August
1968

the Aquarist

and Pondkeeper

2/6
monthly

The AQUARIST
AND PONDKEEPER

Founded in 1924 as "The Amateur Aquarist"

Vol. XXXIII No. 5 August, 1968

THE BUTTS, HALF ACRE, BRENTFORD, MIDDLESEX

Telephone: 01-560 6221

PUBLISHED MONTHLY

SUBSCRIPTION RATES

The Aquarist will be sent post free for one year to any address for £1 15s. 0d. Half-yearly 17s. 6d.

Editor: Laurence E. Perkins

QUERIES

Postal replies are made to all specialised queries accompanied by a stamped, addressed envelope. *This privilege is afforded only to registered readers and direct subscribers.* Subscription forms can be obtained on application. In all cases letters should be addressed to the Editor.

Correspondence with intending contributors is welcomed.

MSS. or prints unaccompanied by a stamped, addressed envelope cannot be returned, and no responsibility is accepted for contributions submitted.

The Editor accepts no responsibility for views expressed by contributors.

Contents

The Late Mr. Bill Kemp

THE DEATH OF MR. BILL KEMP, on the 31st May came as a great shock to all who knew him.

I dedicate these few words to his memory.

Bill and I had known each other for about twenty years. I first met him at a National Show and my first impression of him was that he was a dedicated aquarist. His knowledge of fish at that time was extensive.

Tropical Fish after the war were hard to get so Bill started collecting native cold water fish; but as import restrictions were lifted his fish house soon had the new inmates. We discussed many things and his help he gave me in rearing live bearers was a turning point to my interest in this hobby.

Up to the time of his death, Bill still had a very good deep red strain of Platy which were greedily sought for by aquarists. He would never force you to accept his ideas but ask you to try it and one soon learnt to respect his knowledge.

It was in 1962 when he was made a ASLAS judge. His roll of importance was soon established going around to Clubs judging the shows. His fairness in meriting each fish was acclaimed by all. Many has been the time when he has been called out to help a Club whose judge has been unable to turn up.

His lecture on "Fish keeping, applying the basic principles" was heard by many and I'm sure helped so many up and coming aquarists. He was a member of ASLAS for many years and in 1967/68 was an active member on the Executive Committee. The last year of his life he served as Chairman of my Club (Clapham Aquarist Society). His guidance and presence was always felt.

We in the Aquarist field not only lost a dedicated member but a very dear friend. We shall all miss his quiet unruffled manner. So long Bill, we shall always remember you and our sympathy goes out in no small way to his wife and family.

FREDRIC G. GLYNN.

At right: Pair of Bitterling examining mussel preparatory to spawning. Female on right displaying ovipositor.

Photo on page 485. Platy.

The breeding habits of fishes

by A. Boarder

THE VARIOUS METHODS of breeding among fishes is a constant source of wonderment especially to newcomers to the hobby of fishkeeping. I receive many letters from aquarists with reference to the way goldfish and their varieties reproduce. In consequence of the many requests I will describe the manner in which they breed and then give a few examples of different methods.

It is not always easy for the beginner to be able to sex their goldfish but towards the breeding season, which can be any time between April and September with goldfish, the males often show small white raised pimples on the gill plates and on the front of the pectoral fins. The females are fatter in the body due to the presence of eggs, (hard roe) and the males are as a rule slimmer as the milt, (soft roe) takes up less space. When viewed from above the females look much thicker in the belly than the males.

When the fish are ready the males chase the females through water plants, usually as near the surface and shallows as possible and nudge them vigorously. The females then expel the eggs singly and the males spread their milt to fertilise the eggs. Once the eggs are laid the parent fish take no further interest in them as far as hatching and the rearing of the fry are concerned. The only thing which sometimes happens is that once the excitement of spawning is over the fish might eat the eggs or later the fry when they hatch.

This method of spawning is carred out by most of the coarse British fishes but there are several species which have a far more spectacular method of breeding. The one to be found in the British Isles is the Stickleback, *Gasterosteus aculeatus*, which shows strong parental feelings in the male fish. The male constructs a rough nest of small sticks or weed stems and entices females inside to lay their eggs. He then guards the nest and repeatedly fans the eggs to keep them well oxygenated. Once the fry hatch he also keeps guard over them and shows a very different attitude to that of most other British fishes to their young.

The Trout, *Salmo trutta* and the Salmon, *Salmo salar*, make a form of hollow in the river bed by thrashing their tails over the pebbles, thus creating a shallow which is known as a "redd". Once the eggs are laid and fertilised the parents take no further interest in the eggs or fry later.

One of the most spectacular breeders is the Bitterling, *Rhodeus sericeus*, which has developed a wonderful method of spawning. The fish chooses a mussel, the Painter's mussel, *Unio pictorum*, and the female encourages the mussel to open up and she then inserts an ovipositor into it and lays her eggs. The male then spreads the milt over the opening in the mussel and the eggs are fertilised. The fry remain in the mussel for a time before leaving for the open water. This method of spawning is more remarkable when one considers how readily a mussel will close up when anything unusual touches it and it seems almost impossible that

a fish could have so developed its instincts to be able to choose such an unlikely, though safe, method of protecting the eggs.

Many of the fishes from tropical regions have unusual breeding habits and one of the most interesting types is the nest builder. The labyrinth fishes such as the Fighting fish, Gouramis and Paradise fish are such kinds. The males of these are capable of making a nest of bubbles at the surface of the water. The bubbles do not break and form a compact bunch which is guarded and occasionally replenished by the male. Once the nest is completed the male encourages a female under the nest and then wraps his body over it when the eggs are shed and then fertilised. The fish then pick up the eggs and blow them into the bubble nest. When the female has finished laying she is chased away by the male who then tends the nest, replacing any eggs which fall. Once the fry hatch he also tends them carefully until they are large enough to care for themselves. With the nest builders it is usual for the male to do all the protection and the females usually take no further part in the hatching and rearing of the young.

Many of the Cichlids make a form of nest by cleaning out a small hollow in the bottom and then tend the eggs carefully when they are laid, sometimes removing them to a fresh clean nest or hollow. Some of these types will both care for the eggs and young showing great paternal care. Other Cichlids lay their eggs on carefully cleaned surfaces, such as pieces of rock or the large leaves of water plants. They then tend the eggs, removing any which are infertile or are going mouldy.

Another very interesting and unusual method of breeding is found in the *Haplochromis* species such as the Egyption Mouth breeder. When the eggs are laid and fertilised the female takes the eggs into her mouth and keeps them there until they hatch. The female does not eat whilst the eggs are hatching, often about ten days and even then the young are kept in the mouth for some days but may be released occasionally. For about a week after they are free swimming they may return to the safety of their mother's mouth when danger approaches.

Another method of breeding is found among the Killifishes. Many of these fishes live in small ponds in very hot regions where these ponds can dry up completely during a long drought. These fishes lay their eggs during the rainy season and when the pools dry up the eggs remain in the mud or earth at the bottom and do not hatch until the rains come again. The parent fish usually die during a prolonged drought and so the species is able to survive by fresh specimens hatching out from the eggs which may have remained in the dry bottom of the ponds for some time before the required moisture arrives to enable them to hatch.

Many species of tropical fishes are live bearers when the young are fully formed inside the body of the female until they are sufficiently developed to be able to have a completely separate existence. Such well-known species as the Guppies, Platys, Swordtails and Mosquitos fish are among the livebearers. In these species the eggs are fertilised whilst still inside the body of the female and the males can be distinguished by the strange formation of the anal fin which is capable of being pointed forward to expel the sperms into the female. Among the live-bearers there does not appear to be much paternal instinct as many of the young ones can be eaten by their parents and no apparent interest is taken in the well-fare of their progeny.

Book review

"BREEDING AQUARIUM FISHES," by Dr. Herbert Axelrod assisted by Susan R. Shaw.
Published by T.F.H. Publications at 75s.

This is one of the most recent publications from T.F.H., and will undoubtedly prove to be a valuable addition to the aquatic reference library.

It deals almost exclusively with the breeding of egglayers, although a brief mention is made to livebearers in the opening introductory chapters. These chapters outline the habits and breeding requirements of the various families of fish, and deals with the pre-spawning and courtship rituals of some in particular.

The following pages then detail individual spawnings of almost 100 different species, each accompanied by superb black and white and colour plates of actual spawnings. From the beginner's humble Zebra, through the usually shrugged off *Corydoras* (not here though!), the Pipe Fish from Ceylon, gaudy Aphyosemions, exotic Labyrinths, to the imperious Discus, this book never ceases to delight with its variety, colours, and fin-revealing photography.

This book will appeal to both novice and expert; the latter will be able to use this work as an invaluable guide to setting up the breeding tank and conditioning the pairs of fish with a certain degree of success; and to the former it will show the true colours of fish at peak condition, perhaps different in colour to what he normally sees them in his dealer's tanks, and may even tempt him to try a few different species from the usual community collection.

The only jarring note is that, to our as yet "commercial free" reports on fish breeding, there seems to be a monotonous theme throughout all these spawning records, for all the success seems to depend on a certain freeze dried product!

This is only a personal criticism on the part of the reviewer and seriously does not detract from the excellence of this publication.

Coldwater fishkeeping

Some Facts and Fancies

by A. Boarder

DURING THE PAST FEW YEARS the garden pond has come into its own. Many more people are making them nowadays mainly because with the advent of specially stout polythene and other plastics the pond construction has become so much easier. All that is required today is to buy a large sheet of reinforced material, dig a hole, stretch the sheet over it, anchor the sides and fill with water. The old laborious job of concrete mixing and laying has been done away with. Whether some of these ponds will last as long as a well-made concrete one remains to be seen. The fact is that with the popularity of these quickly made ponds has come a spate of articles in periodicals and newspapers and talks on radio and television on pond construction and maintenance.

This is all for the good of the hobby, but it is a pity that people are not chosen for such instruction who have had plenty of practical experience with garden ponds. Instead we get the same old corn about running a pond which has been repeated for years in books and which bears little resemblance to actual facts. I think that one of the silliest statements which crops up very frequently is that if the pond is made with sloping sides it is not likely to crack when the water freezes over. It is said that the ice will slide up the sides and so will not make any crack. What a lot of nonsense. Once any ice forms on the side of a pond, nothing on earth will ever move it a fraction of an inch until it thaws. If you don't believe it, wait until the next freeze-up and then try to move the ice sticking to the sides of your pond. You will not be able to make any impression on it until it melts.

Another writer recently said that when the pond is made, add half-a-dozen water snails as these will eat all the algae in the water. What a hope! Any experienced aquarist will know that snails are of little value in the pond and will usually either eat the plants which are needed or the fish food. If they cannot eat all the dried food given for the fishes they will slime it up so much that the fishes cannot eat it. Most snails exude a quantity of excrement and so can add to the fouling-up of the water. They can eat fishes eggs and few snails are useful as fish food except when they are very tiny, or if there are tench in the pond as these fish can suck snails from their shells.

Another frequent tip is to have only an inch of fish, not counting the tail for every gallon of water. This might be all right if the tank is of the right shape. If a tank 12 in. × 12 in. × 12 in., is filled with water it will hold about six gallons of water, i.e., six inches of fish. If the tank is 12 in × 6 in. × 24 in., it will still hold about six gallons of water but with the top only 72 square inches it will only hold three inches of fish. If the tank was so glazed that it was six inches deep with a surface area of 24 in. × 12 in. it would now hold 12 inches of fish. Therefore the correct rule for a tank is not an inch to the gallon of water but an inch of fish to each 24 square inches of surface area.

The same speaker who gave the old rule on radio said that Angel fish were bubble-nest breeders which indicates how knowledgeable he was. It is also often recommended to give water lilies some old cow manure when planting. This can upset the water and it will tend to prevent the lily from carrying out one of its important tasks. That is to use up much of the waste matter from the fishes. The more artificial feeding the lilies get the less will they do their work. The introduction of a layer of rich soil is often recommended but this is unnecessary as all that is required is an open-work plastic container in which is a little old turf. The roots of the plant can then creep out of the container and these have the tendency to draw floating detritus to them and utilise it.

Almost always one is told to introduce a scavenger into the pond. This is usually a catfish, and for ponds the one known as *Silurus glanis*, the European catfish, is sold to the unsuspecting pond-owner. Only after the fish has

grown does he find out that his goldfish are gradually disappearing. The catfish is carnivorous and can eat any fish small enough to get into its huge mouth. If goldfish are not over-fed artificially they can clear up most of the edible food in the pond and will eat almost anything that the catfish would eat in the shape of unwanted matter. If one must have another type of fish as a scavenger then a tench would be much better and is not likely to harm the other occupants of the pond. I have kept and bred green tench in my pond together with fantail goldfish for many years and have never found them to harm the goldfish in any way.

Another fallacy which crops up occasionally is that white worms, *Ecchytrae*, are bad for goldfish as they are too fattening. I consider this to be nonsense and claim that they are one of the finest and safest live foods for any fish. I have experimented by feeding a number of fantails on nothing but white worms for eight months and they remained in the best of health. My last experiment was to feed some young fantails on white worms throughout last winter. They were hatched 7th September, 1967, and some spawned on 16th May, 1968. These fish had been kept warmer than usual and had grown so well as to be as large at six months old as my usual coldwater bred fish would have been at three to four years old. Not only were the fish able to spawn but the eggs were fertile and hundreds of fry hatched out. Surely if white worms were harmful, such a happening would not have been possible. These fish were fed white worms every day from the time they could take them mashed up until they were taking a bunch of a hundred at a time.

There is another statement which often makes me wonder and that is the way to cure a fish of Dropsy. Most readers will have seen the illustration in many a fish book of a fish suffering from Dropsy being treated by inserting a syringe needle into it to draw off liquid. It would be interesting to know if anyone has ever actually cured such a fish with this method. In the first place any internal organ could be injured by the careless insertion of the needle and even if it were successful in drawing off liquid how could this kill the bacteria which could have been the cause of the disease?

There is another fallacy which is often heard of among fishkeepers and that is regarding white spot disease. This is often said to be caused by a chill. Now this is not so as white spot disease is caused by a parasite which gets under the skin of a fish. If no parasites are present in the tank or pond the fish cannot get white spot whether it gets a chill or not. On the other hand it is possible for a chill to be one of the primary conditions preceding an attack of white spot disease. All healthy goldfish have a covering of mucus or slime which protects the fish from many pests and diseases. If the fish are out of condition this covering becomes deranged or weakened and then loses its protective powers. A fish in bad condition would be more likely to become infested with white spot parasites but only if they were present in the tank or pond.

Another scavenger which is often recommended for the pond is the freshwater mussel. This is said to keep the water free of floating matter and to act as a filter. If any mussels are put into a freshly constructed pond they are almost certain to die and can then polute the water very badly. Mussels cannot live, move around and feed unless there is a quantity of mud or mulm at the bottom and this is usually absent in a new pond.

New available Fish species

Species

Pseudoplatys (Epiplatys) *annulatus*, Boulenger, 1915.

Description

Female to 1 inch in length, body alternately ringed with bands of chestnut brown and yellow, fins clear except for a tinge of yellow in the tail. Male 1¼ inches with elongated body similiarly marked but carrying plume-like red and blue tail. Other fins, pectorals, anal and dorsal may also be brightly coloured depending upon locality of origin (West African States, 5 to 10 degrees north of the equator).

Water requirements

Not critical. Although wild specimens were reported to have been collected from soft, slightly acid water, it is equally happy and breeds as readily over a wide range of pH and hardness values. Most tap water, matured in a well planted tank, being quite suitable. Limits of temperature tolerance not ascertained but our specimens have bred successfully from 72 to 80°F.

Feeding

Most small live food taken readily but it also shows a surprising partiality for some brands of dried food. It was noted that "McLynn's" was eagerly accepted even when a wide and varied selection of live food was present.

Compatibility

Although, as appearance suggests, this is a diminutive predator, it attacks only fry small enough to be swallowed. Males spar almost continuously among themselves but no damage has been observed. Best kept in company with small inoffensive species, e.g., Neon Tetras (*Paracheirodon innesi*) when it quickly overcomes natural caution and displays to advantage.

Breeding

Eggs are laid singly among floating plants, anchored plants or on any convenient object. Incubation takes 10 to 20 days not, apparently, dependant on temperature. Fry are minute but exceedingly hardy and spend their first week at the surface, after which they can accept brine shrimp and will feed at all levels. Of the fry reared to date about 70 per cent proved to be males.

Conclusions

A small and strikingly coloured fish eminently suited to aquarium conditions and one which has no need of the reservations so often necessary when recommending killies.

Report by The Fishery Services Co.

DAVIC AQUARIA & AVIARIES

In the July issue the address of Davic Aquaria and Aviaries was given as 69 Kew Road, Richmond, Surrey This should have been 96 Kew Road.

Forty years on

by F. L. Vanderplank, Ph.D

BACK IN THE 1920's when I was a boy I was an enthusiast, first for cold water fish, for at that time tropicals were almost unheard of, and the cost of the equipment and fish was prohibitive. Soon after *The Aquarist* was founded in 1924 I became a regular reader and by the end of the twenties I had started breeding my own tropicals. During the 1930's I decided to make a career in biology and entered Bristol University at the same time became biologist to the Bristol Zoological Society, where I was able to help with the problems of their small public aquarium and the breeding of fish and amphibia behind the scenes. During the latter part of the thirties I was a regular contributor to *The Aquarist*, and in 1938 I took a research post under the Colonial Office in Africa. This post was concerned with the tsetse-fly but it took me in the following years all over tropical Africa and I was able to investigate tropical fish in their natural habitats, first in East Africa, after the war in West Africa and the last eight years marine life around Zanzibar and along the East coast.

I was able to write a few articles on freshwater fish in their natural African habitats which were published in *The Aquarist* before it had to stop publication due to the war. Although I never lost my interest in the subject and continually explored all the rivers and ponds I could, in spite of the risks of water borne diseases such as Bilharzia (*Schisto somiasis*) and others, I was too busy to follow what was happening in this line in this country in recent years. Recently I have once again become interested and involved in the commercial aspect of the trade, but what a change (for the better) from the old 1930 days. The first thing that struck me was the cheapness of the tropicals compared with the 1930's. Now only 3s. for an Angel fish, then it was 25s. upwards and money was worth five times as much then as it is now. As a Wholesaler said to me a few days ago, polythene and other plastics and oxygen have revolutionised the trade. The most exciting development is undoubtedly in the tropical marine fish. I was able to watch many species I had last seen some eight years ago while Aqua-lunging over the coral reefs of Zanzibar. The Wholesaler's tanks contained Clown fish, which are very common all along the tropical East African coast and they live in association with the large beautifully coloured sea-anemones and at the first sign of danger dash into the sea-anemones' tentacles or stomach cavity, where they hide until the danger is over. This makes them an easy catch, as they can just be taken out of the anemone. Technically these anemones sting, but I have never found any of the stings anything to worry about. The tide leaves many hundred of square miles of shallow bays and coral reefs exposed to the mid-day tropical sun, and often the water in the pools that are left get so hot that it is too hot to even paddle in, yet these sea-anemones and their clown fish can generally survive these temperatures, together with quite a few other species, just occasionally the temperatures do get too high for the pool's inmates and they are killed. These coral seas have thousands of different species and varieties of the most gorgeous fish.

Back in the late 1930's I experimented with coldwater marine fish, and had sea water brought regularly from Plymouth to Bristol, although we kept quite a lot of fish alive for months or even a year or two, it was hardly a success, but now with the Ozone machine it is quite a different story. I witnessed a short time ago the "Gro-lux" fluorescent tubes being used on a tank of tropical marine fish which included some Butterfly fish, *Chaetodon falcula*, the owner was worried because they had refused to feed up to then, but almost immediately the "Gro-lux" tubes were switched on, the fish started feeding. The light is very bright up to 50 ft. below the surface on the equator, but after 50 ft. gets bluer as one descends and at 120 ft. is a very deep blue, no other colours being visible to the human eye, but the fish community is also different; the brightly coloured coral fish don't generally descend to this depth and the habitants are silver or red-tinged (which looks black to the human eye) fish. Although the field of tropical freshwater fish is by no means exhausted, the scope and colour of the tropical marine fish is unlimited and practically nothing is known about their breeding habits. Many Butterfly fish change their shape and colours as they grow older and consequently have been described as different species because of this, but until someone breeds and rears them the muddle over their names will not be cleared up.

The great difficulty before the introduction of plastics was avoiding any metal or metal-containing paint getting in contact with the salty sea water which very quickly upsets the delicate balance of salts in it, and in so doing kill the inmates. The next great difficulty was to control the bacteria in the tanks and now this has been solved by the Ozone machines. There are still problems but most of these are minor compared with the two mentioned above and one of these is light intensity, which is solved by the introduction of these new type fluorescent tubes.

Angel fish: "....25s. upwards and money was worth five times as much as it is now."

Goldfish breeding

Successful Spawning of Young Fantails

by Arthur Boarder

IN PREVIOUS ARTICLES I have described how warmth and aeration was used to rear some fantail goldfish. In *The Aquarist and Pondkeeper*, for May, 1968, a photograph was published of two of these fish, one raised under ordinary cold conditions and one with warmth. As the young fish had grown so well and had completely changed colour to red, I lowered the temperature of the tanks to about 60° F. As the concrete tanks were in a large garden frame, 20 ft. × 7 ft., with a span roof, they became warmer according to the weather, and so the temperature varied from day to day.

On the 22nd April, as it was quite a warm day I put four of the young fantails in my outdoor pond, the water being then just about 60° F. On May 15th, I put three more in my small outdoor pond. The remaining youngsters were divided up into three tanks. One fine pair in each of two tanks and four others in another tank. I had hoped that the two pairs of fish would spawn as the females appeared to be full of eggs, and had been so for a few months.

