trips to the surface as do the larvae of culex and anopheles mosquitos, which when undisturbed will rest breathing at the surface.

When present in ponds and streams they occur in masses, and may easily be caught with a *daphnia* net, in which they resemble a quivering mass of clear jelly. All tropical fish seem to relish them, and despite their tremendous agility, most fish seem to catch them, since they tire quickly after a dash of about 6-9 inches. A further point in their favour is the fact that when taken from foul water they are able to survive far longer, and seem to be unaffected by conditions which kill off *daphnia* very quickly (pollution, overcrowding and physical damage, etc.).

As a means of reassurance, it should be stressed that the gnats which develop from *Chaoborus* larvae live for only a short period, and are unable to bite or sting humans.

OUR READERS WRITE

Jack Hems replies to his Critic

I do not know where Mr. C. A. Irelan-Hill read that the opaline gourami is "wrongly considered a sport of the Blue Gourami" and is "in fact a separate species," which he calls, and mis-spells, *Trichogasti marmoratus*, but I should be happy to receive this information at the earliest opportunity. I have a considerable library of aquarium magazines and books and up to the time of writing I have been unable to find anything which is at variance with what I wrote in the issue of February.

As Mr. Irelan-Hill is so interested in facts, perhaps he would like to know that the opaline or Cosby Gourami was first introduced into this country thirteen years ago as "a colour variety of the well-known Three-Spot (*Trichogaster trichopterus*) . . ." (*Water Life*, June-July, 1957.)

JACK HEMS.

Undismayed Breeders

I have just started an aquarium and although still a novice I feel I must comment on the article in the April issue, "Breeding good Guppies".

First, I did not want to breed as I wasn't prepared for them, but against all that I read on breeding I got young Guppies and Swordtails—the score:

Week 1. 16 guppies born. No action taken. Total left 12 guppies.

Week 2. Another 12 guppies born. Still no action taken. Total left 10 guppies.

Week 3. 10 swordtails born. Still no action taken. Total left 8 swordtails.

Week 4. 6 guppies born. Still no action taken. Total left 6 guppies. Total fry still left 40 mixed.

Secondly, I have gone against all the rules of breeding. I have swordtails and guppies when I shouldn't have. I have syphoned the water out (even the fry went through the tube), into a bucket, cleaned the tank, put fresh water from the tap back, brought the temperature up with hot water, put the fish back, without losing one fish.

J. B. LAMONLEY,
124 Hillside Grove,
Chelmsford, Essex.

P.S.—The swordtail is about to have some more young. Help!

Contented Reader

Since entering my subscription to *The Aquarist*, I have received four issues. It is evident, after only this short period, that I shall certainly not regret having "invested" in your magazine.

Early this year, I subscribed to other "foreign" tropical fish hobbyist publications as well. The quality of *The Aquarist*, in every aspect, from content to actual printing quality, far exceeds all others I have seen originating outside the U.S. WELL DONE.

Yours faithfully,

P.O. Box 3258, JEFFREY K. MOREIRA.
Honolulu, Hawaii. 96801.

Satisfied

May I say how much I enjoyed the article "An economical fish house" in your April issue. I built my fish house just over two years ago and it is proving quite successful. Incidentally I am greatly indebted to Mr. A. Boarder who gave me quite a lot of information to help me at the time and enabled me to avoid various snags I would not have foreseen without his expert guidance. I only breed fancy goldfish, calico veiltails and scaled and calico fantails and through circumstances I cannot go into here I have only a blue flame greenhouse heater (Aladdin) for heating in the winter, but I have experienced no difficulty with this heating. It is certainly very cheap to run. This past winter I have maintained between 52-62°F for around 5s. a week. Of course I did a really good insulation of cosywrap and hardboard lining. I think more articles of this subject on fish houses would be welcomed by most readers.

Articles on different methods of heating, insulation and their comparable costs. Building materials, siting of windows, shutting out of excessive light or increasing light in existing houses, etc., would, I believe, be informative and interesting to all readers. Let's have more of these articles in future issues. I am sure they will be appreciated by all, whether coldwater or tropical enthusiasts.

Yours faithfully,
S. JACKSON
11, The Rally,
Arlesey, Bedfordshire.

Correspondence on Cichlids desired

I am looking to import Julisochromis Cichlids into the U.S.A., as they are not available here.

I also would like to exchange tape recorded letters with adults interested in Cichlid and rare Catfish in England and other countries.

STEPHEN HOCHMAN,
58-22 Granger Street,
Rego Park, New York 11374,
U.S.A.

Marine Correspondents Wanted

I would like to correspond with other aquarists interested in native marine fish and invertebrates. I may be able to supply interested aquarists with certain living British sea creatures from time to time. I live within travelling distance of the coast and the charge for these animals will suffice to cover the cost of collecting, transporting, etc.

HUW COLLINGBOURNE,
19 Tan y Bryn, Pontygwaith,
Rhondda, Glamorgan.

Assistance Wanted

I am directing this letter to your attention in the hope that I may obtain some information which will aid me in fulfilling a long desired dream.

I have for many years been attempting to obtain from my fellow aquarists in England the full volumes of *The Aquarist and Pondkeeper* and *Water Life*. I have on occasion written to individuals and have received promises to exchange via mail on a swap basis volume for volume these two magazines for some very fine sets of American magazines. Somehow, every time that I complete the transaction the British party fails to follow through and I am left frustrated in my hopes to assemble these sets of British Aquatic magazines.

I am writing to you in the hope that you may have a direct line with the serious hobbyist who might know of a person or persons who may wish to exchange or sell these magazines. If you have a master list of all your affiliated societies' secretaries to whom I might send an announcement of my request I would be happy to print up a list of what I require and a list of what I am offering.

I know that perhaps what I am asking you to do may entail some work. However, through the years, as founder and chief trustee of the Brooklyn Aquarium Society, I have written many hundreds of letters in an effort to further the hobby for my fellow aquarists all around the world and have rarely asked a favour. My desire in this matter is only to make available on this side of the Atlantic as much information as is possible through the formation of as fine a library of literature as can be assembled.

If you have any suggestion as to how I might contact the other societies affiliated with the Northern Aquarium Societies, The Midland Association of Aquarists Societies or the Federation of Scottish Aquarium Societies (i.e. Secretaries' Addresses) I would be most appreciative.

Hoping to hear from you in the near future,

I remain Sincerely,
STEVE STEWART,
459 East 52nd Street,
Rugby, Brooklyn,
New York City, N.Y. 11203.

I have for swap at the present the following volumes of American magazines:—

The Aquarist—Vol. 15 1946 to Vol. 35 21 vols.
With only 5 issues missing in three vols.

Aquarium Journal—Vol. 18 to Vol. 36, 1947 to 1965.
19 vols. 10 issues missing.

Tropical Fish Hobbyist—Vol. 1-14, 1952 to 1965.
6 issues missing.

Exhibition Help Wanted

Once again the Aquarist Fishkeeping Exhibition at Alexandra Palace is upon us. As last year, we hope to have an array of Furnished Aquaria that will be second to none. Also there will be pairs of fishes in open competition, and displays by specialist organisations.

To stage an event of this type needs a lot of preparation, but most of all plenty of help in setting up staging and filling of tanks before the opening, keeping a check on exhibits while the exhibition is open to the public, and emptying of tanks and dismantling of staging after the prize presentation.

This help is very much appreciated, and any one who can offer help in this way would be very welcome from 10.00 a.m. Monday, 6th July, till 9.00 p.m. Sunday, 12th July.

If you can be available at any time during this period would you please contact Mr. S. Mooney, 44 Conniston Road, Muswell Hill, London, N.10. Telephone 01-883 3099.

A. G. JESSOP,
Chairman, F.B.A.S. Show Committee.

The Editor regrets that the author's name, F. W. Offord, was omitted from the title page of his article on Pollution, in our June issue.

REARING THE FRY

By A. Boarder

THE REARING OF THE FRY is the most important part of goldfish breeding. Many aquarists write to me about the losses they have experienced and so I will attempt to give advice which should help those people who have had difficulties in the past. The actual incubation was described by me in my previous article and so I will run through the procedure from the time of hatching. The main necessities for a successful rearing are: Oxygen, food, space and warmth. The first two are very important as no fry are likely to be reared unless these two are present. Fresh water will contain plenty of oxygen but once the water turns foul bad gases form and then the oxygen content will be lessened. The state of the water can be altered by several factors. If it was pure when the eggs were placed in the container then it should remain fairly so unless there were many infertile eggs among the clutch. Also, if some aeration was used this would help to keep the water in good condition. A very deep container as a hatching tank is not as good as one which is shallow as there is rarely as much oxygen in very deep water, especially deep down.

An experienced aquarist can tell at a glance if the water is in a pure condition, but the beginner may also do this by smelling it or by noting the colour of it. Fresh water has no unpleasant smell and looks clear. Foul water will have a bluish appearance and have a bad smell. Although it is not wise to change the water at this stage, it is better to take the chance and do this rather than leave the water in a foul condition. Remember that the fry are very tiny when first hatched and it takes very little to upset them, and there is practically no chance of a cure at this young age. I am certain that some aeration will be a great advantage now, even if this has been dispensed with during incubation. For very many years I used no aeration nor extra warmth for breeding but have now found that it is a great advantage to use both. There is no need to have violent aeration and I consider that this could be to the detriment of the welfare of the fry, as the water would be so disturbed that the fry would

have to use up much energy to fight against the currents.

On the other hand, not only will the slight aeration assist in keeping a plentiful supply of oxygen in the tank, but it will tend to keep small particles of food on the move, this encouraging the fry to take it. The normal food for fry is tiny live creatures such as are found in infusoria, etc., and so they have a tendency to go for only things which move. After a time they will get used to taking food which does not move but at first the aeration, with a fairly constant movement of the water, will assist the food to keep on the move. Having made certain that the water remains in good condition the supply of food is the next important necessity. This, of course, must be very fine at first and the usual method used to be to feed on infusoria alone for the first week or so. Most aquarists have a favourite method of producing infusoria but any method can be successful as long as something in the vegetable line is crushed or boiled and placed in water. The decomposing matter encourages the growth of infusoria which usually includes many very tiny creatures of varying sizes. One of the best types is the slipper *animaculæ* or *Paramecium*. The tiny life can be seen plainly with the aid of a microscope. It is not necessary to use a high-powered one as this type may not be as good as one of about twenty magnification. A type known as a student's microscope is quite satisfactory as a drop of water can be placed on the slide and any live creatures in it will be seen quite easily. It is, of course, no use giving clear water to the fry as food and so the microscope is essential to be certain that sufficient live food is being given.

However, there is no need nowadays to use any infusoria at all as, since the introduction of Liquifry, a very good alternative is available. When using cultured infusoria it is almost certain that with the living creatures you will be adding foul water to the fry tank. This is almost impossible to prevent, even if the infusoria water is strained through silk or similar substances, the water is likely to be on the foul side

as this is the type of water in which the infusoria thrive. The Liquifry takes the place of cultured infusoria and since this food has been on the market I have used no other first food and have had success with it at all times. This liquid food contains minute food in suspension and not only that but it also encourages the formation of infusoria in the tank without the necessity of introducing foul water with it.

The time to give this food and the quantity is often open to question. I like to add a few drops of Liquifry two days after the eggs are laid. Then, by the time the fry are beginning to feed, there are likely to be plenty of infusoria in the water. The amount to be given will depend on the size of the batch of eggs. There is no need to overdo the amount at first, just a few drops will be enough. The fry start to feed as soon as they are free swimming but up to that time they will be sustained by the egg sac with which they were born. Once the fry are seen on the move some more Liquifry must be added. Again the frequency and amount will be decided upon by the size of the hatch. A few drops about three times a day should be sufficient. Some breeders use the yolk of hard-boiled egg strained through fine cloth, such as a handkerchief, but I have never been successful with this method as in the two cases I have experimented with, the fry have developed fungus round the gills and so now I never use egg at all. The Liquifry will be sufficient for about ten days, especially if enough has been added to get a fair supply of infusoria in the tank. The microscope should be used perhaps every day to see what the state of the water is as to the infusoria content.

Once the fry are swimming and feeding well it is possible to use several other types of food, always remembering that it is useless to give any particles larger than can be taken easily. One of the first other foods I give is mashed white worm. I use a few worms mashed up with the well-known worm shredders. These reduce the live food to a pulp which is washed off in the fry tank. I never use any Daphnia, but I know that some breeders swear by this type of live food. I know that it can be all right as long as one is quite certain that when feeding with Daphnia there are no pests present nor any diseases likely to be introduced into the fry tank. About thirty years ago I used some Daphnia from a local pond and introduced a shocking crop of gill-flukes, losing most of a large batch of fry. Since then I never use any live food which has come from a water source, and have had no pests nor diseases in the tanks ever since. The only live foods I use now are garden worms and white worms, neither of which come from a water source.

At about a fortnight of age the fry can start to take very fine particles of dried foods. I find that the flake foods now on the market can be mashed up with the shredders into a fine powder which floats on the

surface. The food will soon be taken by the fry and it is then that slight aeration will keep this food on the move and so encourage the fry to take it. Once the fry are on fine dried foods most feeding troubles are over. It is then possible to use several types of food always trying to include some form of live food. A good mixture is better than to keep to one food alone, but it should be realised that there are likely to be plenty of infusoria in the tank most of the time. Once the fry are taking more dried food I find that I can use almost any type of food as long as I can reduce it to a fine state. For this purpose I have one of the old-fashioned coffee grinders. This is ideal for reducing any dried food to very small particles and I can continue to use this food for some months. The young fish will take this from the surface very readily.

