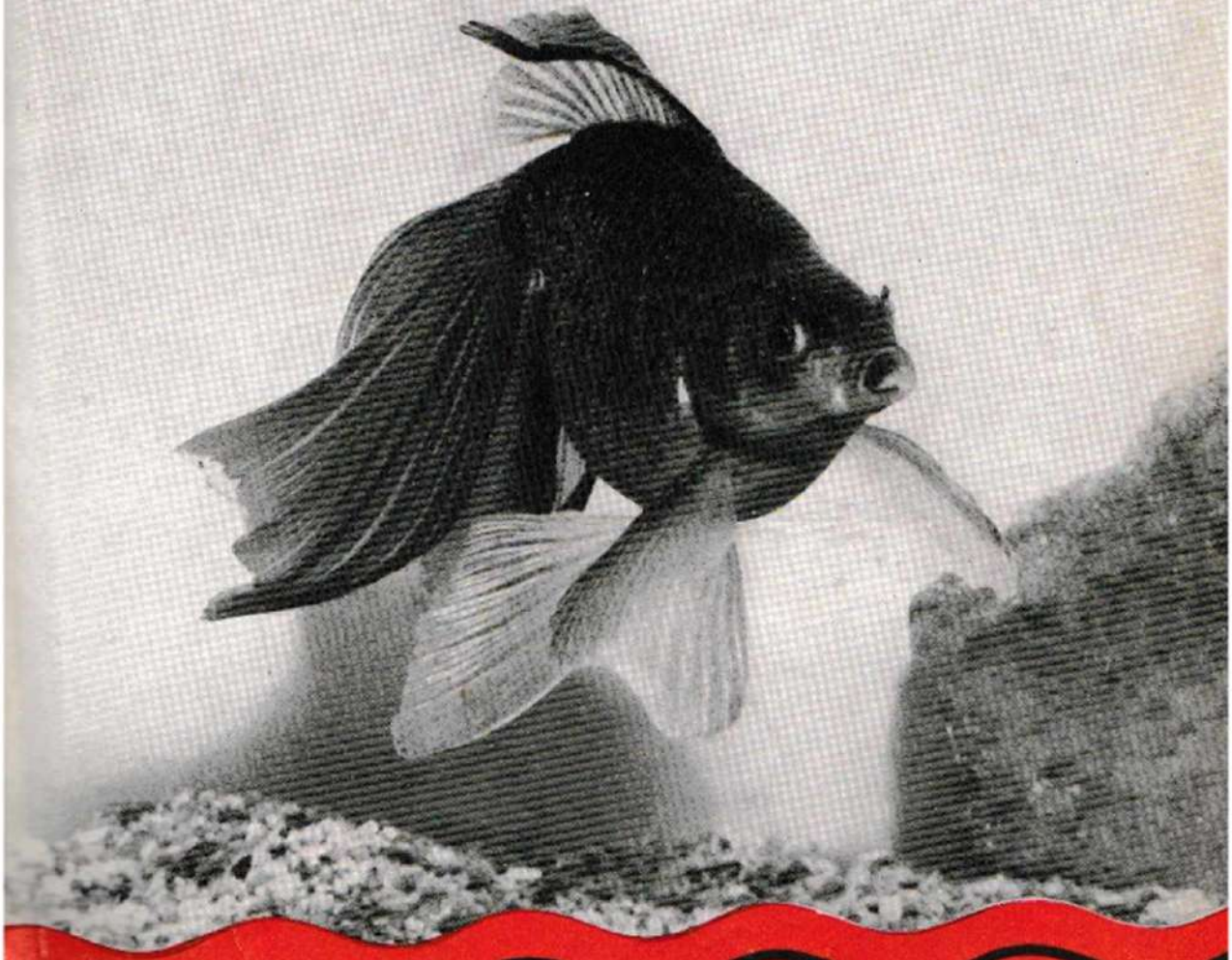
Water Life

AND AQUARIA WORLD



FEBRUARY—MARCH, 1954

TWO SHILLINGS & SIXPENCE

Water Life AND AQUARIA WORLD

VOL. 9. No. 1 (New Issue) FEBRUARY, 1954

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FRONT COVER: **UNPOSED PICTURE.** **This Veiltail Goldfish, its erstwhile flowing fins a trifle folded and its mouth open, barely disguises astonishment at the photographer's interest during a period of quietude in its aquarium. Miss Brenda A. Barnes records the activities of the photographer and his brother, a keen coldwater fish fancier, on page 25 of this issue.**

Photograph H. E. Perkins

EDITORIAL

Home Aquaria

IT is correct to say that many who consider themselves confirmed aquarists started in our hobby in a small way, after first seeing a well set-up aquarium in a friend's house. They were interested in the compact entity where among the plants of various shapes and colours and equally well-chosen rockwork, the constant movement of fishes in crystal-clear water provided a sustained interest.

There are, of course, those who, through neglect, have let their aquariums deteriorate in appearance and so have put off visitors who react against participating in a pastime that they have been misled into thinking is dirty and unattractive. Happily, they are in the minority.

All of us who like to be considered serious fishkeepers should be ambassadors for our hobby. Let us remember the value of showmanship by installing at least one tank, as a special display, in a prominent position. Both to earn the admiration of those who look at it and to make certain that it is an added thing of beauty in the room, the aquarium should be placed in a carefully chosen spot, coloured to blend with the furnishings and, if possible, provided with a stand that can be made to serve a secondary purpose.

Aquaria Associates

The spread of interest in small varieties of cacti and other succulent plants makes it appropriate to erect a shelf on the cross supports of the stand to create a miniature indoor garden beneath the tank by filling it with flora of quaint shapes and colours. It would not be wrong to go so far as to advise all to have at least one "drawing room" community tank. There are two good reasons for that contention.

In the first place, we need more recruits for our hobby and we can best arouse their interest by letting them see what a good furnished aquarium looks like. If we do not give our pastime a good advertisement it will face the possibility of dying out. We ought to display our pets and we must do so properly, taking care to see that their living quarters are maintained in good condition. The scheme whereby some societies hold annual home aquaria competitions amongst their members should be copied by others. Such contests do much to keep up the standard required.

The second reason is a little more subtle. It serves to bring the fishkeepers down to earth. There are those of us who enjoy the privilege of having a fishroom; in many cases we turn it into a utility breeding factory and, in our haste to breed more and more fish, we forget to enjoy the pleasures derived from relaxing to watch those fish which in properly set up surroundings participate in a well ordered daily round.

Our twofold advice is to have that tank set up at once in the house to get the interest of others in keeping fishes and to do so for the purpose of reminding ourselves that fishkeeping can be a pleasure and not the burden some of the more enthusiastic, or even fanatical, in our midst let it become.

Maintaining and Breeding Goldfish Varieties

Practical Recommendations Given by Mr. J. R. Tingle

Mr. J. R. Tingle.

WITH importation of Goldfish at the present rate and prices, the breeding of these creatures in Gt. Britain may not appear to be much of a commercial proposition. Whilst most of the imported fish are of poor show standard, at times we may find reasonable specimens at a fair price and, on purchasing such a pair, we could build up expectations of breeding many more of the same kind and type. Yet no matter how much care we give the offspring, quite a number of odd shapes and sizes (with good colour perhaps) will be produced. This is very disheartening, especially to the novice, although just the achievement of breeding them certainly means something to him even if he has bred "runts". Yet, for all the interest he has derived from his effort, a season will have been wasted as, although there may be two or three spawnings from one pair of fish in a season, the first spawning is usually the best. If the parent fish were from reliable home-bred stock, which is preferable, one or two spawnings at the most should suffice for the average novice.

The purchase of good fish bred in this country will naturally be more expensive in the first place but, with luck and good treatment during conditioning and rearing periods, results will fully repay the initial outlay. My advice is to select one variety of Goldfish and concentrate on breeding it. The experienced aquarist will invariably help you to select the fish, advise you on every aspect and generally charge a reasonable price to start you on the way to success.

Assuming that you are impressed by a particular pair of fish, Veiltails for example, which have rounded bodies and have lengthy fins, the next problem is the tank or other container in which to keep them. One tank is quite sufficient for the pair—or trio as the case may be. It is also adequate for conditioning the fish until the breeding season, i.e., up to the time the fish show their sex characteristics.

Bringing Fish into Breeding Fettle

There are many ways of bringing fish into breeding condition, which is indicated by the males showing erect fins, small tubercles on the gill plates and pectoral fins and their paying attention to the female fish. Female fish in breeding fettle should also have erect fins and their underparts should appear to be of fuller contour every day. Three factors must be considered when conditioning fish. The first is position and temperature of the tank. The second is light and room. The third is food.

Most fish will come into breeding condition gradually without a great deal of rich feeding if the temperature ranges between 65 to 70 deg.F. and this will occur during early summer when the days are longer. Under such conditions, however, spawnings would be mainly infertile and the offspring would not be of good quality.

For best results use a pair of fish—say two years old, which I think is the best age for breeding—and put them together at Christmas or early Spring, feeding them daily on Earthworms (some believe in chopped worms but I believe in "large lumps" for adult fish). Healthy fish simply love to gorge and I cut worms into pieces with a pair of scissors, the small red worms I give whole with feeds on alternate days consisting of crushed cream crackers and, if obtainable, maggots.

Another good conditioning food is dried liver. The liver is boiled or stewed, and is then allowed to dry. It will then keep indefinitely and can be scraped into the tank in fine flakes. While we are bringing the pair of fish into breeding condition a second tank can be set up either for spawning when the time is right or for transferring the eggs to if the pair are allowed to spawn in the first tank. The second tank should be at least 3 ft. long by any width in excess of a foot and a depth of approximately a foot.

Compost and plants may be added but this is not essential if the tank is to be used for rearing only. Plants or other spawning media are obviously needed for the spawning tank. These can comprise of bunches of *Elodea*, *Myriophyllum* or Willow Moss. I find bunches of *Nitella* the best if procurable, but practically anything from fine willow-root even to old pieces of blanket is suitable.

Left together the fish would certainly spawn but none of the eggs would ever reach the hatching stage as they would be devoured within a few hours. Therefore the more room that can be provided the better. For any success in breeding we should have at least three tanks and these should be

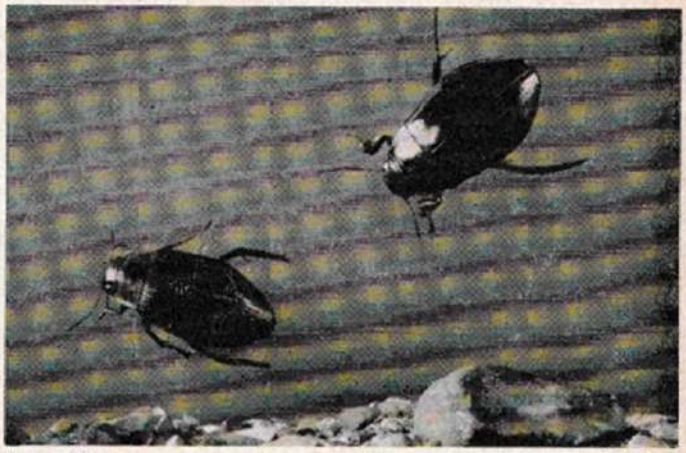
Photograph] [*L. E. Perkins*

Plenty of swim-space is recommended by the author for Fancy Goldfish. Here is shown a Veiltail reared in good conditions.

no less than 2ft. long but preferably 3ft. to 4ft.