On 16th May, this year, I saw that there was chasing going on in the tank with the four fish. Two males were chasing a fat female and the third fish appeared to be taking no interest in the proceedings. These fish were then just eight months old and I was rather pleased to find that several eggs were soon in evidence. After an hour or so I moved the four fish into another tank where they continued spawning for an hour or so. I then moved them again leaving the two tanks with eggs free from fish.

The three fish which were spawning were very fine quality fantails and were better than any I had seen at any exhibition during the past ten years or so. Whether the fry would turn out to be as good remains to be seen. I raised the temperature of the hatching tanks to 70° F. This again varied somewhat as the sun shone, but did not drop below 68° F. at nights.

It was difficult to see how many eggs there were as the concrete tanks only allow viewing from above. In addition there was plenty of weed in the tank. A fair amount of Hornwort (*Ceratophyllum demersum*), and blanket weed round the sides. This weed had established itself all round the side of the tank and was about an inch long. This made an ideal position for the reception of eggs, as there is little to equal blanket weed for holding eggs. A little duck weed was on the surface. In about twenty-four hours I noticed some infertile eggs. It is quite usual to see plenty of these and some fishkeepers may be excused for thinking that there are no fertile eggs at all. However, these do not show up white as do the bad ones. In two days from spawning I could see the young fry in the eggs and so expected at least a few to hatch.

I had no idea before that fantails could spawn at eight months of age and so was very surprised when after almost four days some fry appeared. It was still impossible to tell whether there were many or a few. Only the one female had been spawning and I had not been able to see many eggs. However, by the evening of the fourth day there were plenty of fry free swimming and when a white plastic tray was placed down in the water the fry could be seen almost like a swarm of gnats.

It became evident that I would have to spread some of the fry out into other tanks. My method for catching these tiny fry is to use a small enamel saucepan. This is dipped well down into the fry tank and gently raised. Surplus water is carefully run off and the fry counted as they go gently over the top of the pan into the tank. Each dip into the tank brought up fifty to sixty fry and by 24th May I had spread out some of the fry into six other concrete tanks. On examining the hatching tanks on the night of the 24th, it was very obvious that there were still many fry still in them and more would have to be moved. I had counted at least 450 fry as I moved them and at a fair estimate I consider that there were at least a thousand fry from this one female. That such a young fish could produce so many youngsters at the first spawning seems almost incredible, but by the controlled breeding I was able to make sure that this was the case. I had never had so young a fish breed before.

It must be remembered that the spawning fish were only hatched in September, 1967, and had only the winter months in which to grow. However, they had a fair amount of space in which to develop but whether I shall be able to grow the new youngsters at the same rate if problematical as space will be one of the deciding factors. I immediately introduced 'Liquifry' into the fry tanks and will go from the No. 1 grade, to the No. 2, as the fry grow.

With the aid of a magnifying glass it was possible to see that the tails of the fry were not single and so it is hoped that plenty of them will be of as good quality as their parents. The tail of fantail fry appears shaped like a tiny spade. The water in the tank where the fish spawned was at 60°F. The weather on the day started warm and sunny but clouded over and became cooler later on. I could find no special reason why the fish should have spawned on this particular day. Over many years of breeding I have tried to tie down one particular condition as to weather or temperature but have never been able to say with any degree of certainty what actually starts off the spawning urge.

Stocking the philatelic aquarium

Tropical fish from Christmas Island Thailand Guyana and the Yemen

by A. G. K. Leonard

TEN MULTICOLOURED TROPICAL FISH from the waters around Christmas Island are attractively featured on a new series of stamps for this Australian-administered territory in the Indian Ocean. Released on 6 May, when Australian decimal currency was adopted in place of the Singapore currency previously used by the 3,000 people engaged there in the phosphate industry, they have been designed by the Sydney artist George Hamori, with assistance from the ichthyological staff of the Western Australian Museum at Perth, and make worthy additions to the constantly extending philatelic aquarium—now a major collecting theme.

Some 64 square miles in area, discovered and named by Captain William Mynors on 25 December, 1643, the island situated about 800 miles south of Singapore received little attention until 1888, when it was annexed by Britain, following analysis of its rocky deposits, which were found to comprise almost pure phosphate of lime. Phosphate operations are now carried on by a joint Australian-New Zealand government commission and Australia took over the administration of the island from Singapore in 1958, when distinctive stamps were first issued.

Each stamp of the new series, photogravure-printed at Melbourne in large horizontal format, shows a different fish, duly indentified by its scientific name. Taken in order of value (from 1c. to $1, a total of $2.04, equivalent to 16s. 4d. sterling) this postal aquarium begins with *Grammistes sexlineatus*, then the odd-shaped Moorish

Top right:
The 1c. stamp in the Christmas Island series of fish designs shows *Grammistes sexlineatus*.

Lower right:
The Butterfly fish *Chaetodon meyeri* takes pride of place on the highest denomination in the series.

More attractive stamp designs with fish as the motif

Left:
Two of the set of eight Thai stamps featuring Siamese freshwater fish. Top: *Valmosa rambaiae;* lower, *Tor trambroides.*

Below:
Fish of the Red Sea are illustrated on the set of 13 stamps issued by the Kingdom of the Yemen. The popular English names are used, as shown on the four illustrated.

Philatelic aquarium

continued from page 491

Idol *Zanclus cornutus*, a real collector's item, followed by *Forcipiger longirostris*, the long-nosed butterfly fish, known scientifically for nearly two centuries and chiefly associated with Hawaii. The 4c. stamp depicts *Balistes vidua*, the pink-tailed trigger fish, growing to about 10 inches, its body a solid deep brown, red at the mouth, with dorsal and anal fins white edged with black and a tail that is half white on the inside and pink on the outside half.

Next comes a miniature of *Pygoplites diacanthus*, a graceful butterfly fish with a compressed disc-shaped body, often known as the Regal Angelfish. This is followed by the sharp-spined Surgeon Fish *Acanthurus glaucopareius* and the fearsomely eye-catching Scorpion or Devil Fish, *Pterois volitans*, which needs even more careful handling. Companion stamps illustrate *Chaetodon ornatissimus*, one of the most beautiful of the butterfly fishes, 6 inches long at maturity, which has a bright yellow body and a rosy pink tail, marked with drak brown stripes, and the Surgeon Fish *Acanthurus lineatus*. Pride of place on the top value to complete the series goes to *Chaetodon meyeri*, a very beautiful butterfly fish, highly marked and much prized. All of these tropical fish from Christmas Island will travel easily through the post and make a trouble-free display in the aquarist's stamp album!

A fine array of Siamese freshwater fish for the philatelic aquarium is offered by Thailand, where a long-announced set of eight was released on 1 June. Their designs by Mr. Aram Kaw-Sawung have been photogravure-printed in natural colours by the Japanese Government Printing Bureau and give most pleasing effects. They are sure to be popular with collectors, particularly since the complete set costs only a few shillings.

One depicts the Snake-Skinned Gourami, *Trichogaster pectoralis*, not so colourful as other Asiatic Labyrinth Fishes but undemanding, hardy, prolific and peaceful towards other fishes. Another has for its subject the Red-Tailed Black "Shark", *Labeo bicolor*, which is found mainly in the streams of Thailand and is at its best in soft and slightly peaty water, showing off its velvet black with contrasting orange-red caudal fin. It is hardy and active but quarrelsome with its fellows. Of the same family *Cyprinidae* is *Tor trambroides*, shown on a companion stamp. Not suitable for the domestic aquarium are the catfish *Pangasius sanitwongsei* and *Leiocassis siamensis* depicted on further stamps of the series, which also includes miniatures of *Catlocarpio siamensis* and the Goby *Vaimosa rambaiae*, as well as *Notopterus chitala*, the elongate Knifefish.

Four of the new series of pictorial stamps from Guyana show, Patua, Hassar, Sunfish and Piranha.

On the South American continent, the former colony of British Guiana, now independent under the style of Guyana, signalised its status with a complete new series of pictorial stamps, introduced in March. Five each were devoted to mammals, birds and fishes, realistically depicted in multicolour by the same London printers responsible for current British stamps.

One has an attractive subject in the Two-spotted Cichlid *Cichlasoma bimaculatum*, locally known as the Patua, commonly found in the inland creeks and rivers of Guyana, also in the canals and trenches of the coastlands. Growing up to 8 inches, it is beautifully coloured in its wild state, particularly at spawning time, but tends to lose its coloration in captivity, although it has advantages for the aquarium in that it is very undemanding and well-matched pairs are usually quite peaceful with each other. Another member of the family *Cichlidae* shown on a new stamp of Guyana is the Sunfish or Pike Cichlid, *Crenicichla alta*, a larger food and game fish ranked with the trout.

The Lukunani, *Cichla ocellaris*, depicted on a third stamp, is of interest to the fisherman rather than the aquarist, and neither would wish to have more than pictorial aquaintance with another stamp subject, the Piranha, a Guyanese cannibal fish reputed to be "the most wicked fish that swims": a shoal excited by the smell of blood in the water is said to be able to strip a man or a horse down to a skeleton in a matter of minutes. More attractive is the fifth stamp picture of the Hassar, *Callichthys littoralis*, a heavily mailed little catfish which can live for a considerable time out of water, buried in mud during the dry season; usually hardy and contented in captivity, it can be a useful member of an aquarium community, clearing up remains of food not wanted by other fish.

The largest and most colourful of recent stamps devoted to tropical fish are the 13 issued by the Kingdom of the Yemen last June and September, depicting fish of the Red Sea. They are identified on the stamps by their popular names in English, i.e., Trigger Fish, Rudder Fish, Butterfly Fish, Cuckoo Wrasse, Deepwater Squirrel Fish, Grouper, Dark Clown Fish, Violet-Hued Berycid and Dragon Fish, the last four each providing the subject for two stamps, of different denominations and sizes. These brightly printed labels are obviously aimed at the philatelic market rather than being intended primarily for postal purposes, but as a cancelled set can be obtained for six or seven shillings, most collectors are likely to welcome them into their albums.

Readers interested in stocking a philatelic aquarium as a sideline linking two fascinating hobbies may like to be reminded that previous articles surveying earlier stamp issues on this theme appeared in *The Aquarist* of September 1962, December 1964, February 1966, August 1967 and February 1968.

The Royal Aquarist

by Raymond Lamont Brown

HIS IMPERIAL MAJESTY HIROHITO is the 124th Emperor of Japan. A section of the Japanese people still believe that he rules by divine providence and that he is the direct descendant of *Amaterasu-Omikami*, Goddess of the Sun. In certain parts of Japan, Hirohito is still referred to as the "Son of Heaven," but to those who feel personal affection for him, he is just "Tenno," after the first Emperor of Japan, Jimmu-Tenno.

The Emperor's influence in matters political and domestic today, is but a shadow of the past. The Imperial family did not go through the holocaust of World War II unscathed. They lost their vast estates, power and palaces. To all intents and purposes they are as poor as palace mice.

If the truth were really known the Emperor is more interested in plant and aquatic life than the pomp of palaces. Often, it is said, he arrives back at the Imperial household from a meeting with his ministers, to dine with the Empress, with the knees of his trousers muddy. The reason is that he has been studying fungi and the contents of muddy ponds on his way through the Palace gardens.

A scientist by inclination, wherever he goes, the Emperor sometimes slips away from the official party and is found later up to his knees in slimy ponds, while chamberlains hover at the water's edge in utter despair.

The Emperor looks "the outdoor type," his face is *yakimashita*, that is literally "broiled" by sun and wind. His hair is black and rebellious, showing his determination and the shape of his head is that of the scholar. Although he goes through an international selection of newspapers daily, his chief reading matter is his beloved marine biology books. His library does contain, however, many choice items on philosophy, economics and history.

The constitutional monarch of Japan, then, has a passion for marine biology and has written several books about clams and crabs. A famous work of his has the impressive title of "*Opisthobranchia* of Sugami Bay." The Emperor has an enormous collection of marine specimens carefully and lovingly gathered from Sugami Bay. At one time he used to spend many hours in this Bay, on his small white motor yacht, while Shinto priests lined the volcanic beach beating gongs and chanting prayers for his safety. Whether in monumental garden or on sandy beach, as long as he is close to life in or near water the Emperor is happy. Week after week he sails along the rocky coasts of Japan collecting specimens. Netting them himself, surrounded by a group of privileged professors and scientists (who value his opinions highly and not just because he is the Emperor!), the Emperor contentedly drops algae, starfish and sponges into the pockets of his tailored white coat. Each specimen is carefully packed away for study in his laboratory, back at the Imperial Palace, or for display in his miniature aquarium.

Along the eastern coast of Asia, from the Bering Sea to Australia, is the world's richest region of marine life. Except for the Sea of Japan, which is relatively deeper, most of her coastal waters are most favourable for the development of marine life. The waters around the islands of Nihon are areas where ocean currents from both tropical and polar latitudes converge, creating a very favourable environment for fish. The areas of the most marked convergence, having the most mixed temperature waters, have an abundance of different types of plankton and marine life. The most important area of such water convergence is the western Pacific and extends from (say) latitude 37 deg. off the east coast of Japan northeast towards the Kurile islands.

The Emperor has made a study of tropical fish, amongst which the following are but a minute example from the waters of Japan.

The *Oryzias latipes* (family cyprinodontidae), also known as the Geisha-girl Medaka, or Japanese Medaka, Ricefish, is dull in colour with a rather transparent look. It has a uniform colour of greenish-grey shading off to blue, with a blue to violet iridescence by reflected light. The dorsal fin is produced to a point. Occasionally the anal fin is bordered with yellow. Great care is needed in breeding these fish for they are a delicate species. In Japan a reddish variety has been bred and has been imported into Europe.

The Japanese Weather-fish (*Misgurnus anguillicaudatus*), is yellow-brown to olive-grey brown, with a pale underside, bright silvery. They correspond to the European Weather-fish.

Barilius neglectus, the Japanese Barb, has a brownish-green base, a silver-white horizontal stripe, bordered in dark above and below. The male is more brilliantly coloured.

The Japanese live-bearing snail prefers cool water, and is popular amongst Goldfish fanciers. As they are large and meaty, they are greatly relished in Japan as a food-dish. The young are born alive, fully formed, with the right horn of the male slightly shorter.

Although he is an expert on cell formation and the evolution of marine life, from time to time the Emperor's studies are reflected in the national diet. Whenever the Emperor is known to be studying a particular type of fish or sea-plant, should it be edible it soon appears miraculously on the menus of cafés and restaurants. An example of this was the *hoya* variety of small clam, served with a *shoyu* (soya bean) sauce.

By the close of 1966, Emperor Hirohito will have reigned for twenty years as the "Son of Heaven," "sacred and inviolable," and for twenty years as constitutional monarch, "symbol of the state and of the unity of the people." Modern biographers will continue to show that His Imperial Majesty was against the dreadful World War II and is a man "more sinned against than sinning." Perhaps soon his name will be cleared on this score, for it is his sincere wish that it be so. But more important to science, he has left a mark on aquatic studies as one of the greatest living students of marine biology.

Jottings

by M. J. Parry

POCKET REFERENCE BOOK

Aquatic textbooks vary in price from 2s. 6d. to £7 10s. and above, and to my mind their value lies not in how many coloured plates, line drawings and other illustrations they contain (acceptable though they may be), but rather in the amount of information they impart, leading, ultimately, to a better grasp and understanding of the complex yet sometimes over-simplified aspects of our hobby.

"The Book of the Home Aquarium" by John S. Vinden, F.Z.S., published 1961, price 2s. 6d., by Pan Books Ltd., 8 Headfort Place, London, S.W.1 is, in my opinion, outstandingly the best value-for-money book on the market today. Its low price should not in any circumstances deter the would-be purchaser, as it contains a wealth of information lacking in some books over 20 times its price. Although dealing with the keeping and breeding of the numerous species of fish in a generalised as opposed to an individual manner, it is nevertheless a book of exceptional merit. Chapters are provided on the aquarist's basic equipment, aquatic plants, British native fishes, foreign coldwater fishes, popular tropical fish, aquatic diseases and parasites, advanced fishbreeding and marine aquaria, together with an appendix of species suitable for the "community tank", listing both common and scientific names and approximate body lengths.

All in all it is an exceptionally handy pocket reference book and one I would never be without.

* * *

"ROGUE" FISH

Generally speaking tropical fish are most docile "pets" although there are of course, certain outstandingly exceptions. A typical example is the notorious Piranha (*Serrasalmus spp*) a member of the large Characin family native to the Amazon region of South American which swarm in the rivers and streams in large numbers, and which will rip to the skeleton within minutes any luckless human or animal falling into the water. Surprisingly enough, however, one often hears complaints of "Rogue fish" in a community tank, even Swordtails, Three-Spot Gouramis, Black Widows, Rosy Barbs and Pearl Gouramis being cited amongst the worst offenders. The cause of bullying amongst fish is often only too apparent to even the raw beginner. When selecting fish for a community display one should always endeavour to match them as equally in size and temperament as possible. It is courting trouble to introduce a 4 in. Angel Fish, for example, into an aquarium containing Neon Tetras. The Angel fish will soon learn that his companions will flee if chased, this, in time, becoming a sport, much to the misery and discomfort of the other fish.

There are, of course, several species well-known for their bullying disposition, and mention of them here might give advanced warning to their prospective purchasers. The Tiger Barb (*Barbus tetrazona*), a native of Borneo which attains a maximum body length of approximately 2 inches is, undoubtedly, one of the leaders in the "Rogue fish" field. Although widely sought after as a fish for the community tank, it is a most boisturous specimen, probably doing best in a tank devoted exclusively to its own kind. Amongst other offenders the Serpae Tetra (*Hyphessobrycon serpae*), Paradise Fish (*Macropodus opercularis*, *Badis Badis*, Jewel Fish (*Hemichromis bimaculatus*), Black-Line Tetra (*Hyphessobrycon scholzei*), Red-Eyed Tetra (*Moenkhausia oligolepis*), Tinfoil Barb (*Barbus Schwanenfeldi*), Bumble-Bee Catfish (*Leiocassis siamensis*) and American Flag Fish (*Jordinella floridae*) deserve mention.

Surprisingly enough, the Siamese Fighting Fish (*Betta splendens*) is seldom a troublesome species if only one male (or one male and one female) is kept in the aquarium. The golden rule to remember when keeping fighters, of course, is that no two males should be housed in the same tank. Failure to observe this rule will mean almost certain death for one of the fish, with the distinct possibility of the survivor succumbing through damage received in the "battle".

* * *

FLAG-TAILED TETRA

A species which would appear to have become much more widely available on the British market over recent years is the Flag-Tailed Tetra (*Prochilodus insignis*), a member of the large Characin family, native to the Amazon Basin Region of South America. In its natural habitat it is stated to reach a body length of approximately 12 inches, although only half this size would appear to be reached under domestic conditions. The species is omnivorous in diet, vegetable foods such as lettuce, spinach and algae being accepted as readily as the meaty foods such as *Tubifex*, white worm, chopped or shredded earthworm, etc. Its basic body colouration is of a lightish-grey, with touches of yellow appearing on the finnage. Its main attraction is its large, spreading tail, horizontally crossed with parallel black stripes. *P. insignis* is a vigorous jumper, so it will be found advisable to keep the aquarium covered with a piece of tight-fitting glass. There is no record, as fas a I can trace, of it ever having been bred in captivity.

THE JUNIOR AQUARIST

Uses of the Greenhouse in reptile keeping

by Andrew Allen: *a 15-year-old contributor*

ABOUT THREE YEARS AGO I was struck by the need to keep my Reptiles and Amphibians in more spacious and natural conditions than I was then able to afford. My Reptiles were then kept in several large vivaria which, though adequate, did not provide a chance to study the inhabitants in their everyday habits.

As accommodation in the house was limited I could not keep a six foot, or so, container in any of the rooms and by the outside arrangements I was unable to contemplate a heated outbuilding. My thoughts then turned to a reptiliary, as mentioned by so many authors. But here again, there appeared to be several inadequacies—such as not being able to keep agile species like tree frogs, or even wall or green lizards (for all the authors who tried them in reptiliaries confessed to several escapes, and at the price of green lizards I could not afford these). Again the essential open nature of the reptiliary lent it to flooding and excess weathering which would prohibit such species as spade-foot or green toads. It would be easy for falling branches or excess growth to pave a path to freedom, to say nothing of the danger from cats, rats and magpies.

Thus the only alternative seemed to be something on the lines of a cold frame, or a greenhouse. So I bought a greenhouse from one of the major firms. I made a base of large 2½ ft. × 2½ ft. paving stones, cemented at the edges, with provision for a small hibernating chamber at the centre. The greenhouse was erected in an East-West position, fixed and all gaps minutely plugged. Two small panes of glass in a sheltered position were replaced with perforated zinc, complete with a detachable cover. One light was fixed while the other was adapted as a feeding hatch.

A pond was sunk and lined with plastic sheeting but this was found inadequate because of excessive burrowing by green lizards and was replaced with rigid plastic. The interior was set-up with the earth sloping to a central hill, and culminating peak—I have always found that lizards like to exhibit on the highest terrestial point possible. A hardy shrub that at its maximum would be only 2½ ft. high was planted, and an ornamental ivy was trained up the back of the greenhouse. Large rocks were placed in sunny positions and the rest of the earth banked round. The earth was made of a mixture of clay, sand and peat. The slightly undesirable clay was included to provide safe burrowing for the lizards. Rock plants, grasses, and various small ornamental plants were added, with several clumps of moss, and cress and several aquatic plants set in the pool. Numerous long strips of bark and a tree trunk were placed in natural positions and flowerpots were sunk. The internal arrangement with the central hill had the advantage that South of the hill the ground was sun-baked and ideal for lizards, while in its lee the ground could be kept damp, ideal for slow-worms, frogs and newts.