I mentioned in the first instance the necessity of space and warmth in addition to the oxygen and food. The warmth is very important for breeders who are specialising in any of the fancy varieties of goldfish. I know that artificial warmth can be dispensed with, but since I started to use it I have found many advantages, and now use it each season. The extra warmth, say at about 70°F., will ensure that the fry are constantly on the move and on the feed. Fish can eat far more food when the water is warm than when it is cold. Although warm water contains less oxygen than cold water, the use of an aerator will tend to put matters right in this instance. The warmer the water within reason the quicker will the fish be able to digest their food and so they are ready far more sooner than if they had been cold. The extra food means quicker growth and also any heater in a tank is sure to increase the circulation of the water, thus bring quantities up to the surface for re-oxygenation. If one cannot provide heaters for the tanks then it is possible to improvise somewhat. A tank which is covered with a sheet of glass will attract much warmth if placed where the sun can reach it. Also if a garden frame is available this also helps to increase the warmth. A greenhouse or sun-lounge is also a very good place for the rearing tank, as even a few extra degrees of warmth make a lot of difference to the growth of the fish. Not only this but with any of the scaled types of fancy goldfish, the colour change will be considerably hastened by this extra warmth. Once the young fish are about two months old, as long as their growth rate has been good, the warmth can be allowed to decrease gradually to that of the normal.

Now the space question. This has been left to last as it is not so very important when the fry are very small. I have found that whilst they are tiny they do not seem to mind being kept in crowded conditions, providing of course that the water remains pure and well oxygenated. However, once they are about an inch in length over-all, they should have more swimming space. When removing them to fresh

quarters you must be very careful to ensure that the temperature of the fresh tank is similar to that from which the fry are taken. Also it must never be water direct from the tap. It is essential that such water stands in the air for a couple of days at least so that any chloride can escape. Also fresh tap water can be very cold. The removal of the fry must be done very carefully and it is better to use a small saucepan than to use nets for this purpose.

Once the youngsters are about an inch and a half long they require a 24 x 12 x 12 in. tank for every two

dozen, this with the addition of some aeration. It is possible to house more than this but it is almost certain that by doing so you will restrict the growth of the fish. I am sure that if young fish are subjected to crowded conditions when young they may never again grow on at the maximum rate. Although I have stressed the importance of using some form of artificial heating for rearing fry, I do not suggest that the procedure cannot be carried out without this aid. However, I am sure that with some form of heating and artificial aeration, far greater success will be attained than if neither had been used.

PRODUCT REVIEW

NEW RANGE OF FOUNTAIN SPRAY HEADS BUILT IN BRASS

TO CATER FOR the growing popularity of the ornamental fountain in water gardens, pools and ponds a newly designed range of fountain spray heads is being produced by Eclipse Sprayers Ltd., Smethwick—a company with more than 50 years' experience in the manufacture of high-grade spraying equipment.

Engineered in solid brass there are six different fountain heads in the range, each designed to provide an outstanding water spray feature to the pool.

A conical sleeve with a $\frac{1}{4}$ in. diameter base means that each separate head may be firmly fitted quite easily to the relevant water outlet or stand pipe.



- ES1 has five cone sprays. Relatively little spread but a correspondingly greater height of water spray. This particular head is also for use on larger, municipal fountains.
- ES2 a small centre cone provides three heights of spray—a centre jet of considerable height and two cascading sprays.
- ES3 thirteen cone sprays—giving two heights of water cascades.

ES4 a fountain head which forms a really delightful centre piece display. Multiple sprays spring up from the five cones and four fishtail sprays.

ES5 eminently suitable for the smaller pool. Ninety small holes located around a centre cone provide a superb centre jet and fine spray surround.

ES6 again for the smaller pool. Ninety holes which form a fascinating fine spray effect.

This new range of Eclipse fountain spray heads is being marketed in the United Kingdom by Minster Water Gardens Ltd., Southwell, Notts.

Further information gladly supplied by Miss Hilda Grimley, Eclipse Sprayers Ltd., Rawlings Road, Smethwick, Warley, Worcs. (Tel.: 021-429 1586).

PHILLIPS FLAKED FISH FOOD

PHILLIPS FLAKED FISH FOOD, for all tropical fish, is manufactured by Phillips Yeast Products Ltd., Park Royal Road, London, N.W.10. It sells at 2s. 0d. for a small drum, 4s. 7d. per 1½ oz. tin, 10s. 10d. per 4½ oz. tin and the 18 oz. tin costs 32s. 7d.

This is a highly nutritious staple food for all tropical fish, and the mixed flakes are of various sizes, suitable for fish both large and small. The food is easily crushed for baby fish. The food also contains the ingredient "Saprolegnil" which protects fish against fungus infection. This food does not cloud the water. The food contains liver, white fish and meat meals, insects, crustaceans, vegetable matter, brewers' yeast, milk powder, cod liver oil and Saprolegnil (with vitamins A, B1, B2, niacin, pyridoxin, inositol and D3.) The analysis is the same as the above food. It is suggested that the fish be fed daily, preferably in the evening, with the aquarium lights on. Not more food than the fish can readily consume should be fed. My fish were keen on this food too.

B.W.

Why not join a society?

The following details will be of interest to readers wishing to become members of a society. The benefits of active membership in terms of information, experience and helpful associations cannot be over-emphasised.

In future issues lists will be published of societies affiliated to The Midland Association of Aquarists Societies, The Federation of Scottish Aquarium Societies and The Federation of British Aquarists Societies.

Readers wishing to contact any of the societies listed below should address their letters to the society, **HON. SECRETARY, W. T. KELLY, 31 SIDDELEY STREET, LIVERPOOL L17 8XU.**

A stamped addressed envelope **must** be enclosed.

FEDERATION OF BRITISH AQUATIC SOCIETIES: AFFILIATED SOCIETIES

CHEESHIRE

Chester & Dist. A.S.
Crewe A.S.
Ellesmere Port Trop. Fish Soc.
Glossop A.S.
Hoylake & Dist. A.S.
Macclesfield A.S.
Northern Goldfish &
Pondkeepers Soc.
Northwich & Dist. A.S.

CUMBERLAND

West Cumberland A.S.

DENBIGHSHIRE

Wrexham Trop. Fish Soc.

DERBYSHIRE

Alfreton & Dist. A.S.
Hyde A.S.

DURHAM

Stockton-on-Tees A.S.

LANCASHIRE

Accrington & Dist. A.S.
Ashton-u-Lyne A.S.
Barnoldswick, Earby &
Dist. A.S.
Barrow & Dist. A.S.
Belle Vue (Manchester) A.S.
Blackpool & Fylde A.S.
Bolton Trop. Fish Club
(ex Lancs. Aq. Breeders Soc.)

LANCASHIRE (continued)

Bury & Dist. A.S.
Gorton & Openshaw A.S.
Heywood & Dist. A.S.
Leigh A.S.
The Loyne A.S.
Lytham A.S.
Merseyside A.S.
Nelson A.S.
North Western Bus A.S.
Oldham & Dist. A.S.
Osram A.S.
Rochdale & Dist. A.S.
City of Salford A.S.
Southport A.S.
Sunnybrow A.S.
Stretford A.S.
Warrington A.S.
Wigan & Dist. A.S.

LEEDS

Horsforth A.S.

LINCOLN

Scunthorpe Museum Soc. Aq.
Group

NORFOLK

Kings Lynn & Dist. A.S.

NOTTINGHAMSHIRE

Dukeries A.S.
Hucknall & Bulwell A.S.

NOTTINGHAMSHIRE (cont.)

Nottingham & Dist. A.S.
Rainworth & Dist. A.S.
Worksop A.S. & Zoological
Soc.

N. WALES

Colwyn Bay & Dist. A.S.

SCOTLAND

Lanarkshire A.S.

STAFFORDSHIRE

Leek & Dist. A.S.

YORKSHIRE

Aireborough & Dist. A.S.
Barnsley Trop. Fish Soc.
Blackeborough A.S.
Bradford & Dist. A.S.
Castleford & Dist. A.S.
Dewsbury & Dist. A.S.
Doncaster & Dist. A.S.
Four Star A.S.
Halifax A.S.
Huddersfield Trop. Fish Soc.
Keighley & Dist. A.S.
Rotherham & Dist. A.S.
Selby & Dist. A.S.
Sheffield & Dist. A.S.
Stocksbridge & Dist. A.S.
Tadcastle & Dist. A.S.
Thorne A.S.
Top Ten A.S.

Junior Aquarist

OUR MOST COMMON CUTTLEFISH

By Bill Simms



BECAUSE OF THE MANY cuttlefish bones found cast up on our beaches, the name of Common Cuttlefish has been given to *Sepia officinalis*, with a length of 6-12 inches. But the most common cuttlefish around our coasts is the Little Cuttle, *Sepiolo atlantica*, which reaches a length of two inches, only. Despite its numerical advantage, though, this creature is not noticed often because of its mottled sandy colouring, and its small size. It lives in the shallow water just below the tide marks, and there it burrows in the surface sand. Frequently it is found in shrimping nets which is quite natural because it lives on such marine creatures as shrimps.

Like all cephalopods, the Little Cuttle feeds only on living creatures and it is to catch these that the burrow is made in the sand. At one side of the tentacles, protruding from below the mantle, is a tube used for expelling water and waste products from the body. This water can be expelled so forcibly that the cuttlefish is shot backwards through the water rapidly, and by this means can escape from some of its enemies. Through this same tube an inky fluid can be expelled also, and this is used as a cover-up while the cuttlefish escapes. It is with the aid of this tube that a hole is excavated in the sand. Lying on the sand surface the cuttle obtains a grip with its tentacles, directs its tube downwards, and then ejects water with sufficient force to remove some sand but not so forcibly that the creature is shot away backwards. This is continued until the hole appears big enough, and then any larger stones—too heavy to move with the jet of water—are removed by the tentacles. Finally the cuttlefish moves into the hole, flaps a little to settle sand around itself, and practically disappears from view. I have watched this process, and can testify that even without looking away, it is almost impossible to keep this little creature in view.

Unlike the large, more well-known cuttlefish, the little cuttle has a flap sticking out from each side of its body. These form a part of its mantle and are flexible, being used for slow swimming in the same way that the thin edge of the mantle of the larger cuttlefish ripples to move it through the water.

There are ten tentacles on all cuttlefishes; eight short ones, and two that are longer. The long pair in the little cuttle are different in length according to the sex. Those of the male are twice as long as the body, whereas the female has the two arms only slightly longer than the other eight.

The little cuttle, like all cephalopods, has the ability to change its colour fairly rapidly. It does this, apparently unconsciously, by contracting or expanding tiny spots of colour dotted all over its body. These spots belong to two or three groups of colours and when one group contracts while the other groups expand, there is an automatic change of body colour. This appears to be a nervous reaction, triggered by the vision in response to its surroundings.

All cuttlefishes have very good eyesight so that it is rare for them to miss seeing us long before we could see them: hence the difficulty of finding this very common small cuttlefish. The occasionally small puffs of sand seen near one's feet when walking in shallow sea water could well be the flurry caused by a little cuttle moving sharply away. All we see is the sand settling down once more. With the aid of a shrimping net pressed tightly against the sand, and a fairly fast forward progress, it is possible to catch one or two, especially if we try in the summer. I have never tried keeping one of these little cuttles in a cold marine aquarium but I think that it would be fairly simple provided that a good store of live food is obtained, and doled out carefully.



from AQUARISTS' SOCIETIES

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

THE results of Swillington A.S. second quarterly members' show this year were as follows:

Characins: 1 and 3, H. Wimbles; 2, P. Reynolds. Fishers: 1, L. Longfellow; 2, P. Reynolds; 3, Mrs. E. Reynolds. Anabantids: 1, Mr. Hargreaves; 2, Mrs. E. Reynolds; 3, Mr. Stead. Corydoras Catfish: 1 and 2, P. Reynolds. A.O.V. Cats and Loach: 1, P. Reynolds; 2, L. Longfellow; 3, Mr. and Mrs. R. Stringer. The Best Fish in Show was won by P. Reynolds, who also received the A.P. and W. R. Gawthorne Cups for Corydoras and A.O.V. Cats and Loach. Mr. Wimbles received the Ladies Trophy for Characins. Mr. Hargreaves received the Whitrose Trophy for Anabantids, and Mr. Longfellow received the Richardson Pet Shop Trophy for Fishers. The Judging was done by W. Cattmull, and the evenings entertainment was a talk on coldwater fishkeeping by Mr. Eadon of Sheffield.

AT the Mid-Sussex A.S. monthly meeting J. Kall, a familiar figure in the society, gave a helpful and interesting talk on plants, illustrated with slides. He explained that each plant needed careful attention and would only grow to the full if given the right conditions. He also told members that a cryptocoryne will grow best if the plant is left to mature for a couple of years and then set out the best plants from the runners.

Ted Jessop judged the Table Show of barbs and cichlids (dwarf and large) and presented the prizes as follows: Barbs: 1 and 3, D. T. Waring; 2, C. West; 4, J. Walker; 5, N. Short. Cichlids (dwarf): 1, S. Cauderbank; 2, C. West; 3, N. Short; 4, R. Smith. Cichlids (large): 1 and 3, D. Soper; 2, C. Corbin; 4, B. Slade.