Breeders say the best fish are born in March and I agree that the earliest spawnings are the best but to attempt spawning in anything like frosty weather is fatal and will perhaps upset the whole season's results. I suggest you consider the weather forecasts before making an early start with breeding. If the pair show any signs of driving too early, part them and keep in separate tanks until April or May.

When conditions seem favourable (and if you are a person who must go to business, I suggest Friday night) lower the water three or four inches in the spawning tank, place in the plants or other spawning medium and also the pair of fish. Fill the tank with cold tapwater then replace the cover on the tank and go to bed ! The next morning, especially if it is a bright Spring one, you will find quite a display of driving and splashing occurring inside the tank and will observe vast numbers of eggs adhering to the plants, sides and bottom of the tank, with many more to come. I usually leave the pair together until about midday. Yes, you may see the fish devouring a large number of eggs but there will be quite sufficient left for you to rear when the parents have had their feed.



Photograph] [*H. Bastin*

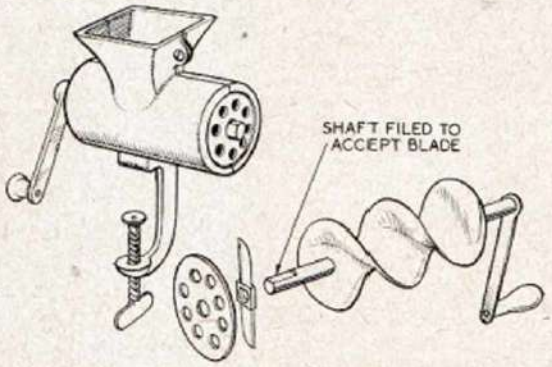
Beware of introducing the Great Diving Beetle (Dytiscus marginalis) *to aquariums. Female with furrowed wing cases is left, and male, right.*

The trouble with most beginners is they want to rear all the young fish produced but, of course, it is impossible and the more that are reared in limited accommodation the less successful will be the attempt. Even if every condition were perfect and a pond full of natural livefood was available to accept the young fry, a very large number of the fish would never reach maturity. When the parents are removed or the plants with eggs adhering are transferred to another tank, the parents should be given a good meal of chopped worms. Usually, if the temperature is in the region of 60 deg., the eggs will hatch in from three to seven days and hundreds of small hair-like creatures hanging from the plants or on the sides of the tank will be seen. After a lapse of another three days the young fry will be free-swimming and devouring the microscopic animals which they can see and we cannot.

Supplying Infusoria

The breeding tank will have accumulated a small amount of Infusoria during the period of incubation but not sufficient to feed the youngsters beyond a 24-hour period, so the incubation period is the time for us to prepare further supplies of Infusoria. Various methods are used and it is possible to purchase culture-inducing powders which are very good. The method I have used for years is to prepare the culture in an old bread bin by adding two large handfuls of hay—clover hay preferably—to about two gallons of tap water. I let this stand out in the open for about a week and luckily I have always found a good supply of *Paramecium* on examination with a microscope.

For those who have just a couple of tanks I suggest the use of six 2 lb. glass jam jars. Scald the hay and add a portion of the fluid, when cold, to each jar, then fill up with tap water. Let the jars stand anywhere, either outdoors or inside a hut or in the house. This may sound far-fetched to some but a friend of mine was bedridden for many years and he bred quite a lot of tropical egglayers in his bedroom. He cultured Infusoria upstairs. It might be said that the smell must have been oppressive but I saw some wonderful cultures he made and never noticed any smell which was unduly offensive when the glass covers were removed. In my own attempts I am afraid I have produced some remarkable odours but, provided fresh water is added to the cultures and fresh hay introduced regularly, there is no reason why there should be any offensive perfumes !



A toy mincer adapted for use as a worm shredder. This has been achieved by introducing a cutting blade behind the grid.

Amount of Food for Young Fish

One tablespoonful of a good culture twice a day is sufficient for the first week but this is increased as the young fish grow. Cut the Infusoria down to a minimum at the end of a fortnight. To replace them I use a small portion of flour put into a piece of rag and waved about the tank. Another good food at this stage is the cocoon of the gentle squeezed into the tank. As the youngsters develop screened *Daphnia* should be offered. Small quantities given frequently are the best as these small crustaceans need plenty of oxygen and too many, added to a tank containing a lot of young fry, will soon cause trouble.

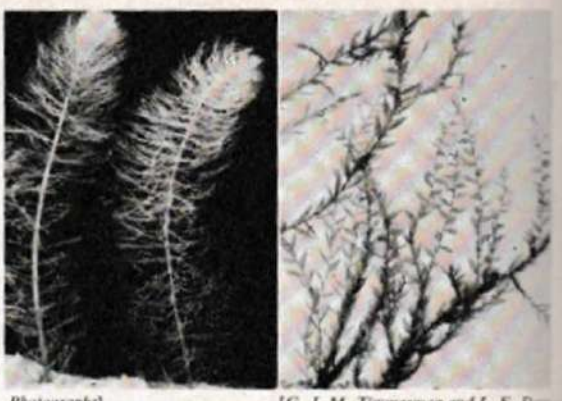
This is the time when care must be taken not to introduce *Hydra*, Planarians, *Dytiscus*, Water Boatmen or Dragon-fly larva with the *Daphnia*. Still, I say we must have *Daphnia* as no other food gives the same results. Mikro-worms are praised by many breeders but I have never been very successful with their use, as the fry devour them but allow them to escape through their gills.

Garden worms are really good food for all sizes of fish but to bring them down to the size suitable for small fry is quite a job. There are worm shredders on the market but I made a most efficient one by using a very small mincer. My wife first introduced this mincer (usually sold as a child's toy). On examining it I found that there was the usual driving

screw to push its contents to the grid. By using small pieces of bread this would act efficiently but, as no cutter was present, it was useless for the purpose for which I proposed to use it. After a little alteration and the addition of a piece of flat steel, fitted to act as a cutter, I found this the most useful addition to my fish breeding requisites. Of course cutting up and mincing worms is not a job appealing to everybody but the result is really worth the trouble. I can put a dozen really large worms into the mincer and, after a few turns of the handle, I get enough wholesome food to feed a large number of fish, large, small and very small. Maggots can be prepared this way if the food is allowed to drop into a butter muslin net. The net is waved about in the water and quite a cloud of suitable food is there for the youngsters. What food is left in the net can be graded out to larger fish. Since I made this gadget many of my friends have managed to procure a mincer but this particular toy, sold at 3/6d, does not now seem to be obtainable in my city (Sheffield).

The young fish should be ready for grading at a month old and, by removing the larger fry to another tank, the smaller youngsters have a better opportunity to grow. As I stated previously, if plenty of room is not available it is better to dispose of the small ones and concentrate on rearing a few larger selected fishes. If properly fed these should be at least 1-1½ in. long at the age of nine weeks. Overcrowded tanks of fry will waste your time and rearing a few healthy ones, or even only one, to good show specimens is a far prouder achievement.

Of course various snags occur in fish breeding activities but the sense of achievement in breeding and rearing your own quality fish makes the attempt well worth while.



Photographs] [*G. J. M. Timmerman and L. E. Day*

Two fine-leafed plants species suitable as spawn trap for Goldfish. Left, Myriophyllum. *Right:* Fontinalis.

Photograph] [*J. R. Tingle*

Some of the author's Fancy Goldfish stock.

— Know Your Fishes —

No. 31

Abramites microcephalus

Photograph] [*G. J. M. Timmerman*

Just a little different from the more well-known species of Characins, *Abramites microcephalus* would doubtless enjoy popularity were it in ready supply. Its shape is rather interesting, the body being somewhat cylindrical and the snout pointed. A characteristic of this fish is its habit of moving about in a nose-down attitude, the angle being as great as 45 degrees.

Colouring is pleasing but not brilliant. The body is a greyish-brown varying in intensity. Dark barring, either deep brown or black, adorns the sides. These bars are seven in number and the third extends into the dorsal fin where its dark colour tapers out along the front edge of the fin so that the mark has a triangular shape. Immediately behind this fin's dark triangle there is a line of yellow.

The adipose fin is marked with black but it is basically yellow. The caudal fin is yellow but at its base, where it joins a dark area on the peduncle, it is white. The anal fin frequently has some black markings at its root towards the posterior edge although the overall colour is yellow. Pelvic fins are black and pectoral fins are yellow.

All records suggest that the species is inoffensive but few specimens have been imported into this country so positive indications of its requirements are not possible. Its resemblance to members of the *Leporinus* Genus correctly suggests that it is closely related. From this it would appear that *Abramites microcephalus* might be a good jumper so tanks should be kept covered. A mixed diet is suitable with some soft Green algæ doubtless appreciated.

Maximum length is four to five inches. No sex identification has been noticed and no record of success in breeding is recorded. A temperature between 73-77 deg. F. is suggested.

A. microcephalus is native to the Lower Amazon. Class: *Pisces*. Order: *Ostariophysi*. Family: *Characidæ*. Genus: *Abramites*. Species: *A. microcephalus*.

Searching for Fish in British Guiana

Numerous Tropical Species Seen and Collected in their Native Haunts

By Dr. Werner Ladiges (Hamburg)

(Illustrated by Wilhelm Hoppe)

SINCE the American ichthyologist Eigenmann first published information on the fish fauna of British Guiana that region has become one of the best known throughout South America among those interested in fish. Nevertheless the Continental aquarium trade had neglected this country for many years and I am proud to say that a first trip to gather information, undertaken by me, succeeded in rediscovering its wealth of beautiful species in the many rivers and brooks. I shall now give an account of my trip which will no doubt prove of modest historical value for all aquarists.

The types of fish native to the rivers of British Guiana are similar to those living in the Amazon basin, although a few species found in the latter location are non-existent and a few others are exclusively reported from Guiana. In view of the restricted size of the area and its more easy accessibility, however, British Guiana is a more prolific hunting ground for both explorers and dealers in fishes.

When I left Europe the first wilted leaves were falling from the trees; through a fine and steady drizzle the Holland express carried me to Amsterdam, the only port from which at that time a direct passenger service existed to the country in which the "red pepper grows", as the Germans used to say. The plan to organise a fish hunting expedition to Guiana had been worked out only a few weeks before.

In the midst of the hectic anxiety usually connected with examination days at the Zoological Staatsinstitut I spent an evening with the owners of the Aquarium-Hamburg. We had a large map of South America before us and we spoke of the La Plata, of the Amazon river and others, and came to the conclusion that it was high time to send an expert down there to secure new supplies and to gather fresh facts on the living habits of tropical fish in their natural habitat. All of a sudden I suggested the three Guianas, remembering what Eigenmann had stated in his reports of the tremendous number of fish he had seen. I also knew that many highly coveted species lived there. My suggestion was accepted and half-an-hour later the plans were drawn up and I was entrusted with seeing the matter through.