Several advantages soon became apparent. The temperature though likely to soar into the 90's, was easily controlled by normal greenhouse methods. In winter the pond never froze and insulating material could be packed to a good depth without fear of rotting. I have, after the last two winters, had a 100 per cent emergence from hibernation. Another very great advantage is that the relative humidity can easily be controlled. With judicious watering the lizard holes need never be too wet, while the amphibians need never be too dry. Hibernating conditions can thus be carefully regulated. Rain can be made to fall at the right time to stimulate breeding. The feeding can be carefully regulated. A weekly ration of gentles, woodlice, earwigs, slugs and earthworms in the damper parts can be added—some will be eaten, while others will breed and provide food later. Spiders will soon establish themselves. It is a good idea to set up an ant colony to provide constant food for the toads. Mealworms, stick insects, etc., can be reserved for personal feeding. The wider spaces at the inhabitants' disposal do not seem to deter them from hand-feeding and I had all my lizards feeding from hand within a week of arrival.

The uses of a greenhouse in reptile-keeping are many and they are especially useful where the owner takes holidays because they can be self-watering by condensation, and self-feeding. Some species like marsh frogs can only be kept in the greenhouse. By keeping hardy reptiles in them, accommodation in the house can be reserved for tropicals and breeding pairs. The inhabitants certainly seem to benefit from the bright sunlight, the fresh air (a most important factor), the abundant food, the company of others of their species with which to mate and above all, the ability to do just what they like in nearly unlimited, but carefully controlled, surroundings.

Our experts' answers to your queries

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

COLDWATER queries answered by A. Boarder

The water in my pond is very green. How can I alter this please?

At the beginning of the warmer months of the year many ponds go green through the presence of green Algae. This tiny free-floating plant thrives in water which is exposed to the light. Once water lily leaves grow over the surface they tend to shade part of the water and the Algae is choked out. A good under-water oxygenating plant such as *Lagarosiphon major*, is also a fine plant to grow as it is strong growing and can help to keep the Algae down. Most ponds with a good growth of this plant are kept free from green Algae.

I have a quantity of blanket weed in my pond; can I do anything about it?

Blanket weed or flannel weed can be a pest, especially in freshly constructed ponds. Once a healthy growth of water plants can be obtained the blanket weed can be kept under control. Before this happens you will have to help the existing plants by pulling out much of the weed. If you twist a broken stick among the weed you can get large masses of it out. Do this frequently and you will soon find that conditions will improve.

I have found one or two goldfish in my pond with tiny white spots on them. Is this White Spot disease and how can I cure it?

From your description it appears that the fish are attacked by White spot disease. This is not easy to get rid of in a pond. There are cures on the market but I have had no personal experience with them. The cure is to understand the metamorphosis of the pest and then you will know how to combat it. Whilst the parasites are under the skin of the fish they are almost impossible to kill. When they mature they drop from the fish to the bottom where they encyst. After a time fresh parasites emerge and swim around to find a fresh host. It is probable that where healthy fish are concerned many of the young parasites would not be able to get contact with a fish and so would soon die. One of the best preventives to this trouble, and many others, is to ensure that the fish are kept in good condition all the time. Over-feeding and over-stocking are two of the worst happenings to upset the balance of a pond. If fish attacked by white spot are changed from one container to a fresh clean one every day the cysts will be washed away before the young parasites emerge.

I have a freshly made concrete pond and some goldfish I put in have died. Is this because of free lime in the water?

A strong concentration of lime in the water could kill the fish. Once the concrete has set it should be well soaked by leaving it filled with water for a few days. It should then be almost emptied and scrubbed round with a stiff broom. After another refill the same process should be repeated. The water should then be quite safe. A lot depends on the depth of the pond. The shallower it is then the more will the water be impregnated with lime.

I have a number of small red worms in the mulm at the bottom of my fish tank. What are they and are they harmful?

The worms are Tubifex and can be eaten by the fish as long as they are not over-fed with other matter. The presence of these worms sometimes indicates that there has been some over-feeding with dried foods as the worms breed and feed in such decaying matter.

I have found some lice on my orandas. I have picked them off. Is there anything else I can do?

Sometimes the lice, *Argulus*, attach themselves under the fish near a junction with a fin where they are very difficult to see. It is fairly easy to clear a fish of the lice by giving it a bath in Dettol solution. This must not be strong, only a teaspoon to two gallons of water. Even then the fish must not be left in it unattended. If the fish turns over remove it to fresh water immediately and in any case in three or four minutes. The lice will leave the fish as soon as it is immersed in the solution.

I am having trouble with Fungus disease with my fish in an outdoor pond. I have tried different cures with varying success. What can I do to prevent the disease?

Fungus disease attacks fish which are either damaged or in bad condition. Fish have a mucus covering which is slime-like and this protects the fish from diseases and pests. As long as this covering is intact the fish is able to shrug off most troubles which could otherwise attack it. The best way to deal with Fungus disease is to prevent it. This might sound difficult but it is quite easy as long as the fish are kept in good condition. Although the spores of the disease and others may be present in the pond it is usually only when a fish is out of condition that it is attacked. Therefore keep the fish healthy by not over-feeding with dried foods and by not over-stocking. It is far easier to keep a small number of fish in a pond in good condition than it would be if the pond was over-stocked.

I had a water lily a few weeks ago and was advised to plant it in a container with John Innes potting compost No. 2. Since doing so the water appears to

Fantail goldfish

have become foul and I have lost some goldfish. Could the soil be the cause?

It is possible for the potting compost to have polluted the water and caused the death of the fish. This compost contains sulphate of potash, superphosphate, lime and hoof and horn grist, apart from the loam, peat and sand which makes up the bulk. In a small pond this mixture could cause pollution and be dangerous to fish. The best thing to use as a potting compost is just a piece of old turf. The less fertilisers in the compost the better as the lily will be forced to send out its roots to search for nourishment. It will find this in the mulm and droppings from the fish and so perform one of its most important functions, which is to help to keep the water pure. The more it is fed artificially the lazier it will be.

I have had a large goldfish in a tank in the house and would like to put it into the pond in the garden. When it is safe to do so?

The fish can be put in the pond when the water has warmed up somewhat. When you do so you may find that the water in the pond is much warmer later in the day, especially a warm one. Before letting the fish go float a container in the pond with the fish in it so that the water in the container can get near to the temperature of the water in the pond.

What are the breeding habits of the green Tench?

Tench breed in a manner similar to that of goldfish. The male has a thickened front to the pelvic fins. The male chases the female vigorously through water plants, usually in the shallows and near the surface of the water. I have bred these fish for many years and even had two-year-old youngsters breed. The rearing of the fry is carried out in the manner as for goldfish.

I have had one or two goldfish die in my pond and they show discoloration and bruising on their bodies. There are a number of frogs and tadpoles in the pond. Could these have killed the fish?

A male frog could kill a fish and tadpoles can eat all the mucus from a fish and so leave it prey to pests and diseases. A healthy fish is not likely to be attacked by tadpoles but I have known a sluggish fish to have many tadpoles feeding from it. Toad tadpoles will not be eaten by goldfish once they become about half-grown. Frog tadpoles can be eaten by the fish as long as they do not grow too large. Once a tadpole is about fully grown it can swim very quickly and cannot be caught by the goldfish. This is the stage when they could be dangerous.

How can I trap a great water diving beetle in my pond?

Go quietly to your pond at night armed with a strong torch and a net. You will probably see the beetle at the surface and it is quite easy to catch it then. Many pond pests can be caught in a similar manner. Even water boatmen can be caught with the fingers if you are quick, at night with the aid of the torch. Many such creatures stay at the surface at night and do not appear to be disturbed by the light of a torch.

tropical fish-keeping queries answered

Is it true that the guppy may be kept in a heated marine tank?

The guppy will live in a tropical marine tank, provided the change from fresh to salt water is brought about very gradually.

Some few months ago I purchased a plant called *Apomogeton ulvaceus*. Recently, however, the foliage has withered away. The corm, which I examined the other night, shows no signs of decay. Can you tell me what is ailing this plant?

Many plants of the genus *Apomogeton* have a rest period. In a word, the leaves die back and the plants become dormant until fresh growth commences again. It is said that a slightly lower temperature helps enormously to build up the strength of a resting *apomogeton*.

Please name a few foods for *Daphnia* that I am attempting to breed for live food for my fish in a kitchen sink sunk outdoors.

Yeast, *Infusoria*, or dried blood. The first and last should be stirred round in about a pint of tepid water. Enough of the particle-filled solution to fill a tablespoon should be emptied into the sink twice or thrice a week.

What is the life-span of a common paradise fish (*Macropodus opercularis*)?

Given proper care and attention, the paradise fish should live for upwards of five years. We know of one that lived eighteen years.

All the rasboras I have read about appear to live in the natural state in Indonesia or the Malay Archipelago. Are any species found elsewhere?

The genus includes fishes indigenous to East Africa, Japan, China, India, and the myriad islands stretching almost to Australia.

Continued on page 498

tropical queries

continued from page 497

If I planted the surplus *vallisneria* from my tropical aquarium in my garden pond would it stay alive at the lower temperatures?

Vallisneria has a wide temperature tolerance, but will not endure an English winter outdoors save in very sheltered places or in water warmed by a nearby industrial plant.

Does it harm a purchased *cryptocoryne* plant to cut its broken roots back before setting it in the compost?

The short answer is no. But make certain that the roots are cut back to healthy tissue, and with a razor blade or sharp scissors.

Is it a fact that a bright pink colour can be maintained and perpetuated in red *planorbis* snails merely by feeding them certain foods?

We do not know that it is a fact that red *planorbis* snails can be colour-fed, but from all accounts a diet of lettuce, the pulpy flesh of a ripe tomato, and moribund tubifex worms does help to maintain the attractive coral-pink hue.

The cryptocorynes, sagittarias and elodeas I have in my aquarium flourish well, but I cannot get the submerged form of Indian fern (*Ceratopteris*) to stay alive for long. Does this plant require very special treatment?

If you can grow cryptocorynes and sagittarias in your aquarium then the water should suit Indian fern. In all probability your trouble is the lighting. Indian fern does demand plenty of bright top light. It also stays around longest in a tank devoid of snails. Snails will soon reduce the foliage of Indian fern to shreds.

May the pests sometimes found about a house such as clothes' moths and tiny spiders be fed without danger to one's fish?

Clothes' moths may certainly be fed to aquarium fish. Spiders, too, but as spiders are enemies of flies, midges, tiny moths and various pests' larvae they should be preserved rather than destroyed. If you are one of those people who cannot stand the sight of a spider around the house the best thing to do is to trap it in the bristles of a brush and shake it off outside.

I have built myself a small but handsome fish house and wonder whether I could add to its attractions by growing orchids on shelves fitted above the tanks. If so, please give me the names of a few orchids that I might try.

There are a number of orchids that will flourish in a heated fish house provided, of course, they are given a position out of bright light and are potted up correctly in sphagnum moss or osmunda fibre. Odontoglossums, cypripediums, and masdevallias are among the most suitable orchids to buy. But before you purchase any—orchids are not dirt cheap—we advise you to borrow a book on their culture and care from your local public library.

Water hawthorn

by B. Fry

ONE OF THE EASIEST and most rewarding of the plants for a garden pond is *Aponogeton distachyon*. This plant from South Africa is popularly known as the water hawthorn or Cape pond flower. Provided it is rooted below ice-level (the plant flourishes well in anything from about 8 to 30 in. of water) it is perfectly hardy over the greater part of the British Isles. But as is only to be expected, it always looks its best in the more favoured (climatically speaking) parts of the country.

The white flowers have jet black anthers and open out from the end of a forked stalk. They emit a fragrance that may be likened to the smell of vanilla pods. The elongated oval leaves, that float on the surface, measure about 1½ in. across by 4 in. in length. They are dark green above and lighter green below. Both leaves and flowers may persist well into the winter until really cold weather sets in.

If *A. distachyon* is planted in a pot, see that this is of a size large enough to accommodate a spreading rootstock (tuberous). A regular 16 pot (9½ in. diameter by 9 in. deep) or its equivalent in a plastic container will suffice for a few years, after which division of the cramped rootstock and a change of compost is called for.

The water hawthorn has utilitarian as well as ornamental uses. In South Africa the tubers furnish the natives with a food and, according to Clarence Elliott, an erudite writer on garden plants, the edible flowers are worthy of the attention of the culinary experimentalist. It is also said that an extract of the flowers is used in the manufacture of certain scents.

Fish shows success of Thames clean-up

A 15-INCH CARP is swimming happily around a pool near Guildford unaware of the interest its capture in the Thames off Millbank has caused among Greater London Council scientists. For when it was trapped in riverside workings opposite the Tate Gallery, the presence of a freshwater fish that far downstream shows that efforts to clean up the Thames are having results.

During the past 18 months, freshwater fish have been frequently trapped at Fulham power station but the arrival of the carp off Millbank is a first sign that fish are returning to this part of the river.

The carp was found by workmen building a riverside wall as part of the GLC's road widening scheme. "It was in very good condition" said ganger Mr. David Clements, who picked it out and placed it in a recently completed fountain pool for a couple of days. He later placed it in a pool owned by a friend near Guildford.

A few days after the carp's stranding in the river works, a 12 inch. roach was found in the same spot—another sign that freshwater fish are moving further down stream. Since then, workmen claim to have seen several more freshwater fish around the workings.

The Gudgeon

by B. Fry

THE GUDGEON makes a useful addition to a garden pond; for though it does not seek the limelight it performs the valuable service of eating the dead food the more showy and readily seen species miss. It is a member of the family *Cyprinidae*, and is known to science as *Gobio gobio*. It is native to the whole of Europe, except Norway and southern Italy, and extends eastwards across Russia into China. In Britain it does not occur naturally in Cornwall, part of Wales, the Lake District and Scotland.

In the natural state it is found in still and running water, that is to say in isolated ponds (not commonly) and rivers and streams. Some anglers use it as live-bait. It attains a length of about 6 in., but larger specimens even up to 8 in. are found.

The body shape is elongated and flattened below, with somewhat compressed sides tapering towards the tail. The coloration is grey-green to blackish on the back shading to greenish olive to light brown on the flanks, that are marked with dark streaks and spots. In young fish the dark spots are very noticeable along the middle of the sides. The underparts are silvery; the fins yellowish, with dark spots in the dorsal and forked caudal fins. A barbel adorns each corner of the mouth. The scales are large.

The food of the gudgeon is insect larvae, tiny crustaceans, the eggs of fishes, and various worms. It will also take some green food—the fresh growth of *elodea* or *potamogeton*, for example. Food is looked for on the bottom. In point of fact, the gudgeon seldom ventures away from the bottom, or from near the bottom. But it is not necessarily a fish of the deep; it likes to explore the shallows, and it will swim into the shallows at spawning time, which is April to June or July. Then the love-hungry sexes—essentially the species is gregarious by nature—make for the spawning ground. There the females will be hotly pursued by the males. Like some other carps, the eager males are distinguished by whitish tubercules, or blebs, on the head. The eggs are deposited on stones or among stones interspersed with tufty plants or algae. The fry are rapid-growers.

The gudgeon settles down very well in the aquarium, provided plenty of swimming space in well-aerated water is available. And it soon becomes quite tame. The food that suits an aquarium gudgeon best, and is the most readily procurable, is meat, anglers' maggots, and worms.

Unlike most coarse fish we know, the gudgeon makes good eating; for it has an unusually delicate flavour. The French, who understand all about food, serve the gudgeon in several ways, though usually fried, in butter, perhaps, and flavoured with herbs. Or in a wine and herb sauce. Or as a garnish to other freshwater fish, such as fat, stuffed carp. Or coated around their middles with egg-and-breadcrumbs so that, as Madame Prunier remarks, they look as though they are wearing little muffs

Equipment review

"The Super Cascade" Fountain and Waterfall Pump

THE LATEST DEVELOPMENT in fountain and waterfall pumps comes from Elsworthy Electronics Limited. It is aptly named "The Super Cascade" and retails at 8 guineas.

An outstanding feature of the Super Cascade is its technique of driving the impellor which is coupled to the motor by a magnetic force, consequently, the motor is able to be housed in a separately sealed moulding which eliminates the possibility of water leakage into the motor housing, which would normally occur if there is a direct spindle drive between the impeller and motor.

The Super Cascade operates on a safe voltage of 24v. and is supplied with a completely enclosed mains transformer and adjustable fountain rose and waterfall outlet.

The whole kit is beautifully presented in an expanded polystyrene packing with glossy display sleeve, and retails at 8 guineas.

Enquiries to: Elsworthy Electronics Ltd., 27/31, Broadley Terrace, London, N.W.1.

Suitable Blennies for the Aquarium

by Bill Sims

MORE AND MORE aquarists are beginning to discover the great attraction of keeping cold-water marine life, for though the colours and shapes of tropical marines are outstanding, those of our native fishes are not to be despised. In addition there is a lot to be said for learning the different techniques of managing marine aquariums with less expensive fishes which you can collect for yourself.

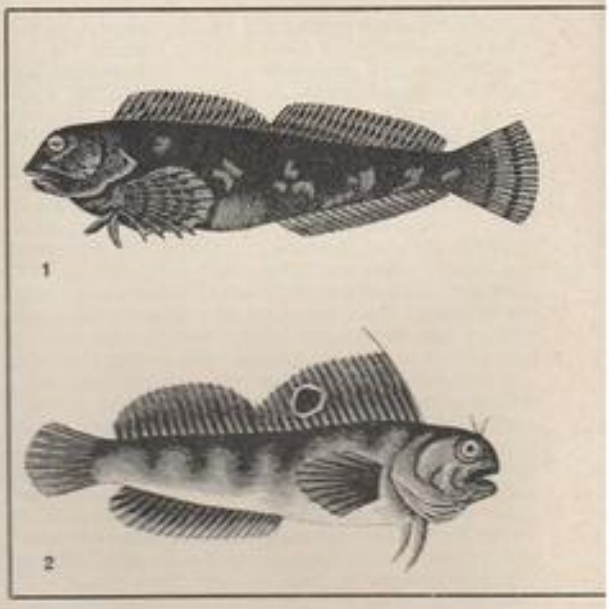
The blennies of our coast are excellent subjects for keeping in a cold-water marine aquarium, but do make sure that it is kept cold for though some blennies frequent rock pools that heat up considerably between tides, they cannot stand too much heat and live far better in the cold. Use plenty of rocks and weeds for a blenny aquarium, and try to arrange an above-surface ledge of rock onto which the blenny can climb. The pectoral fins and ventral fins of some blennies are used like hands and feet for crawling about, and while this is mainly when they are in the water—and thus lighter—they are sometimes used to drag the fish onto an above-surface ledge. This is not to "sun" themselves, as some folk think for to expose themselves to the sun for any length of time would be fatal to any blenny as they must keep their gills damp. Therefore, if you do arrange a rock ledge at or above water level, be sure to drape wet seaweed over it to form a dank cave. Inside this your blenny will often conceal himself.

Then it is just a matter of obtaining your blenny and that, fortunately, is not at all difficult if you have access to the coast anywhere—and who hasn't, nowadays? Choose a beach where there are some rock pools and a time when the tide is out. Search each pool carefully, looking under the bladder wrack where it hangs in festoons down the side of the pool. Most likely the first fish you find will be a Shanny. This is one of the most common of our blennies for it is present all around our coast. It is an interesting fish because of the variation in its colouring and blotchy markings. In length it can be up to six inches while the colour is greenish-yellow, darkened with blotches of black, brown, or grey. Many blennies have a small filament sprouting from just above the eyes. The Shanny does not so this feature can be used to distinguish it from others of a similar appearance. Although the food of the Shanny is mainly small water creatures of many kinds and some fishes, it does also eat some seaweed. In captivity it is easy to keep and soon learns to eat scraps of raw fish, pieces of mussel, and similar foods.

With a similar taste in food, the Butterfly Blenny, *Blennius ocellaris*, is very much harder to find for it has now become fairly rare. Nevertheless, it may occasionally be found among thick masses of seaweed in the larger pools towards the lower tide marks. It is up to 7 inches long. This blenny is easy to recognise for it has the first spine in its dorsal fin extended beyond the others and there is a large "eye-spot" on the dorsal composed of a round black spot surrounded by a thin white line. In addition the butterfly blenny has a filament above its eyes.

Montagu's Blenny, *Blennius galerita*, is a smaller fish than the first two mentioned, being only 3 ins. long. This one, also, has the filament on the head above the eyes but, in addition, this filament is of an orange colour and it is connected to the dorsal fin by a series of small tentacles which sometimes show clearly and at other times are barely discernible. The Montagu's Blenny lives in the tide edge among rocky pools and seaweeds and is somewhat more colourful than the first two described. It is brownish-grey with darker bands but over this colouring is a series of bluish-white spots. The caudal is of an orange-red colour like the filaments over the eyes. Being smaller, it is sometimes more convenient to keep in an aquarium but always remember of all blennies, that they have powerful jaws and teeth so that smaller living creatures are rarely safe from them. The Montagu's blenny is inclined to skulk under rocky ledges, keeping out of sight for long periods.

Looking something like the others but being of a larger size, is the Tompot Blenny, *Blennius gattorugine*. This



1

2

reaches a length of nine inches and has acquired its name of "Tompot" because it is so often found in lobster pots which it has entered to steal the bait. It will not normally be found in rock pools because its normal haunts are in slightly deeper water among rocks. The simplest way to catch one of these is with a hoop net baited with any kinds of fish, or crushed-up shore crabs. Lower this to the bottom near rocks and after five minutes haul it up very smartly.