At the Brighton inter-club show the aggregates obtained from each Society's entries were as follows: Portsmouth, 923 points; Brighton and Southern, 915; Mid-Sussex, 904; Littlehampton, 902.

Any further information on the society may be obtained from the secretary, J. Reeve, 36 Rumbolds Lane, Haywards Heath, Sussex.

THE July meeting of the Amesbury & District A.S. will consist of a re-run match with Salisbury and District A.S. and the classes for the show will be for barbs and any variety livebearers.

Results of the bottle show which was for Cichlids and Male Clippies were: 1, Mr. Rose (Clippy) 83 points; 1, Mr. Lane (Angel) 83 points; 2, Mr. Lane (Cichlid) 82 points; 3, Mr. Elliott (Cichlid) 80 points; 4, Mr. Lane (Cichlid) 72 points.

AT the first May meeting of the Guildford and District A.C., one of the members, Phillip Gurr, gave a very enlightening lecture on Genetics. This gave some of the beginners a bit more knowledge of what Genetics was all about, and many questions were asked and answered. A Table Show was held and the results were:—Over two tanks: 1, 3 and 4, Phillip Gurr; 2, Ian Bennett. Under two tanks: 1 and 4, Tom Garnett; 2, Gillian Bennett; 3, Peter Kelly.

The evening of the second meeting was called Lucky Dip, and turned out to be most enjoyable. The President, Dick Aylott, had been at work on the table by many pieces of paper all folded. Members were invited to

take their pick and give a short talk on the subject chosen. This turned out to be a very lively evening with at times many members trying to help the speakers by making additions to what was being said. The meetings are still held at the Guildford Trades and Labour Club, The Mount, Guildford, on the second and fourth Wednesday in the month, new members are always welcome.

THERE was a good attendance at the May meeting of the Carshalton District A.S. Mr. Jessop was a most able speaker drawing on his own experiences to provide a helpful and amusing talk on general fishkeeping and he also judged the Table Show. Results: Egglayer (pairs): 1, J. Lucy; 2, Jean Horsley; 3, Nigel Tucker. A.O.V. Catfish: 1, Jean Horsley; 2, Nigel Tucker. Junior Class: Egglayer (pairs): J. Dixon. There is a shortage of members in the junior side and any juniors (under 16) interested should contact the Secretary, 8 Reading Road, Sutton, Surrey, for details. Any interested parties or members of other societies who may wish to visit should also contact the above official.

AT the last meeting of the Penarth A.S. a very full evening of events was arranged for the members and their guests. The meeting opened with a vote of thanks given by the Secretary, Mr. W. Nicholas, for his donation of books to the club's library. There was an inter-club competition between the hours, and the Steel Company (Velindre Plant) A.S. M. Hesketh, Penarth's show Secretary, won the challenge shield for Penarth with a Tiger Barb. The Table Show which was for Hemigrammus and Hypheobrycon was judged by C. Harding of Cardiff A.S. the results being: 1, M. Dennison; 2 and 3, K. Swenson. The meetings are held every fourth Monday in the month at the Station Hotel, Cogan, Penarth. Visitors can be assured of a warm welcome.

A TALK by Les Jordan opened up the proceedings at the first May meeting of the Basingstoke A.S. The subject was Cichlids and he concentrated on his favourite, the Blue Acara. Being the possessor of many fine Cichlids he was very competent to talk on this subject and made a very interesting evening to novices and experts alike. There was a very large attendance for Cyril Brown's discussion on Killifish and they were not disappointed. The quality and standard of the P.B.A.S. speakers the club has had the fortune to obtain this year was maintained and Cyril proved once again that a talk can be basic but extremely interesting.

THE Jim Irvine Trophy Competition has now commenced at Ealing and District A.S. for this year's contest; it is an Any Species competition with each nominated entry being shown four times throughout the year. A record entry of 56 fish was nominated and benched at Round One, and sizes ranged from Rasbora maculata to a large Piranha.

The result of this clash was a Speckled Molly in first place, there were two seconds, three thirds, seven fourths and fourteen fifths! Only five points separated the first five places, so it should be a good finish towards the end of the year. A recent Club activity was a visit to the Aquarium at London Zoo, where a very interesting hour was spent "behind the scenes," the highlight of which was the hand feeding of the monster record breaking carp.

THE Weymouth and District A.S. May meeting was given over to a general discussion on topics that would interest new members of the Club.

Many questions were asked and debated by members, and these proved popular and very interesting for those present.

It was proposed that members should be requested to take more interest in the monthly table shows and for the benefit of the new members an endeavour was to be made to arrange a slide show on breeding for the Beginner. The following is a list of the monthly programme of table shows: July, Sharks and Loaches; August, A.V. Labyrinthis; September, Open Show 6th September; October, Corydoras; November, H and H; December, A.O.V. Cichlids.

THE last meeting of the Vauxhall Motors Aquarist Section was well attended by the members. The guest speaker was Graham Cox of Sea Aquariums, London, who gave a most interesting talk, illustrated by some beautiful slides. After seeing the slides the members are now most keen to start Marines.

The show during the meeting was for any variety: Tropical Pairs and Plants. Results were: Pairs: 1, J. Baines; 2, B. Carter; 3, B. Burgess; 4, B. Webb. Plants: 1, T. Jeffries.

THE emphasis at the May meeting of the Plymouth A.S. was on Pondkeeping. A lengthy talk was given by V. Cundy, who, with the aid of numerous illustrations, methodically disposed of all the objections normally raised by those who think pondkeeping is impractical. Even the hardweller can arrange a pleasant indoor set-up complete with small fountain. As a logical follow-up to the talk a collection of slides were shown of plants and fish kept in the pond of W. Rundle, the club chairman.

The Table Show for the month was for Cats and Loaches and again it was the novices who contributed the great majority of the exhibits. Results: Premier: 1 and 3, D. Budd; 2, M. Austin. Advanced: 1, D. Collins; 2, Mrs. M. Podner; 3, W. Hoskins. Novices: 1, T. Harding; 2, W. Webb; 3, Master Pink. Best Fish in Show was D. Budd's Corydoras Julia.

THE "Fish of the Month" Table Show competition at the Bethnal Green A.S. meeting, was this month very well supported, and the usual high standard was maintained. The competition was won by S. Cowell, second being P. Arnold, third was K. Dodd and fourth Mr. Davis.

The Society had great success at the Tottenham A.S. open show with S. Cowell taking no less than four firsts, a second, third and a fourth. These included the "Best Fish in Show" trophy, the "George Bunde Rose Bowl" and the "Hetta Fish Trophy." Supporting him in the awards were D. Bundy with a first, P. Brindley and W. Williams with seconds, and B. Martin with a third.

This year sees the 21st Annual Open Show of the Society, and preparations are under way for a special "Birthday Show" which is to be held on Saturday, 8th September. More information, including schedules, etc., will be made available as soon as possible. Information concerning the activities of the Society may be obtained from the General Secretary, P. Arnold, 24 Rawson House, Skipworth Road, E.9. Tel. 985 1919.

THE first May meeting of the Hastings & St. Leonards A.S. included a talk on Native Marines given by Ted Jessop. This was an interesting and lively talk well illustrated by samples of shells and corals. Although we are a seaside club we were still able to learn much about Native Marines and the art of keeping them. The Table Show for May was for Labyrinthis (excluding fishers): 1, P. Martin; 2, J. Watson; 3, G. Chalcraft.

On the second meeting there were two excellent films. The first, "Between the Tides," being a first-class film on Native Marines, the second was a colourful film on Tropical Marines

lined off the East African coast. The Table Show was for Barbis: 1, Mr. Willis; 2, Mrs. Greig; 3, Mr. Harbord. The club is now settling down well in the new meeting place and visitors are welcome. The secretary is P. R. Martin, 20 Silverlands Road, St. Leonards-on-Sea.

FIVE new members were welcomed by the **Shrewsbury and District A.S.** during May meetings, and the membership is rising rapidly. Members were entertained by a slide/tape lecture on "The Introduction to the Cichlids," which was most helpful. A full programme for the next few months is being arranged, the highlight being a "Festival of Tropical Fish" to be held in the Town Centre and open to the public. Ed Harvey was re-elected chairman and invites correspondence from other clubs. His address is 27 Claremont Hill, Shrewsbury. Any addresses where slides on Tropical Fish or Plants can be obtained would be more than welcome.

RESULTS of the Sunnybrow A.S. Open Show, Guppies: 1, Mr. and Mrs. Cobb (Belle Vue); 2, K. Buchanan (Rainworth); 3, R. Tomkinson (Glossop). **Swordtails:** 1, Mr. and Mrs. Heap (Belle Vue); 2, Mr. Gibson (Huddersfield); 3, K. Stafford (Oldham). **Platies:** 1, C. Ward (Doncaster); 2, D. Sewell (Rainworth); 3, Mr. and Mrs. Webb (Salford). **Mollies:** 1, J. Igoe (Rainworth); 2, Mr. and Mrs. Hogarth (Salford); 3, S. Harrop (Ostram). **A.O.V. Livebearers:** 1, Mr. and Mrs. Heap (Belle Vue); 2, K. Harrop (Ostram); 3, G. Hodgkinson (Gorton and Openshaw). **A.V. Labyrinth:** 1, Mr. Gibson (Huddersfield); 2, D. Sewell (Rainworth); 3, Miss L. Hindley (Salford). **Fighters:** 1, Mr. and Mrs. Hogarth (Salford); 2, J. B. Dawson (Ostram); 3, H. Wright (Hyde). **Small Barbis:** 1, Mr. and Mrs. Wild (Salford); 2, S. Harrop (Ostram); 3, M. Tonge (Oldham). **Large Barbis:** 1, K. Parker (Merseyside); 2, F. Mulla (Merseyside); 3, Mr. and Mrs. Sistrer (Sunnybrow). **Dwarf Cichlids:** 1, H. Davies (Belle Vue); 2, Miss L. Hindley (Salford); 3, H. Nowell (Hyde). **Large Cichlids:** 1, D. and R. Stenden (Loyne); 2, Mr. and Mrs. Webb (Salford); 3, J. S. Mooney (Glossop). **Angels:** 1, B. Gray (Sunnybrow); 2, I. Morrell (Ashton); 3, D. Sewell (Rainworth). **Small Characins:** 1, S. Harrop (Ostram); 2, M. Jones (Valley); 3, D. and R. Stenden (Loyne). **Large Characins:** 1, K. Parkes (Merseyside); 2, V. Parkes (Merseyside); 3, D. Sewell (Rainworth). **Single Killifish:** 1, D. and R. Stenden (Loyne); 2, Mr. and Mrs. Johnson (Salford); 3, D. Sewell (Rainworth). **Catfish:** 1, K. Davies (Belle Vue); 2, E. Wells (Doncaster); 3, V. Parkes (Merseyside). **A.O.V. Catfish:** 1, D. Harvey (Sunnybrow); 2, G. Hodgkinson (Gorton and Openshaw); 3, F. Mulla (Merseyside). **Loaches:** 1, P. Kenyon (Belle Vue); 2, D. Smith (Glossop); 3, Mr. and Mrs. Webb (Salford). **Labios, Sharks, Foxes:** 1, D. R. Stenden (Loyne); 2, Mr. and Mrs. Grimshaw (Sunnybrow); 3, F. Mulla (Merseyside). **Danios and Rasboras:** 1, R. A. Johnson (Ashton); 2, K. Parkes (Merseyside); 3, D. Noeris (Oldham). **A.O.V. Tropical:** 1, D. R. Stenden (Loyne); 2, Mr. and Mrs. Heap (Belle Vue); 3, J. S. Mooney (Glossop). **A.V. Coldwater:** 1, Mr. and Mrs. Miller (Belle Vue); 2 and 3, Mr. Walsh (Accrington). **A.V. Goldfish:** 1 and 3, Mr. Whitley (Accrington); 2, Mr. Walsh (Accrington). **Pairs Livebearers:** 1, J. Igoe (Rainworth); 2, S. Buchanan (Rainworth); 3, S. Harrop (Ostram). **Pairs Egglayers:** 1, I. K. Barlow (Ashton); 2, F. Robinson (Sunnybrow); 3, Master S. Robinson (Sunnybrow). **Breeders Livebearers:** 1, Mr. Gibson (Huddersfield); 2, D. Norris (Oldham); 3, D. Sewell (Rainworth). **Breeders Egglayers:** 1, Mrs. Shackleton (Belle Vue); 2, S. Cain (Sunnybrow); 3, Mr. and Mrs. Hogarth (Salford). **Junior Livebearers:** 1 and 2, Miss B. Kaye (Top Ten); 3, K. Tuckington (Belle Vue). **Junior Egglayers:** 1, B. Seabright (Gorton and Openshaw); 2, Master A. Kaye (Top Ten); 3, Master F. Cobb (Belle Vue). **Best Fish in Show:** Master B. Seabright (Gorton and Openshaw). Society with most points: Belle Vue.