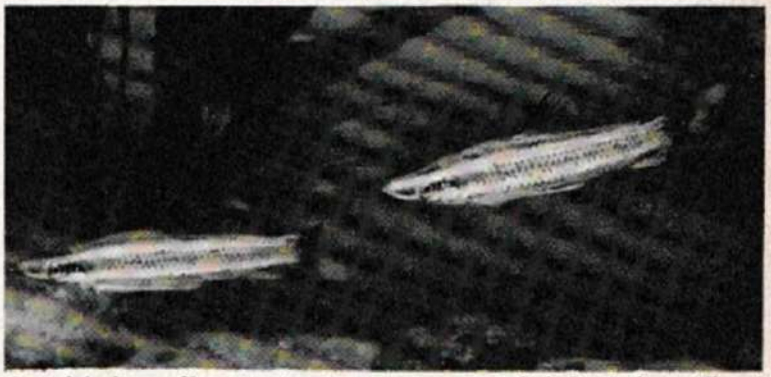
Obtaining the Required Equipment

Within two weeks nets were procured, as well as other necessary equipment and stores of all kinds. Everything was dispatched to Amsterdam from where we sailed aboard S.S. Stuyvesant. After a stormy trip across the Channel and the Bay of Biscay we reached the sunny island of Madeira. We crossed the Atlantic in two unforgettably beautiful weeks under an emerald sky, and saw large numbers of flying fish lifting themselves out of the gently rolling waves. When we awoke one morning we found gorgeously coloured butterflies resting on the deck and long swift rows of bright ibis flying over our vessel. From the hazy shore a tepid breeze brought with it a peculiar smell telling of decaying trees and fragrant flowers, exciting the newcomer's interest.

Two days later we landed at Georgetown, the capital of British Guiana. First impressions were overwhelming; instead of finding myself in mangrove thickets and heavily overgrown river banks I saw imposing bank buildings and an unexpectedly large number of cars. Apart from the sultry heat only a few isolated palm trees and coloured people served to remind us of the tropics, and proof that we were on the right track.

Final Preparations

With the aid of the very affable Capt. Hastings, whose Nottingham House was well known to all huntsmen at that time, and of a native boy, who had already worked as gold digger and game tracker, the balance of my equipment was soon secured. It was my plan to follow the itinerary covered by Eigenmann, working my way up the Demerara river and exploring its backwaters in the midst of the huge primeval forests. It was there that I wanted to catch some specimens of the wonderful fish he had listed in great detail in his book on Guiana. To make this possible I took along an ample supply of food for my boy and I, as well as for an additional help I wanted to hire on the spot.



One of the larger Characins, Anostomus anostomus, *which Dr. Ladiges collected.*

After a few busy days everything was settled and we set out aboard the tiny government-operated river boat which was to bring us into our Garden of Eden, the boundless forests with their orchids and ibises, their humming birds and their herons. While I rested in a deckchair my eyes took in the wide expanse of the river, with the vessel's wake crashing noisily through intertwining roots and arousing more than one alligator from its siesta. Where screeching swarms of the Amazon parrots assembled in their roosting trees we dropped anchor at the small Wismar missionary station, where we found the best possible reception. It was from this base that our numerous expeditions began.

The station was built many years ago on a narrow strip of clearing between the forest and the river. Father Archer, the young Canadian missionary, readily helped me in every respect. As I could not wait any longer I went out the same evening to try out my fisherman's luck along the grassy shoreline. The very first catch in my net yielded an excep-

tionally large variety of fish, among them *Pristella riddlei*, *Polycentrus schomburgkii*, *Hemiodus semitæniatus*, several Catfish and specimens of the genus *Mærkhausia*.

I shall never forget this first catch of mine in tropical waters. But it acquainted me right from the start with the unbelievable difficulties one must overcome to score a success. In most cases there was no other way but to strip and dive head-first into the water. In this primitive manner, and from aboard "coreals" as the natives call their slender boats, all accessible creeks and coves were searched. The Indians led us to large floating grass islands and similar favourite haunts of our elusive quarry. Frequently we had to fight our way through the whirling eddies and sometimes we were immersed in the water up to our necks as we kept on fishing with our nets.

Movement of the Nets

Plain catching nets proved impracticable and the best results were obtained by resorting to a vertically-held net such as is customary among the aborigines. It has a height of about one metre and a length of 2.5 metres and is held in an upright position by two men who push it slowly forward with their hands and feet and lift it out of the water upon reaching the shore with a jerky movement to hold it in a horizontal position.

On the second day of my expedition I succeeded in catching near Wismar a most beautiful *Anostomus anostomus* which

Gasteropelecus sternicla, *Hatchet Fish of the* Gasteropelecidæ *Family. They have a dark lateral band with pale edging.*

had vainly tried to hide in a grass wisp; no living specimen had been brought to Europe until then. I also caught *Pœcilobrycon ocellatus* and *erythrurus*, *Nannostomus marginatus* and *simplex*, and—as another rarity—*Ephippicharax orbicularis*. Many Catfish were found and in a muddy bay I came upon the rare *Corydoras punctatus*, but only once.

Again and again large numbers of *Gasteropelecus sternicla* were thrown into an uproar by our boats and fled. They appeared as silver streaks jumping out of the water and gliding along on the surface, like freshwater "flying fish". In shallow mud holes in the interior of the virgin forest we found and collected specimens of *Rivulus* and *Callichthys*. The *Rivulus* were leading a semi-amphibian life in their shallow ponds, which were at times not more than 1 and 2 in. deep, crawling between moss tufts and accumulations of decaying leaves and fruit. They jumped up like grasshoppers in front of my feet and often enough they got stuck to the upper parts of my boots.

After I had filled about one half of my cans, the empty ones, with two boats and part of our food supply, were stowed aboard the most peculiar railway I have ever seen. It was a single-track line leading straight through the hilly section between the Demerara and Essequibo rivers. It consisted of a dilapidated tractor of obsolete design and two freight cars of equally venerable age—that was all. But the contraption functioned against all expectations.

Pencil Fish, Pœcilobrycon ocellatus, *with eye-spot on caudal fin. It is just possible that this fish may prove to be a colour variation of* P. eques *although further investigation is necessary before a ruling can be given.*

Swiftly it made its panting way through the dense woods, uphill and downhill, until we landed at Rockstone, a small Indian settlement consisting of 10 houses huddled together at the river's bank. This place had acquired a certain importance from the fact that the gold diggers used to start from it on their way up the Mazaruni river. It was the most solitary place I have ever been in, with no other educated human beings for many miles, nothing but plants and animals to keep the natives and you company.

Off and on we saw a group of shy aborigines in the distance but they immediately disappeared in the dense foliage of the undergrowth. The two of us, and a butterfly collector with his Indian boy, took up quarters in an old battered and crumbling rest house located near a creek in the midst of the forest. To be frank, it turned out quite soon that we were but additional tenants in the house, for every corner had been taken long before our arrival by huge birdspiders, bats, Teju leguans and rats. Whilst I arranged the cans, the boys busied themselves with building a fire, hanging the hammocks and the mosquito netting, whilst chattering all the time like a pair of parrots. As soon as I found a chance I went to the creek flowing past the house.

Its somewhat reddish, but otherwise limpid, waters were hedged in by mangrove and mucka-mucka, with large stilt-like roots forming shadowy nooks and corners and an enormous wealth of fish life in them. Countless schools of *Carnegiella strigata*, *Hemigrammus ocellifer*, *Pristella riddlei*, *Copeina arnoldi*, *Pœcilobrycon* and *Nannostomus* specimens of various species were darting to and fro in the sunny water.

A new discovery not listed up to that time for Guiana was *Monocirrhus polyacanthus*. I caught large numbers of *Carnegiella* moving about in schools of tremendous size. Large-size *Hoplias malabaricus* were in the meadows along the river bank and jumped away into deep water when I approached.

Up-river I could see a bright yellow sandbank a little more than a mile away which I visited next. Leguans, turtles and caimans had deposited their eggs in the extremely hot sand and large full-grown specimens of these creatures were basking themselves in the sun. Towards the central part of the river channel the beach sloped very gradually and it

Corydoras agassizi, *a Catfish similar in appearance to* Corydoras punctatus.

was here where I observed a great many types of *Aphyocharax* bestirring themselves. A giant freshwater ray which had dug itself deep into the hot ground could have been caught alive. He was nearly 3 feet long. Behind the sandbank I found an old river course with stagnant water, completely overgrown with salvinias and mimosa-like plants. New varieties of fish were detected here. A great many Knife Fish and countless *Pœcilobrycon* and *Nannostomus* of various types hid below the aquatic plants.

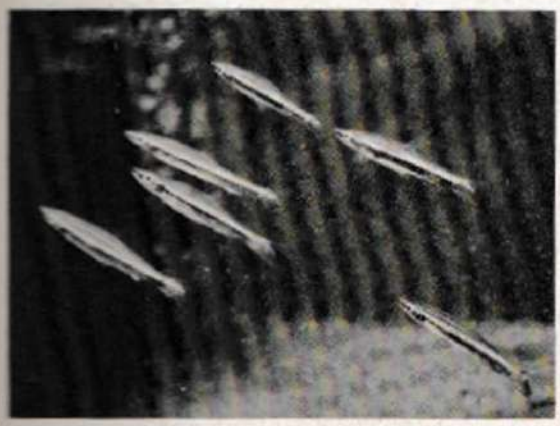
On account of the large number of caimans with which the valley was infested—once I "met" an extraordinarily big fellow—I did not feel fully at home in these waters and left without having taken advantage of all opportunities offered there. Everywhere along the steep banks I saw large schools of the minute *Hemigrammus* and many different types of *Pœcilobrycon* and *Nannostomus* which must be regarded as typical and most prolific representatives of the fish fauna of Guiana. At deeper spots I quite often found small groups of *Mesonauta* and larger schools of big fancy-coloured specimens of the Genus *Chalceus* with red and black fins. To my great regret the nets at my disposal were inadequate to catch even a single representative of this latter fish. Every time when I had succeeded in closing in on such a group with my unwieldy 6-metre net they got aware of the impending danger and jumped out over the rim of the net.

Marbled Hatchet Fish (Carnegiella strigata) *showing dark mottling.*

Mammoth Cichlid Specimens

In front of the natives' settlement a group of rocks rose out of the water, with many oddly-shaped grottos at the water level. Below the surface there were many rivulets and channels carved in by erosion. *Astronotus ocellatus*, *Cichlasoma severum*, *Cichlasoma festivum* and other *Cichlidæ* were found here. In all the three species I could observe there were real "giants" with "moss-covered" backs. I also saw many *Pterophyllum scalare* but they were very shy and hid at once under the rocks when we approached.

The impression of the same location at night time was entirely different in many respects. I had hoped that it would be possible to catch the fish during darkness by the light of a powerful lamp. The composition of the fish fauna was actually quite different. There were still the big Cichlids,



Pœcilobrycon eques, *a Pencil Fish species bearing a superficial resemblance to the more frequently seen* P. auratus.

but the Characins I had seen during the day were gone. Electric eels and strange-looking Catfish and large-eyed Characins had taken their place.

During my daily excursion into the innumerable creeks and sloughs of the jungle forests I came once to a shallow brook snaking its way through the bush. There was no shadow anywhere. A husky tapir fled when he saw my boat rounding a corner, and the same was true of a group of capybaras. Upon completing the bend I made straight for the half-submerged trunk of a tree until I became aware of the huge jaguar crouching on it. When I stopped he got slowly up, stretched his legs, snarled—and slid away into the dense undergrowth. A narrow escape, indeed ! In this creek we found large numbers of half-grown *Hyphessobrycon rosaceus* and a single specimen of the rare *Hyphessobrycon minor*, in the company of *Hemigrammus ocellifer* and *Pristella*.