Belonging to a slightly different group, though still with the name of Blenny, is *Carelophus ascanii* or Yarrell's Blenny. This fish is up to 7 ins. long, and lives in similar places to the tompot, so may also be found in lobster pots or the hoop net. In colour the Yarrell's Blenny is reddish-brown, marked with blotches of lighter and darker colours. It is a longer, more slender fish than those already described. The filament over the eyes is supplemented by smaller ones farther forward and by quite large ones on the first spines of the dorsal.

An extremely interesting fish is the Viviparous Blenny, *Zoarces viviparus*. Although this fish is reputed to reach a length of two feet, such big ones are rearly seen and a more normal size would be less than a foot. It would need a much larger aquarium but would be worth the extra trouble. The females mate in winter and carry their young about inside themselves for 3-4 months. When released, the babies are 1 to 1½ inches long, perfectly formed and well able to fend for themselves. A large female can give birth to about 200 at a time. This fish should be sought among seaweed lying on tumbled rocks near the lower tide marks, while the young ones may be almost anywhere in that sort of region.

All these blennies have been kept in captivity and all are good feeders, so that they are most suitable for a first attempt at keeping salt-water fishes.

1 The Shanny
Blennius pholis

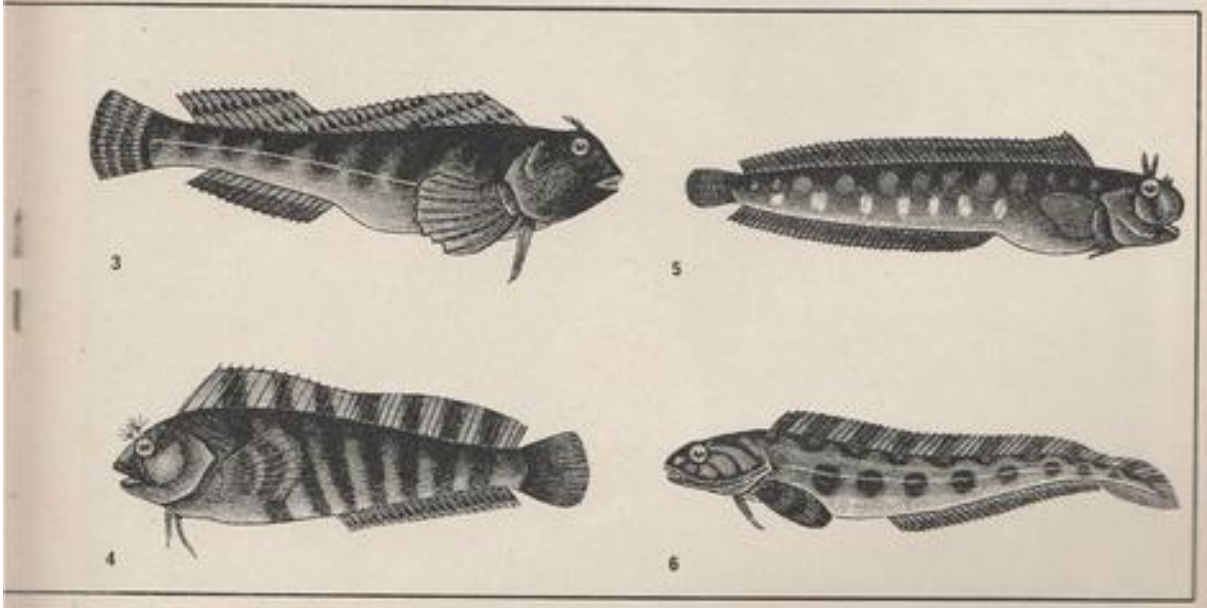
2 Butterfly Blenny
Blennius ocellaris

3 Montagu's Blenny
Blennius galerita

4 Tompot Blenny
Blennius gattorugine

5 Yarrell's Blenny
Carelophus ascanii

6 Viviparous Blenny
Zoarces viviparus



The National Furnished Aquarium Exhibition

ORGANISED BY K. B. Tropical Fish of Bradford in conjunction with Interpet Ltd. of Dorking, Surrey and the Bradford & District Aquarist Society, the show was staged at St. George's Hall, Bradford on 12-16 June. Over 120 tanks formed the focal point of the show with additional exhibits by societies and traders. Competitions for Freshwater and marine classes were held the results of which are published below.

Attendance figures nearly reached 10,000 and the organisers expressed their satisfaction at this response from the public.

The results were as follow: 1, Best Aquarium Exhibit in Show, G. Binks, Leeds, 81½ pts; 2, J. E. Taylor, Blackpool, 80½ pts; 3, D. Shields and M. Stray, Halifax, 77½ pts.; 4, S. Hill, Riddings, 76½ pts.; 5, J. E. Taylor, Blackpool 76 pts.; 6, Mr. and Mrs. R. Stringer, Leeds, 75½ pts.; 7, F. H. D. Vicker, Ilford, 75½ pts.; 8, S. Hill, Riddings, 74½ pts.; 9, J. Goodison, Bradford, 72 pts.; 10, Best Marine, P. Moorhouse, Huddersfield, 78 pts.

The scene at St. George's Hall, Bradford.

Tropical aquarium carps

A popular section of the aquatic hobby

by M. J. Parry

TROPICAL CARPS are represented in the aquarium by three main groups of fish, the danios, barbs and rasboras, and combine to form the largest group of freshwater fishes available to the aquarist. They are natives of Asia, Africa and, in particular, the Far East, including Bengal, Borneo, Burma, India and the Malay Peninsula. Unlike the large characin family which I dealt with in a previous article (Fishes of the Characin Family, *The Aquarist*, March 1966). The group possesses no adipose fin, nor teeth. All are scaled, with two pairs of barbels (somewhat indistinct), present in many species. The group is relatively hardy, preferring a well-lit, well-planted aquarium, maintained at a temperature between 68-75°F, with the water being of an acid nature, pH 6.4-6.8. All in all the group comprises of peaceful species, if kept with companions of their own size, a noted exception being the Tiger Barb (*Barbus tetrazona*), a lively colourful fish which tends to indulge in a little fin-nipping.

The Danio family consists of six highly-popular species, the Zebra Fish (*Brachydanio rerio*), the Spotted Danio (*Brachydanio nigrofasciatus*), the Pearl Danio (*Brachydanio albonlineatus*), the Leopard Danio (*Brachydanio frankei*), the Giant Danio (*Danio malabaricus*) and *Danio devario*, the latter being a comparatively recent introduction to the aquatic scene. All six species are active, shoaling fish, in their native haunts being found in both standing and fast-flowing waters, with high oxygen content. They are exclusively surface-swimming fish, taking their food from the same level of water. Their diet should, in the main, consist of finely-powdered dried food, which together with occasional feeds of *daphnia* will do much to keep the fish in good health. Given good environmental conditions, coupled with good feeding, the life span of the family can be anticipated to be upwards of two years.

For breeding purposes, although not always essential, it will be found a wise policy to separate the chosen breeding pair to isolated aquariums, where they should be conditioned for several days on lavish amounts of chopped *tubifex*, white worm and *daphnia*. Sexes are easily identified by the plumper appearance of the female over the slimmer male. The breeding tank (12 in. × 6 in. × 6 in. being adequate) should be set up to include acid water, pH 6.8, well planted in the centre with hornwort, *nitella*, or *myriophyllum* (or any other such bushy aquatic vegetation), with the bottom covered with three layers of glass marbles.

Both fish should be introduced into the breeding tank late in the evening, in order to rest before the rigours of spawning which usually occurs around dawn of the following day. The actual spawning act is denoted by wild skirmishes around the aquarium, the male chasing a fleeing female who, at varying intervals, expels her transparent eggs, which are immediately fertilised by milt ejected from the male. The semi-adhesive eggs pass between the crevises of the marbles, thereby safe from the parents, who are avid egg-eaters. Upon termination of spawning, which will be evident from the much slimmer body of the female, both parents should be removed. Hatching occurs within 36-48 hours, the fry becoming free-swimming on the fourth day, after absorbtion of their yolk-sacs. The raising of the newly-born fry will be discussed later in the article.

The Barb family form the greater part of the tropical carp group, being represented, according to authoritative sources, by some 1,600 species, not all of which, of course, are available to the hobbyist. A great deal of argument has raged over many years as to whether the Barb species should be known under the scientific name of *Puntius* or *Barbus*, and as *Barbus* is the mostly used term in the area in which I reside (South Wales) it is to be hoped that its use in this article will meet with the approval of the country as a whole.

Barbs are useful additions to any tank, for they are excellent scavengers, constantly scouring the aquarium bottom for any morsels of food, missed by the other fish. It should not be assumed by this, however, that these fish will live on uneaten food alone, or that they will counteract any gross overfeeding. The family are omnivorous in diet, *daphnia*, *tubifex*, white worm, Bemax, chopped spinach and prepared dry food being accepted with equal relish. They will exist in water temperatures ranging from the middle sixties (F) to the middle eighties, 75°F being a good interim temperature. Some of the smaller barbs worthy of a place in the decorative tank may be chosen from the following: the Golden Barb (*Barbus schuberti*) developed as a "sport" (freak from the half-banded barb (*B. semifasciolatus*) by a Mr. Thomas Schubert of Camden, New Jersey, United States of America; the Nigger Barb (*B. nigrofasciatus*), which attains a maximum body length of 2½ inches, and when in breeding condition offers itself as one of the most magnificent of all freshwater aquarium fishes, the body being of a rich ruby coloration, vertically crossed by three broad black bands; the Checker Barb (*B. oligolepis*), another handsome and diminutive aquarium fish, its large scales giving the appearance of a miniature chess board; Cumming's Barb (*B. cumingi*), a fish adorned with two large black spots on each side of the body, one behind the eye, and the other at the tip of the caudal

Continued on page 505

The Golden Medaka

Oryzias latipes

by J. H. Soanes

THE MEDAKA is a fish that is included in most books about our hobby. Although I have kept fish for many years it was only a short time ago that for the first time I saw fish of this species offered for sale. There are two colour varieties of medaka, one a grey-green fish, the other a golden variety. The latter is by far the more attractive of the two. Apart from their very pleasant colouring and quiet disposition, these fish are worth keeping just to observe their unusual method of reproduction. In their natural habitat they range from China, through Korea, Japan and Malaya, to Java. With such a wide distribution as this their tolerance of temperature variation must be much greater than that of most of the tropicals we keep. I have seen it quoted that they can stand temperatures from 90°F. down to just above the freezing point of water.

The golden medaka is not a brilliantly coloured fish but it is nevertheless extremely attractive. Its body is gold with numerous green and blue spangles on the posterior half. The fins are paler than the body and the caudal fin has red borders along its top and bottom edges. The eyes are endowed with emerald green irises that really flash in a good light. Sexing the fish is a comparitively simple task. If they are in good condition the fullness of the egg-laden female is an obvious guide, but if they are out of condition the male often appears deeper than the female so other features have to be used. The specimens that I have exhibit a most unusual feature for egg-laying toothcarps; this is that the females are better coloured than the males. Their bodies are a much richer gold and their caudal fins have more intense red markings. However, the males have deeper anal fins and longer dorsal fins. The females can grow to about one and a half inches, the males tend to be a quarter of an inch or so shorter.

The specimens that I purchased were sadly out of condition. They were fed generously on chopped meat and fish, water fleas and white worms. After just one week on this diet the females were so full of roe that they resembled very gravid female guppies. The colours had intensified in both sexes and the males had begun to show interest in the females.

The breeding tank was an 18 in. × 10 in. × 10 in. with a very thin layer of gravel on the bottom to cut down reflections that might worry the breeders. Several cryptocorynes, planted in polythene pots, were introduced, and a large mass of naias and cabomba was allowed to float freely an inch or so below the surface. These plants are necessary because of the natural method of reproduction of the medaka. The water was about eight inches deep, the hardness 150 p.p.m., the pH 6.8, and the temperature 77-79°F.

A quartet of two males and two females was introduced into the tank in the evening. The following morning both females were carrying large clusters of eggs held closely to their bodies around the region of their vents. It was difficult to estimate how many eggs there were. These eggs were carried for an hour or so, a few at a time being rubbed off onto the naias or cabomba. While the eggs were being carried by the females the males approached and fertilised them. By midday the females were free of the eggs which could now be seen hanging among the plants, mostly singly, but some in groups of two or three. This process was repeated every morning for a week. Every other day the plants were inspected for eggs, any that were discovered were removed and placed in a jar floating in the tank.

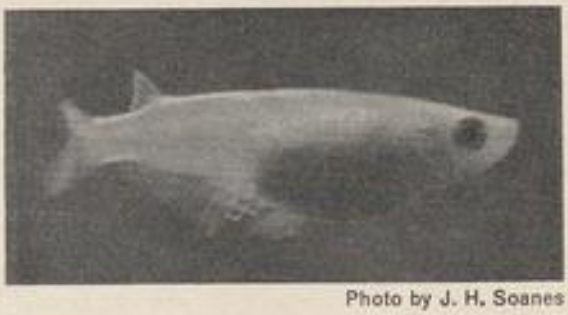


Photo by J. H. Soanes

Female golden medaka carrying eggs.

According to all the literature that I had available the parents do not eat their eggs so long as they are well fed. My breeders were fed three times a day but it was obvious that the number of eggs collected fell far short of that produced by the females. Within three or four days of being collected about ten per cent of the eggs in the jar had fungused. I decided that I would try to overcome the loss of eggs due to these two factors; the eggs being eaten, and the high proportion becoming fungused.

To eliminate the first factor I thought I would try to remove the eggs from the females artificially. This proved to be much simpler than it might at first appear since the females always produced eggs once a day within an hour or two of daylight. Once they had done so all I had to do was watch to see that the males approached and fertilised the eggs. Each female was then netted in turn and the eggs gently removed by careful strokes of a small squirrel hair paint brush. The eggs kept together in large groups and were hard enough to be held between the fingers without suffering damage. This method of removing the eggs proved neither detrimental to the eggs

nor to the female fish. One interesting fact arose from all this and that was that, whereas in every book that I had referred to the number of eggs produced at one time was said to be about a dozen, I found that the number ranged from the upper twenties to the upper thirties.

To help keep down the number of eggs being affected by fungus I decided to adopt the same method of keeping the eggs until hatching as I use when breeding Aphyosemions and other members of the killifish group that spawn on mops. The eggs that I had stripped from the females were placed in a sandwich box measuring 6 in. × 4 in. containing an inch of the water from the tank in which the parents were spawning. To this had been added ten drops of a five per cent solution of methylene blue. This container was then kept at a steady temperature of 78°F.

After two or three days the embryos could be seen developing in the eggs and their eyes were soon obvious. On the ninth day the first eggs hatched, but most of the fry emerged on the tenth day. At birth the fry were free-swimming but not quite large enough for brine shrimps. For the first three days they were given a liquid fry food, then newly hatched brine shrimps (the liquid food was also given for a further three days for the benefit of the late hatchers and more slowly developing fry). After nine days microworms were included in the diet and fine dry food. The youngsters grew quickly and were soon miniature versions of their parents. In eight weeks they were over half an inch in length.

The golden medaka is an ideal community fish and produces eggs even in the tank with other types of fishes. By using the method I have described above these eggs can be removed and hatched out elsewhere—a very convenient way of breeding fish for the aquarist with only a couple of tanks at his disposal.

Find the fish

by Doreen Thiel

The first is in COMB and also in BRUSH,
The second is in SQUEEZE but not in CRUSH,
The third is in EAST as well as in WEST,
The fourth is in TRIAL and also in TEST,
The fifth is in TEA but not in COFFEE,
The sixth is in SWEET but not in TOFFEE,
The seventh is in LAMP but is not in LIGHT,
The eighth is in PLEASE and also DELIGHT,
The ninth is in SEMOLINA and also in RICE,
The tenth is in SNOW but not found in ICE,
The eleventh is in UNDER but not in BELOW,
The twelfth is in TIE but not in BOW,
The next is in CORN and also in GRAIN,
The last is in STRESS and also in STRAIN.

Solution on page 510

Tropical aquarium carps

continued from page 503

peduncle; and the Cherry Barb (*B. titteya*), the whole of the fish, body and finnage (in the male) being of a beautiful cherry red, horizontally crossed with a black wavy line. Other members of the family worthy of mention are the Rosy Barbs (*B. conchius*), the Ticto Barb (*B. ticto*), and, provided that great care is taken to restrict it to a near-exclusive carnivorous diet, the aforementioned Tiger Barb (*B. tetrazona*).

Many of the barbs will breed at a very early age, some when only three months old. Their breeding procedure is very similar to that of the characin family. The breeding tank should be set up to include acid water, with the aquarium bottom carpeted with well-washed sand or gravel, heavily planted with bushy aquatic vegetation, examples being cabomba, elodea and hornwort. Depth of water should be approximately 7 inches, with the temperature maintained at around 80°F (27°C). In spawning, the male firstly chases the female, and later circles around her, displaying his brightest colours. Eventually, the female will commence to release her eggs, which are immediately fertilised by the male, before they drop to the plants below. Hatching occurs within 24–48 hours.

The Rasbora family has, for many years, been personified by just one species, the well-known and highly popular Harlequin Fish (*Rasbora heteromorpha*). Several other species are available to the aquarist, however, and these include the Elegant Rasbora (*R. elegans*), the Brilliant Rasbora (*R. einthoveni*), the Dwarf Rasbora (*R. maculata*), the Red-Striped Rasbora (*R. pauciperforata*) and the Scissortail (*R. trilineata*). All are excellent additions to any aquarium, and likely to become increasingly popular in future years, as they become more widely available on the British market.

The rasboras have a preference for water of a distinctly acid nature (pH 6.08-6.5) and herein, I believe, lies their successful propogation. Many are the aquarists, for example, who have attempted to spawn the Harlequin Fish, and many are those that have failed. Our German colleagues, renowned for their success with past "problem" fish, for example, the Angel Fish (*Pterophyllum eimeki*) and the Neon Tetra (*Hyphessobrycon innesi*) would seem to be the best authorities on breeding rasboras, though seem to be reluctant to impart their knowledge to a wider circle of hobbyists. Water conditions would appear to be a criterion, as is suitable "conditioning" beforehand. The eggs are stated to be laid on the underside of broad leaves, with up to 300 eggs being deposited at each spawning.

The raising of the newly-born fry of each of the Danio, Barb and Rasbora families can be treated together, their being similar, initially, in size and growth rate. The first food for most fish (excluding livebearers, swordtails, platies, mollies, etc.) is infusoria, which is followed, in turn, by newly-hatched brine shrimp, micro worm, finely sifted *daphnia*, chopped white worm and chopped *tubifex*. Growth of the fry is fast, sexual maturity being reached by the danios and barbs families at around three months old, and a little later by the rasbora group. All in all the tropical aquarium carps form a popular section of the British aquatic hobby, and any aquarist successful in breeding them can be assured of a readily available market.

Be ready for the big event of the British Aquarists' Festival

The "Champion of Champions" Contest

Entries for the "Champion of Champions" contest at the British Aquarists' Festival at Belle Vue, Manchester (26th and 27th October) are well in excess of last year's big entry for the first of these annual awards. There will be more yet, and we want to ensure that everyone qualified to enter has the opportunity.

The Contest, sponsored by *The Aquarist and Pondkeeper*, is open to winners of "Best Fish in Show" awards won at an Open Show, i.e., open to any member of the public and not by invitation only, and where Show Schedules are available. Entry forms should be forwarded by Secretaries within five days of Show date. A gold-plated pin (illustrated above) will be sent to entrants, with an acknowledgment of their entry. Winners who have not received an acknowledgment are requested to contact us; all correspondence to "Champion of Champions," *The Aquarist and Pondkeeper*, Half Acre, The Butts, Brentford, Middlesex.

Closing date for entries is 30th September, 1968. Be sure your entries are sent to us before that date to ensure your place in this premier contest for fish-keepers.

The B.A.F. for 1968 will be bigger than ever; a much larger area at Belle Vue has been allocated to it and all indications point to it being the biggest and best yet.

Secretaries! Entrants! Let us have your entry forms promptly, please.

Closing date, 30th Sept., 1968

Last year's winners in the "Champion of Champions" Contest:
(L. to R.) R. Atherton, 2nd.
B. Darkin, 1st.
J. A. Robinson, 3rd.

Special needs of a public aquarium

Method and materials employed at Brighton

In an earlier article on new developments at Brighton Aquarium we reported on plans and policies in an interview with Mr. Graham Cox, Director of the Aquarium. He now sets out his views on the special problems of installation and maintenance involved in organising a large aquarium.

THE REQUIREMENTS of a public aquarium, as well as its problems, are different in more than degree with those of the private enthusiast. They involve equipment and methods of a special character, beyond the scope or needs of the smaller installations, yet there is much to be gained from a study of the larger field in respect of feeding, diseases, and aquaria management.

The interview with Mr. Cox covered a wide range of topics, and his opinions have the merit of long experience with large and small aquaria. As a hobbyist from the age of twelve, an enthusiast for 20 years, and now director of a large public aquarium, he is well equipped with practical experience; his years as a teacher and his insatiable appetite for reading the literature of fish-keeping have produced an analytical approach to the subject. Always informative, sometimes provocative, his opinions are to be heard with advantage.

Filtration

The filtering of the large tanks at Brighton Aquarium is probably the major item in the staff's list of responsibilities. In the dolphin pool, for example, the daily excreta amounts to 14 lbs. in weight and it is obviously of critical importance to remove or neutralise it at a balanced rate if serious harm to the dolphin is to be avoided.