RESULTS of the Croydon Open Show were as follows:

Barbs: 1, C. Pike (High Wycombe); 2, Mr. Harper (Kingston); 3, J. Bellingham (Tonbridge); 4, Mrs. P. Tee (Brighton). **Characins:** 1, G. Greenhalf (Kingston); 2, K. Dryden (Croydon); 3, A. Blake (Basingstoke); 4, L. Laming (Medway). **Cichlid:** 1, Mr. Harper (Kingston); 2, Mr. Bowes (Walthamstow); 3, J. Bellingham (Tonbridge); 4, Mr. Cowell (Walthamstow). **Dwarf Cichlids:** 1, S. Dale (Hounslow); 2, Mr. Bowes (Walthamstow); 3, A. Blake (Basingstoke); 4, Mrs. Tee (Brighton). **Labyrinth:** 1, Mr. Kendrick (Freetrance); 2 and 3, Mr. Bowes (Walthamstow); 4, Mr. Golding (Tonbridge). **Siamese Fighters:** 1, A. Blake (Basingstoke); 2, C. Anthony (Croydon); 3, Mr. Williams (Bethnal Green); 4, K. Quennell (E. Dulwich). **Toothorp:** 1, Mr. Golding (Tonbridge); 2, Mr. Taylor (Tonbridge); 3, Mr. Summers (Uxbridge); 4, I. T. Mathieson (Tonbridge). **Tropical Cats:** 1, G. Greenhalf (Kingston); 2, Mrs. Tee (Brighton); 3, Mr. Kinsey (Independent); 4, Mrs. Nicoll (Reigate and Redhill). **Corydoras/Brochis:** 1, Mrs. Nicoll (Reigate and Redhill); 2, G. Greenhalf (Kingston); 3, L. Thompson (Uxbridge); 4, Mr. Kinsey (Independent). **Rasboras:** 1, Mr. Harper (Kingston); 2, K. Barrett (Kingston); 3, Mr. Summers (Uxbridge); 4, Mrs. Mathieson (Tonbridge). **Danios & W.C.M.M.:** 1 and 3, Mr. Harper (Kingston); 2, Mrs. Maddison (Brighton); 4, A. Blake (Basingstoke). **Loach:** 1 and 2, Mr. Tee (Brighton); 3, S. King; 4, Mr. Bowes (Walthamstow). **A.O.S. Tropical Egglayer:** 1, Mr. Bondy (Bethnal Green); 2, Mr. Williams (Bethnal Green); 3, Mrs. Tee (Brighton); 4, Mr. Creighton (E. Dulwich). **Guppy (male):** 1, Mr. Bowes (Walthamstow); 2, C. Hillier (Medway); 3, V. Wood (Reigate and Redhill); 4, D. Mackay (Kingston). **Guppy (female):** 1, J. Stephens (Dartford); 2, C. Elliott (Medway); 3, Mr. Harper (Kingston); 4, Mr. Pike (High Wycombe). **Swordtails:** 1, E. Horsley (Carshalton); 2, Mrs. Maddison (Brighton); 3, Mr. Mathieson (Tonbridge); 4, J. Stephens (Dartford). **Platy:** 1, A. Howes (Freetrance); 2, Mr. Hayman (Reigate and Redhill); 3, H. Wood (Croydon); 4, S. King, Molly; 1, G. Greenhalf (Kingston); 2, B. Smith (Kingston); 3 and 4, Mrs. Nicoll (Reigate and Redhill). **A.O.S. Livebearer:** 1, Mr. Pollard (Kingston); 2, P. Hammond (Freetrance); 3, A. Blake (Basingstoke); 4, J. Stephens (Dartford). **Single Tail Goldfish:** 1, S. and H. Parker (Croydon); 2 and 3, V. Voysey (Salisbury); 4, J. Marshall (Medway). **Twin Tail Goldfish:** 1, Mrs. Pearce (Cattford); 2, Mr. Long (SPASS); 3 and 4, A. Pearce (Cattford). **A.O.S. Coldwater:** 1 and 3, V. Voysey (Salisbury); 2, A. Howes (Freetrance); 4, S. and H. Parker (Croydon). **Breeders (Egglayers):** 1, R. G. Cox (High Wycombe); 2, Mrs. Maddison (Brighton); 3, Mr. Wood (North Kent); 4, J. Wright (Reigate and Redhill). **Breeders (Livebearers):** 1, J. Wright (Reigate and Redhill); 2, G. Greenhalf (Kingston); 3, Mrs. Quennell (E. Dulwich); 4, K. Dryden (Croydon). **Best Fish in Show:** Mrs. Nicoll, Corydoras Jullii. **Best Egglayer Cup:** Mrs. Nicoll, Corydoras Jullii. **Best Livebearer Cup:** Mr. Pollard, Half Beak. **Best Coldwater Cup:** S. and H. Parker, Common Goldfish. **Best Breeders Team:** R. G. Cox, Corydoras Palustris. **Ladies' Rose Bowl:** Mrs. Nicoll, F.B.A.S. Trophy (Barbs). **C. Pike, Checker Barb, Croydon Cup:** Kingston and District A.S. A total of 551 entries were received and 27 Clubs were represented.

AT the May meeting of the **Ilford & District Aquarist & Pondkeepers' Society**, a lecture was given on the colour genetics in goldfish by Ron Dodkins. Afterwards, he together with his colleagues who were knowledgeable as regards Tropical Fish, judged the monthly Table Show, the results of which were as follows:

Any Variety Single Tail Goldfish: 1 and 2, H. Berger (Shubunkin); 3, Mrs. Rowe (Shubunkin). **Any Variety Swordtail:** 1 and 3, D. Seaman (Red Swordtail); 2, Mrs. Rowe (Black Swordtail). **Any Variety Labyrinth:** 1, T. Bloomer (Dwarf Gourami); 2, D. Seaman

(Opaline Gourami); 3, Mrs. Rowe (Siamese Fighter).

New members are always welcome to the Society which meets at 8 p.m. on the second Monday of each month at St. Laurence Church Hall, Hamilton Avenue, Barkingside, or enquiries can be made to the Secretary, R. P. Ruth, 103 Heath Road, Chadwell Heath, Romford, Tel: 590 1666.

A MOST interesting talk on "Home Aquaria" was enjoyed by the members at the May meeting of the **Bishops Cleeve A.S.** This was illustrated by a fine selection of colour slides by Mr. Churchill from Cardiff. The Table Show winners were as follows: 1, T. Evans (Flying Fox); 2, T. Daffurn (Weather Loach); 3, I. Scriven (Weather Loach); 4, N. W. Dooley (Red Tailed Shark).

Guppy Show (Senior): 1, F. Scriven; 2, I. Scriven; 3, D. Stevens.

Guppy Show (Junior): 1, M. Tester; 2, P. Tattenfield; 3, L. Gumbler.

AT the May meeting of the **Grimshy & Cleethorpe A.S.** the guest speaker was A. Robinson of Scunthorpe, who showed a really good selection of slides of tropicals and prize-winning furnished aquariums. The monthly Table Show winners were: **Fighters:** 1 and 2, D. Kirk; 3, J. Jeremy. **Characins A.V.:** 1 and 2, E. Parker; 3, P. Jensen.

MEMBERS of the Harrogate and District A.S. heard a very interesting talk in May on Livebearers from A. Ridd of Bedford and District A.S. They also held a Table Show which Mr. Faircliff, of Tadcaster Society, judged, the results being as follows: 1, M. Levett; 2, P. Tucker; 3, Master M. Hawley.

THE Scunthorpe Museum Society Aquarist Group held an inter-club Table Show recently, the societies taking part being Scunthorpe, Grimshy, Doncaster, Thorne, Gainsborough and Grantham. The total number of entries was 186. Results: **Single Livebearer:** 1, V. Handie (Scunthorpe); 2, M. Ward (Doncaster); 3, C. Jewison (Thorne). **Anabantids:** 1, Mr. Bone (Doncaster); 2, R. Berry (Scunthorpe); 3, Mr. Easton (Grimshy). **Characins:** 1, Mr. Peddie (Grimshy); 2, Mr. Dixon (Grimshy); 3, Mr. Parker (Grimshy). **Killifish:** 1, Mr. Peddie (Grimshy); 2, R. Snowdon (Thorne); 3, Mr. Shipley (Thorne). **Cold Water:** 1, D. Caldwell (Scunthorpe); 2 and 3, J. Rhoades (Scunthorpe). **Danios, Rasboras and Minnows:** 1, Mr. Gregory (Grantham); 2, V. Handie (Scunthorpe); 3, Mr. Jones (Grantham). **Barbs:** 1, K. Evans (Grimshy); 2, A. Robinson (Scunthorpe); 3, Mr. Paver (Grantham). **A.O.V.:** 1, 2 and 3, Mrs. E. McGrath (Scunthorpe). **Dwarf Cichlids:** 1, A. Robinson (Scunthorpe); 2, J. Rhoades (Scunthorpe); 3, Mr. Parker (Grimshy). **Large Cichlids:** 1, Mr. Paver (Grantham); 2, Mr. Parker (Grimshy); 3, Mrs. E. McGrath (Scunthorpe). **Loach and Sharks:** 1, Mr. Parker (Grimshy); 2, J. Rhoades (Scunthorpe); 3, R. Berry (Scunthorpe). **Catfish:** 1, Mr. Paver (Grantham); 2, Mr. Wells (Doncaster); 3, J. Rhoades (Scunthorpe). **Fighters:** 1, Mr. Pattison (Grantham); 2, Mr. Pogson (Scunthorpe); 3, Mr. Dickers (Thorne). **Six Fry Egglayers:** 1 and 3, J. Rhoades (Scunthorpe); 2, L. Evans (Grimshy). **Six Fry Livebearers:** 1, C. Jewison (Thorne); 2 and 3, S. Pogson (Scunthorpe). The final placings were: Scunthorpe 101, Grimshy 52, Grantham 34, Thorne 21, Doncaster 17.

AT the May meeting of the **Yate and District A.S.** the main topic of conversation concerned

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the progress of the Society at various Open Shows and the number of successes that had been achieved. There was also a slide show, the subjects being An Introduction to Cichlids and The Breeding and Life Cycle of Cichlids.

THE Hull A.S. third open show attracted more than 600 visitors and 320 fish were benched, the results were as follows: Coldwater: 1, Mr. Asquith, Castleford; 2, Mr. Allison, York; 3, Master Hepinstall, Castleford. Catfish, Corydoras: 1, Mr. Allison, York; 2, Mr. Edson, Hull; 3, B. Stabler, Hull. A.O.V. Cichlids: 1, Mr. Allison, York; 2, R. Bukh, Hull; 3, Master Hepinstall, Castleford. Livebearers (Guppy): 1, Master Hepinstall, Castleford; 2, Mr. Shipley, Selby; 3, G. Andrews, Hull. Swordtail: 1, D. H. Hartley, Castleford; 2, K. Bates, Hull; 3, Master Hepinstall, Castleford. Platy: 1, K. Jesney, Hull; 2, T. Storey, Hull; 3, J. Mitchell, Hull. Molly: 1, B. Stabler, Hull; 2, A. Douglas, Hull; 3, E. Storey, Hull. A.O.V. Livebearer: 1, P. Reynolds, Swillington; 2 and 3, P. Walker, York. Danios, Rasbora, Minnows: 1, M. Purvis, Hull; 2, R. Shipley, Thorne; 3, T. Douglas, Hull. Barbs (up to Rosy Barbs): 1, Mr. Massey, Hull; 2, Master Hepinstall, Castleford; 3, Mr. Conlon, Selby. Over Rosy Barbs: 1, D. W. Smith, Tadcaster; 2, Mr. Scall, Selby; 3, Master Hepinstall, Hull. Cichlids (large): 1, T. Douglas, Hull; 2, P. Burrows, Hull; 3, Mr. and Mrs. A. B. Smith, Top Ten. Cichlids (dwarf): 1, Mr. and Mrs. A. B. Smith, Top Ten; 2, Master Hepinstall, Castleford; 3, J. Bewell, Top Ten. Characins: 1 and 2, Mr. Eyre, Worksop; 3, Mr. Middleton, Doncaster. Fighters: 1 and 3, Mr. Whitecock, Tadcaster; 2, Mr. and Mrs. Gates, Castleford. Anabantids: 1, J. Blizard, Sheffield; 2, M. Purvis, Hull; 3, Master R. Scott, Hull. Breeders (livebearers): 1, Mr. Jewison, Thorne; 2, P. Reynolds, Swillington; 3, T. Douglas, Hull. Breeders (egg-layers): 1, E. Wells, Doncaster; 2, Mrs. Gear, Kettleby; 3, Mr. Jewison, Thorne. Egg-laying Tooth-carp: 1, P. Rimmer, Hull; 2, D. W. Smith, Tadcaster; 3, Mrs. Gear, Kettleby. Sharks, Flying Fox: 1 and 2, Mr. Scall, Selby; 3, Mr. Haegensen, Hull. Pairs (livebearers): 1, B. Stabler, Hull; 2, T. Douglas, Hull; 3, Mrs. B. Chapman, Hull. Pairs (egg-layers): 1, Mr. Eyre, Worksop; 2, Mr. Conlon, Selby; 3, J. Mitchell, Hull. A.O.V.: 1, Mr. Whitecock, Tadcaster; 2, T. Dickens, Thorne; 3, P. Reynolds, Swillington. Best in Show, Barb: D. W. Smith, Tadcaster.

The construction, design and setting of garden ponds was the subject of a talk given to members of the **Southampton A.S.** at their monthly meeting. The speaker, W. Ryder of Portsmouth, illustrated his talk with various coloured diagrams and sketches and gave many useful tips to his audience. The table show for twin-tailed Goldfish was won by Mr. Fish with a Black Moor; Mrs. Snelgrove was second; and Mr. Fish third.