On a cruise to the large jungle island—called Gluck Island—particularly interesting piscatorial observations were made. I could also write a book dealing with the unbelievable variety of birds which I saw and heard everywhere.

One by one our transportation cans had filled to capacity

Head of a rare Knife Fish, Rhamphichthys rostratus.

and it was time to start on the home trip. The delicate cargo was stowed on one of the two old freight cars while the other had been taken by a horde of fancy-clad fellows who were highly excited gold diggers. Again the old tractor pulled us through the darkness of the night, with myriads of ghastly and awe-inspiring noises and screeches drowning the din of our engine and the clatter of the wheels at times. To my surprise my precious fish stood up to the transportation well, even the frail *Monocirrhus*, and not one of them died.

Transporting the Catch

At Wismar, the balance of our catch I had left there and the new Rockstone crop were carefully transferred aboard the government steamer. After a quiet and uneventful trip we found ourselves back at Georgetown. The Nottingham House made available to me a spacious and sunny room in which I could set up an electric pump to ensure an adequate air supply for my fish collection. The time left at my disposal allowed me to roam the city, to pay a visit to the marvellous Botanical Garden with its *Victoria Regia* pond and the lotus gardens. A last hunting expedition to the inlet channels of the water works yielded a most beautiful specimen of the *Hyphessobrycon* Genus, a *Hyphessobrycon stictus* with the light pink caudal peduncle, and also *Nannacara anomala*. Three weeks later the Holland express took me back to Hamburg.

Supplying the Needs of Vivaria Inmates

1. Indoor Fernery for Amphibians

By Alfred Leutscher, B.Sc.

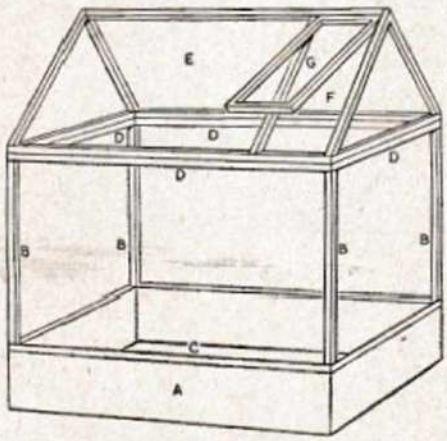
ANY lover of animals who wishes to keep pets will realise that under conditions of domestication they become entirely dependent on the owner. He must therefore provide them with the best living conditions in captivity, artificial as these may be. A healthy animal, they say, is a contented one, and this will depend largely upon two things—the proper environment and the correct diet. It is, therefore, a wise hobbyist who decides beforehand whether he can adequately provide such conditions for his pets.

In previous articles appearing in WATER LIFE I have had something to say about various reptiles and amphibians, the animals of the vivarium hobby. This new series deals with their homes in captivity. A vivarium keeper starts with one advantage in that his animals require comparatively little space in which to live, so that a vivarium can be installed in the smallest space, even a flat. The kinds of vivaria which are used will depend largely upon the creatures we choose, and since these can vary enormously in their habits—from purely aquatic to entirely terrestrial—the design and construction of vivaria lends added interest to the hobby. The finished products will depend upon what we can afford to spend on material, on our own ingenuity and workmanship, and on time and labour we can provide.

Let us start with a community vivarium for amphibians. This can be made for the cost of some wood, screws, window glass, zinc sheeting and paint. I am in the habit of giving names to my vivariums, each conveying a different idea of style and use. This kind is named the Fernery, a very popular ornament in Victorian days when it was used for housing a collection of ferns and other moisture-loving plants. It also makes an ideal home for amphibians.

Sketch 1 will give some idea of its shape. The bottom, A, is a shallow, wooden tray of tongue-and-groove boarding, which is lined with some zinc sheeting on the inside. The framework which holds the glass above this is made of one inch hardwood strips. Firstly, prepare the four uprights, B. These should have grooves cut in them with a tenon saw, down the two adjacent inner sides into which the glass can be fitted. Now prepare the base of the frame, C, so that it will sit on top of the tray, and groove lengthwise as before. Next, cut the window glass carefully so that each piece will slide down the upright grooves when the uprights are screwed in place. Each piece of glass must be so cut that it is slightly above the uprights, because it will have to fit into the grooves of the top part of the frame, D. If the uprights are pulled into position with the glass in its place before the top is screwed down, the frame should be rigid.

The sloping glass roof, E, is made in a similar way, and will require a little more precision because of the angles. The triangular ends are made first, then screwed on to the cross pieces. This roof merely rests on top of the main cage. Ventilation is provided by a strip of perforated zinc, F, fixed on the inner side of the frame towards one end. Over this is fixed on hinges a wooden flap, G, which can be adjusted to admit or exclude the air from outside. Finer details of the frame hinges and grooves are shown in Sketch 2.

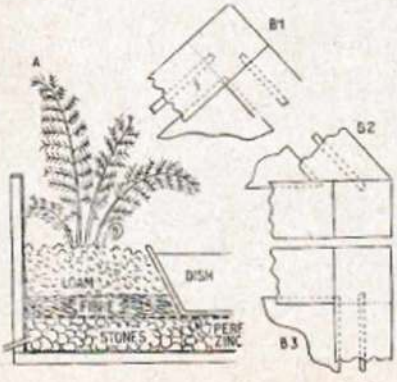


A Fernery must be well drained. The tray bottom is covered with loose stones, bricks or cinders, to a depth of about three inches. On this is placed a sheet of perforated zinc which is then covered with moss or peat fibre. Finally comes a good layer of soil for the plants to grow in. A loamy soil will suit ferns best, such as a mixture of leaf-mould, sand and some good garden soil. Somewhere in the tray a shallow dish of water is sunk to the rim. There should also be a small drainage pipe fitted into one corner.

The plants which will occupy the Fernery should not be too crowded. They may either be purchased at a florist's or collected from the countryside. Places to search are along shady banks and ditches, hedgerows, old walls and undergrowth in woods. Ferns, mosses and other shade dwellers should grow well with little attention. Here and there a broken flower pot, a branch or two or some bark strips will provide shelter for the amphibians. In a community like this one can assemble together a collection of small frogs, toads and salamanders. Newts can also be added during the times they are out on the land. Small specimens of each species are advised.

Food such as maggots, worms, slugs and meal-worms are best, served by hand or in a feeding dish. If flies are given they can be dropped in alive. A regular supply is possible, by placing in the cage a small pot with a hole in the lid, which contains maggots. These will pupate and hatch. The flies finally crawl out into the cage. I have known toads to wait around such a pot for the next meal.

The size of a Fernery will depend upon space and contents. Mine works out roughly 3 ft. long by 1 ft. 6 in. wide and about 2 ft. high. The woodwork has been given an annual coating of oak stain, but the inside is untreated. The dish is always filled with clean water, and a small pot stands under the drain pipe. The animals are fed about twice a week, and are hibernated in a cold garage for the winter.



Sketch 1 (*upper illustration on this page*) *shows the structure of the wooden framework of the Fernery. The lettering is referred to in the text.*

Sketch 2. *A, is a section of one end of the tray. B*1 *is an end view of the frame at the top of the roof. B*2 *shows the base of the roof and B*3, *the top of the main cage. Dotted lines are grooves for the glass.*

Systematic Study of Pond Life (4)

Varying Forms of Respiration

By John Clegg, F.R.M.S.

In previous articles, consideration has been given to three of the fundamental questions to be answered when studying the ecology of a pond: "What lives where and when?" These have been questions that can only be answered by observations at the pondside. With the fourth question "How?" we enter the second phase of the study which is the analysis, or sorting out, of the data that has been accumulated. This is a task to be carried out at home or in school by close examination of the creatures in aquaria, with hand-lenses or under a microscope. We must set out to find out all we can about *how* they live in their habitats, that is, what special features they have for securing from their environment the necessities of life—food, oxygen, etc. This is, of course, a very large subject and in the present article only one aspect can be touched upon—the securing of oxygen, and that only in connection with one or two groups of animals which are commonly encountered in pond-hunting expeditions.

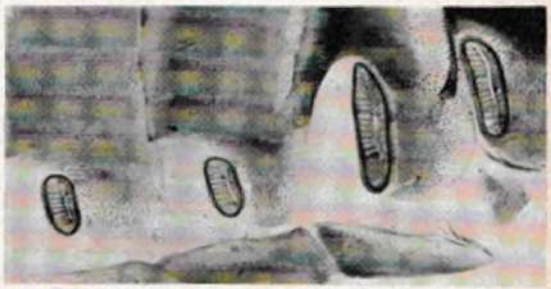
In creatures that are truly aquatic—the primarily aquatic organisms—there is no special problem since they absorb their oxygen either through their whole body surface if they are small, or through special organs, such as gills. It is only when they are living in conditions of severe oxygen scarcity (as for example *Tubifex* worms, in polluted waters) that they need special mechanisms—in this case the red pigment, hæmoglobin, in the blood.

Great Silver Beetle at the surface. Note its silvery underparts.

The secondary aquatic animals—those which have taken to life in the water late in their evolution—are, however, in a different category. As they are often dominant creatures in a pond, they will serve as convenient examples in this article. Let us take, first of all, some aquatic insects. Land insects take air at air-holes, or spiracles, situated at intervals along their bodies. The air is taken direct, without the intervention of a blood-stream, to all parts of the body needing it, through air-tubes, or tracheæ. In most adult aquatic insects the same method is adopted but obviously some special modifications become necessary to suit the new environment. For example, it would be highly inconvenient, and perhaps dangerous, to have to return to the surface very frequently to renew the air-supply, and so many insects, such as Diving Beetles and Water Boatmen, carry an air reservoir in the form of a bubble in the most convenient position for renewal at the water surface. This can be drawn upon while the insects are swimming about in the water. The bubble is usually held in position by over-lapping hairs and is in contact with open spiracles.

In the Great Diving Beetle (*Dytiscus marginalis*) the bubble is trapped below the wing-cases and to renew the supply the beetle lifts the ends of its wing-cases above the surface film, at the same time taking in additional air through the extra large spiracles at the tail-end of the body.

That fine insect, the Great Silver Beetle (*Hydrous piceus*), carries its store under its body and the silvery sheen has given the insect its name. The Silver Beetle has, in fact, two types of air-retaining hairs on its body, a series of long, recumbent hairs which hold a large air-bubble, and a covering of much finer hairs, retaining a very thin film of air. Incidentally, if this beetle is kept in captivity, it should be allowed to come out of the water about once a fortnight to groom itself and to keep these air-holding hair-piles in good condition, otherwise it tends to die through lack of oxygen.



Spiracles of the Giant Diving Beetle. Larger ones are near the rear of the body. Photographs by the author.

Considerable attention has been paid lately to the presence of these very thin films of air on some aquatic insects, notably by Dr. W. H. Thorpe and his colleagues at the Department of Zoology, University of Cambridge. It is found that the films act as a type of physical gill, that is they are not merely air reservoirs but, by providing an extensive gas/water surface, they enable oxygen to be absorbed from the surrounding water as it is used up, so reducing the need to renew the air-supply at the surface.