Mr. Cox sees filtration as falling into two parts; mechanical and biological. The mechanical factor, with its function of removing particles of detritus from the water and avoiding "cloudyness," is of particular importance in a public aquarium. Fortunately it is not a difficult problem.

Biological filtration is concerned with the neutralisation of toxic materials in solution which would have pronouncedly harmful effects on the fish. Mr. Cox learned from his experiments at home that under-gravel filtration is the most effective method, and he had adapted it for the more complex demands of the public aquarium. His method, he believes, is a revolutionary development and it has the further advantage of costing practically nothing.

Here are Mr. Cox's own comments:

Filtration is undoubtedly the Public Aquarium Director's *bete noir*. Cloudy tanks are like cloudy days—depressing, and no matter how much time and money are lavished on the interior decor of the aquarium hall and the tanks themselves, in the final analysis murky water destroys the whole of one's efforts. However, simple abolition of cloudiness is not the complete answer to the problem.

As stated above, I feel that filtration is two problems in one, as follows:

(1) *Mechanical filtration*—making water optically clear and transparent by removing visible particles.

Whilst I have said that water clarity is essential for an appealing exhibit, it is not, of itself, sufficient to guarantee healthy fishes. I have tested different samples of water taken from marine tanks which belonged to friends and other public aquariums all having a common problem—their fishes and invertebrates had the aggravating habit of dying prematurely. In every case, on testing with Nessler's Reagent, I have discovered an intolerably high level of ionised and un-ionised ammonia to be present—deadly toxic to all forms of marine life. And yet their water was gin-clear because ammonia imparts no colour or turbidity to the water.

It should be apparent, then, that to succeed in the keeping of delicate marine animals (and fresh-water organisms for that matter, although their tolerance of ammonia and nitrites in solution is much greater than that of sea-dwelling creatures), one not only requires clear water, one needs chemically wholesome water as well.

Many filters will give clear water. Power filters of the Eheim variety are certainly the best at this in my experience; but acceptable results can be obtained with clip-on outside filters, or corner filters (both surface and submerged, in which an air-lift passes water through glass wool, or a man-made fibre filtration material. One large American manufacturer has even miniaturised the type of filter used widely today in swimming-baths and for clarifying beer, etc. These filters suck the liquid to be filtered through a layer of ultra-fine diatomaceous earth particles, thus clarifying it. Every so often one has to dismantle the filter, wash the old diatomaceous earth off the filter membrane and re-coat it.

However, none of these devices, of itself, is capable of providing the second, more important type of filtration, which is:

(2) *Biological Filtration.* As I explained in my article published in the February 1968 issue of *The Aquarist*, entitled "Marines aux Naturelles," this process consists of encouraging the growth, within the gravel of the aquarium, of large colonies of nitrifying bacteria. These vitally important organisms are capable of oxidising the toxic ammonia and nitrites, produced as waste products by the aquarium's animal population, and by the activities of decay bacteria, into harmless *nitrate* salts.

As is amply shown by the work of Kawai, Yoshida and Kimata (University of Tokyo), Kuhl and Mann (German Federal Research Institute) and by Aritsune Saeki (University of Kyoto), and as I have verified by my own experimentation, the only type of filter capable of encouraging and supporting the growth of nitrifying bacteria on the large scale needed for rapid nitrification is the *undergravel filter*—probably the simplest, certainly the

cheapest, and without a doubt bio-chemically the most effective filter of all.*

*(I must add a note here that undergravel filtration retards plant growth in freshwater aquariums).

All I am doing at Brighton is what any aquarist who keeps abreast of current scientific research could do. I am modifying this venerable Aquarium's presently ineffectual filtration system in the light of what I have read and discovered for myself.

When you next visit Brighton Aquarium, please ask for me, and I will be only too pleased to show you how the new system works, but if you've an eye for clear water and healthy fish, I won't have to tell you which tanks are filtered by my new system and which are filtered by the "old-fashioned" power-filter, concluded Mr. Cox.

Feeding

Second only in importance to filtration the feeding of the exhibits calls for extreme care at Brighton, since the day-to-day value of any exhibit stands or falls on the skill of the aquarist in providing the right foods in correct proportions at the required intervals. A far cry, this, from the home aquarist's random scatter of a proprietary food across the water surface: in the public aquarium the diet techniques are carefully worked out and systematically applied, with constant checks on the results. Carelessness can be costly in valuable fish; overfeeding induces ailment and disease, underfeeding can lead to "cannibalism" in species such as the piranhas which are prone to satisfy hunger by eating their companions.

The food for the dolphins is given scrupulous attention. Content and frequency of their special foods are recorded in detail, and every utensil used is sterilised daily. Mr. Cox, who in his travels has seen £250 worth of (tropical marine) fishes ruined by a single feeding, is not likely to take any chances with his dolphins valued at £2,000 each.

Diseases

Saddening as diseased fish may be to the home aquarist, in a place like the Brighton Aquarium it could be catastrophic. That it is not a serious problem is due to a strict adherence to the old maxim: "Prevention is better than cure".

New specimens are rigidly quarantined and the handling of them is governed by strict rules. When a consignment arrives, the box is never opened up completely, since the sudden glare of light would be injurious to fish that have been for hours or even days in darkness.

At Brighton there is no place for "wet-thumb" methods; the latest anti-biotic and veterinary techniques are employed in conjunction with unrelaxing supervision. The result? Only one minor disease outbreak in three months.

Lighting and Decor

Furnishing and illumination are subject of careful study by Mr. Cox and his staff, who seek to create in each tank a true picture of the exhibits' natural environment. Be it a jungle pool, a tropical river, or an English stream, the setting is being planned to show the fish "at home". Reflected rather than transmitted light is favoured, and new systems of lighting are being developed to this end.

Plants

The use of plastic and other artificial plants is common in America, and Mr. Cox came back from his tour with a dislike for this expedient. They contribute nothing he says, to the true function of aquatic plants in removing nitrogen compounds and carbon dioxide, and apart from decoration their practical value is limited to use in tanks of plant-eaters, such as tinfoil barbs, the larger cichlids, Metynnis sps. etc.

Furnishing

If plant techniques in America disappointed Mr. Cox he found much to admire in the field of decor and furnishing. He was impressed with the emphasis given to the "atmosphere" of the tanks, in creating a true and vivid picture with the use of natural rocks and other components. This is his aim at Brighton, and though the American's use of bulky and rare materials has had to be modified, he has developed a way of achieving the same effect with little trouble or expense.

Sheer weight and bulk exclude much of the American material, and the expense of equipping tanks with coral rules out its use at Brighton—at least in its natural state. But visitors to the Aquarium will still see the fish swimming among the reefs and rocks of their native habitat, all contrived from fibre-glass!

The method is simple, inexpensive, and produces an almost weightless material that is virtually indestructible. A model of the desired background is laid out on a concrete floor, using natural rocks and boulders to cover the area of the tank to be equipped. A mould is taken by flowing on liquid fibre-glass, which after setting is peeled off and coloured to produce a most realistic effect. The mould is then trimmed to size and fitted into place.

Experiments in moulding coral formations, too, have been very successful, and the method offers immense possibilities in "changing the scene" in the tanks at frequent intervals.

In what is little more than a mere glimpse at the exciting developments going forward at the Brighton Aquarium, I hope I have given some idea of the enthusiasm and dedication of Mr. Cox and his staff, in their challenging task of updating the aquarium. For almost a century it has been an entertainment for the visitor and an education to the initiated. When current plans are completed it will fulfil these functions to a much greater degree and establish the Brighton Aquarium as one of the best in the world. *W.J.Y.*

There is a constant need for large specimens at Brighton: aquarists who may wish to dispose of large fish, e.g., barbs, which have outgrown the home tank, should get in touch with Mr. Cox, who will pay well for suitable specimens and arrange collection. Address enquiries to:—Mr. Graham Cox, Director, Brighton Aquarium, Brighton, Sussex.

Moving house

Looking at the problem of transporting fish and aquaria

FORTUNATELY, moving house is something which only happens to the average person once or twice in a lifetime, but when the person happens to be an aquarist, it raises even more problems than the usual multitude which beset the non-aquarist.

To trust one's precious aquaria and fish to the mercy of the removal men is out of the question and so it falls upon the aquarist himself to look to the transportation of his tanks and fishes. At such a time two important questions arise: does the aquarist have a car, and does he have any friends who have cars? If the answer to either, or both, questions is in the affirmative, then the problem is half solved. Should any of his driver friends be aquarists, then even more reliable help can be expected.

How can one set about transporting fully set up aquaria? Having recently gone through the ordeal, I can offer the following advice for what it is worth. With smaller tanks it is only necessary to remove heater, thermostat and air line, together with about half of the water in the aquarium. If the distance to the new house is not too far, the fish, plants and gravel can be left in the tank and should not come to any great harm if no mishaps occur. If the aquarium being moved is lifted carefully with the hands beneath the lower edges of the frame and the fingers clear of the base glass, no harm should result. Of four tanks which I had removed in this manner, the three which I myself removed reached their destination intact but one which a friend tried to move had water running rather quickly out of its displaced base before it had been moved more than four feet. My good male guppies which it contained were quickly netted and dumped into the nearest tank which happened to contain some larger fish and they soon removed large portions of the guppies' tails during their short journey. I was fortunate in that the car in which I transported my smaller tanks had a large roomy boot, the floor of which was level with its outer edge. This meant that the tanks could easily be slid into the boot and as easily removed. A car with a boot which had a sunken floor would have presented more problems and would probably have resulted in more leaking tanks.

The fact that the car which I used had a roof-rack was very useful in that the stands for the aquaria could be transported at the same time, this cutting down on both the number of trips required and on the amount of time wasted before the tanks were again set up. If the tanks being moved contain any large rocks, these should be removed before transporting in case they tip over during the moving. Rocks, cover glasses, air-pumps, heaters, thermostats, hoods, fish foods and other accessories can be transported inside the car on the back seat.

With larger aquaria it is usually necessary to remove the fish and place these in an insulated container. The water should be removed as should the heater, thermostat and rocks, but the gravel and plants may be left in place, the latter not coming to much harm if they are not allowed to dry out during the journey. This method prevents the plants from having to be uprooted and later transplanted which can cause a set-back to such plants as *Cryptocoryne* species.

A lot of forethought has to go into the arrangements to be made in the new house before the tanks arrive. If at all possible carpets should be laid in the room in which the tanks are to be placed and the new site for the tanks, convenient, naturally, to an electric power point, chosen. Electric wire leads, fitted with the appropriate plugs and connectors, should be at the ready. A supply of hot water at the new house is a must, for filling up tanks when they arrive and a couple of plastic buckets together with a length of rubber tubing, both of which items the aquarist will probably already have, will be needed. If possible, transport the aquaria a day or two before the main flitting as on that day you will have enough with which to contend without having to devote all your time to aquatic subjects.

When you and your aquaria arrive at the new house, get the stands and tanks in place as quickly as possible. Take care with electrical connections and be sure to include a roll of insulating tape in your pocket together with a pair of scissors. Both items will be very useful. A point which may be overlooked if you are moving into a new house is the connection of an electricity supply. Make sure that this has been done before you plan to move in your tanks. If your new residence is fitted to take square pinned 13 amp. fused plugs, make sure that the fuse in your plug is high enough to carry the load of the total amps. which your aquatic set-up will use. Remember not to overload your power supply.

These are the main problems with which you will have to contend but some other points should be borne in mind. Hot water taken from a new hot water storage tank is not always as clean as one would need for setting up aquaria so it will be better if water from the cold tap is boiled in, say, an electric kettle and mixed with cold water in a plastic bucket until the required temperature is reached. Do not subject fish to sudden changes in water temperature.

Unless you can judge the water temperature required fairly accurately with your hand (and this only comes from lengthy experience) it is better to have a thermometer with you to gauge the correct temperature of the water.

Finally be prepared to make a few adjustments to the plant life in your aquaria if the water supply in your new home comes from a different source than it did in your old home. Even in the same town, as I have found, water may be supplied to different parts from different sources. The water supplied to the new house into which I moved recently is softer than that supplied to my previous residence. This has meant that to continue to grow some of my previous plants I have had to take steps to render the water in some tanks harder. The pH of the water is also slightly different, being just about the neutral mark. I am lucky in that having soft, neutral water, I can render it slightly acid fairly easily with the knowledge that it will remain fairly stable. To render soft water hard without affecting the pH, is not nearly as easily done. One advantage is that at last I am able to grow *Cabomba* and *Ambulia*, the former being a plant which I think is one of the most attractive tropical aquatics and one with which I have never before had success.

None of my fish seems to have been bothered by their moving except for the unfortunate guppies whose tails were partly eaten. Should you be faced with the prospect of having to move house with your aquaria, don't let it worry you too much. You may have to reglaze an aquarium if you let an inexperienced friend help you, but if, as in my case, it happens to be an old aquarium which was in need of being reglazed anyway, it gives you the reason for doing so. After about a week you should have your tanks back into their old form and should yourself have again become engrossed in your hobby with renewed interest.

Solution to "Find the fish"

see page 505

Answer, BETTA SPLENDENS

Our Readers' write

TetraMin

I have followed with interest the recent correspondence concerning the price of TetraMin, but there is one further peculiarity which, so far, I have not seen mentioned. The price of the 2 oz. TetraMin is 8s. 11d. (at least that is what I have been paying lately) and that of the smaller size I believe is 3s. 10d. The latter size containing ¼ oz. according to the printed drum. Reducing these figures to cost per oz., it will be seen that it is improportionally more expensive to buy the larger quantity. This is against the normal concept of bulk buying where unit costs are supposed to go down not up when larger amounts are bought.

I hope that this letter will not prompt Messrs. Herb-Royal Ltd. to correct the anomaly by the simple expedient of upping the price of the smaller size.

A. P. KERSEY,
2 Cheney Close, Toddington, Beds.

EDITOR'S NOTE.—This letter was referred to Messrs. Herb-Royal Ltd., who replied as follows:

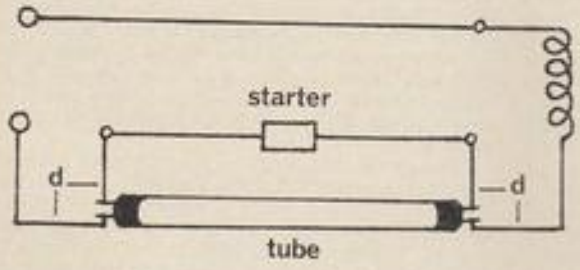
"The complaints of your writer are perfectly justified, and in fact our attention was drawn to this by another customer. We immediately took this up with our principals in Germany who accepted full responsibility for the error, and as a result of this intervention, the price has been reduced to 8s. 9d."

Hardy minnows

Last year I went fishing in a river quite near to our home. I brought home three minnows to put in our fish pond at the bottom of our garden. When Christmas came, the pond froze. The ice was three to four inches thick and it had to be broken with an axe. When spring came, we cleaned out the pond and we found the three minnows in it, still alive. Now we have found thirty to forty young ones in the pond.

We think this is remarkable how they survived and bred, for it is rarely known for them to live in home-made ponds, at all.

Yours faithfully,
SUSAN HARMSON (Age 13).



Tungsten to tubes

Correction to diagram

The Editor regrets that an error appeared in the circuit diagram of Tungsten to tubes (July issue). The correct layout is shown below; and the connections to the pins of the tube should be noted.

News from AQUARISTS' SOCIETIES

THE first-ever Open Show of the **Thurrock A.S.** was well supported by other Societies and a total of 333 fish were benched in addition to 12 furnished aquarias. A film show of sound films loaned by the I.C.I. was shown as well as a cartoon film, to entertain the exhibitors and their families while the judging took place. The results were as follows:—A.V. Guppy: 1, R. Savage (unattached); 2 and 4, L. Goff (Bethnal Green A.S.); 3, T. Asquith (Catford A.S.). A.V. Molly: 1, T. Asquith (Catford A.S.); 2, K. Appleyard (Thurrock A.S.); 3, T. D. Smith (Brent A.S.); 4, I. Stewart (London Transport A.S.). A.V. Platy: 1, J. D. Wilson (Catfoed A.S.); 2, F. E. T. Smith (Catfoed A.S.); 3, R. Nicholls (Thurrock A.S.); 4, R. Kerridge (Harlow A.S.). A.V. Swordtail: 1, P. O'Bryan (Thurrock A.S.); 2 and 4, J. Hartleburg (Thurrock A.S.); 3, J. D. Wilson (Catford A.S.). A.V. Fighter: 1, 2 and 3, D. Durrant (Thurrock A.S.); 4, C. Ayres (East London A.S.). A.V. Labyrinth: 1, F. E. T. Smith (Catfoed A.S.); 2, B. Harvey (North Kent A.S.); 3, R. Fox (Brent A.S.); 4, D. Durrant (Thurrock A.S.) Danio, rasbora, W C M M: 1, A. J. McArthy (Catford A.S.); 2, R. Nicholls (Thurrock A.S.); 3, Mrs. I. Salisbury (Harlow A.S.); 4, D. Stewart (Kingston A.S.). A.V. Barb: 1 and 4, A. J. McArthy (Catford A.S.); 2, M. A. Jones (Erith A.S.); 3, B. Martin (Bethnal Green A.S.). A.V. Corydoras Catfish: 1, S. Mooney (Tottenham A.S.); 2, W. R. Sherwin (Willesden A.S.); 3, H. S. Wood (Croydon A.S.); 4, Miss M. Sherwin (Willesden A.S.). A.O.V. Catfish, Loach, or Eel: 1 and 4, T. D. Smith (Brent A.S.); 2, G. Greenhalf (Kingston A.S.); 3, B. Martin (Bethnal Green A.S.). A.V. Characin: 1, A. J. McArthy (Catford A.S.); 2, G. Greenhalf (Kingston A.S.); 3, T. D. Smith (Brent A.S.); 4, B. G. Dunn (Southend A.S.). A.V. Achlid: 1, B. Harvey (North Kent A.S.); 2, B. Martin (Bethnal Green A.S.); 3, S. Mooney (Tottenham A.S.); 4, G. Greenhalf (Kingston A.S.). A.V. Egg-laying Toothcarp: 1, R. Nicholls (Thurrock A.S.); 2, J. Mason (Southend A.S.); 3 and 4, B. Challenger (British Killiefish Association). A.O.V. Tropical: 1, B. Harvey (North Kent A.S.); 2 and 3, C. Swinburne (Brent A.S.); 4, A. S. Harding (Erith A.S.). Breeders Egglayer: 1, F. H. Vicker (East London A.S.); 2, S. Mooney (Tottenham A.S.); 3, J. D. Wilson (Catfeed A.S.); 4, H. S. Wood (Croydon A.S.). Breeders Livebearers: 1, R. Kerridge (Harlow A.S.); 2, G. Greenhalf (Kingston A.S.); 3, F. R. Williams (Tottenham A.S.); 4, A. J. McArthy (Catford A.S.). Furnished Aquaria: 1, K. Appleyard (Thurrock A.S.); 2, D. Durrant (Thurrock A.S.); 3, S. Hindle (Thurrock A.S.); 4, R. Nicholls (Thurrock A.S.). Special Awards: The Nicoll Cup for best breeders team, R. Kerridge (Harlow A.S.). Durrant Rose Bowl for the best catfish, loach or eel, S. Mooney (Tottenham A.S.). President's Shield for the best characin, A. J. McArthy (Catfoed A.S.). Appleyard Trophy for the best Labyrinth, D. Durrant (Thurrock A.S.). Essex Cup for the best livebearer, J. D. Wilson (Catford A.S.). Thurrock Cup and Aquarist Gold Pin for the best fish in the show, S. Mooney (Tottenham A.S.). F.B.A.S. Championship Trophy for the best cichlid, B. Harvey (North Kent A.S.). Killiefish Tankard for the best egglaying toothcarp, R. Nicholls (Thurrock A.S.).

* * *

THE large number of 568 entries completely surpassed the expectations of the **Trowbridge and District A.S.** at its third annual open show. Attracting most attention was a 9-inch Piranha, which took first place in the Characin class of 53 fish. Entries came from Portsmouth, Barry, Llantwick Major, Cardiff, Newport, Taunton, Yeovil, Bristol, Bath, Bridgwater, Salisbury, Stroud, etc.

The club and committee would like to thank the judges, Messrs. R. Wigg, K. Parrant, A. Mately, V. Capaldi and F. Brown, for their outstanding work of judging so many fish and all the traders and individuals who helped to make the show such a success. Results of the show were as follow: Coldwater—Goldfish: 1, C. Cuss; 2, C. Pearce; 3, W. Reeves. Shubunkins: 1 and 2, W. Reeves; 3, J. Wheeler. Fancy Goldfish: 1, B. Harding; 2 and 3, W. Reeves; A.V. Pond and River: 1, J. Stallwell; 2, M. Butcher; 3, C. Pearce. Tropical—Guppy (Male): 1 and 2, J. Wheeler; 3, G. Carter. Guppy (Female): 1, 2 and 3, J. Wheeler. Swordtails: 1 and 3, M. Sainsbury; 2, W. Corrick. Platies: 1, B. Lewton; 2, A. Rogers; 3, S. Steers. Mollies: 1, B. Harding; 2, J. Parsons; 3, J. Wheeler. Characins: 1, C. Gorwill; 2, C. Hawks; 3, A. Cox. Barbs: 1, F. Brown; 2, J. Nye; 3, D. Warment. Danios: 1, J. Lowdes; 2, C. Craddock; 3, D. Warment. Rasboras and Minnows: 1, J. Parsons; 2, W. Corrick; 3, M. Patrick. Dwarf Cichlids: 1 and 2, C. Craddock; 3, P. Gibbs. A.O.V. Cichlids: 1, R. Woolley; 2, Mrs. Fitzgerald; 3, J. Parsons. Angels: 1, R. Pope; 2, C. Pearce; 3, A. Cox. Fighters: 1, J. Wheeler; 2 and 3, Mrs. King. Labyrinths: 1, P. Halliwell; 2, B. Harding; 3, R. Brown. A.O.V. Catfish: 1, F. Brown; 2, K. Clough; 3, A. Cox. Corydoras: 1 and 2, B. Harding; 3, F. Brown. Botias, Loaches, Eels: 1, M. Hazel; 2, F. Brown; 3, J. Wheeler. Toothcarps: 1, R. Hemming; 2, J. Powell; 3, J. Almadi. A.O.V. Tropical: 1, R. Brown; 2, B. Short; 3, Mrs. J. Wright. Breeders—Coldwater: C. Pearce. Tropical Livebearer: 1, Mrs. Wright; 2, D. Warment; 3, J. Wheeler. Tropical Egglayers: 1, W. Gadd; 2, B. Lewton; 3, E. Scudamore. Furnished Jar: 1, J. Parsons; 2, R. Chard; 3, D. Binding. Best Coldwater and Best in Show: W. Reeves (Shubunkin). Best Tropical: F. Brown (Clown Barb).