DURING the past two months **Bristol Tropical Fish Club** has been engaged with the preparation for their three day Open Show. Club meetings during these months have proved particularly entertaining with G. Churchill of Cardiff providing an excellent slide show on furnished aquaria and Colin Cradlock giving an extremely interesting talk on various aspects of fish-breeding. A change in venue takes place after and including June when the club meetings are altered to the third Thursday of each month at the National Labour Board Social Club, Welsh Back, Bristol, commencing at 7.45 p.m. New members and visitors are always extremely welcome.

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A very interesting and enlightening talk on Tropical Fish Diseases was given to members of the **Tonbridge and District A.S.** recently by J. G. Osborne. Advice was given by Mr. Osborne to members on diseases with remedies which he has found successful. The results of the table show for Barbs and Guppies were: Barbs: 1, Mrs. I. Bellingham; 2, K. Taylor; 3, J. Bellingham. Female Guppies: 1, Mrs. I. Bellingham; 2, W. Rood; 3, J. Bellingham. Male Guppies: 1, T. Hines; 2, W. Rood; 3, R. Taylor.

MEMBERS of the **Hinckley and District A.S.** were entertained at the May meeting by a lecture on Anabantids given by D. Bennett of the M.A.A.S. He also gave a slide show after his talk. There was also a Table Show for novices and a Furnished Jar competition. The show was judged by Mr. Skinner, who gave the following results—Novices Class: 1, Mr. Shepherd; 2, R. Nunn; 3, P. Barwell. Furnished Jar: 1 and 2, G. Wain; 3, N. Pywell.

New members are most welcome and enquiries should be made to the secretary, D. E. Sparrow, 55 Rugby Road, Hinckley, Leics.

THE Bury and District A.S. Open Show attracted many spectators along, and the number of entries was well up on last year's total. The results were as follows—Inter-Society Shield: 1, Bury and District; 2, Ousam; 3, Belle Vue. J. Tonge of Oldham won the "Best Fish in Show" award with his Snakehead.

Individual Class results—Male Guppies: 1 and 2, Mr. and Mrs. Cobb (Belle Vue) (Section winner); 3, J. and B. Dawson (Ousam). Female Guppies: 1 and 2, J. and B. Dawson (Ousam); 3, Mr. and Mrs. R. D. Hilton (Heywood). Platy: 1, Miss L. Hindley (Salford); 2, D. Norris (Oldham); 3, A. Buckley (Bury). Mollies: 1, Mr. and Mrs. Hogarth (Salford); 2, S. Irving (Ousam); 3, S. Harrop (Ousam). Sword-tails: 1 and 2, N. R. Gibson (Huddersfield); 3, K. Stafford (Oldham). Small Characins: 1, S. Harrop (Ousam); 2, I. Wood (Bury); 3, Mr. and Mrs. Cobb (Belle Vue). Large Characins: 1, R. Haslam (Loyne); 2, R. Adamson (Bury); 3, D. Mills (Bury). Dwarf Cichlids: 1, G. Rigby (Oldham) (Section winner); 2, R. Davies (Belle Vue); 3, H. Thompson (Hyde). Angelfish: 1, B. Walker (Bury); 2, H. Lees (Oldham); 3, P. Danielson (Huddersfield). A.O.V. Cichlids: 1, D. and R. Stenden (Loyne); 2, Master F. Cobb (Belle Vue); 3, D. Truby (Nelson). Small Barbs: 1, A. Beasley (Ousam) (Section winner); 2, R. Bowling (Sunnybrow); 3, M. Tonge (Oldham). Large Barbs: 1, G. Stewart (Independent); 2, J. and B. Dawson (Ousam); 3, A. Baldwin (Nelson). Self Coloured Fighters: 1, Mr. and Mrs. Hogarth (Salford); 2, J. Pagett (Heywood); 3, Mr. and Mrs. Lord (Valley). Multicoloured Fighters: 1, B. Wright (Hyde); 2, D. Molleaux (Bury); 3, A. Beasley (Ousam). A.O.V. Labyrinth: 1, J. Tonge (Oldham) (Section winner); 2, N. R. Gibson (Huddersfield); 3, Miss L. Hindley (Salford). Rasbora, Danios and Minnows: 1 and 3, A. Beasley (Ousam); 2, R. and A. Johnson (Ashton). Egg-laying Tooth-carp: 1 and 2, Mr. and Mrs. Johnson (Salford) (Section winner). Catfish: 1, R. Davies (Belle Vue) (Section winner); 2, A. Baldwin (Nelson); 3, B. Thompson (Hyde). Loaches: 1, A. Mills (Bury); 2, Miss A. Gregory (Earby); 3, R. and A. Johnson (Ashton). Sharks and Flying Foxes: 1, D. and R. Stenden (Loyne); 2, Mr. and Mrs. Grimshaw (Sunnybrow); 3, N. R. Gibson (Huddersfield). Pairs (Egg-layers): 1, D. and R. Stenden (Loyne) (Section winner); 2, J. and K. Barlow (Ashton); 3, Mrs. M. Molleaux (Bury). Pairs (Livebearers): 1, Miss A. Gregory (Earby); 2, Mr. and Mrs. Hogarth (Salford); 3, S. Harrop (Ousam). Breeders (Egg-layers): 1, E. Lever (Bury) (Section winner); 2, Mrs. Shackleton (Belle Vue); 3, Miss L. Hindley (Salford). Breeders (Livebearers): 1, N. R. Gibson (Huddersfield); 2, P. Danielson (Huddersfield); 3, T. Hardman (Bury). A.V. Aquatic Plant (Rooted): 1, A. Mills (Bury); 2, T. Hardman (Bury); 3, A. Beasley (Ousam). A.V. Aquatic Plant (Cutting): 1, A. Beasley (Ousam) (Section winner); 2, I. Wood (Bury); 3, T. Hardman (Bury). Common Goldfish:

1, Master F. Cobb (Belle Vue); 2 and 3, Mr. and Mrs. F. Taylor (Bury). A.V. Fancy Gold fish: 1, P. Danielson (Huddersfield); 2, D. Orlin (Bury). A.O.V. Coldwater: 1, Mr. and Mrs. Miller (Belle Vue) (Section winner); 2, A. Mills (Bury); 3, Mr. and Mrs. H. Cooper (Bury). A.O.V. Tropical: 1, D. R. Stenden (Loyne) (Section winner); 2, C. Stewart (Independent); 3, R. McKenna (Nelson).

THE Northwich and District A.S. held the annual inter-society Quiz and Table Show with Chester A.S. in May and won the trophy for the first time since the competition was first held two years ago. The competition result was as follows: Northwich: Quiz 29; Table Show 67. Chester: Quiz 28; Table Show 24. Leading points scores for Northwich were: H. Bowman, 24 (five first prizes and Best Fish in Show, R. and I. Antonio 15; and P. Acton and W. Dickens 11. Northwich will now hold the trophy until the away return match at Chester in October.

THE results of the **Southend, Leigh and District A.S.** Open Show, were as follows: A.V. Male Guppy: 1 and 4, K. Lane (S.L.A.D.); 2, K. Appleyard (Thurrock); 3, S. G. Cowell. A.V. Female Guppy: 1, R. Passmore (S.L.A.D.); 2, K. Adams (S.L.A.D.); 3, A. Chapman (S.L.A.D.); 4, J. J. Arrow. A.V. Platy: 1, R. Orford (S.L.A.D.); 2, R. Kerridge; 3, D. Durrant (Thurrock); 4, T. Clark (S.L.A.D.). A.V. Swordtail: 1, P. O'Brian (Thurrock); 2, C. Wood; 3, P. J. Goodyear. A.V. Molly: 1, G. S. Green; 2, R. S. Alborough; 3, M. Upton (S.L.A.D.); 4, K. E. Longman and R. Passmore (S.L.A.D.). A.V. Barb: 1, D. Edwards (S.L.A.D.); 2, A. Staples (S.L.A.D.); 3, G. J. Cowell; 4, C. Wood. Dwarf Cichlids: 1, D. Edwards (S.L.A.D.); 2, M. Seago (Witham); 3, G. S. Green; 4, A. Chapman (S.L.A.D.). A.V. Angelfish: 1, D. Chewright (S.L.A.D.); 2, T. Clark (S.L.A.D.); 3, M. Upton (S.L.A.D.); 4, W. Ashfield. A.O.S. Cichlid 1, D. Edwards (S.L.A.D.); 2, S. G. Cowell; 3 and 4, K. Adams (S.L.A.D.). Egg-laying Tooth-carp: 1, R. Simpson; 2, D. Edwards (S.L.A.D.); 3, C. Chewright (S.L.A.D.); 4, M. Upton (S.L.A.D.). Danio and White Cloud: 1, F. W. Few; 2, P. O'Brien (Thurrock); 3 and 4, A. Chapman (S.L.A.D.). Rasbora: 1, D. Edwards (S.L.A.D.); 2, K. Adams (S.L.A.D.); 3, R. Appleyard (S.L.A.D.); 4, R. Smith. A.V. Fighters: 1 and 2, D. Durrant (Thurrock); 3, C. Wood; 4, J. J. Arrow. A.O.S. Labyrinth: 1 and 4, R. Kerridge; 2, D. Edwards (S.L.A.D.); 3, M. Seago (Witham). Corydoras and Brochis: 1, T. Clark (S.L.A.D.); 2, D. Edwards (S.L.A.D.); 3, D. Durrant (Thurrock); 4, K. A. Holt (Billericay). A.O.S. Catfish: 1 and 4, R. Kerridge; 2, S. G. Cowell; 3, D. Little (S.L.A.D.); A.O.S. Tropical: 1, R. Smith; 2, S. G. Cowell; 3, R. Kerridge; 4, R. Basterford. A.S. Coldwater: 1, R. Passmore (S.L.A.D.); 2 and 4, L. Mitchell (S.L.A.D.); 3, T. Clark (S.L.A.D.). Breeders (Livebearers): 1 and 3, D. Chewright (S.L.A.D.); 2, G. Green; 4, R. Passmore (S.L.A.D.). Breeders (Egg-layers): 1, J. J. Arrow; 2, D. Durrant (Thurrock); 3, T. Clark (S.L.A.D.); 4, G. S. Green. A.S. Tropical (Marine): 1 and 2, B. Goodyear; 3 and 4, D. Chewright (S.L.A.D.). Furnished Aquaria: 1, S. Mole; 2, D. Finch (S.L.A.D.); 3, D. Durrant (Thurrock); 4, D. Chewright (S.L.A.D.). A.S. Tropical Plant: 1, M. Upton; 2, J. J. Arrow; 3, D. Durrant; 4, P. F. Capon. Characin: 1, R. Kerridge; 2, D. Edwards (S.L.A.D.); 3, D. Durrant (Thurrock); 4, S. G. Cowell. Best Fish in Show—"Aquarist" Gold Pin: R. Kerridge.

AT the May meeting of the **Mid-Sussex A.S.**, Alan Jackson gave an interesting talk on catfish accompanied by very detailed sketches. Mr. Jackson explained that many members kept catfish in their aquaria simply to keep the tank and gravel clean, not realising that the little food that did reach the bottom of the tank would not be sufficient to feed them, and that catfish should be fed at night, as most catfish are nocturnal.

The May Table Show of Characins and Catfish was judged by C. A. T. Brown, who awarded the prizes as follows:—Catfish: 1 and 3, C. Corbin; 2, D. Soper; 4, G. Leech; 5, A. Jackson. Characins: 1, N. Short; 2, D. Soper; 3, C. West; 4, R. Bottriss; 5, E. Speck.

The Society recently supported the Portsmouth Inter-Club Show. There were fifteen societies showing fish in eleven classes—overall the Mid-Sussex Society took sixth place jointly with the Portsmouth A.S. and gained prize cards as follows:—third in Rasboras; third in Catfish; and second in Characins. Any further information on the society may be obtained from the secretary, J. Reeve, 36 Rumbold Lane, H. Heath 3702 (evenings).

THE following officers were elected at the annual general meeting of the **Huddersfield Tropical Fish Society**: Chairman, J. Blainey; vice-chairman, Mrs. P. Robinson; treasurer, J. Bellin; show secretary, Mrs. Bane; magazine editor, B. Robinson; committee: Master A. Robinson, T. Butterworth; secretary, J. B. Wake, 990 New Hey Road, Outlane, Huddersfield, Yorks.

THE Isle of Wight A.S. usually reduces its activities during the summer owing to the holiday trade but aquarists on holiday on the Island might find a visit to the club's exhibition at Peck Pool Park, near Ryde, a pleasing diversion.

National Competitive Standard for Coldwater Fishes

Consequent to a meeting held on 9th May at the Ladywood Community Centre, Birmingham, at which areas in the North, North East, London, Bristol and the Midlands were represented, it was unanimously agreed that a genuine National Competitive Standard for Coldwater Fishes was sorely needed. The Standard to be decided democratically with involvement of all and every interested organisation being invited to participate.

With this end in view a meeting has been arranged at the above venue on Sunday, 19th July, commencing 2 p.m. The meeting will be open to anyone who may be interested and if there is any organisation which has not already received a personal invitation from the writer, perhaps this could be considered as such. Further details, including routes through Birmingham, booking of lunches, etc., may be obtained from the writer, Mr. T. L. Dodge, 48 Dunsmore Road, Hall Green, Birmingham, 28.