Dr. Thorpe believes that this specialised hair-pile may have been evolved from the "rain-proof" hairs which many small insects living on or near water possess. However the modification has come about, such plastron respiration, as it has been named, has enabled several Genera of aquatic insects, most of them from running water and thus beyond the scope of these articles, to become almost independent of visits to the water-surface for air.

A somewhat similar arrangement has been adopted by the Water Spider, the only British spider that has taken to a full aquatic existence. Nevertheless it still retains most of its terrestrial characteristics, including the necessity to breathe atmospheric air. Hence it builds underwater a form of web which it proceeds to fill with air carried down from the surface in the form of bubbles trapped in the air-retaining pile on its abdomen. In the air-bell so constructed, it lives continuously except for occasional hunting expeditions after its prey in the form of smaller animals, which are taken back to the bell to be devoured.

Great Pond Snail (Limnæa stagnalis) *breathing at the surface of the water.*

The bell does not need frequent replenishment with air, but like the plastrons mentioned above, can ab-

sorb fresh oxygen from the surrounding water to make good what has been used in the spider's respiration. The carbon dioxide given out by the spider also diffuses outwards and is readily dissolved in the water.

To return once more to the insects, air reservoirs are not the only modifications for facilitating respiration in a watery environment. Gnat larvæ, for example, have a breathing tube at the tail-end of the body, which, by means of flaps, can be secured to the surface film so that the insects can remain suspended while taking in air and feeding. Breathing tubes are also found in the Water Scorpions and in the fly larvæ *Tubularia* (=*Eristalis*—the Rat-tailed Maggot) and *Ptychoptera*. In the Water Scorpions the tubes are rigid and spine-like and are poked above the surface, so bringing into communication with the atmosphere the air-holes at their bases. In the case of the fly larvæ the tubes are telescopic so that they can be extended to suit the depth of water.

Not all aquatic larvæ have the open tracheal system of breathing. Some have a closed system in which air-holes do not open to the surface. Instead, thin-walled gills cover the ends of the tracheal tubes and these are carried at various parts of the body. The three "tails" of a Damselfly nymph, and the pairs of vibrating gills on the abdomen of the pond Mayfly, *Cloeon*, are good examples of creatures with tracheal gills, but they are not always carried outside the body. In the case of the larger dragonfly nymphs, they are inside the rectal cavity and water is drawn inside to supply the insects' oxygen requirements.

In some larvæ with thin skins the whole body surface appears to act as a gill, absorbing oxygen from the water and giving out carbon dioxide. In the so-called Bloodworms, larvæ of the Chironomid midges, the presence of red pigment, hæmoglobin, aids the process of respiration by making the most of what little oxygen there is in the deficient water where they live. The so-called "blood-gills" of these larvæ are not now considered to be for respiratory purposes but are probably connected with the intake of mineral salts from the water.

The methods of respiration adopted by other groups of pond animals, such as the snails, also have points of interest in determining what kinds can live in particular waters. Some snails such as the Pond Snails (*Limnæa*) and the Ramshorn (*Planorbis*) breathe atmospheric air and rise to the surface to get it, although it is believed that the Great Pond Snail, at least, is capable of extracting some oxygen from the water. The Ramshorns have red hæmoglobin in their blood, as is obvious when an albino specimen, lacking pigment in the shell and body (the Red Ramshorn, so beloved of aquarists), is observed. They can thus make do with minimum quantities of oxygen. On the other hand, the freshwater Winkles (*Vivipara*) are gill-breathers and need adequate oxygen in their environment.

Current Research

The Swim-bladder

By Alastair N. Worden,
M.A., B.Sc., F.R.I.C., M.R.C.V.S.

"FOUR functions are attributed to the teleostean swim-bladder. It is believed to be a hydrostatic organ and to play a part in respiration, to act as a sense organ and to serve for sound production." In an important contribution that opens with these words, Drs. F. R. Harden Jones of the Zoological Laboratory, Cambridge, and N. B. Marshall of the Natural History Museum, have provided an up-to-date review of our knowledge of the structure and functions of the swim-bladder (*Biological Reviews*, 1953, 28, 16-83).

During development the swim-bladder of teleost fishes originates as an outgrowth from the dorsal or lateral walls of the forepart of the gut. Fish with well-developed swim-bladders swim easily and can remain poised in "mid-water" with little or no movement of their fins, while fish in which the swim-bladder is small or absent swim with difficulty when off the bottom and can remain poised in mid-water only with great effort. There is a correlation between a well-developed swim-bladder and a low sinking factor, while fish with reduced or absent swim-bladders have a high sinking factor. The volume of the swim-bladder can be adjusted to compensate for the expansion or compression of gas that occurs when a fish moves from one level to another. This compensation takes place by the addition (e.g., through gulping of air) or removal of gas.

In many swamp-dwelling species the swim-bladder is structurally modified to resemble a lung, and it has been shown experimentally that these fish can survive in waters of low oxygen content provided that they have access to the surface to gulp air. It is possible that in other species the swim-bladder may act as an oxygen store, but experiments with Carp, Orfe and Perch suggest that the amount of oxygen thus stored is of a very low order and insufficient to last the fish for more than a few minutes. In deep-water fish the situation may be different, for the proportion of oxygen in their swim-bladders is higher and the actual amount of gas available is greater under the increased pressure.

The expansion or compression of gas in the swim-bladder must lead to changes in the shape of its wall, and it has been suggested that these changes may stimulate nerve endings in the wall itself or the surrounding tissues. Since pressure changes are produced by sound waves as well as by variations in the pressure of the water or the atmosphere, the swim-bladder could in this way act as a hydrophone as well as a monometer or a barometer.

In some fish the swim-bladder is coupled to the membranous labyrinth so that movements of its wall can be transmitted to the endolymph (WATER LIFE, October-November, 1951, 6, 250-251 & 254). Apart from this effect through the ear, however, there is little evidence that the swim-bladder can itself act as a sense-organ which enables the fish to maintain a steady depth in "mid-water". Experiments designed to establish or refute this possibility have given negative or conflicting results.

Sometimes an Accessory Hearing Organ

The swim-bladder appears, however, to function as an accessory hearing organ in those species where it is connected to the ear, for such fish respond to sounds of higher frequency and lower intensity than fish in which the connection is absent.

Many teleosts produce sounds through the medium of the swim-bladder, which may in some cases act as a resonator for sounds produced by the activity of neighbouring organs. In other cases sounds are produced by the expulsion of gas through the pneumatic duct, or by the contractions of special muscles which set up vibrations in the wall of the swim-bladder itself.

It is reasonable to assume that fish which are capable of sound production use this as a means of communication. Prof. von Frisch suggested nearly 20 years ago that gurnards and drum-fishes produced loud noises because their sense of hearing was poor while species such as the Minnow, which have more acute hearing, need make noises of a low intensity only. The exact biological significance of fish noises is as yet unknown, but they appear to be related to breeding.

Records taken a few years ago at the Woods Hole Oceanographic Institution suggested that in deep waters fish may use noises as a means of sound-echoing so that they can gauge the depth at which they are swimming.

The ecological significance of the swim-bladder is interesting. It is rarely "lost" in freshwater fish, although it is often reduced in size in hill-stream or bottom-loving species, to which a hydrostatic organ would not be of any advantage.

World-wide Guppy Service

Overseas Secretary of the British Specialist Federation Gives News of Controlled Guppy Breeding in Many Countries

By A. P. Stanley

IT has been said many times that variety is the spice of life, but can one imagine a more varied company than that containing a University Professor and a pastor from the United States of America, a businessman from Rhodesia, a textile executive from Portugal and a Tyrolean, living in a village sheltered by the Alps? These individuals have but one thing in common—they are keen Guppy breeders and represent a few of the ever increasing circle of overseas members of the Federation of Guppy Breeders' Societies.

To us, here in Britain, the activities of the overseas members are of continual interest. We follow their achievements with pride, for they are a new addition to the F.G.B.S. family. The elation of a success gained by them is shared here in the Home Country, and to encourage these members, the Silver Pin Award which gives proof of an outstanding success may now be presented to overseas Guppy breeders.

Many of the overseas members, and some non-members as well, have benefited from Guppies exported to them from top-grade stock. These tiny ambassadors have gone out from Britain by air and sea to Canada, the U.S.A., Portugal, Austria, Holland, Kenya, Rhodesia, Aden and the Union of South Africa.

A fair proportion of the F.G.B.S. overseas members are American breeders and, therefore, it follows that we learn more of their efforts than those of aquarists in other countries. The Americans are second to none in their enthusiasm, particularly in respect of experiments.

One ex-G.I., now living in Washington State, has conducted a number of experiments on the Guppy by means of radio-activity. He found that the colour gene controlling pigmentation can be affected. This enthusiast used his work on the Guppy to help pass his University Finals, and wrote a 17-page paper on the subject of habits and breeding.

In the Middle-West—Boulder, Colorado to be precise—another F.G.B.S. member is working hard to create the first Guppy breeders' society of America. Previous attempts, all by non-members, have failed, mainly due to the large distances involved and the non-standardisation of types. It is also from Colorado that we learn of a theory that can revolutionise Guppy breeding. The magic words are electro-magnetism and radio-activity. This would possibly support the earlier experiments in Washington, the theory being that the U.S.A., by its geographical location, is receiving a considerable concentration of radiation from natural elements which have, it is claimed, a definite bearing on the number of colour variations produced, the effect on the colour gene resulting in these mutations appearing. In consequence, it would seem that the American Guppy breeder has a colour pattern potential that can be so extensive as to overshadow completely colour variance in the British counterpart. Only the shortage of enthusiastic breeders is likely to delay this supremacy, unless the average British aquarist takes more interest in intensifying colour in Guppies, and so assist the F.G.B.S. generally.

That the Americans, by these theories, are rather scientific in their approach, is obvious. Let us consider another line in which they are progressing, that covering the application of antibiotics. It was in July of 1950 that an American doctor touched on antibiotics when giving a talk to the G.B.S. during a visit to London and, for the first time, we learned that aureomycin had been used, by injection, in an attempt to enlarge Guppies. The experiments were said to have been only partly successful. Now this, to the majority of aquarists, was rather a misleading statement, since no intimation of accelerated growth was made. However, it is now common knowledge that antibiotics, such as aureomycin, are responsible for accelerating growth to an appreciable degree in a number of animals, including fish. Exactly what causes the speeding up of the natural process of growth is not yet known for certain. A popular opinion appears to follow the line that anti-bacterial action of the drug, by wiping out harmful intestinal micro-organisms, assists in stimulating the non-harmful bacteria into acceleration of structural development.

Photograph] ["*Illustrated*"

Vice-president of the Guppy Federation, Mr. E. S. Roach, transfers Guppies to a furnished aquarium whilst four members of this specialist group watch with interest.

In view of what has already been experienced regarding the way that bacteria and other living creatures will build up resistance and so combat man-made destruction by chemical action, one is led to assume that the harmful bacteria may eventually overcome the large scale application of antibiotics and we shall thus lose the means of providing a growth stimulant.