* * *

THERE were over 340 entries for the **Alfreton and District A.S.** second Open Show, with the following results:—

Guppies: 1, 2 and 3, Mr. Duffy (F.G.A.); Platies: 1, D. Lemons (Alfreton), 2, R. Walker (Sheffield), 3, Mr. and Mrs. Dernie (Worksop). Mollies: 1, B. Morrell (Derby), 2, J. Igoe (Rainworth), 3, Mr. and Mrs. Dernie (Worksop); Swordtails: 1, Mr. and Mrs. Dernie, (Worksop), 2, J. Wright (Alfreton), 3, I. G. Shipman; Small Barbs: 1, J. Wright (Alfreton), 2, Mr. and Mrs. Dernie (Worksop), 3, R. Walker (Sheffield); Large Barbs: 1, S. Hill (Alfreton), 2, F. Ledger (Huddersfield), 3, T. Gould; Small Characins: 1, D. Wragg (Alfreton), 2, R. Walker (Sheffield), 3, J. D. Fellows (M.A.P.S.); Large Characins: 1, Mr. and Mrs. D. Sides (Chapeltown), 2, B. Jones (Worksop), 3, J. Murray (Belle Vue); Killiefishes: 1, D. Craven (Sheffield), 2, M. Mallatratt (Mansfield), 3, J. D. Fellows (M.A.P.S.); Minnows and Danios: 1, J. Wright (Alfreton), 2, J. Lee (North Staffs), 3, M. Allsop; Sharks and Foxes: 1, R. Walker (Sheffield), 2, A. G. Esteves (Huddersfield), 3, F. Everett (S.A.S.S.); Rasboras: 1, J. D. Fellows (M.A.P.S.), 2, T. E. Smith (Hucknall and Bulwell), 3, F. Ledger (Huddersfield); Dwarf Cichlids: 1, L. Kaye (Huddersfield), 2 and 3, R. Walker (Sheffield); Large Cichlids: 1, K. Binns (Nottingham), 2, F. Everett (S.A.S.S.), 3, Mr. and Mrs. Dernie (Worksop); Angels: 1, J. Igoe (Rainworth), 2, J. Murray (Belle Vue), 3, M. Allsop; Catfish: 1, Mr. and Mrs. D. Sides (Chapeltown), 2 and 3, A. G. Esteves (Huddersfield); Loaches: 1, J. A. Stanton (Derby), 2, R. Walker (Sheffield), 3, A. G. Esteves (Huddersfield); Fighters: 1, Mr. Anson (Stockbridge), 2, J. D. Fellows (M.A.P.S.), 3, L. Kaye (Huddersfield); A.O.V. Anabantids: 1, Mr. and Mrs. Dernie (Worksop), 2, L. Kaye (Huddersfield), 3, Mr. and Mrs. Dernie (Worksop); A.O.V. Tropical: 1, Mr. and Mrs. W. H. Selby, 2, R. Cox, 3, Mr. and Mrs. W. H. Selby; Pairs: Egglayers: 1, Mr. and Mrs. Dernie (Worksop), 2, D. Craven (Sheffield), 3, R. Walker (Sheffield); Pairs, Livebearers: 1, Mr. Duffy (F.G.A.), 2, Mr. and Mrs. Dernie (Worksop), 3, B. Morrell (Derby); Junior Egglayers: 1, Goodwin Bros. (North Staffs), 2, Miss M. Saunders, 3, Master David Gould (Alfreton); Junior Livebearers: 1, Master M. Simpson, 2, J. Bailey (North Staffs), 3, Goodwin Bros. (North Staffs); Goldfish and Comets: 1, Mrs. V. Wright (Alfreton), 2, C. Hill (Nottingham), 3, Mr. Eadon (Sheffield); Shubunkins and Fancy Goldfish: 1, and 2, Mr. Eadon (Sheffield), 3, C. Hill (Nottingham); A.O.V. Coldwater: 1, Mrs. V. Wright (Alfreton), 2, C. Hill (Nottingham), 3, Mr. Eadon (Sheffield); Breeders Egglayers: 1, R. Walker (Sheffield), 2, Mr. and Mrs. Dernie (Worksop), 3, Mrs. I. Bullyment (Nottingham); Breeders Livebearers: 1, Mr. and Mrs. Dernie (Worksop), 2, I. G. Shipman, 3, Mr. Duffy (F.G.A.); Mini-Jars: 1 and 2, S. Hill (Alfreton), 3, Mrs. Eadon (Sheffield); Best Fish in Show: Dwarf Cichlid (Nannacara Anamalous), L. Kaye (Top-Ten, Huddersfield). Jack Arnott Cup for best tropical: L. Kaye (Huddersfield); Jack Arnott Cup for best coldwater: Mr. Eadon (Sheffield).

* * *

THERE were more than 250 entries for the Open Show of the **Keynsham and District A.S.** Results: Guppies: B. Clarke; Swordtail: S. T. Cook; A.O.V. Livebearers: R. J. Brown; Specified Barbs: P. B. Garner; A.O.V. Barbs: F. Brown; Dwarf Cichlid: C. Cradock; A.O.V. Cichlid: H. Powell; H.H. Characin: D. Noble; A.O.V. Characin: Mrs. C. Hanks; Fighting Fish: Mrs. T. King; Labyrinths: B. J. Luton; Catfish: P. Wright; Sharks and Louches: A. Player; Rasbora: J. Parsons; A.O.V. Egglayers: J. Willett; Furnished Jar: A. G. Cocks; Breeders Egglayer: W. G. Gadd; Breeders Livebearer: Mrs. T. Wright.

* * *

THE following officers were elected at the Annual General Meeting of the **Stockton-on-Tees A.S.**: Chairman: D. Keigthley; Secretary: D. Tichenor; Show Secretary: T. Walls, 11, Wylam Road, Stockton-on-Tees, Teesside; Treasurer: T. Stephen; Vice-Secretary: B. Walls; Committee: Mrs. B. Clerrett, Messrs. Emmerson, W. Bowman, K. Clerrett and L. Collins.

* * *

THIS year the **Fancy Guppy Association** held their Third International Guppy Show in Manchester when another brilliant display of over five hundred Guppies from several countries were on show including entries from Germany and Austria.

Best Single Fish was won by Messrs. Fowles and Vinall with a very nice Male Delta. Best opposite sex was won by W. Holmes with a Highly-Coloured Roundtail Female and the best Breeders Exhibit was won by Victor Partington with four Large Black Deltas. Further results were as follows:—

Delta: 1, Fowles & Vinall, 2, M. Delingpole, 3, V. Partington, 4, Mrs. J. Croft; Pintail: 1 and 3, R. Brothwood, 2, V. Partington, 4, M. Delingpole; Original Veil: 1, D. Curry, 2, Mrs. J. Croft, 3, P. Jinks, 3, M. Delingpole; Short Dorsal Veil: 1, R. Holt, 2, S. Duckworth, 3, M. Delingpole, 4, W. Collyer; Long Dorsal Veil: 1, Colin Brothwood, 2, M. Delingpole, 3, Beresford & Jeffery, 4, R. Holt; Scarftail: M. Delingpole; Cofertail: 1 and 2, D. Crane, 3, G. V. Bosche; Lyretail: 1, M. Delingpole; Top Sword: 1, M. Delingpole, 2 and 3, H. Gunther; Lower Sword: 1, K. Rigby, 2, M. Delingpole, 3, N. Court, 4, Fowles & Vinall; Double Sword: 1, 3 and 4, M. Delingpole, 2, K. Rigby; Roundtail Male: R. Cheshire; Speartail: M. Delingpole; Pintail Colour: 1 and 3, M. Delingpole, 2, I. Oppenhoff; Male: 1, D. Curry, 2 and 3, R. Young, 4, J. Heap; Superba: 1, Fowles & Vinall, 2, Beresford & Jeffery, 3, M. Delingpole; Wedgetail: 1, J. Walker, 2, M. Delingpole, 3, P. Jinks, 4, Carol Brothwood; Metropolitan: 1, S. Duckworth, 2, V. Partington, 3, W. Myers, 4, P. Jinks; Roundtail: 1, W. Holmes, 2, J. Davis, 3, M. Delingpole, 4, Beresford and Jeffery; Female Scallopfail Colour: 1, W. Holmes, 2, V. Partington; Female: 1, J. Walker, 2, V. Partington, 3, Mrs. J. Croft; Breeders Males: 1, V. Partington, 2, D. Crane, 3, Fowles &

Vinall, 4, M. Delingpole; Breeders Females: 1, W. Holmes, 2 and 3, M. Delingpole, 4, Mrs. J. Croft; Breeders Pairs: 1 and 2, D. Curry, 3, Mrs. J. Croft, 4, R. Frothwood; Experimental Males: 1, Fowles & Vinall, 2 and 3, R. Broadwood; Experimental Females: 1, Mrs. P. Wilson, 2, Beresford and Jeffery, 3, W. Holmes, 4, R. Young; Master Breeders: 1, D. Curry, 2, Mrs. J. Croft, 3, R. Broadwood; Junior Single Fish, any variety: 1, Colin Broadwood, 2, Carol Broadwood, 3, Lynda Curry, 4, Wendy Melton; Junior Breeders: 1, P. & P. Hodkinson; Ladies Single Fish, any variety: 1, Miss J. Johnson, 2, Mrs. P. Wilson.

* * *

THE **Brent A.S.** has continued with its ambitious programme with a recent visit to the Aquarium at the London Zoo where all facilities were afforded, and the following week the Club was visited by Mr. Bert Senior of the London Zoo Hospital to discuss in detail with members the species they had seen previously.

The inter-club competition between Ealing and Brent has now been completed. At Ealing a very good lecture was given by K. Nutt and the exhibits judged by H. Towell, the result being Ealing A.S. 23, Brent A.S. 32. The return match held at Brent was judged by Roy Biggs, the results being as follows: Cichlids: 1, J. Raymond (Brent), 2, J. Line (Brent), 3, C. Hooper (Brent), 4, R. Barrett (Ealing); A.O.V. Labyrinth: 1, R. Savage (Ealing), 2, R. Fox (Brent), 3, P. Heal (Ealing), 4, A. Betterley (Ealing); A.V. Corydoras: 1, R. Barrett (Ealing), 2 and 3, R. Fox (Brent), 4, R. Barrett (Ealing); A.O.V. Egglayer: 1, T. D. Smith (Brent), 2 and 4, C. Swinburne (Brent), 3, C. Butterfield (Ealing); Best Fish in Show, T. D. Smith (Brent). Scores for this round were Brent A.S. 35, Ealing A.S. 20, the trophy for this year being awarded to Brent with an overall score of 67 to Ealing 45.

The winner of Section No. 1, Series No. 3, of the Denis Smith Trophy was won by R. Fox with 18 points, closely followed by C. Swinburne with 17. The figures in the Club overall championship are approaching the half-way stage, the leaders being: T. D. Smith, 293 points; C. Swinburne, 126 points; R. M. Fox, 93 points; P. Shrimpton, 49 points; C. Hooper, 37 points; J. Raymond, 29 points.

* * *

AT the monthly meeting of the **New Forest A.S.** the Show Secretary reported on the results of the Open Show at Southampton where the club was well represented and members of the Club took three firsts. The main item of the evening was a quiz compiled by Messrs. Jeffery and James of the Bournemouth club. This proved very interesting and members found it instructive and entertaining. The draw for a wallet of the new coins donated by J. Jeffery was won by D. Harding.

The results of the table shows were as follows: Guppies: 1, D. Tuckwell, 2, R. Travers, 3 and 4, R. Mooley; Swordtails: 1, D. Tuckwell, 2, R. Menhenett, 3, K. Newton, 4, A. Williamson.

* * *

MEMBERS of **Croydon A.S.** have recently enjoyed lectures from Messrs. Morrice and Katritzky, and high attendance and an ever-increasing membership shows a keen interest in the hobby.

For the convenience of Committee and Officers in organising the Christmas Socials, something which has become very popular recently, the Annual General Meeting has been changed from October to April, and on that evening the following Officers and Committee were elected: Chairman: G. Licence; Vice-Chairman and Minutes Secretary: P. Boyes; Secretary: D. Crowley, 180 Harrington Road, South Norwood, S.E.25; Assistant Secretary: A. Smith; Show Secretary: D. Smith; Treasurer: Mrs. E. Chaussard; Assistant Show Secretaries: Miss F. Spencer and C. Chisholm; Committee Members: Messrs. H. Wood, P. Trask, and T. Thatcher.

Visitors are welcome to visit Croydon A.S. on the second and fourth Thursday in the month at: The Victory Club, 227 Selhurst Road, South Norwood, S.E.25 (two minutes from Norwood Junction). Meetings start at 8 p.m.

THE new committee of **The Amersham and District A.S.** is as follows: Chairman: A. Humphreys; Secretary: D. T. Moody, 65, Vale Road, Chesham, Bucks; Assistant Secretary: R. Huey; Show Secretary: T. Cruickshank; Assistant Show Secretary: G. Rutland; Treasurer: J. Williams; Publicity Officer: Mrs. G. Balfour; Member: Mrs. S. Harris.

* * *

THE Open Show of the **Yeovil and District A.S.** proved a great success. The number of entries totalled 339, and the best fish in the show was exhibited by a Yeovil club member, V. Collins, with a coldwater fish. The show attracted fishkeepers from a wide area and thirteen societies exhibited. Of the thirty trophies awarded Yeovil members won nine as follows: Goldfish: Mrs. T. Gillard; Shubunkin 3 inches: S. Langdon; Shubunkin 5 inches: S. Langdon; Scaled Fantails: V. Collins; A.O.V. Pond/River: V. Collins; Characins: N. Stainer; Breeders Egglayer: Mrs. T. Gillard; Male Guppies: K. Blake. Other trophies went to Cardiff (5), Salisbury (4), Bristol (4), Newton Abbot (3), Weymouth (2) Martock (1), Bridgwater (1), South Petherton (1). The judges included Mr. Morris of London, Mr. Mathy, Bournemouth, and Mr. S. Langdon, President of the Yeovil Society. Awards were presented to the winners by the club chairman, Mr. D. Phinn.

* * *

THE **Three Counties Show** at Bracknell results were as follows: Barbs: 1, C. Pike, 2, A. Blake, 3, M. Davies, 4, T. Duffy; Characins: 1, G. Greenhalf, 2, R. Wingrove, 3, T. Walker, 4, L. Jordon; Cichlids: 1, M. Davies, 2, A. Blake, 3, L. Jordan, 4, B. Johnson; Dwarf Cichlids: 1, P. Merritt, 2, J. Pollard, 3, M. Davies, 4, P. Bennet; A.V. Labrynth: 1, F. Hall, 2, T. Walker, 3, Mrs. G. Carter, 4, M. Carter; A.O.V. Catfish: 1, A. Rundle, 2, P. Merritt, 3, G. Greenhalf, 4, Mrs. N. Jordan; Cory. Cat.: 1, R. Wingrove, 2, J. Norris, 3, R. Cox, 4, A. Blake; R.D.M.: 1, P. Merritt, 2, T. Walker, 3, R. Kyte, 4, R. Dove; Botia, Loach: 1, M. Carter, 2, R. Cooper, 3, L. Jordon, 4, Mrs. G. Carter; Killiefish: 1, T. Walker, 2, S. Tarrant, 3, R. Cooper, 4, R. Huey; Platy: 1 and 2, R. Cox, 3, Mrs. G. Carter, 4, L. Little; Swords: 1 and 2, D. Walls, 3, R. Cox, 4, M. Carter; A.O.V. Tropical: 1, M. Davies, 2, R. Wingrove, 3, T. Errey, 4, R. Armstrong; C. Goldfish: 1, V. Voysey, 2, T. Errey, 3, T. Duffy, 4, R. Blight; Fancy Goldfish: 1, V. Voysey; Shubunkin: 1, 2, 3 and 4, K. Speaks; A.O.V. Cold: 1 and 2, V. Voysey, 3, Mrs. N. Jordan, 4, M. Davies; Rooted Plants: 1, 3 and 4, R. Dove, 2, G. Greenhalf; Cuttings: 1, G. Greenhalf, 2, L. Jordan, 3 and 4, R. Dove; Tropical Breeders Egg: 1, 3 and 4, R. Armstrong, 2, P. Merritt; Tropical Breeders Live: 1, R. Cox, 2, R. Cooper, 3, D. Walls, 4, G. Greenhalf. Best fish at show: M. Davies, P. Fasciatus; Highest Average Points: 3 C's Member, Mrs. N. Jordan; Best Breeding Achievement: R. Armstrong, Copper Tetras.

* * *

THE results of the **Thorne A.S.** Open Show were as follows: Best Exhibit: Mr. Bralsford (Sheffield); Livebearers: 1, Mr. Dernie (Worksop), 2, Mr. Gardner (Aireborough), 3, Mr. Reynolds (Swillington); Characins: 1, Mr. Walker (Sheffield), 2, Mr. Robinson (Aireborough), 3, Mr. Linden (Swillington); Barbs: 1, Mr. Bralsford (Sheffield), 2, Mr. Payer (Hartlepools), 3, Mr. Gregory (Osram); Catfish and Loach: 1, Mr. Carey (York), 2, Mr. Walker (Sheffield), 3, Mr. Reynolds (Swillington); Anabantids: 1, Mr. Dernie (Worksop), 2, Mr. Done (Huddersfield), 3, Mr. and Mrs. Howard (Barnsley); Siamese Fighters: 1 and 3, Mr. Fairchiffe (Tadcaster), 2, Mr. Senior (Sheffield); Cichlids: 1, Mr. Carey (York), 2, Mr. Walker (Sheffield), 3, Mr. Robinson (Aireborough); Egg-laying Toothcarps: 1, Mr. Jackson (Rotherham), 2 and 3, Mr. Greenhall (Tadcaster); Danios, Rasboras, Minnows: 1, Mr. Reynolds (Swillington), 2, Mr. Walker (Sheffield), 3, Mr. and Mrs. Cohen (Pontefract); A.O.V.: 1, Mr. Dickens (Thorne), 2, Mr. Carey (York), 3, Mr. Deakin (Derby Reg.); Pairs (Livebearers): 1, Mr. Snowdon (Thorne), 2, Mr. Chamberlane (Stockton), 3, Mr. Robinson (Aireborough); Pairs (Egg-layers): 1, Mr. Gregory (Osram), 2, Mr. Walker (Sheffield), 3, Mr. Carey (York); Breeders (Livebearers): 1, Mr. Dernie (Worksop), 2, Mr. Scally (Bedworth), 3, Mr. Burnap (Independent); Breeders (Egg-layers): 1, Mr. Walker (Sheffield), 2 and 3, Mr. Dernie (Worksop); Coldwater: 1 and 2, Mr. Hunt (Houghton-le-Spring), 3, Mr. Cooper (York).

* * *

THE organisers of **Southampton Aquarists'** Open Show were able to congratulate themselves that they had chosen the date successfully as entries came from as far afield as Poole, Portsmouth and Basingstoke. This, at a time when the fish show calendar is filled with at least two shows each weekend, is no mean achievement.

The Diploma for Best Fish in Show went to I. Perman of Gosport for a Texas Cichlid. Nevertheless, nine first awards out of twenty-five classes went to Southampton Society's members. The results of the various classes were as follows:—Female Guppy: 1, D. Gibbs, 2, D. Jones, 3, C. Sprinks; Male Guppy: 1 and 3, B. Poole, 2, S. Cook; Livebearers: 1, B. Beown, 2, I. Goddard, 3, S. Cook; Platy: 1, I. Russell, 2 and 3, D. Gibbs; Characins: 1, J. Jeffries, 2, I. Perman, 3, D. Gibbs; Barbs: 1, B. Beown, 2 and 3, I. Perman; Danio, Minnow and Rasbora: 1, F. Harding, 2, D. Jones, 3, I. Russell; Fighter: 1, J. Jeffries, 2, J. Beard; Labyrintha: 1, D. Jones, 2, B. Poole, 3, S. Cook; Cichlid: 1 and 2, I. Perman, 3, K. Clough; Catfish and Loach: 1, I. Perman, 2, A. Williamson, 3, D. Jones; A.O.S. Tropical: 1 and 2, H. Armitage, 3, I. Perman; Plant: 1, V. Voysey, 2, V. Hunt, 3, D. Gibbs; Tropical Breeders Egglayers: 1 and 2, D. Jones, 3, I. Perman; Tropical Breeders Livebearers: 1, J. Cairnie, 2, D. Gibbs, 3, B. Poole; Common Goldfish: 1, V. Voysey, 2, L. Menhennet, 3, J. Jeffries; Shubunkins: 1, H. Gilbert, 2, and 3, V. Voysey; Fantails: 1, 2 and 3, H. Gilbert; Fancy Goldfish: 1, V. Voysey, 2, V. Hunt, 3, A. Williamson; Pond or River Fish: 1, 2 and 3, V. Voysey; Coldwater Breeders: 1, Miss V. Gilbert, 2, J. Jeffries; Tropical Furnished Aquaria: Portsmouth; Coldwater Furnished Aquaria: Portsmouth; Individual Tropical Furnished: 1, Mrs. J. Jones, 2, L. Hastings, 3, Mrs. Gibbs; Individual Coldwater Furnished: Mrs. Gibbs.