THE speaker at the May meeting of **Walthamstow and District A.S.** was G. H. Jennings of Krakas, and he gave a very interesting and enlightening talk on keeping tropical marine fish. The lecture was illustrated by slides of the various fish now available to the would-be marine aquarist. New members are very welcome and full details may be had from the secretary, A. Chandler, 68 Uplands Road, Woodford Bridge, Essex.

THE **Thurrock A.S.** held their third annual Open Show recently, and D. Durrant and J. Furber were congratulated for their excellent organisation of the show which had over 300 entries.

Results were as follows:—Furnished Aquaria: 1, S. Mooney (Tottenham); 2, D. Durrant (T.A.S.); 3, K. Appleyard (T.A.S.); 4, Mrs. Juson (T.A.S.). Tropical Plants: 1, Mrs. J. Stott (Walthamstow); 2, C. Elliott (Medway); 3, D. Edwards (Southend); 4, Mrs. Arrow (E. London) and Mrs. J. Stott (Walthamstow). Singletailed Goldfish: 1 and 2, D. Goodbody (Walthamstow); 3, J. Marshall (Medway); 4, P. Croft (T.A.S.). Twintailed Goldfish: 1, K. Appleyard (T.A.S.); 2, S. Mooney (Tottenham); 3 and 4, S. Hendle (T.A.S.). A.O.S. Coldwater: 1, J. Stott (Walthamstow); 2 and 4, G. Eaton (T.A.S.); 3, D. Durrant (T.A.S.). Angels: 1, J. Stephens (N. Kent); 2, S. Hendle (T.A.S.); 3, H. Juson (T.A.S.); 4, H. Gee (Blackwater).

Male Guppy: 1, Mrs. Myers (F.G.B.S.); 2, R. Maynard (Hendon); 3, G. Eaton (T.A.S.); 4, R. Smith (Tottenham). Guppy Female: 1, C. Elliott (Medway); 2, J. Stephens (N. Kent); 3, Mrs. Myers (F.G.B.S.); 4, G. Eaton (T.A.S.). Fighters: 1, D. Durrant (T.A.S.); 2, Mrs. Asplin (Independent); 3, G. Greenhalf (Kingston); 4, C. Elliott (Medway). Danios and W.C.M.M.: 1, J. Stephens (N. Kent); 2, P. O'Bryan (T.A.S.); 3, D. Durrant (T.A.S.); 4, Miss A. Sutton (T.A.S.). Swordtails: 1, R. Haulson (Walthamstow); 2, J. Stephens (N. Kent); 3, A. Day (Jnr.) (Harlow); 4, P. O'Bryan (T.A.S.). Corydoras and Brochis: 1 and 2, S. Mooney (Tottenham); 3, P. Grovener (Kingston); 4, R. Wright (E. Dulwich). Characins: 1, G. Greenhalf (Kingston); 2, D. Edwards (Southend); 3, D. Durrant (T.A.S.); 4, G. Green (E. London). Catfish: 1 and 4, G. Greenhalf (Kingston); 2, A. Kinsey (Independent); 3, D. Marshall (Hendon). E.L.T.C.: 1, R. Taylor (Tonbridge); 2 and 3, I. Mathieson (Tonbridge); 4, D. Cheswright (Southend). Mollies: 1, R. Alborough (T.A.S.); 2, G. Green (E. London); 3, L. Laming (Medway); 4, L. Baker (E. London). Dwarf Cichlids: 1, T. Cruickshank (Ealing); 2, M. Seago (Witham); 3, P. Squires (Eritch); 4, D. Cheswright (Southend). Labyrinth: 1, P. Kendrick (Preelance); 2, A. Chandler (Walthamstow); 3, J. Grace (Infield); 4, D. Edwards (Southend). Cichlids: 1, J. Foley (Brentwood); 2, D. Edwards (Southend); 3, D. Marshall (Hendon); 4, R. Bovee (Walthamstow). Loach: 1, Mrs. Greenhalf (Kingston); 2, Mrs. Cruickshank (Uxbridge); 3, M. Seago (Witham); 4, L. Laming (Medway). Barbs: 1 and 4, T. Cruickshank (Ealing); 2, S. Cowell (Walthamstow); 3, R. Argent (E. London). Rasboras: 1, J. Stephens (N. Kent); 2, K. Barrett (T.A.S.); 3, R. Argent (E. London); 4, D. Durrant (T.A.S.). Plaques: 1, Mrs. Cruickshank (Uxbridge); 2, H. Wood (Croydon); 3, D. Durrant (T.A.S.); 4, G. Hendle (T.A.S.). A.O.S. Egg-layer: 1, D. Bundy (B. Green); 2, A. Kinsey (Independent); 3, I. Cowell (Walthamstow); 4, P. Kendrick (Preelance). A.O.S. Livebearer: 1, Mrs. Cruickshank (Uxbridge); 2, J. Pollard (Kingston); 3, E. Gee (Blackwater); 4, Mrs. Myers (F.G.B.S.). Sexed Pairs Tropical: 1 and 2, C. Wood (N. Kent); 3, P. Grovener (Kingston); 4, N. Seago (Witham). Breeders Egg-layers: 1, J. Stott (Walthamstow); 2 and 4, P. Grovener (Kingston); 3, K. Barrett (Kingston). Breeders Livebearers: 1 and 2, R. Marher (Walthamstow); 3, G. Greenhalf (Kingston); 4, H. Wood (Croydon). Twenty-three societies entered the Show and E. Jessop, chairman of the F.B.A.S., presented the awards.

RECENTLY the Midland Association of Aquarist Societies held their first inter-society show. The North Warwick Aquarist Club were the hosts, and twenty-two societies benched 336 fish in ten classes. There was a points system for the first six places, and after the count, it was Bedworth A.P.S. who were the winners.

THE results of the **Derby Regent Open Show** were as follows: Trophy for the best largest fish, C. Hill (Notts); trophy for the best smallest fish, M. Jones (Bury). Other awards were:—Guppies: Miss Lindley (Alfreton). Plaques: Mr. Ward (Doncaster). Mollies: Mr. Selby (Nottingham). Swordtails: Mr. Selby (Nottingham). Small Barbs: Mr. Blizzaad (Sheffield). Large Barbs: S. Hill (Alfreton). Small Characins: Mr. Jones (Bury). Large Characins: Mr. Ickling (Alfreton). Killifish: Miss Lindley (Alfreton). Minnows and Danios: S. Hill (Alfreton). Dwarf Cichlids: Mr. Whiteley (Alreborough). Large Cichlids: Mr. Hubert (D.R.A.S.). Livebearers (Breeders): Mr. Dicken (Sheffield). Egg-layers (Breeders): Mr. Wells (Doncaster). Angels: Mr. Foed (D.R.A.S.). Fighters: Mr. Cooper (Derby Show Group). A.O.V. Anabantid: Mr. Harlow (D.R.A.S.). Corydoras: Mr. Wells (Doncaster). A.O.V. Catfish: Mr. Cooper (Derby Show Group). Loaches: Mr. Hunt (Burton). Sharks: Mr. Jones (Bury). Rasboras: S. Hill (Alfreton). Flying Foxes: Mr. Jordan (Leicester). Livebearer (pairs): Mr. Whiteley (Alreborough). Egg-layer (pairs): Mr. Hough (North Warwick). Goldfish and Comets: C. Hill (Nottingham).

Shubunkins: C. Hill (Nottingham). A.O.V. Coldwater: A. Kaye (Top Ten). A.O.V. Tropical: Mr. Moss (D.R.A.S.). Juniors (Livebearers): Miss Kaye (Top Ten). Juniors (Egg-layers): A. Kaye (Top Ten). Furnished Aquaria: Mrs. Kendrick (D.R.A.S.).

NEWS from **Yeovil and District A.S.** gives the winners of recent competitions. P. Soaley won the Inticott Stainer Tropical Pairs Cup with a pair of blue gouramis. There were nineteen entries judged by Mr. Matley from Bournemouth. The other placings were: 2 and 3, M. Gaylard; 4, Mrs. V. Jushell. S. Longdon, president of the Society, congratulated and presented Mr. and Mrs. Wright with a cheque on the occasion of their recent marriage.

The annual inter-club show with Taunton A.S. resulted in a draw when both Societies gained 55 points. There were eleven classes with two fish from each society and these were judged by Mr. Barle John from Exeter, who presented the hand-carved wooden plaque jointly to Mr. Corrick (Taunton) and Mr. Hulbert (Yeovil). The best fish in show was a Tinfoil Barb, entered by Mr. Larkcombe of Taunton.

Results—Plaques: 1 and 2, Taunton; 3 and 4, Yeovil. Mollies: 1 and 3, Yeovil; 2 and 4, Taunton. Barbs: 1 and 2, Taunton; 3 and 4, Yeovil. Characins: 1 and 4, Taunton; 2 and 3, Yeovil. Cichlids: 1 and 2, Taunton; 2 and 4, Yeovil. Labyrinth: 1 and 2, Yeovil; 3 and 4, Taunton. A.O.V. Livebearers: 1 and 4, Yeovil; 2 and 3, Taunton. A.O.V. Egg-layers: 1 and 4, Taunton; 2 and 3, Yeovil. Guppies: 1 and 4, Taunton; 2 and 3, Yeovil. Coldwater (Tin.): 1 and 2, Yeovil; 3 and 4, Taunton. Fancy Coldwater: 1 and 4, Taunton; 2 and 3, Yeovil.

THE Isle of Wight A.S. had a hectic finish to their season's activities. At the annual general meeting D. Crisp, the retiring chairman, expressed thanks to the hard-working Officers and Committee, and the balance sheet reflected a healthy state. Officers elected: chairman, S. G. Stevens; vice-chairman, D. Crisp; hon. secretary, E. Davison; 89 High Street, Shanklin; hon. treasurer, I. Salter; curator, S. G. Stevens; judge, D. Crisp; show secretary, J. Nolan; press and publicity, R. L. Netten. At the end of April the Club went to Hounslow where an inter-club competition with six classes of two fish each class was won by the host club with 925 to 900 points. The annual dinner was held at Ryde early May when forty-six members and their guests enjoyed an excellent meal and their guest of honour, T.V. personality, the Incredible Christopher, then entertained them with magic and illusions. The trophies were awarded to: Points Challenge: S. G. Stevens; Guppy Cup: E. Davison; Best Tropical: W. Bradley; Best Coldwater: K. Willis; Novice Coldwater: R. Eastler; Home Furnished Aquarium: S. Stevens; Plant Cup: E. Davison; Ladies: Mrs. J. Foster.

AT the May meeting of the **Gloucester A.S.** members were informed that the Club had now joined the newly-formed Severnside Aquarists Association. After Club business had been dispensed with, members were introduced to their guest speaker for the evening, Tony Artus of Gocherington, near Cheltenham, who gave all present a very interesting and informative talk on his experiences in the fishkeeping hobby. The guest speaker for the August meeting will be W. Harold Cotton. Anyone interested in joining the Society is cordially invited to attend one of the Club's meetings held on the first Thursday of every month at the St. James Parish Hall in Upon Street.

White Spot vanishes when you use Hillside Aquatics London N12

THE AQUARIST

Gloucester, commencing at 8 p.m., or alternatively to contact the secretary, Brian Stoneham, 54 Treadworth Road, Gloucester.

THE fifth annual show of the Trowbridge A.S. was an outstanding success with a record number of entries of 665 fish, and an attendance of approximately 900 visitors. The show is now one of the largest and best supported one-day shows in the area. Results: Small Barbs: 1, P. Brown; 2, D. Phippen; 3, D. Huntley; 4, R. Larcombe. A.O.V. Barbs: 1, P. Brown; 2, J. Turner; 3, G. Churchill; 4, T. Jones. H. & H.: 1, R. Harvey; 2 and 3, K. Watkins; 4, J. Turner. A.O.V. Characins: 1, C. Phipps; 2, J. Turner; 3, C. Russell; 4, D. Hayter. Apistogrammas and Nannocara: 1 and 2, T. Hatton; 3, F. Gibbs; 4, C. Butcher. A.O.V. Cichlids: 1, P. Treadgold; 2, C. Penny; 3, P. Brown; 4, T. Hatton. Angels: 1, A. Bull; 2, C. Pearce; 3, T. Hatton; 4, R. Harvey. Siamese Fighters: 1, S. Scudamore; 2, T. Jones; 3, M. Balydon; 4, T. Bateman. A.O.V. Labrynthins: 1, C. Butcher; 2 and 3, C. Penny; 4, C. Phipps. Egg-laying Toothcarps: 1, C. Phipps; 2 and 4, G. Churchill; 3, J. Norris. Catfish: 1, B. Snell; 2, J. Turner; 3, P. Treadgold; 4, P. Wright. Corydoras: 1, F. Williams; 2, G. Carter; 3, P. Jenkins; 4, M. Squibb. Rasboras: 1 and 2, M. Patrick; 3, A. Hull; 4, K. Watkin. Danios and Minnows: 1, M. Butcher; 2, Mrs. Daniels; 3, G. Furber; 4, R. Harvey. Botia, Loaches and Eels: 1, G. Furber; 2, F. Brown; 3, G. Carter; 4, D. Wragg. A.O.V. Tropical: 1 and 4, T. Jones; 2, T. Hatton; 3, G. Orton. Sexed Pairs: 1, C. Phipps; 2, R. Bennett; 3, B. Snell; 4, T. Jones. Guppy (male): 1 and 4, M. Balydon; 2, J. Wheeler; 3, E. Jones. Guppy (female): 1, J. and A. J. Wheeler; 2, T. Hatton. Swordtails: 1, T. Hodge; 2, D. Warment; 3, C. Penny; 4, R. Peacock. Platies: 1, Masters Patrick; 2, C. Phipps; 3, T. Bateman; 4, C. Phipps. Mollies: 1, J. Purnford; 2, P. Williams; 3, K. Spiers; 4, Mrs. Daniels. Common Goldfish: 1, R. Sudd; 2, N. Collins; 3, E. Wilson; 4, B. Harding. Shubunkins: 1, 2 and 3, B. Langdon; 4, R. King. A.O.V. Fancy Goldfish: 1, 2 and 3, R. King; 4, V. Collins. Breeders (Egglayers): 1, P. Treadgold; 2, K. Spiers; 3, D. Phippen; 4, R. Harvey. Breeders (Livebearers): 1, G. Furber; 2, R. Cliffe; 3, P. Bailey; 4, J. Wheeler. Furnished Jar: 1, C. Phipps; 2, Mrs. Daniels; 3, J. Turner; 4, Mrs. Nye. Best Fish in the Show and Best Tropical Red-finned Shark: T. Jones of Weymouth.