The keener American Guppy breeders will, no doubt, make it their business to set up a laboratory to further their aims, particularly as these drugs are, quite probably, less expensive and easier to obtain than in Britain. We may well find that, with the aid of radio-activity and antibiotic concentrates, these Americans will be teaching us a thing or two in the near future.

Having covered, to a small degree, the test-tube aspect of American Guppy breeding, let us consider their show fish. There is little doubt that the U.S. Guppies are among the most brilliantly coloured in the world, but they most definitely are lacking in finnage standardisation. Strains are predominant over types. The Veiltail, for instance, appears under the titles of Black, Red, Blue, Gold, Betta, Goldtail. Very closely related are the American Scarftails (which are

Photograph] [*H. Pincombe*

Some officials and members of the Federation of Guppy Breeders' Societies. Front row, extreme left, Mr. W. Myers, successful E. Counties Section exhibitor; extreme right, Mr. A. P. Stanley, overseas secretary and author of this article. — Centre row, extreme left, Mr. W. Howe (show secretary). Back row, extreme left, Mr. A. J. Holloway (general secretary); extreme right, Mr. H. S. White (President). Next to him is Mr. E. H. Riddle (treasurer).

not at all similar to the British type of the same name), the Aqua, or, as it is known in Britain, Flagtail, and the Superba. There is almost an equal number of Swordtail types, these again bearing very attractive titles, but all very similar in finnage and dependent upon colour pattern for identification.

In many cases, the females of the aforementioned types, although having a pleasant blue-green caudal and dorsal colouring, tend to develop square-cut fins. This development has already caused some minor headaches among F.G.B.S. judges and breeders, specimens having come over here and reached the show bench as well as the fishroom.

The F.G.B.S. members in America are mostly engaged in breeding Veiltails (American), Scarftails (British, of American origin), Doubleswords (British origin) and Robsons (American, of British origin). Possibly there are other types being bred by members, but we have no up-to-date information on them. Veiltails, Aquas, Golden Trinidads and Dr. Abbs types have come across the Atlantic and have served to strengthen F.G.B.S. standard types, and to improve coloration to a fair degree.

The Albino Guppy is one we have yet to see in Britain. In Philadephia a strain has died out, despite all attempts to save it, whilst there are reported to be a few in New England. Possibly our American cousins will one day feel disposed to let us have a few of these rarities.

The Gold (or Blonde) Guppy, is more popular over there than in Britain, possibly because they are scoring on colour. Gold-laced, on the other hand, are so comparatively scarce, that one member recently wrote under the impression he had "discovered" them as a new strain.

Anglo-American Co-operation Needed

The leading authorities on the Guppy in the U.S.A. are few. Wm. T. Innes, is a great Guppy fancier and is probably responsible for quite a lot of the behind-the-scenes work to improve American strains. What a pity that a mutual-aid programme between the top-line American and British Guppy breeders is not in being, for both are doing so much already, and co-operation between the two could produce the finest show Guppies in the world.

In their travels to overseas aquarists, British-bred Guppies have now covered a total of over 400,000 miles of air, sea and rail travel. After experiencing extreme heat and bitter cold, all but two females have reached their destinations safely.

Every overseas consignment so far sent out has caused a considerable stir in the country, or area, of its arrival. Canada received the most recent batch; they were on show at the Montreal Exhibition and were the first Doublesword Guppies ever seen in that part of the world—American stock being the main source of Canadian breeding efforts. The hobby is comparatively young in the land of the maple leaf.

Looking around the Commonwealth, we find that the Guppy is popular in India, Australia and New Zealand. In India, the Veiltail and Lacetail are the backbone of the Guppy representation but there is no set standard for anyone who is inclined to follow selective breeding with the stock of *Lebistes reticulatus*.

New Zealand has more variation for, as well as the common Guppy, they have the Gold, Veiltail, Scarftail and Lyretail. Geographical location and subsequent climatic conditions of New Zealand are most favourable. The weather conditions are comparable with those of the Mediterranean countries. The Australian Guppy breeders are rather an unknown quantity. Most of the F.G.B.S. types are reported to be available, particularly the Veiltail. However, we have reason to doubt that, apart from the more common types, there are very many good class Doubleswords, Pintails, Speartails, Robsons, etc.

Exports to South Africa

South Africa should, within two years, have the finest selection of show standard Guppies, outside of Britain. This is due to the fact that Robsons, Veils., Scarfs., Doubleswords (and Flagtails or Aquas) have gone out in the past few months to Capetown, Durban and Johannesburg. The breeders concerned will be jockeying for position fairly soon, for the first broods of young have already begun to colour up.

Further North, in Bulawayo, Rhodesia, and Nairobi, Kenya, other breeders are getting down to re-organising their tanks for the broods that will soon be on the way. A Rhodesian member has several large metal tanks of voluminous capacity, into which the descendants of the English bred Guppies will be placed for rearing on 100 per cent livefood diet. Occasionally, this member has the chance to go on safari and it was on one hunting trip that, deep in the jungle, he came upon a stretch of water containing fish almost identical with the common Guppy. The difficulty of transporting them back to base camp and then home, caused abandoning the idea of bringing them out. That scoop has yet to come. Nearer home, Portugal is another country where the tropical fish hobby is comparatively new. It was therefore pleasing to know that the solitary F.G.B.S. member there had caused a minor international sensation when he first showed his newly acquired Doublesword Guppy. Now there are Portuguese and Germans, as well as the British interest, to keep the Lisbon Story running.

The Veiltail and Doublesword have gone across the Alps, in the Tyrol, both creating a stir amongst local aquarists. The young from these fish will be exhibited later this year in an Austrian-German International Competition under F.G.B.S. standards. The English stock is being crossed with Austrian and German lines in order to strengthen the blood-stock and possibly improve the finnage.

Germany, from whom the aquarist world learned so much before the War, has now set about strict line-breeding and selection. Until recently, the Austrians have professed a preference for colour rather than finnage, and the small black spots, or "eyes", are retained as adding attraction to appearance and colour pattern. Gold-laced Guppies are virtually an unknown factor in Austria. Incidentally, the

Germans have a theory that large tanks and aeration promote stronger, fitter fish by giving adequate muscular exercise.

Holland is the only country outside Britain that has an organised Guppy breeding club; it is the three-year-old Nederlandsche Guppen Kring; a club of about thirty members that relies mainly on correspondence and its own bulletin to keep members advised of what is going on. Starting from scratch (for which they are to be admired), the Dutchmen were just getting to the stage of breeding a rather stubby Doublesword when the F.G.B.S. gave a helping hand by sending over Scarftails and Veiltails, at the time of the recent International Conference. Later, Doubleswords, Bottomswords and Lyretails were sent across. As a result of these contacts, an exchange of ideas will shortly begin.

The interest that the average overseas member has for the activities of the home-based G.B. societies, is remarkable. Club reports are eagerly scanned, and the recent inter-society matches were followed to the extent of a number of enquiries for photographs of members whose names appeared regularly in the bulletin reports. With support and enthusiasm such as this, one can rest assured that the British Guppy will travel further yet. It is the ambition of the F.G.B.S. to make its own standards the yardstick by which all are compared, and it will be those overseas members, the Cleveland Professor, the Portuguese trader, the Rhodesian businessman, the Tyrolean gentleman and the pastor from Pennsylvania, together with all of the other overseas members, who will help to make it so.

"Alf," posing for his photograph, taken by the author.

Rearing Frogs in a Miniature Enclosure

By V. H. Lacey

If you are a town dweller, with little room to spare for the building of pools, you may be interested to hear of my successful attempt to rear a limited number of frogs from the spawn stage, in a dish measuring 10 in. by 8 in. Year after year my son literally filled my pool with frog spawn, and consequently I was unable to rely on the pool for a supply of *Daphnia*. Last year I suggested that half-a-dozen tadpoles would be quite as interesting as a thousand, especially if kept in a vessel where observation would be easy. Fortunately he fell in with the idea, so an enamelled pie dish was obtained from the kitchen.

Positioning the Container

A shallow depression was dug at a spot where the sun shines most of the day, the pie dish was sunk level with the soil, a few turves of rough grass were patted down around the edge, and the "pond" was ready. The dish was filled with pool water, a few pieces of filmy algæ were dropped in, and we set out for the spot across the fields which had never yet failed to serve us with spawn. It needed about three visits before we were lucky, but eventually we found a newly-spawned mass. A very small slippery "lump" was broken off and deposited in the dish, which some members of the family derisively christened "the lake".

We found that the water quickly warmed up when the dish was covered with a piece of glass, so this was left on most of the time. The small black wrigglers were rather inconspicuous at first but, when fed with waste matter siphoned from my aquariums, little bits of scalded bread, and other oddments, they came on at quite a rate. One thing which never seemed to fail as a food was a small quantity of "Bemax"—they seemed to have a great liking for it.

As they got bigger we found the most popular food, as well as the one inducing fastest growth, was a piece of rabbit liver which had been pulped and dropped in raw. I think they adhered to this night and day for about a week until the last vestige disappeared. It may strike some readers that by this time the water was becoming somewhat foul; but there is little to worry about with tadpoles—they are not "mature-water" faddists. The dish was flushed over daily with a jugful of fresh water, and remained quite inoffensive.

Exceptional Development

By the time the first pair of legs of the tadpoles appeared, I was beginning to feel that they were making extraordinary progress, and the place where the spawn was found was revisited. Our tadpoles certainly were completely outstripping their wild brethren—I really believe they were at least 3 weeks ahead of the naturally-grown specimens which we found in the swamp from where we collected the spawn.

By early Summer we had five young frogs, with stumpy tails, leaving their miniature home to hide upon the rough grass during the warmer part of the day, returning occasionally to get their skins wet if the day was very dry.

It was found that if one or two grass stalks were smeared with treacle the frogs took quite an interest in the flies which were attracted; so we kept this simple bait spread on the same grass stems continuously.

Eventually, during a damp spell, our frog family broke up; four went out into the world to fend for themselves, leaving us with Alf, pictured here, like a faithful dog, intently watching his favourite grass stem. And when I decided it was time to obtain a portrait of Alf, this was how I found him; all the fuss and clatter of setting up the camera, and taking it down again afterwards, failed to disturb him in the least; his mind was on higher things as he posed for me.

I recommend this experiment to any reader interested in our hobby, and can assure him of a whole Summer of interest at no expense whatsoever.

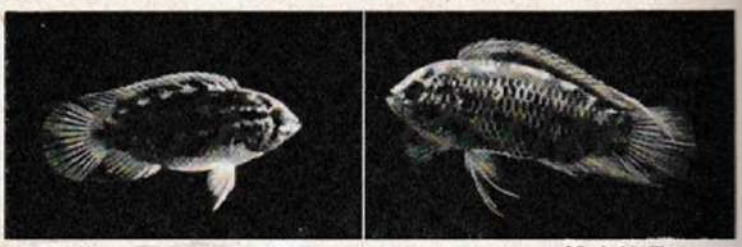
Success with a Dwarf Cichlid

Spawnings from *Nannacara anomala* — Small Tanks Used — Constant Attention to Eggs and Fry Given by Female

By P. Woolley

I PURCHASED two half-grown female *Nannacara anomala* in February of last year, and in August I managed to get a fine male of the same species. He was put in an 18×10×10 in. tank with the two females. Within two days he had made his choice and I removed the other female (caudal fin somewhat chewed) into my largest community tank.