* * *

THE **Loughborough and District A.S.** held their first Open Show when over 300 fish were entered and there was a good attendance of visitors. Local members had several successes which was commendable considering the high standard and the fact that most of them have only recently started showing.

The show results were:—Guppies: 1, Mr. Underwood (Lemington), 2, Mrs. Heaton (Bedworth), 3, Mr. Gloven (Bedworth); Livebearers: 1, Mr. Everett (South Staffs), 2, Mr. Worth (Nuneaton), 3, Mr. Sheehy (Coventry); Darios, Rasboras, W.C.M.M.: 1, Jones and Delves (Bedworth), 2, Mr. Wright (Alfreton), 3, Mr. Wragg (Alfreton); Barbs: 1, Mr. Spencer (Atherstone), 2, Mr. S. Purdy (Loughborough), 3, Mr. Sheehy (Coventry); Cichlids: 1, Mr. Everett (South Staffs), 2, Mr. Todds (Bedworth), 3, Mr. and Mrs. Jeffs (Bedworth); Characins: 1, Mr. Chapman (Loughborough), 2, Mr. Sheehy (Coventry), 3, Mr. Allen (Nottingham); Fighters: 1, Mr. Kaye (Top Ten), 2, Mr. Goodyer (Bedworth), 3, Mr. Wragg (Alfreton); Anabantids: 1, Mr. Kaye (Top Ten), 2, Mr. and Mrs. D. Halford (Loughborough), 3, Mr. Chamberlain (Lemington); Corydoras: 1, Mr. Shakespear (Bedworth), 2, Mr. Sheehy (Coventry), 3, Mr. Kaye (Top Ten); Livebearer (Pairs): 1, Mr. Worth (Nuneaton), 2, Mr. Jones and Delves (Bedworth), 3, Mr. Ledger (Top Ten); Egglayer (Pairs): 1, Mrs. Lindley (Alfreton), 2, Mr. and Mrs. Halford (Loughborough), 3, Mr. Jones and Delves (Bedworth); Breeders (Livebearers): 1, Mr. and Mrs. Simpson (Bedworth), 2 and 3, Mr. Scally (Bedworth); Breeders (Egglayer): 1 and 3, Mr. Lee (N.S.A.S.), 2, Mr. Jones and Delves (Bedworth); A.O.V. (Tropical): 1, Mr. Spencer (Atherstone), 2, Mr. and Mrs. Selby (Nottingham), 3, Mr. Everett (South Staffs); A.O.V. (Coldwater): 1, Mr. Pepper (Leicester), 2, Mr. Underwood

(Levington), 3, Mr. Brooks (Loughborough); A.O.V. (Catfish and Loaches): 1, Mr. Vesey (Loughborough), 2, Mr. Sheehy (Coventry), 3, Mr. Kaye (South Staffs).

* * *

THE **Hounslow & District A.S.** has been enjoying a very full and varied programme both socially and in the competitive field.

The Society's Annual Dance was a great success with about 150 members and guests having a very good evening. On another occasion the Society enjoyed a visit to the G.P.O. Tower which was a very good trip.

The regular table shows are still being well supported and at a recent competition for pairs the results were as follows:—1, D. Love (Rasbora elegans), 2, J. Thorne (Elestes longipinnis), 3, V. Jenkins (Corydoras aneus). At this meeting the members were entertained by a very interesting illustrated slide lecture by Jim Kelly on genetics. Other meetings recently have included talks on various subjects from diseases to breeding and these have been greatly appreciated. The Society is now looking forward to the Open Show on the 14th September at the Youth Centre, Cecil Road, Hounslow. The prize list this year will exceed last year's standard and the Society's aim to be the first club in the South of England to achieve a show with one thousand entries. Last year they had over six hundred entries. Exhibitors who are interested should contact the Show Secretary, Mr. B. Pratt, 23, Woodlawn Drive, Feltham, Middlesex. New members to the Society are always welcome at the regular alternate Wednesday meetings at the Isleworth Community Centre, Clifton Road, Isleworth, or details can be obtained from the Secretary, D. Woodward, 34, Uxbridge Road, Hanworth, Middlesex.

* * *

THE **Scottish A.S.** held their Annual General Meeting recently, and the election of office bearers was as follows:—President, K. Brown; Vice-president, Mrs. M. McArthur; Secretary, J. Goodwin, 2f, Burnbrae Street, Failley, Clydebank; Treasurer, E. Daly; Committee: H. Chandler, E. Watson, R. Woods, J. Connelly, G. Thompson, R. Brown, J. Langan, D. Copland, A. Patrick, A. Welsh, Dr. A. Young. New season commences in the Christian Institute, 70 Bothwell Street, Glasgow, on 27th August. Table Show—All Gouramis.

* * *

THE May meeting of the **Ilford & District Aquarists' & Pondkeepers' Society** was devoted in the main to coldwater fish and garden pools. Mr. H. Tisbury of Brentwood gave a most interesting talk on breeding and raising the more exotic goldfish species and screened some of his coloured slides. He also brought along a selection of his fancy goldfish which members were able to examine closely during the break for refreshments.

The Table Show was for Swordtails and Labyrinths and the winning entries were:—Swordtails: 1, R. Sampson (Red Sword), 2, A. Seaman (Red Wagtail Sword), 3, P. Sheehan (Red Wagtail Sword); Labyrinths: 1, R. Sampson (Three Spot Gourami), 2, R. Sampson (Paradise Fish), 3, P. Sheehan (Opaline Gourami).

The Society took part in the Redbridge Exhibition held for four days from 1st to 4th May, putting on a display of tropical and coldwater aquaria. The stand proved to be very popular, attendances were good and it is hoped that the publicity given to the hobby will benefit this and other Societies in the future. Anyone interested will be welcome to attend the Society's meetings held on the second Monday evening of each month at St. Laurence's Church Hall, Donlington Avenue, Barkingside, Ilford. Details are available from the Secretary, Mr. R. Ruth, 13 Dunkeld Road, Dagenham.

* * *

THE **Blackwater A.S.** were entertained by a slide show of Killiefish during the June meeting. After the show a discussion took place and it is expected the members will be searching for spare tanks, mops, etc., to try their hands at these fascinating species. The Table Show was for Catfish and Loaches. Judged by the proprietor of the local aquatic shop, G. Yallop. First prize went to D. G. Kempen, second to Master C. Waldock, and the third was won by R. Davis.

* * *

IN recent weeks the **Burton and District A.S.** has had a very busy time. An interesting trip to Bristol Zoo, where a view behind the scenes provided a source of information not usually acquired by ordinary visitors, was enjoyed and members were conducted round the Aquarium and Reptile House, and some of the braver ones were able to handle one or two exhibits.

The Inter-Society Show was held in June at Derby between Burton, Derby and Nottingham Societies, Burton gaining three first awards, two seconds, and three thirds. Although there was no special award, G. Mead had the satisfaction of knowing his pair of Guppies gained the highest marks in the Show. Following this, the monthly meeting took place at which H. J. Wain, a local historian, was the guest speaker. He brought along many interesting and rare specimens of fish and fossils, some being many thousands of years old. He gave a very interesting and amusing lecture, and members expressed a great desire to hear him again on some future occasion.

* * *

AT the June meeting members of **Aireborough and District A.S.** between them exhibited ninety entries, at their annual members' show. This year the entries were divided into thirteen classes, as this year two more cups had been donated by R. Lister (President), and P. Iveson (Treasurer). The best fish in the show also received the K. Emms Cup and Replica. While the exhibits were being judged by J. M. Skinner of Wakefield, the Secretary, G. E. Walker, gave a talk on "The history of Fishkeeping." Results:—A.V. Anabantid: 1 and 2, P. Barritt, 3, J. Whiteley; A.V. Flying Foxes and Sharks: 1, P. Barritt, 2, R. Taylor, 3, Master D. Lacey; A.V. Pairs: 1, J. Whiteley, 2, J. Stretton, 3, B. Megson; Furnished Minijars (no fish): 1, B. Megson, 2, P. Barritt; A.O.V. Fish: 1, W. Naylor, 2 and 3, R. Lister; A.V. Cichlid: 1, P. Barritt, 2, J. Whiteley, 3, R. Taylor; A.V. Barbs: 1 and 3, P. Iveson, 2, R. Taylor; A.V. Catfish and Loach: 1 and 3, R. Lister, 2, B. Megson; A.V. Breeders: 1, J. Kay, 2, R. Lister, 3, K. Marshall; A.V. Fish (novices only): 1, J. Robinson, 2, J. Kay, 3, J. Stretton; A.V. Fish (juniors only): 1, Master A. Stretton, 2, Master D. Robinson, 3, Master A. Flesher; A.V. Livebearer: 1, P. Barritt, 2, Mrs. R. Robinson, 3, B. Megson; A.V. Characin: 1, Mrs. R. Robinson, 2, L. Whiteley, 3, G. Monk., Best exhibit in the show: P. Ivesons (male Cherry Barb) 87 points.

* * *

IT is regretted that due to circumstances beyond their control the **Roehampton A.S.** are unable to go ahead with their proposed first annual show on the 8th September, and this has been cancelled.

* * *

ON the programme for the June meeting of the **Leek and District A.S.** was a tape and slide lecture entitled "Brine Shrimp" which dealt with the natural history and commercial exploitation of this important food. The Society rules have been amended and now include the presentation of a cup and commemorative plaques for "Aquarist of the Year" and "Junior Aquarist of the Year." These awards are based on show points obtained at the monthly shows. Show results in the class of Catfish, Loaches and Gobies were:—1 and 2, G. Thompson, 3, K. Thompson, 4, J. Thompson. Judges were M. Jerrard and W. Ash. Meetings are held at the Central Liberal Clubs, Leek, and all visitors are welcome.

* * *

THE June meeting of the **Newport A.S.** took the form of a slide lecture on guppies, provided by the Fancy Guppy Association, for which the projectionist was Club Secretary Ivor Phillips.

The results of the main table show of the evening, judged by Mr. Eddie Myer, for two classes, Guppies and Catfish, were:—Guppies: 1, 2 and 3, D. C. Bishop; Catfish: 1 and 3, Master A. Berry, 2, A. J. Payne. The results of the table show for juniors judged by M. J. Parry were:—Egglayers: 1, Miss D. Lowndes, 2, R. Hewlett, 3, Master J. Walker; Livebearers: 1 and 2, Master A. Berry, 3, Master J. Walker. Schedules for the Society's sixth annual open show to be held at the Duffryn Junior High School, Stow Hill, Newport, on Saturday, 21st September, are expected from the printers during the first week of August, and can be obtained from M. J. Parry, 45, Western Drive, Gabalfa, Cardiff, CF4 2SF.

* * *

THE **Hastings and Bexhill A.S.** elected their new committee for the forthcoming club year as follows: Chairman, G. Pryke; Vice-Chairman, P. Harbord; Programme Secretary, P. Martin; Correspondence Secretary, Miss V. Rogers; Show Secretary, A. McCormick; Treasurer, Mrs. M. Holmes; Other Committee Members: C. Jenner and Mr. Brummel-Hicks.

On the same evening Les Luxford showed the slides he had taken during his demonstration of fish photography held at Miss Rogers' home. Besides fish he had also taken slides of reptiles and amphibians, including the rare Tokay Gecko and the quaint Axolotl. At the meeting held on the last Friday in June which was also attended by members of the Eastbourne A.S., members were given a quiz slide show during which they were invited to try their skill at identifying the thirty-six fish shown. Later the slides were shown again giving the correct solutions. The slides which were of exceptional clarity were taken by Mr. Braz Walker of the U.S.A. who is almost completely paralysed.

There was also an inter-club table show which was judged by Mr. Barry Funnell, results being as follows:—Labyrinths: 1, P. Martin, Hastings (Combtail), 2, J. Watson, Hastings (Dwarf Gourami), 3, J. Watson, Hastings; Characins: 1, A. McCormick, Hastings (Pulcher), 2, A. J. Clark, Eastbourne (Cardinal), 3, W. Baldock, Hastings (Silver Dollar).

* * *

THE June meeting of the **Horsforth A.S.** included a slide show showing the way the Americans set up their tanks for shows. It was called the "American Scene" and some of the members were very surprised to hear that some of the American aquarists go over 100 miles to these shows taking their tanks, fish and even their own tank water and think nothing of it.

There were twelve new members, and there was an auction where all sorts of things were auctioned apart from fish and plants. Winners of the table show:—Specified Class: 1, W. Audsley, 2, Mr. Athey, 3, A. Jobbins; A.O.V. 1, M. Barker, 2, C. Tate, 3, K. Shaw; Junior A.O.V.: 1 and 3, D. Shaw, 2, J. Dugdale.

On Sunday the 16th June the Society had a sponsored walk to "Surprise View" which is fourteen miles, each walker was sponsored by one of the Society's non-walkers. Twenty took part and the afternoon was a success.

* * *

AT a recent meeting of **Swillington A.S.** two members, G. Binks and W. Emmett, gave a talk on fish-house construction. This was so interesting that the number of questions asked prevented the talk being finished, and Messrs. Binks and Emmett finished it at the following meeting.

K. Bateman of Leeds gave an extremely interesting talk at the next meeting on Cichlids behaviour, and at the last meeting the evening's entertainment was provided by W. Emmett, in the form of a taped quiz.

Results of the recent table shows are:—Carps and Minnows: 1, P. Reynolds, 2 and 3, Messrs. J. and M. Linden; Mollies: 1 and 2, F. Cummings, 3, Mrs. S. Batty. The first term of the quarterly plaque was won by Messrs. J. and M. Linden, 2, Paul Reynolds, 3, G. P. Nash. At the moment the points for the committee plaque (for the lady-member gaining most points at Society table shows) are: Mrs. Batty 17; Mrs. Stringer 9; Mrs. Emmett 8.

* * *

AT the first general meeting of **Peterborough Fishkeepers' Association** twenty-eight members heard Bob Burrell and David Jones of Corby A.S. talk on furnishing an aquarium and the plant of the month—Indian Fern. The club meets on the first Tuesday of every month. A permanent venue has yet to be found

but the Secretary, R. E. Scott, will be pleased to notify prospective members of the location of the next meeting if they will contact him at 58 Thorpe Lea Road, Peterborough.

* * *

THE **Cardiff A.S.** held their annual general meeting recently when a new Committee was selected as follow—Chairman: B. Garwill; Hon. Secretary: Mrs. Y. Churchill; Treasurer: E. Townsend; Show Secretary: Y. Parsons; Librarian: D. Warmeant. A knockout competition was held, the result being as follow: 1, G. Churchill who won the shield with a Scat, 2, P. Garner (Barb), 3, M. Phillips (Angel), 4, Mr. Chard (Agassizi). Meetings are held on the last Thursday of the month at the Gas Showroom, St. John's Square, Cardiff, at 7.30 p.m. Details from Hon. Secretary, Mrs. Y. Churchill, 13 Montgomery Street, Cardiff. The Open Show is to be held on 14 September at the Y.M.C.A., Station Terrace, Cardiff.

* * *

AT the last meeting of the **Wakefield and District A.S.** the results of the classified table show were as follow: 1, J. Reynolds, 2, B. Kilner, 3, B. Kilner; A.O.V.: 1, A. Walker, 2, J. Reynolds, 3, G. Bulby; A.O.V. Novice: 1, Miss S. Cooke, 2 and 4, J. Ball, 3, C. Wainwright. The Wakefield and District A.S. were guests at York Aquarists Society who organised an excellent trip around the fish houses of the members. It is hoped that Mr. P. Reynolds, Chairman of the A.Y.A.S. and Swillington A.S. is now fully recovered from his recent illness and once more in the chair.

* * *

RECENTLY the **Ealing and District A.S.** were hosts to Brent A.S. when the first annual contest between these two Societies was held. During the judging of fish an extremely interesting talk on the breeding of Siamese Fighters and Labyrinths was given by Mr. Nutt of Tottenham A.S. Afterwards he answered questions arising from his talk. Results of the contest were: Cats (exc. Corydoras): 1, B. Ankin (E), 2 and 3, T. D. Smith (B); Characins: 1, 2 and 3, T. D. Smith (B); Barbs: 1, R. Savage (E), 2, T. D. Smith (B), 3, C. Swinburn (B): Guppies: 1 and 2, R. Savage (E), 3, J. Raymond (B).

* * *

AT the June meeting of the **Bournemouth Aquarists Club** an assembly of over 40 members and guests enjoyed a quiz, compiled and presented by Les James and Jack Jeffery.

During the interval, the Table Shows of the month were judged by Ron Matley and Jack Jeffery and the results were as follow: Fighters: 1, J. V. Jeffery, 2, Mr. Chaney, 3, Mr. Diggins; Shubunkins: 1, Mr. Watkins; Special Competition: Furnished Jar: 1, Mr. Reed, 2, Mr. McFarlane, 3, H. Earl. A raffle was held, and a prize was won by Mr. Cox. An Auction then followed, with the Club's Chairman, Mr. B. Coombes, as Auctioneer, and three fine Goldfish were purchased by members. The remainder of the quiz then followed, and after this the secretary gave members some information about a recent F.B.A.S. meeting.

* * *

AT the last meeting of the **Hull A.S.** a challenge match was held against York A.S. which resulted in a draw. Out of 87 entries the "Best Fish in Show" award was won by P. Carey, York. A Criss Cross Quiz was conducted by the Hull Chairman, A. Douglas.

The resignation of Mr. Ron Pool, Librarian and Committee member, was regretfully accepted. Mr. Burrows was asked to take over the acting position which he accepted. The Society meets every first and third Wednesday of the month at the Railway Club, Anlaby Road, Hull. We welcome all applications for membership and visitors can be sure of a very warm welcome.

* * *

THE annual open show of the **Skipton and District A.S.** was attended by a good representation from societies in Yorkshire and Lancashire. Mr. J. M. Skinner (Wakefield) and Mr. G. Holmes (Bradford) judged the 226 entries as follows: Guppies: 1, D. W. Smith (Tadcaster), 2, Mrs. I. Moorhouse (Bradford), 3, T. Bickle (Keighley); Swordtails: 1, P. Barrett (Aireborough), 2, N. Turner (Mixenden) 3, Mrs. R. Robinson (Aireborough); Mollies: 1, A. B. White (Skipton), 2, Mr. and Mrs. D. Standen (Loyne), 3, P. Iveson (Aireborough); Platies: 1, W. Naylor (Aireborough), 2 and 3, P. & M. Bone (Huddersfield); Small Characins: 1, F. E. Gregory (Osram), 2, Mrs. P. M. Robinson (Huddersfield), 3, A. G. Esteves (Top Ten); Large Characins: 1, N. Turner (Mixenden), 2, J. A. Whiteley (Aireborough), 3, Mr. and Mrs. D. Standen (Loyne); Small Barbs: 1 and 3, F. E. Gregory (Osram), 2, A. Beasley (Osram); Large Barbs: 1, K. Parkes (Merseyside), 2 and 3, R. Taylor (Aireborough); Rasboras, Danios and Minnows: 1, Miss S. J. Robinson (Huddersfield), 2, F. E. Gregory (Osram), 3, Mr. and Mrs. D. Standen (Loyne); Sharks and Flying Foxes: 1, P. Barrett (Aireborough), 2, G. Garforth (Mixenden), 3, A. Murray (Valley); Fighters: 1, A. E. Whitelock (Tadcaster), 2, D. W. Smith (Tadcaster), 3, A. Beasley (Osram), A.O.V. Anabantids: 1, P. Barrett (Aireborough), 2, A. E. Whitelock (Tadcaster), 3, R. Taylor (Aireborough); Catfish and Loaches: 1 and 2, A. G. Esteves (Top Ten), 3, W. Parkin (Huddersfield); Angels: 1, P. & M. Bone (Huddersfield), 2, Mr. and Mrs. D. Standen (Loyne), 3, G. Orchard (Bradford); Dwarf Cichlids: 1, R. Taylor (Aireborough), 2, P. Barrett (Aireborough), 3, Mrs. R. Robinson (Aireborough); A.O.V. Cichlids: 1, R. Moorcroft and Son (Merseyside), 2, K. Parkes (Merseyside), 3, Mast. D. Robinson (Aireborough); Cyprinodontids: 1 and 2, A. Beasley (Osram), 3, J. Roberts (Nelson). A.O.V. Tropical: 1, Mrs. I. Moorhouse (Bradford), 2, Mr. and Mrs. D. Standen (Loyne), 3, R. E. Hampson (Horsforth); Livebearer Pairs: 1 and 2, Mrs. R. Robinson (Aireborough), 3, P. Moorhouse (Bradford); Egglayer Pairs: 1, W. Parkin (Huddersfield), 2, R. Taylor (Aireborough), 3, A. Beasley (Osram); Breeders Livebearers: 1, P. and M. Bone (Huddersfield), 2, H. Gardner (Aireborough), 3, W. Parkin (Huddersfield); Breeders Egglayers: 1, A. Beasley (Osram), 2, G. Garforth and N. Turner (Mixenden), 3, Miss Watson (Valley); A.V. Coldwater: 1 and 3, S. Walsh (Accrington), 2, Mrs. I. Moorhouse (Bradford); Best in Show: R. Moorcroft and Son (Merseyside) 86 points.