THE second Open Show of the Top Ten A.S. was an outstanding success when 745 entries, representing 47 societies were benched. The Top Ten Society will hold their third Open Show on 21st March, 1971, once again in Huddersfield Town Hall.

At the first Open Show there was a class for Marines, but no entries were received, so the class was dropped for the second show. The third Open Show will include a Marine class and a large trophy will be presented for the best Marine fish. The results of the second Open Show are as follows—Guppies: 1 and 2, Mrs. Lindley (Alfreton); 3, Mr. and Mrs. Cobb (Belle Vue). Swordtails: 1, A. Hudson (Wakefield); 2, Mr. and Mrs. Thomson (Independent); 3, A. S. Allison (York). Platies: 1, Mr. and Mrs. Aucott (Nuneaton); 2 and 3, D. Sewall (Rainworth). Mollies: 1, 2 and 3, J. Igoe (Rainworth). A.O.V. Livebearer: 1, L. Kaye (Top Ten); 2, Mr. Reynolds (Swillington); 3, J. Whitley (Aireborough). Barbs (up to and including Nigger): 1, F. Gregory (Osram); 2, J. Whitley (Aireborough); 3, Mr. and Mrs. Wild (Salfoed). Barbs (over Nigger): 1, K. Parkes (Merseyside); 2, Mr. and Mrs. Grimshaw (Sunny Brow); 3, C. Holdsworth (Privatiers). Toothcarps: 1 and 3, W. Bailey (British Killie Association); 2, M. M. and A. Crowther (Swillington). Small Characin (up to and including Bleeding Heart): 1, D. Sewall (Rainworth); 2, F. Gregory (Osram); 3, A. G. Esteves (Top Ten). Characin (over Bleeding Heart): 1, K. Parkes (Merseyside); 2, J. Whitley (Aireborough); 3, N. Turner (Mixedend). Any variety Dwarf Cichlid: 1, B. Megson (Aireborough); 2, J. Brook (Wakefield); 3, B. Eyre (Worksop). Angels: 1 and 2, B. Williams (Four Stars); 3, N. Lees (Oldham). A.O.V. Cichlid:

1, Mr. and Mrs. Ormsher (Southport) (Best in Show); 2, Mrs. Carey (York); 3, A. Seabright (Gortonshire and Openshaw). Anabantids up to Giant: 1, N. Gibson (Huddersfield); 2, Mr. Godbehere (Stockbridge); 3, Mr. and Mrs. Grimshaw (Sunny Brow). Fighters: 1 and 3, Mr. and Mrs. Cohen (Castleford); 2, A. White-lock (Tadcaster). A.O.V. Anabantid: 1, D. Sewall (Rainworth); 2, K. Parkes (Merseyside); 3, Mr. and Mrs. Cohen (Castleford). Sharks and Flying Foxes: 1, Mrs. Scafe (Selby); 2, F. Mullar (Merseyside); 3, V. and N. Fearn (Stockbridge). Danios and Minnows: 1, K. Stafford (Oldham); 2, H. Bowman (Northwich); 3, A. G. Esteves (Top Ten). Rasboras: 1, Mr. and Mrs. Cox (Nuneaton); 2, Master R. Johnson (Aireborough); 3, M. Purvis (Hull). Loaches (including Botia): 1, D. Jackson (Dukeries); 2, D. Kenyon (Belle Vue); 3, J. Ellis (Independent). Corydoras: 1, R. Davies (Belle Vue); 2, E. Wells (Doncaster); 3, A. Beaumont (Independent). A.O.V. Catfish: 1, I. Antonio (Northwich); 2, G. Hodgkinson (Gorton Openshaw); 3, Mr. and Mrs. Webb (Salfoed). Breeders (Livebearer): 1, N. Gibson (Huddersfield); 2, Mr. and Mrs. Cobb (Belle Vue); 3, H. Gardner (Aireborough). Breeders (Egglayer): 1, F. Buxton (Barnsley); 2, D. Healey (Warrington); 3, Padgett and Edkins (Bedworth). Ladies (any variety): 1, Mrs. Deaves (Barnsley); 2, Mrs. Gregory (Osram); 3, Miss Lindley (Alfreton). Pairs (Livebearer): 1, D. Godbehere (Stockbridge); 2, J. Igoe (Rainworth); 3, H. Gardner (Aireborough). Any variety Female: 1, G. Thickbroom (Castleford); 2, N. Gibson (Huddersfield); 3, Roberts and Gock (L.A.P.S.). Pairs (Egglayer): 1, I. and K. Barlow (Ashton); 2, Mr. and Mrs. Cohen (Castleford); 3, G. Hopkinson (Independent). A.O.V. Tropical: 1, D. Kennedy (Bradford); 2, A. S. and M. J. Allison (York); 3, A. White-lock (Tadcaster). Fancy Goldfish: 1, Mr. Moorhouse (Bradford); 2 and 3, E. Asquith (Castleford). A.O.V. Coldwater: 1, Mr. and Mrs. Miller (Belle Vue); 2, Master A. Kaye (Top Ten); 3, A. S. Allison (York). Juniors any variety (up to and including 15 years of age): 1, Master A. Kaye (Top Ten); 2, G. Thickbroom (Castleford); 3, R. Seabright (Gorton Openshaw).

THERE is a change of officers of the Stone A.S. as follows—Chairman, A. Smith; vice-chairman, J. Sanders; hon. secretary, P. J. Clements, 55 Paddock Ave., Stafford, Staffs.; treasurer, I. Brough; show secretary, N. Plant, 18a High Street, Stone, Staffs.; social secretary, C. Brindley; minutes secretary, D. Plant.

THE results of the Newcastle Guppy and Livebearer Open Show held early in May were as follows—Guppies: 1, Mr. Greenacre; 2, Mr. Stewart; 3, Mr. Stobbert. Mollies: 1, Mr. Walls; 2 and 3, Mr. Stobbert. Swordtails: 1, Mr. Adkinson; 2, Mr. Scotman; 3, P. Skinner. Platies: 1, Mr. Pulman; 2, Mr. Roberts; 3, Mr. Burn. Small Barbs: 1 and 2, Mr. and Mrs. Atwell; 3, Mr. Stephenson. Large Barbs: 1 and 3, Mrs. Wilkinson; 2, Mr. Ambrass. Small Characins: 1, Mr. Emerson; 2, Miss Simpson; 3, Mr. Tait. Large Characins: 1, Mr. McCrystal; 2, Mr. Sonley; 3, Mr. Duncanson. Dwarf Cichlid: 1, Mr. Jackson; 2, Mrs. Howe; 3, Mr. Fraser. Large Cichlids: 1, Mr. Bebbington; 2, Mr. Lothian; 3, Mr. Devitt. A.V. Fighter: 1 and 3, Mr. White-lock; 2, Mr. Roberts. A.O.V. Labyrinth: 1, Mr. Tait; 2, Mr. and Mrs. Liddle; 3, Mr. Pulman. Sharks and Laboes: 1, Mr. Tait; 2, Mr. Watson; 3, Mr. Stephens. Rasboras and Danios: 1, Mr. and Mrs. Atwell; 2, Mr. Tait; 3, Mr. Mallaby. Egg-laying Toothcarp: 1, Mr. Sonley; 2, Mrs. Howe; 3, Mr. Walker. Catfish and Loach: 1, Mr. Low; 2, Mr. and Mrs. Atwell; 3, Mr. Bebbington. A.V. Coldwater: 1, Mr. Tate; 2, Miss T. Liddle; 3, Mr. Emerson. Breeders Class (Livebearer): 1, Mr. Martin; 2 and 3, Mr. Greenacre. Breeders Class (Egglayer): 1 and 2, Mr. Sonley; 3, Mr. Pulman. Breeding Pairs (Livebearer): 1, Mr. Walls; 2, Mr. Martin; 3, Mr. Liddle. Breeders Class (Egglayer): 1 and 3, Mr. Tait; 2, Mr. and Mrs. Atwell. Furnished Jar: 1, Mr. and Mrs. Renton; 2, Mr. and Mrs. Roberts; 3, Mr. Bebbington. A.O.V. Tropical: 1, Mr. and Mrs. Renton; 2,

Mr. White-lock; 3, Mr. Sonley. Best Livebearer in Show: Mr. Walls. Best Fish in Show: Mr. McCrystal.

THE May meeting of the Coventry Pool & Aquarium Society went very successfully with a talk by R. Porder from Uxbridge, on plants. His talk was amply illustrated with colour slides and his talk helped both beginners and specialists.

The Table Show results were—Anabantids: 1, 2 and 3, T. Sheehy; 4, I. Jordan. Loaches: 1, T. Scott; 2, T. Sheehy; 3 and 4, L. Boot-Danico. Rasboras and W.C.M.M.: 1 and 2, R. and P. Hirst. Junior A.V. Catfish: 1 and 2, P. Dewis; 2, R. Coulson. Best fish in show, a combal of T. Sheehy.

THE Osram A.S. Open Show results were as follows—Anabantids: 1, Mrs. A. Gregory (Nelson); 2, R. Mayor (North Staffs.); 3, K. Parkes (Liverpool). Fighters: 1, Mr. and Mrs. Hogarth (Salfoed); 2, J. Pargett (Herswood); 3, Mrs. L. Davies (Heywood). Small Barbs: 1, 2 and 3, F. Gregory (Osram). Large Barbs: 1, K. Parkes (Liverpool); 2, G. Stewart (Unattached); 3, R. Tomkinson (Glossop). Laboes and Sharks (Best Fish): 1, R. Seabright (Gorton & Openshaw); 2, Mr. and Mrs. Heap (Belle Vue); 3, P. Mulla (Liverpool). Small Characins: 1, F. Gregory (Osram); 2, R. Dawson (Oldham); 3, H. Birchwood (Oldham). Medium Characins: 1, S. Harrop (Osram); 2 and 3, H. Bosman (Norwich). Large Characins: 1, K. Parkes (Liverpool); 2, Mrs. V. Parkes (Liverpool); 3, R. Haslam (Loyne). Angels: 1, Mr. and Mrs. H. Cooper (Bury); 2, R. Tomkinson (Glossop); 3, Miss J. Norris (Loyne). Dwarf Cichlids: 1, G. Rigby (Oldham); 2, I. Bewick (Valley); 3, L. Hindley (Salfoed). Large Cichlids: 1, Mr. and Mrs. Ormsher (Southport); 2, B. Nicholls (Valley); 3, Master F. Cobb (Belle Vue). Tooth Carps: 1, Mr. and Mrs. Johnson (Salfoed); 2, Mrs. A. Gregory (Nelson); 3, J. Bamires (Huddersfield). Rasboras: 1 and 3, R. and A. Johnson (Ashton); 2, K. Parkes (Liverpool). Danios: 1, H. Bowman (Northwich); 2, Mr. and Mrs. Cobb (Belle Vue); 3, M. Tonge (Oldham). Guppies: 1 and 3, P. J. Duffy (Alfreton & F.G.A.); 2, Mr. and Mrs. Cobb (Belle Vue). Swordtails: 1, R. Antonio (Northwich); 2, K. Stafford (Oldham); 3, R. Haslam (Loyne). Mollies: 1, Mr. and Mrs. Hogarth (Salfoed); 2, S. Harrop (Osram); 3, P. Robinson (Sunnybrow). Platies: 1, I. Bewick (Valley); 2, G. Hodgkinson (Gorton & Openshaw); 3, Mr. and Mrs. Cobb (Belle Vue). A.O.V. Livebearer: 1, Mr. and Mrs. Heap (Belle Vue); 2, K. Harrop (Osram); 3, R. and J. Wakefield (Osram). Loaches: 1, P. Mulla (Liverpool); 2, P. Kenyon (Belle Vue); 3, Mrs. A. Gregory (Nelson). Catfish: 1, K. Davies (Belle Vue); 2, R. Antonio (Northwich); 3, K. Ankers (North Staffs.). Goldfish: 1, Master F. Cobb (Belle Vue); 2, C. Whitney (Accrington); 3, Mr. and Mrs. H. Cooper (Bury). Shubunkins: 1 and 2, S. Walsh (Accrington); 3, C. Whitney (Accrington). Veltails: 1 and 3, S. Walsh (Accrington); 2, C. Whitney (Accrington). Orandas and Loach-heads: 1, 2 and 3, C. Whitney (Accrington). A.O.V. Coldwater: 1, Mr. and Mrs. Miller (Belle Vue); 2 and 3, S. Walsh (Accrington). Breeders (Egglayers): 1, L. Hindley (Salfoed); 2, Mrs. J. Shackleton (Belle Vue); 3, F. Gregory (Osram). Breeders (Livebearers): 1, P. J. Duffy (Alfreton & F.G.A.); 2, J. Popson (Osram). Breeders (Guppies): 1, J. and B. Dawson (Osram); 2, R. Tomkinson (Glossop); 3, Mr. and Mrs. Cobb (Belle Vue). Pairs (Egglayers): 1, F. Robinson (Sunnybrow); 2, F. Gregory (Osram); 3, E. Price (Gorton & Openshaw). Pairs (Livebearers): 1, Mrs. A. Gregory (Nelson); 2 and 3, P. J. Duffy (Alfreton & F.G.A.). Osram Juniors A.V.: 1, D. Butterworth; 2, D. Dawson; 3, A. Irving. Osram Juniors Tiger Barbs: 1 and 2, M. Ritchie (Osram Junior (F. Gregory Trophy)); 3, D. Butterworth (Osram Junior). A.O.V.: 1, J. Tonge (Oldham); 2, C. Stewart (Unattached); 3, P. Mulla (Liverpool).