The pair spawned within 48 hours on the vertical face of a rock. However, the female seemed to lack concentration in fanning her eggs. I rather imagine that the continued presence of the male upset her. At all events, all the eggs developed Fungus.



Photograph] [*G. J. M. Timmerman*

A pair of the attractive Dwarf Cichlid species, Nannacara anomala. *The female (left) is smaller growing to 2½ in. whilst the male (right) may attain a length of 3 in.*

About ten days later I put the other female (tail now completely restored) into an 18×12×12 in. tank thickly planted with *Vallisaeria, Cryptocoryne* and one half-grown Amazon Sword Plant. In addition there were three smallish rocks and a flower-pot. Water was about seven inches deep and at a temperature 77 to 78 deg.F. The tank had been set up some time. I put the male in the same evening, and the next morning the spawning was complete. This time I removed the male at once.

The female fanned the eggs continuously. Her markings at this time were magnificent—a deep chocolate colour with lighter brown mottlings. By the evening of the first day there was no change in the appearance of the eggs which were laid on a vertical rock surface facing into the back corner so that I could only see their reflection in the glass.

On the morning of the second day they appeared the same. The female fish did not relax, but by the second evening the spawning area was showing a great deal of Fungus, and I felt discouraged. On the morning of the third day after laying I went into the room to find the female in the act of moving her hatchlings round to a hollow at the side of the rock. So all was well.

From hatching to free-swimming took seven days and what a wonderful mother the adult fish proved to be! She was constantly moving her brood every two or three hours during the day, from the rock hollow to the flower-pot, from the flower-pot to the back of another rock, and thence back to the rock hollow. She carried them ten to twelve at a time to the fresh spot, each removal operation lasting about three minutes. Towards the end of this stage they were becoming rather lively, which added a touch of humour at the rock hollow since it just was not big enough, and the process of picking up the fry from the gravel floor was absolutely continuous.

Fry Free-swimming

On the afternoon of the seventh day I was rewarded with the fine sight of a proud mother moving gently through the water with fry swimming all round her. I removed her that evening. The fry were a good size and I fed them on cultured Infusoria for only two days by which time they were quite capable of dealing with Mikro-worms.

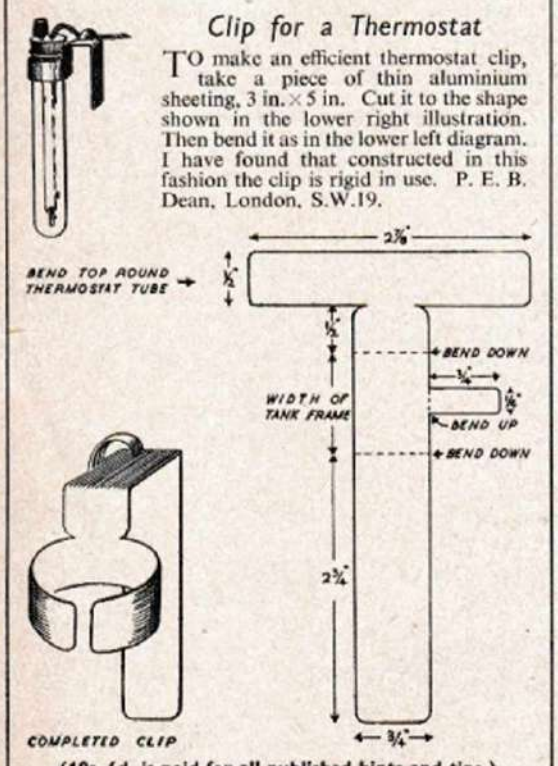
My other female fish spawned again about a week after the first. Procedure was the same but temperature was rather higher (81-82 deg.F.). The period from hatching to free-swimming occupied only five days. I decided to leave her with her fry, and up to the time of writing she is still there, guarding them.

In conclusion I should like to say a word in favour of this species of Dwarf Cichlid. It is small (well-grown males are not more than 3 in., and females 2½ in.). They breed in small tanks and do not touch plants at any time. In addition they are very hardy. I can say that with great assurance since my two females, together with a *Corydoras paleatus*, were the only survivors from a 54 deg. experience last winter. The species makes it a good community tank occupant.

Readers' Hints and Tips

Clip for a Thermostat

TO make an efficient thermostat clip, take a piece of thin aluminium sheeting, 3 in.×5 in. Cut it to the shape shown in the lower right illustration. Then bend it as in the lower left diagram. I have found that constructed in this fashion the clip is rigid in use. P. E. B. Dean, London, S.W.19.



(10s. 6d. is paid for all published hints and tips.)

Do We Need Two Categories for Exhibitors?

Pros and Cons of the Suggestion for Champion and Novice Classes Debated

THE Editorial in the October, 1953, issue of WATER LIFE advocated the introduction of a second grade of exhibitor. Behind this suggestion lay the fact that a number of aquarists had been discouraged from continuing to exhibit at shows. One cause of their dissatisfaction was the repeated success of a comparatively few exhibitors whose fish were nearly always at the top of their classes.

In the December issue, four expressions of opinion were published and this time we give several further views, selected from the many received. Others will be published later. Opinions are divided but, in general, it is felt that some move is called for to arrest the falling off of interest amongst those who might be expected to be regular exhibitors. The arguments for and against the proposed inception of novice classes, leaving the more experienced aquarists to compete against each other in a champion (or senior) section, show that some societies have already tried to solve the problem and that a number of individuals have also given careful thought to it.

Other views are invited as they may well help in the formulation of an acceptable policy which could then be sponsored by the Federation of British Aquatic Societies. It is already engaging the attention of the Federation's Judges' and Standards Committee. In this connection **Mr. R. O. B. List**, the Federation's secretary, writes "I am pleased to be able to tell you that we are going to move on the matter of 'Higher Status' as it is considered an excellent idea and I am requested to thank you for your lead in the matter".

Mr. W. Dacre (Luton), a recognised judge and member of the Goldfish Society of Great Britain, is, he writes, much in favour of the Editorial but, preferring the term "senior" to "champion" for the higher status of exhibitor, supports an earlier WATER LIFE opinion that there should be a series of championship shows. He states: "Championship classes should be held but once a year over a stated area at which the only entries accepted should be of fish that have won in senior classes at the smaller open shows. Novice classes have already proved very popular at most of our club table shows and attract good numbers of entries. I am all for the novice and senior grades. I understand that championship classes in other livestock shows are run in conjunction with a specialist society at one of the big annual exhibitions. The fish men could do this quite simply. However, champion fish are comparatively few and novice exhibitors are many, so let us have novice classes at all open shows, please, as well as senior classes."

Mr. D. Baldry, F.Z.S. (Accrington), member of the local society that is affiliated to the Federation of Northern Aquarium Societies, writes: "It seems to me that Accrington A.S. lead the way and other societies would do well to follow suit. For the past four years this society has staged some of the most successful shows in the North of England. Two years ago its members settled the problem, at the same time showing every consideration for the newcomer to the exhibition world. They put on three classes for Furnished Aquaria (1) Open; (2) Members' and (3) Novices. Previous winners of 1st, 2nd and 3rd prizes are barred from the novice class, but the novice may enter all three classes. This is quite clear and simple to put into operation and it gives the novice some incentive."

Mr. D. Baldry, who writes on this page, with some of his many prizes gained at shows, including a WATER LIFE *Diploma.*

Mr. S. T. Hunt (Northampton), a provincial judge recognised by the F.B.A.S., puts forward an argument against novice classes based on a different interpretation of the way the scheme would work. He suggests that:— "If any aquarist is to be debarred from exhibiting fish in a champion class until he has gained a specified number of novice awards, I am opposed to the system. There are many aquarists guilty of attempting to breed good specimens of one variety or another who are not necessarily interested in novice classes, and it would be an injustice to exclude them at their moment of success."

This was not our view of the way things would work out. The scheme would not stop beginners from entering in champion classes if they were prepared to compete against experienced exhibitors. It would, however, make champions ineligible to compete in novice classes. Similarly, it was not a case of making novices wait until they had won so many awards in that section before they could become champions but to make sure that by the time they had achieved those successes they would automatically relinquish their novice standing rather than be allowed to compete against beginners for all time. It was thought that this protection of beginners' interests was necessary for the success of the scheme. Mr Hunt continues:— "In areas such as Northampton, which can support only one society, to exhibit at open shows involves travelling relatively long distances and the effort (and expense) necessary to obtain a requisite number of novice awards would be considerably greater than, say, in the London district. Such areas depend mainly on their monthly table shows, particularly as far as the novice is concerned; but, as many judges know, awards are often granted at these shows against the better judgment of the judge himself. This could be overcome by a general adoption of a pointing system, but there would no doubt be opposition to enabling 'qualification' to be obtained from such shows, however high the standard may be sometimes. The precise definition of novice is going to be the biggest difficulty and may probably have the opposite effect from that intended."

Here again, Mr. Hunt's views are built up on the opposite approach to us. It was not intended that newcomers would have to strive

to become champions but that when they had made such progress as to be able to win three first prizes at open events they would qualify as champions and so be permitted to enter for champion classes, only, at future shows. Such arbitrary advancement would leave the field clear for the hitherto less successful to try to gain red tickets in the novice section.

Mr. B. J. Nield (Blackburn), secretary of his local society, favours a handicap system, having for some months studied the problem of creating the necessary incentive to get the average club member to exhibit regularly. He is aware of the fact that in a number of clubs what he describes as "the work and action" is done by a nucleus of members, the others often openly stating that, under the present system it is a waste of time and effort to compete. Mr. Nield continues "My idea is to handicap winners in members' shows as follows: 1st prize, handicap 5; 2nd 3; 3rd 1. These points are put against him at the next show. Each time he wins, the points will be added. If he gets three first prizes he will be loaded with 15 points when entering at the 4th show. This will soon bring the other members into the limelight. All handicaps must be clearly shown on the exhibitor's tank, so that everyone knows his standing. When a loading of 15 points is reached this member is put into the champion class. The secretary can keep records of members' successes. Separate handicaps should be kept for single fish and furnished aquaria." Mr. Nield, who has given us details of his scheme, suggests that it would give the beginner greater incentive to show fish. As he points out, the idea would have to be adopted generally to be properly effective.

Mr. W. L. Mandeville (Birmingham), who is on the F.B.A.S. provincial judges' list and is an official of the Midland Association, writes in a private capacity. He observes that:—"As things stand at present, we have show committees striving to present our hobby in all its aspects as attractively as possible to the public; exhibitors prepared to compete with hope of no greater reward than a brief hour of glory, a card or two to hide the damp patch in the fishhouse and a trophy to guard and clean for 12 months; judges prepared to assess the merits of entries for no reason other than that competitive shows would not be possible without them. How can this happy state be maintained or improved? The weakest link is the very successful competitor. The hopes of winning may change to the fear of losing. This fear among such old hands may mean that their very representative entries are denied to us. A championship class would stimulate this type of exhibitor, but the class must be designed to emphasise competitive ability and not purchasing power. The Goldfish Fancy would have no difficulty in recognising a Championship category for the outstanding representative specimens conforming to the standards are not for sale. In the tropical fancy we might be restricted to the livebearers where 'developed and produced' is more important than 'caught and purchased', but whatever the difficulties involved, a championship class is now a necessity."