* * *

AT the monthly meeting of the **Guildford and District A.S.** the club once again welcomed Dick Armstrong of the B.K.A., who gave a most interesting and informative lecture on live foods. The club expressed its appreciation for this fine lecture and it is hoped to see more of him in the near future.

Recently an inter-club show was held between the Woking, Weybridge and Guildford clubs. Six entries in each of the three classes were required from each club. A most enjoyable and friendly evening was held and the results were as follow: Barbs: 1, Mr. Walker (Guildford), 2, Mr. Robins (Woking), 3, Mr. Aylott (Weybridge), 4, Mr. Robins (Woking); Characins: 1, Mr. Welch (Woking), 2, Mr. Walker (Guildford), 3, Mr. Johnson (Woking), 4, Mr. Walker (Guildford); Livebearers: 1, 2 and 4, Mr. Walker (Guildford), 3, Mr. and Mrs. Brock (Woking).

The club secretary is Mr. Walker, and any person interested in joining should contact him at: 67 Applegarth Avenue, Guildford, Surrey.

* * *

THE results of the Annual Open Show of **Merseyside A.S.** were as follow:—Guppies: 1, B. Hilton (Stretford), 2 and 3, W. J. Orton (Salford); Mollies: 1, F. Woodward (Blackpool), 2, F. Bishtom (Valley), 3, F. Ledger (Top Ten); Platies: 1, Mr. and Mrs. Bone (Huddersfield), 2, I. Watson (Sunnybrow), 3, N. Peterson (Merseyside); Swordtails: 1, Mr. and Mrs. Grimshaw (Sunnybrow), 2, Mr. and Mrs. Bone (Huddersfield), 3, F. Woodward (Blackpool); Small Barbs: 1, J. and E. Boardman (Leigh), 2, T. Acton (Gorton), 3, R. Potts (Top Ten); Large Barbs: 1, K. Parkes (Merseyside), 2, R. Adamson (Ind.), 3, P. and H. (Gorton); Labeos and Sharks: 1, B. Seabright (Gorton), 2, F. Mulla (Merseyside), 3, A. Esteves (Top Ten); Loaches: 1, W. Parkin (Huddersfield), 2, A. Quinton (Valley), 3, Mr. and Mrs. Webb (Salford); Small Catfish: 1, A. Esteves (Top Ten), 2, D. Incledon (Merseyside), 3, I. Watson (Sunnybrow); Large Catfish: 1, F. Mulla (Merseyside), 2 and 3, R. Tomkinson (Glossop); Anabantids: 1, L. Kaye (Top Ten), 2, Mr. and Mrs. Bone (Huddersfield), 3, P. Clarke (Merseyside); Fighters: 1, L. Kaye (Top Ten), 2, F. Mulla (Merseyside), 3, Master N. Kirkby (Merseyside); Dwarf Cichlids: 1, G. Howard (Blackpool), 2, W. Smith (Merseyside), 3, G. Hannett (Huddersfield); Large Cichlids: 1, R. Moorcroft (Merseyside), 2, K. Parkes (Merseyside), 3, D. Ledger (Ind.); Angels: 1, J. Murray (Belle Vue), 2, N. Peterson (Merseyside), 3, N. Kirkby (Merseyside); Small Characins: 1, A. Esteves (Top Ten), 2, C. Brothwood (Gorton), 3, F. Bishton (Valley); Large Characins: 1, R. Moorcroft (Merseyside), 2, Mrs. V. Parkes (Merseyside), 3, D. Thomalla (Merseyside); Toothcarps: 1, Master P. Hodgkinson (Gorton), 2, J. and E. Boardman (Leigh), 3, D. Thomalla (Merseyside); Rasboras and Danios: 1, P. and H. (Gorton), 2, J. and E. Boardman (Leigh), 3, D. Thomalla (Merseyside); Breeders (Egglayers): 1, Mr. and Mrs. T. Webb (Salford), 2 and 3, E. McCab (Gorton); Breeders (Livebearers): 1, Mr. and Mrs. Bone (Huddersfield), 2, W. Gorton (Salford), 3, R. Brothwood (Gorton); Pairs (Egglayers): 1, G. Hannett (Huddersfield), 2, W. Parkin (Huddersfield), 3, E. McCab (Gorton); Pairs (Livebearers): 1, Mr. and Mrs. Bone (Huddersfield), 2, E. Fletcher (Glossop), 3, R. Brothwood (Gorton); A.O.V.: 1, G. Hannett (Huddersfield), 2, I. Watson (Sunnybrow), 3, D. Thomalla (Merseyside); Juniors: 1 and 2, Master N. Kirkby (Merseyside), 3, Master A. Middleton ((Gorton). Best fish in Show award went to G. Hannett (Huddersfield). Merseyside A.S. Open Show Shield placings were: 1, Merseyside 39 points, 2, Huddersfield, 30 points, 3, Gorton and Openshaw, 21 points.

* * *

THE League Positions for the **Rugby A.S.** Cups, correct up to the last meeting in June:—Herbert Cup—Tropical: R. Delday 580 pts., Mr. and Mrs. Thomas 405 pts., D. Green, 385 pts., H. Harris 370 pts., J. Smith 275 pts., F. Underwood 240 pts., K. Russell 190 pts., C. Hands 180 pts., Q. Wells 170 pts., B. Woolterton 170 pts., B. Malin 95 pts., E. Sidwell 40 pts.; Bennett Plaque—Juniors: Q. J. Wells 555 pts., C. Locke 385 pts., D. Boult 310 pts., B. Malin 150 pts.; Pleasance Cup-Breeders: H. Harris 200 pts., D. Green 190 pts.; Bedford Cup—Coldwater: B. Malin 280 pts.

* * *

THE first meeting in June of the **Mid-Herts A.S.** covered a mini aquaria and plant show and was judged by Mr. Pye of Brentwood Aquatics. He also brought along a selection of excellent slides for the entertainment of the Society. At the second meeting of the month a table show was held, the results being as follows:—Barbs: 1, 2 and 4, P. Barnard, 3, T. Summers; Catfish and Loaches: 1, D. V. Lander, 2, B. Davison, 3, T. Timms, 4, G. Ralph; Guppies (female): 1, 3 and 4, B. Bradshaw, 2, T. Timms; Guppies (male): 1, 2 and 3, L. Weller, 4, C. Withers; Guppies (Breeders): 1 and 4, L. Weller, 2 and 3, B. Rumney. This table show was very well supported there being over seventy entries. Members also entered fish in the following Open Shows: Glossop, Brighton, Uxbridge and Cambridge, and took a good share of the awards.

* * *

THE most successful annual open show in the history of the Society was held by **Llantwit Major A.S.** recently with over four hundred entries of fish and eight Furnished Aquaria. The judges were Dr. C. W. Cole of Birmingham, John Wheeler of Bradfoed-on-Avon and Colin Lewis of Newport. The Best Fish in the Show Award went to P. A. Player, Cardiff, with a Red-tail Black Shark. He received the gold-plated pin for the Champion of Champion Award and a Plaque for Best Egg-laying Fish. A Plaque for Best Livebearer, the Mr. and Mrs. Steer Guppy Cup went to Mr. Garner, Cardiff. The Amis Cup was won by R. S. Wigg for the Best Furnished Aquaria. Master N. Rowlands

was awarded a cup for the Best Junior Exhibit and the Plaque for highest points in show went to Mrs. Parsons of Cardiff.

The full results were as follow:—Siamese Fighters: 1 and 2, D. F. King (Bristol), 3, J. Girdon (Llantwit), 4, Mrs. Harding (Cardiff); A.V. Labyrintha: 1, A. Ibbertson (Llantwit), 2, N. Gregory (Bristol), 4, B. A. Harding (Cardiff); H. & H. Characins: 1, 2 and 4, A. Ibbertson (Llantwit), 3, M. Tanner (Newport); A.O.V. Characins: 1, B. A. Short (Bath), 2, A. Rogers (Llantwit), 3, and 4, D. Songhurst (Llantwit); Barbs: 1, W. Chapman (Bristol), 2 and 3, B. A. Harding, 4, J. Smithson (Bridgend); Guppy Longtail: 1, P. B. Garner (Cardiff), 2, R. S. Wigg (Llantwit), 3 and 4, M. Phillips (Cardiff); Guppy Short-tail: 1, D. Songhurst, 2, N. Counsil, 3, J. Smithson; Guppy Female: 1 and 3, P. A. Player (Barry), 2, C. W. Smith (Cardiff), 4, R. S. Wigg; A.V. Platy: 1, A. Rogers, 2 and 4, R. S. Wigg, 3, S. Steer (Barry); Swordtails: 1, C. Harding (Cardiff), 2, S. Nelson, 3 and 4, J. Smithson; A.V. Mollies: 1, B. A. Harding, 2, J. Parsons, 3, C. Barber (Bridgend), 4, P. Garner; Catfish and Loaches: 1, F. Brown (Bristol), 2, J. Parsons, 3, W. Chapman, 4, D. Hayter (Trowbridge); Corydoras: 1, P. Callow (Bath), 2 and 4, B. A. Harding, 3, F. Brown; Dwarf Cichlids: 1 and 4, C. Barber, 2 and 3, J. Smithson; A.O.V. Cichlids: 1 and 2, J. Parsons, 3, P. A. Player, 4, G. Pearce (Llantwit); Rasboras and Danios: 1 and 2, J. Parsons, 3 and 4, D. R. Warment (Cardiff); Tooth Carps: 1 and 2, G. Pearce, 3, C. Churchill (Cardiff); A.O.V. Egglayer: 1, C. A. Player, 2, E. A. Short, 3, F. Brown, 4, J. Parsons; A.O.V. Livebearers: 1 and 2, J. Parsons, 3, J. Saunders (Llantwit); Breeders Egglayers: 1 and 2, C. Barber, 3, R. Hoare (Bridgend), 4, D. Warment; Breeders Livebearers: 1, J. Smithson, 2, D. Warment, 3, D. Bishop (Bristol), 4, A. Payne; Sexed Pairs: 1, C. Barber, 2, R. Wilkie (Cardiff), 3, B. A. Harding, 4, A. Ibbertson; Junior Class: 1, 2 and 4, N. Rowlands (Bridgend), 3, T. Richards (Bridgend); Furnished Aquaria: 1, R. S. Wigg, 2 and 4, S. Nelson, 3, D. King.

* * *

THE result of **Bristol A.S.** return match with the G.S.G.B. resulted in a win for the visitors from London by 3½ points. Totals for the complete contest were as follows (visitors in each case nominating the classes). At London: Bristol A.S. 1,047 pts.; G.S.G.B. 1,041 pts. At Bristol: Bristol A.S. 1,102½ pts.; G.S.G.B. 1,105 pts.

The principal event at the Bristol A.S. monthly meeting was a slide show of the recent challenge match with G.S.G.B., also shots of past club outings and shows. The slide show was presented by the president, J. Savage, who provided a detailed and entertaining commentary throughout. The table show was in two classes and results were as follow. Labyrinths: 1 and 3, F. Brown, 2, Miss H. Morgan; Cichlids: 1, Miss H. Morgan, 2 and 3, F. Brown, 4, Mrs. C. Allenson. The raffle was won by M. Howe. During the past month the Society provided judges for the fish section of the R.S.P.C.A. Show, members G. Stone and P. Greenhill officiating. F. Brown exhibited at Llantwit Major and secured a first, and L. Emery lectured at Wells and Yate and Mr. Thomas was occupied in the same capacity at Trowbridge.

* * *

FOLLOWING a suggestion made by Mr. A. Jessopp at the previous meeting of the **Tonbridge and District A.S.** a small selection of Tetras was provided by the committee for judgment by club members. They provoked some very interesting and instructive comments.

The society's first Table Show, A.V. Livebearers, was judged by the committee and the results were as follows: 1, T. D. Amos (Chrome-Yellow Wagtail), 2, J. Bellingham (Hybrid Platy); 3, I. T. Mathieson (Fantail Guppy), 4, Mrs. J. Bellingham (Green Swordtail). A raffle was held in aid of club funds, and tentative arrangements were made for a visit to the Medway A.S. Open Show.

* * *

AT the open show of the **Uxbridge and District A.S.** two hundred and fifty entries were benched covering twenty-one classes. Prize-winners were as follows. Club Furnished Aquaria: Ealing A.S. Individual Furnished Aquaria: 1, R. Forder; 2, J. S. Peters; 3, R. Forder. Guppy: 1, L. Goff, Bethnal Green 78 points; 2, W. N. Holmes, Verulam Aquatic Group 77 points; 3, Miss G. Thorn, Hounslow A.S. 76½ points. A.V. Mollies: 1, T. J. Hennessy, Verulam Aquatic Group, 84 points; 2, C. Withers, Mid Herts A.S. 79 points; 3, B. Funnell, Uxbridge A.S. 78 points. Platies: 1, T. J. Hennessy, Verulam A.G. 82 points; 2, F. B. Young, Reigate and Redhill A.S. 80 points; 3, Mrs. M. G. Nichol, Reigate and Redhill A.S. 79 points. Swords: Red, 1, T. J. Hennessy, Verulam A.G. 80 points; 2, R. G. Cox, High Wycombe A.S. 79 points. Green, 1, T. D. Smith, Brent A.S. 81 points; 2, R. S. C. Wingrove, High Wycombe, 80 points; 3, D. R. Lelliott, Verulam A.G., 79 points. Labyrinths: 1, B. Harvey, North Kent A.S., 77 points; 2, T. J. Summers, 76 points; 3, F. B. Young, Reigate and Redhill A.S. 75 points. Siamese Fighters: 1, D. Durrant, Thurrock A.S. 78 points; 2, D. Durrant, Thurrock A.S. 77 points; 3, D. Durrant, 76 points. Corydoras: 1, Mrs. M. G. Nichol, Reigate and Redhill A.S. 79 points; 2, R. C. Wingrove, High Wycombe A.S. 78 points; 3, R. Briggs, Kingston A.S. 77½ points. A.V. Catfish and Loach: 1, R. J. Thorne, Hounslow A.S. 78 points; 2, W. T. Evans, unattached 77 points; 3, R. E. Cooper, Kingston A.S. 76 points. Cichlids: 1, J. Thorne, Hounslow A.S. 81 points; 2, A. Withers, Mid-Herts A.S. 80 points; A. Withers, Mid-Herts A.S. 78 points. Dwarf Cichlids: 1, D. R. Lelliott, Verulam A.G. 78 points; R. J. Thorne, Hounslow, 76 points; 3, B. Funnell, Uxbridge A.S. 75 points. Rasboras: 1, R. Biggs, Kingston A.S. 84½ points; 2, W. M. Holmes, Verulam A.G. 82 points; 3, D. R. Lelliott, Verulam A.G. 81½ points. Barbs: 1, Mrs. L. J. Thorne, 80 points; 2, J. P. Peters, Uxbridge A.S. 79 points; 3, D. R. Lelliott, Verulam A.G. 78½ points. Egglaying Toothcarps: 1, B. Harvey, North Kent A.S. 78 points; 2, J. Cooper, Verulam A.G. 77 points; 3, S. G. Tarrant, Willesden A.S. 76 points. A.O.V. Tropical Livebearer: 1, T. J. Summers, Uxbridge A.S. 78½ points; 2, B. Harvey, North Kent A.S. 78 points; 3, R. Biggs, Kingston and District A.S. 77 points. A.V. Tropical Egglayers: 1, P. A. Grosvenor, Runnymede A.S. 81 points; 2, C. Swinburne, Brent A.S. 80 points; 3, W. T. Evans, unattached, 79 points. Breeders Egglayer: 1, C. E. Pike, High Wycombe A.S. 77 points; 2, J. Cooper, Verulam A.G. 75 points; 3, C. E. Pike, High Wycombe A.S., 73 points. Breeders Livebearer: 1, Guppies, Verulam A.S. 74 points; 2, Guppies, W. M. Holmes, Verulam A.G. 72 points; 3, R. G. Cox, High Wycombe A.S. 71 points. Special Class. Two Pairs A.V. Tropical Fish: 1, R. Biggs, N. Frifasciatus and Golden Danios, 76½ points; 2, J. S. Peters, Checker Barbs, 75 points; 3, I. McGaw, Green Mollies, 72½ points. The Best in Show and *Aquarist* Gold Pin award went to Mrs. M. Nicholl with her Corydoras julii. Trophy for Club with highest points was awarded to Verulam Aquatic Group.

* * *

NEW SOCIETY

THE **Doncaster and District A.S.** has recently been reformed. Meetings take place at the Lord Nelson, Cleveland Street, at 8 p.m. on the first and third Thursdays of each month. Anyone interested is most welcome. All enquiries should be sent to Hon. Sec.: E. W. Ford, 20, Norborough Road, Doncaster.

* * *

SECRETARY CHANGE

Warrington A.S.: Mr. Arthur Addison, 5, Hewitt Street, Latchford, Warrington, Lancs.

* * *

AQUARIST CALENDAR

3rd-4th August: Tottenham and District A.S. Coldwater Show, Lordship Park (in conjunction with Haringey Show). Details from Mr. Sean Mooney (Show Secretary), 44, Coniston Road, Muswell Hill, N.10.

3rd-10th August: Portsmouth A.S. Open Show at the Portsmouth Community Centre, Twyford Avenue. Schedules available from Mr. W. Ryder, Show Secretary, 493 Commercial Road, Portsmouth.

11th August: Rainworth and District A.S. Open Show at the Showroom of E. Taylor and Sons (Southwell) Ltd., West End Garage, Southwell, Notts. Hon. Secretary, Mr. K. Clifford, North Stoke, 45a, Linden Street, Mansfield.

14th-17th August: Midland Aquarium and Pool Society Annual Open Show, Bingley Hall, Birmingham.

25th August: Rochdale and District A.S. First Open Show at the Hamer Working Men's Club, Halifax Road, Rochdale.

31st August-1st September: Harlow A.S. Open Show.

7th September: High Wycombe A.S.

7th September: Yate and District A.S. Annual Open Show at Chrischurch School, North Street, Downend, Bristol. Schedules from Mr. T. J. Green, 42A, North Street, Downend, Bristol.

7th September: Bethnal Green A.S. Annual Open Show at the Bethnal Green Evening Institute. More details will be available later.

7th-8th September: Nottingham and District Open Show. Drill Hall, Triumph Road, Nottingham.

8th September: Warrington A.S. First Open Show.. St. Benedicts Youth Club (Bell Hall), Orford Lane, Warrington. Show schedules from Mr. Higham. Tel.: Warrington 36939.

14th September: Hounslow and District A.S. Annual Open Show at the Youth Centre, Cecil Road, Hounslow.

14th September: Nuneaton A.S. First Open Show. Schedules and details from Show Secretary, G. E. Cox, 36, Manor Court Road, Nuneaton, Warwickshire.

15th September: Reigate and Redhill A.S. Annual Open Show, Somers Hall, Reigate. Show Secretary, Mr. I. Stamp, 10, Benhams Drive, Horley.

21st September: Amersham and District A.S. Annual Open Show. Secretary, Mrs. Veronica Keating, 62, Townsend Road, Chesham, Bucks.

21st September: Newport A.S. Sixth Annual Open Show at the Duffryn Junior High School, Stow Hill, Newport. Details from the show secretary, Mr. M. J. Parry, 45, Western Drive, Gabalfa, Cardiff.

21st September: Mid-Herts A.S. Open Show at St. Paul's Church Hall, St. Albans, Herts. Show schedules are available from C. Withers, 15, Charmouth Road, St. Albans, Herts.

22nd September: Stone A.S. Open Show. Schedules may be obtained from Show Secretary K. Harvey, 61, St Vincents Road, Walton, Stone, Staffs.

22nd September: Birmingham Section F.G.A. Open Show at Glebe Farm Community Centre, Glebe Farm Road, Stechford, Birmingham 33. Show Secretary, Mr. P. W. Jinks, 355, Stockfield Road, Yardley, Birmingham.

22nd September: Dewsbury and District A.S. Annual Open Show, Further Education Centre, Park Road, Batley.

27th and 28th September: Bristol A.S. Annual Open Show at Bishopston Parish Hall, Gloucester Road, Bristol. The Show Secretary is R. Berry, 120, Fouracres Crescent, Downend, Bristol.

29th September: Annual Open Show at Harrowside Solarium, South Promenade, Blackpool.

29th September: Hucknell and Bulwell A.S. Annual Open Show. Works Canteen, A. R. Marshall and Sons Ltd., Forest House, Hucknall Lane, Bulwell, Notts. Show schedules from M. T. Harrington, 5, Greenwood Vale, Hucknall.

12th October: Cheltenham and District A.S. Annual Open Show at Ambulance Headquarters Hall, 86, Gloucester Road, Cheltenham.

17th, 18th, 19th October: Scottish A.S. Annual Open Show, McLellan Galleries, Sauchiehall Street, Glasgow.

26th-27th October: British Aquarists' Festival Belle Vue, Manchester.

1st December: Aireborough and District A.S. 7th Annual Open Show. The Town Hall, Guisley, Nr. Leeds, Yorkshire. Schedules and details available from the show organiser and secretary: Mr. G. E. Walker, 2 West End Terrace, Guisley, Nr. Leeds, Yorkshire.