THE guest speaker at the main May meeting of the Bradford and District A.S. was O. Ricketts from Huddersfield, who gave an

excellent talk on the health and bio-chemistry of fish and animals. He commenced with a layman's introduction to hormones, pointing out the origin of each in the body and its purpose. Mr. Ricketts mentioned that the cost of hormones was naturally very high and the use of them with fish, was largely unknown. At present they are often only used on humans and farm animals of economic importance. The speaker next covered antibiotics. In answer to a question, he said that when acriflavine is used it should be the neutral type and not the acid. Acriflavine can cause temporary sterility, i.e., 4-5 months. No antibiotic will cure fungal growths and if they are given orally in a water-soluble form, they may rob the fish of vitamins. The Table Show for May featured Anabantids and Fighters: 1, A. Rudd; 2, D. Kennedy; 3, N. Spencer. A.O.V.: 1 and 3, P. Chorley; 2, N. Brotherton.

A SCHEME to promote interest in society affairs has been organised by the **Wellingborough and District A.S.** Points are awarded to members for such things as attending meetings, entering table shows, writing for the magazine, etc. At the end of the year, the person with the most points receives a trophy to keep for one year. Table Show results:—Anabantids: 1, Phyl Flint; 2, Mr. Donlevy; 3 (equal), M. Hewison, P. Crossfield. Furnished show jars: 1, Joyce Atkins; 2, A. Tupman; 3, D. Bitchener.

THE main event at the May meeting of **Skegness and District A.S.** was the setting up of a fish tank by J. Lyall and M. Abbott. At the end of the evening the contents of the tank were sold in aid of the club funds. The results of the monthly fish show were as follows: Senior Classified: 1, R. Blythyn; 2, M. Abbott; 3, I. Lyall. Senior A.O.V.: 1, M. Abbott; 2 and 3, I. Lyall. Junior A.O.V.: 1, S. Hayes; 2, R. Mott; 3, E. Collins. A quiz was held at the June meeting, the winner being R. Blythyn. Results of the monthly Table Show were as follows:—Senior Classified (Mini Tank): 1, J. Lyall; 2 and 3, I. Lyall. Senior A.O.V.: 1, J. Lyall; 2, I. Lyall; 3, M. Abbott. Junior Classified (Mini Tank): 1, A. Foster; 2, S. A. Hickson; 3, J. Turner. Junior A.O.V.: 1 and 3, B. Collins; 2, A. Foster.

THE **West Cumberland Aquarists Club** held their inter-club show with Brampton in April and the results were as follows:—Catfish: 1, G. Burton (Brampton); 2, R. Hayter (Brampton); 3, E. Robinson (Brampton); 4, E. Hodgson (Brampton). Loaches: 1, A. Hunt (Brampton); 2, H. Hodgson (Brampton); 3, E. Robinson (Brampton); 4, G. Burton (Brampton). Labryrinths: 1, J. Parker (West Cumberland); 2, H. Prain (West Cumberland); 3, D. Young (West Cumberland). Dwarf Cichlids: 1, S. Martin (West Cumberland); 2 and 4, R. Strand (West Cumberland); 3, P. D. Bulman (Brampton). Barbs: 1, J. Hall (West Cumberland); 2, J. Satterthwaite (West Cumberland); 3, E. Hodgson (Brampton); 4, G. Burton (Brampton). Guppies: 1, J. Parker (West Cumberland); 2, J. Batey (West Cumberland); 3, R. Mitchell (West Cumberland); 4, E. Hodgson (Brampton). Rasboras, Danios and Minnows: 1, R. Mitchell (West Cumberland); 2 and 4, W. Whit (Brampton); 3, P. D. Pulman (Brampton). Swords and Platys: 1, J. Satterthwaite (West Cumberland); 2, G. Burton (Brampton); 3, W. Prain (West Cumberland); 4, J. Batey (West Cumberland).

During the judging S. Martin gave a film show on fancy guppies which was very enjoyable. Meeting nights every other Tuesday and new members always welcome. The secretary is J. Parker, 2 Southey Avenue, Oregill, Egremont, Cumberland.

THE Inter-Society second leg return between **Nottingham A.S.** and **Hucknall and Bulwell A.S.** resulted as follows:—Rasboras, Danios and White Clouds: 1, B. Andrews (Hucknall and Bulwell); 2, K. Bishop (Hucknall and Bulwell); 3, I. Husk (Nottingham). Characins: 1, I. Hulleyment (Nottingham); 2, M. Harrington (Hucknall and Bulwell); 3, A. Hallam (Hucknall and Bulwell). Anabantids: 1, N. Goodliffe

(Nottingham); 2, I. Husk (Nottingham); 3, N. B. Kenney (Nottingham). Livebearers (ex Guppies): 1 and 3, R. Wildson (Hucknall and Bulwell); 2, W. Selby (Nottingham). Coldwater: 1, 2 and 3, C. Hill (Nottingham). Pairs: 1 and 3, W. Selby (Nottingham); 2, E. Smith (Hucknall and Bulwell). A.O.V. Catfish and Loaches: 1, N. B. Kenney (Nottingham); 2 and 3, B. Andrews (Hucknall and Bulwell). Final points: Nottingham 42 points; Hucknall and Bulwell 28 points.

THE annual general meeting of the **New Forest A.S.** was held in May, when the following officials were elected:—Chairman, A. Williamson; vice-chairman, C. Knapp; secretary, R. Travers, 6 Auckland Avenue, Brockenhurst; treasurer, D. Tackwell; show secretary, D. Lane; handling assistant show secretary, D. Lane; committee members, M. Lee and M. Aust; publicity, K. Hinton; auditor, D. Hare. The Champion Trophies were awarded as follows:—Coldwater Points Trophy: 1, L. Memhennett; 2, D. Lane; 3, A. Williamson; 4, R. Travers. Tropical Points Trophy: 1, D. Harding; 2, R. Moseley; equal 3, D. Hare, D. Lane, M. Lee. Champion coldwater: L. Memhennett gained all the first four places. Champion Tropical: 1, C. Knapp; 2 and 4, M. Lee; 3, A. Williamson.

SHOW REPORTS OMITTED

We regret that owing to pressure on space the following show reports have been held over until August issue: **Boston A.S.**, **Coventry Pool A.S.**, **Cardiff A.S.**, **Dakeries A.S.**, **Uxbridge A.S.** and **Stockton-on-Tees A.S.**

NEW SOCIETIES

Holme Valley A.S.—A new aquarists' society was formed in the West Riding of Yorkshire on 6th May at Honley near Huddersfield, when the following officers were elected:—chairman, R. Flynn; vice-chairman, J. Burton; secretary, D. Milnes, 26 Long Lane, Honley, Huddersfield; treasurer, Mrs. B. Flynn; show secretary, N. Gibson. Meetings will be held fortnightly with effect from Monday, 8th June, at Honley Youth Centre.

NEW MEETING VENUES

A new aquarist society has just been formed in **Port Talbot** and anyone interested in joining please contact the secretary, J. D. Nichols, 8 Dolphin Place, Port Talbot. Phone 4652.

Bristol Tropical Fish Club now meet at 7.45 p.m. on the third Thursday of each month, at the National Dock Labour Board Social Club, Welsh Back, Bristol.

The fortnightly meetings of the **Sunderland A.S.** are now held in the Monkwearmouth Community Centre, Dundas Street, Sunderland, on alternate Wednesdays commencing 8 p.m. The new secretary is A. Hudson, 14 Arundel Gardens, East Herrington, Sunderland, to whom all correspondence should be addressed.

SECRETARY CHANGES

Sunderland A.S.: A. Hudson, 14 Arundel Gardens, East Herrington, Sunderland.
Hackley and District A.S.: D. E. Sparrow, 55 Bayford Road, Hinkley, Leics.

AQUARIST CALENDAR

5th July: Gosport and District A.S. Annual Open Show at Bridgemary Community Association, Brewers Lane, Bridgemary, Gosport. Show Secretary, K. Clough, 16 Newport Road, Gosport.

5th July: Glossop A.S. Open Show, Glossop Centre, Talbot Street, Glossop, Derbyshire. Schedules from Miss M. D. Smith, 3 Chapel Lane, Hadfield, Via Hyde, Cheshire.

10th-12th July: Aquarist and Pondkeeper Fishkeeping Exhibition, Alexandra Palace, Wood Green, London, N.22.

11th July: Basingstoke and District A.S. Open Show. Details from A. Blake, 50 Bousry Road, Basingstoke.

11th-12th July: Dagenham Town Show. Schedules from J. M. R. Fyfe, 3 Ashvale Drive, Cranham, Upminster, Essex. (Tel. Upminster 28435.)

12th July: Grantham and District A.S. First Open Show, Guildhall, St. Peter's Hill, Grantham. Schedules available mid-February from Show Secretary, S. Paver, 59 Alexander Avenue, Newark, Notts.

12th July: Tadcaster and District A.S. Open Show at Collingham Memorial Hall, Collingham, Wetherby, Yorks. Schedules from J. W. Holmes, Newsagent, Collingham, Wetherby, Yorks.

18th July: North Kent A.S. First Open Show. Show Secretary, J. Parker, 6 Moore Road, Swanscombe, Kent.

19th July: Barnsley Tropical Fish Society Open Show. Details available from the Show Secretary, J. Howard, 67 Woolley Colliery, Darton, Nr. Barnsley, Yorkshire.

20th July: Plymouth A.S. Open Show, Sherwell Hall, Sherwell, Plymouth. Details from Show Secretary, R. Gartrell, 53 Biggin Hill, Ermettle, Plymouth, Devon.

25th July: A joint venture by Stockton and Cleveland Aquarist Societies, incorporated into the Teesside Agricultural and Horticultural Show, a new Aquarist Section. First Open Show. Schedules available from K. Low, 2 Farmbank Road, Ormesby, Middlesbrough, Teesside, TS7 9HG or K. Clennett, 26 Thames Avenue, Thornaby, Teesside.

25th July: Teesside Show Aquarist Section, First Open Show. To be held in Stewart Park, Teesside. Schedules from K. Low, 2 Farmbank Road, Middlesbrough, Teesside, TS7 9HG.

1st August: Stroud and District A.S. Third Open Show, Mid-Glooucestershire Technical College, Stratford Road, Stroud, Glos. Schedules and information from Show Secretary, P. L. K. Trudgold, 15 King's Road, Rodborough, nr. Stroud.

1st August: Chingford and District A.S. Open Show, New Road Methodist Church Hall, New Road, London, E.4. Schedules from Show Secretary, A. Pannell, 9 Pembar Avenue, London, E.17.

2nd August: Blackpool and Fylde A.S., New Venue, Arnold Boys' School, Lytham Road, Blackpool. Schedules from G. Howard, 56 Stamford Avenue, Blackpool from mid-June.

8/15th August: Portsmouth Open Show. Show Schedules from V. B. Hunt, "Caerlog," 120 London Road, Witley, nr. Portsmouth, Hants.

15th August: Harlow A.S. Open Show, Moor Hall, The Stow, Harlow. Schedules from P. Murdoch, 21 Brookline Field, Harlow.

16th August: Bedworth Aquarist and Pool Society Open Show to be held at Nicholas Chamberlain Comp. School, Bulkington Road, Bedworth. Show schedules available from K. Edkins, 72 Lister Street, Attleborough, Nunnaton.

16th August: North Staffs A.S. Second Annual Open Show at Meir Community Centre, Uttoneter Road, Meir, Stoke-on-Trent. Details from K. Balch, 78 Courtway Drive, Stoke-on-Trent, ST1 6DU.

16th August: Leigh A.S. Open Show. Details will be announced later.

22nd August: Yeovil and District A.S. Open Show at Grass Royal Secondary School, Yeovil. Details from D. M. Pbins, 5 Hill Terrace, Bower Hinton, Martock, Somerset.

23rd August: Scarborough and District A.S. First Open Show, St. Saviours Church Hall, Scarborough. Details from Mrs. E. A. Moore, 44 Dale Edge, Eastfield, Scarborough.

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

5th September: Yate and District A.S. Open Show at Christchurch Hall, North Street, Dowend, Bristol. Details available from Show Secretary, C. E. Stickland, 20 Barge Close, Chipping Sodbury, Glos.

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

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