Capt. L. C. Betts, M.B.E., chairman of the Goldfish Society of Great Britain, appraises the position from the realist's point of view:—"At first glance, the case for novice classes appears irrefutable. Who would not agree that beginners coming into the hobby should have classes of their own? They cannot be expected to compete with exhibitors of ripe experience who possess large establishments and have infinite numbers of fish from which to choose. Since every demand in the end becomes satisfied provided the request is insistent, why has not this particular problem come up before? As I see it, as soon as there is a real desire on the part of the novices for novice classes then such will undoubtedly be arranged.

"Whilst fishkeeping is widespread and its activities have been experienced in most houses in this country, mainly through the remarkable cheapness of the Common Goldfish, few people develop a competitive spirit in their fishkeeping. There are inherent difficulties which inhibit this tendency.

"To start with, fish shows are costly, elaborate affairs requiring finance and plenty of hard work on the part of the organizers. This has brought about a reduction in the number of shows with the corresponding decline in opportunities for showing. Many events in the past have been dull unimaginative affairs which have failed to arouse interest in a potential showing public. If that is not enough, the competitive spirit in our daily life is disappearing and hobbies are the first to suffer. Secondly, getting the entries ready, transporting them to the show, and the return home after the fish have been on the show bench, is a major operation. To big breeders the results obtained are worth it, but to the small man it may prove otherwise. Thirdly, to most exhibitors there is only one ticket worth having and that is the 'First'. The exhibitor that continues to show his fishes without getting somewhere is not of this world, which means that the novice is not long in that category but either passes on to the open (or 'Champion') class or drops out altogether. Thus, a constant stream of novices is required to keep this class of entrant going which in turn depends on a regular healthy intake of hobbyists.

Photograph [WATER LIFE

Mr. W. L. Mandeville (right) with Mr. J. H. Gloyn, judges of WATER LIFE *Interclub Challenge Class for tropical livebearer pairs (F.B.A.S. standard types) at the 1954 National Exhibition of Cage Birds and Aquaria, in Olympia London.*

"With a dropping off of club members, this would not appear to be the case. Further, as I see it, the novice class caters for a type of fishkeeper that is loathe to admit his apprenticeship and does not support a facility that is designed for his particular benefit. Unfortunately, to some the word 'novice' is usually associated with juniors under 16 years of age. In practice the club table show seems to cater for this type of exhibitor.

"It must be agreed that there is a big gap between the exhibitor with one or two tanks and the man with a fishhouse. Whether it be breeding or showing the odds are on the fish-house man every time. Before the war the argument was whether the trader should be allowed to compete against the amateur; now the question is whether the beginner should be allowed to compete against the 'old hand'. I do not think it matters either way. Beginners with the right stock can challenge the old hands on equal terms for when you are a beginner nothing is too much trouble. As time goes on you are always looking for short cuts and taking chances, whereas good Goldfish, for example, can only be produced by infinite care. The novice that wants to get a few 'pots' before tackling the major events is not the type that will stay with the hobby long, anyway.

"I will end as I started. If there is a real demand for novice classes then they will be provided."

Photography and Fishkeeping

The Perkins Brothers Combine their Respective Interests to Good Effect

By Brenda A. Barnes

Mr. N. E Perkins encourages a Crayfish to display for his brother, awaiting the opportunity to "shoot". Photograph by the author.

MR. N. E. PERKINS and his brother Mr. L. E. Perkins, are widely known in the fishkeeping hobby, not least by means of the fish photographs so frequently appearing in the pages of WATER LIFE. These photographs, accredited to Mr. L. E. Perkins, are however the result of the combined efforts of the two brothers, the one operating the camera and covering the photographic side of the operation, while the other attends to selection of the subjects, arranging the set-up and encouraging the fish to behave photogenically.

Although I should like to write of the two brothers jointly, this is impossible because, whereas one devotes his life to photography, the other appears to me—though he assures me otherwise—to live for fish.

Let me first tell of the photographer; he is 31, and has been practising photography, including the complete processing of his pictures, since he was eleven. All his work shows a desire not only for pictorial exactitude but also for those things which have an æsthetic value, attempting to capture not the moods of Nature but those moods or impressions which our vision of the world creates within us. Seeing his fish photographs, it must be admitted that he has captured, especially with Veiltails such as that on page 10 of this issue, the impression of grace which the sight of Veiltails leaves in the mind, but which is so fleeting if searched for.

Mr. N. E. Perkins, eight years his brother's senior, has nurtured a piscatorial bent since he was three years old. At that age he had his first tank of Goldfish and has kept fish in infinite variety since then. His childhood and adolescence were coloured with a succession of fishy incidents which were frequently minor and sometimes major catastrophes so far as his mother was concerned. Eventually when fish became anathema to his parent, they were forbidden entry to the Perkins' home.

Angling Activities

For a time there reigned a certain amount of domestic peace during which the angler continued to catch fish but appeared to refrain from bringing home his catches. All seemed well until Winter brought a freeze-up when an investigation revealed that the main water storage tank was frozen solid. Embedded in the vast block of ice were Crucian Carp, Tench and many other coarse fish which had enjoyed a sequestered hospitality there for some six or seven months!

It was obvious that this interest in fish was not to die easily but did, in fact, endure even in the face of rigorous, and often very justified, opposition.

Mr. N. E. Perkins, now married, has fish whose numbers and varieties are limited only by the dimensions of his home and its ground. Considering that he lives in a small flat with a very small garden it is amazing to see the number of strong, healthy fish which are maintained. To say that there is a large pond in the garden gives less an impression of the facts than by pointing out that the garden consists of a pond with a path around it!

Even so, I was surprised at the number and size of the fish contained in it; to say nothing of the variety. Mr. Perkins tells me that there is probably 20 lb. weight of fish in the pond comprising a 2-3 lb. Hi-goi Carp, one blue Hi-goi of about 1½ lb. (a gift from the late Duke of Bedford), three Golden Orfe 8-10 in. long, Golden Tench, numerous large Shubunkins, Dace, Gudgeon, Minnows, Mirror Carp, Golden Rudd and Bitterling. These are in the main part of the pond. The front basin, which is divided off, houses over 20 adult Veiltails, a very large Moor and a yearling.

Upstairs in a spare room there are eight large tanks which contain, when full, over a ton of water. More Veils., Telescopic-eyed varieties and Bubble-eyes can be seen here although the set-up is not arranged artistically which is not surprising considering the limited space available. Jars containing dead specimens, chemical apparatus, scales, a microscope, etc., are scattered around the room.

Photograph [*L. E. Perkins*

The resultant photograph showing a female Crayfish taking a strip of whale-meat.

In taking stock of the crowded room I noticed a pair of Crayfish with their young in a separate tank. I was told that the breeding of these creatures in a small tank constitutes quite a feat in the absence of running water. However, it is surprising what infinite care, and patience, together with an innate knowledge of animal life, can achieve.

Scientific Subjects

For some years now Mr. N. E. Perkins has been attending evening classes and studying zoology, botany, and chemistry which lessens the time available for his fishkeeping activities. He shares with his brother, however, a belief that a full life is a happy one and there is no doubt that this partnership of theirs affords them great pleasure as well as furnishing interest for all who follow fishkeeping.

Pondkeeper's Year

Outdoor Tasks for the Late Winter and

IT is always wise to be cautious during the early days of February where pondkeeping is concerned. Whilst a mild spell may clear January's snow and ice, giving every indication that the worst of Winter is over, a sudden drop in temperature, a bitter north-east wind and February Filldyke becomes February Freezedyke; a stern reminder that Winter is still capable of laying an icy grip upon the land. The beginner, experiencing his first Winter of pondkeeping, and no doubt eager to get things going, will be wise to let well alone until the month is on the wane.

During the comparatively milder periods which we are liable to experience at this time of the year, if the weather takes a somewhat unseasonable turn, the fish may show signs of increased activity when a little careful feeding with livefoods, such as Earthworms (or gentles if the worms are not procurable), will do no harm but they should be given in small quantities. With the return of low temperatures and freezing conditions, however, fish will immediately return to a state of quiescence and food will be ignored, so feeding should be stopped.

Getting Fish Through the Cold Weather

Pond fish, which have been properly nourished by good feeding during the late Summer and early Autumn, will have built up a reserve of fats within their bodies and, provided they have sufficient depth of water in which to seek security against low temperatures and surface freezing, are capable of withstanding a considerable amount of severe weather over quite a period of time with little or no ill-effects. A pond intended for wintering fish should have, or offer in some part, a water depth of no less than two feet. It is in the protection of deep waters that the fish find security and, in a natural torpid state induced by low temperatures, their body processes are considerably slowed down and the fat reserves provide what little sustenance is needed.

Feed Fish in Mild Spells

When unseasonable, mild spells occur and the higher temperatures promote activity extra demands are made on the fat reserves. With the possibility of little or no natural food around in the garden pond at this time of the year a little judicious feeding will help to offset losses in these reserves which may be sorely needed with the return of low temperatures at a later period.

Severe cold spells, alternating with mild weather in mid-February, can be responsible for causing trouble in the early Spring. A careful watch at this time and a little skilful feeding when needed can go a long way to avoiding the trouble.

Early February is a good time to make plans for work to be done at a later date. Perhaps the addition of a few more species or varieties of plants in the pond, rockery or bog surround might be contemplated. Alterations to the actual surround itself can be considered. Plans made now and the details thought out will help towards getting away to a good start when weather conditions permit and the right time for planting arrives.

Left: Sagittar
folia *showing*
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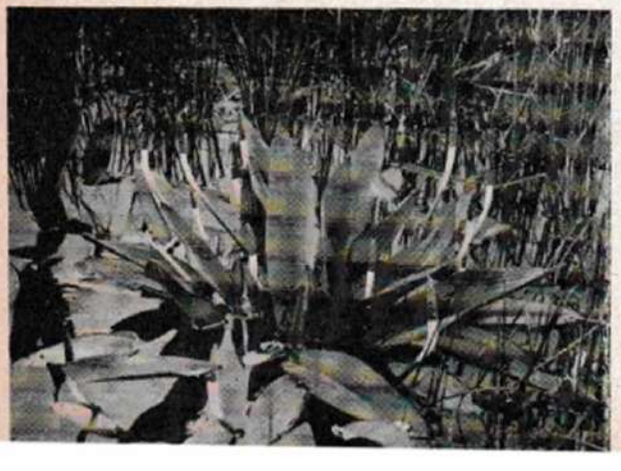


If it is intended to make additions to the collection of plants it is a good idea to place the order with suppliers now and request delivery to be made around the correct time for planting, which is usually March or April. This often avoids disappointment if ordering is delayed until the time for planting and the rarer species are found to be in short supply and possibly temporarily out of stock.

Planting During March and April

A few suggestions now will certainly not be out of place for plants which may be set in March or April. They might be of interest to beginners or pondkeepers wishing to make additions. First of all then a few sub-aquatics which are sometimes forgotten but well worth considering for they are capable of adding charm to the cool depths of the pond.

Water Lobelia (*Lobelia Dortmanna*) is a native species

Photograph [*E. E. Dennis*

Golden Club (Orontium aquaticum) *which bears small yellow flowers.*

Early Spring

By J. Stott

Photograph] [*J. Stott*

Informal pool with a background of alpine plants and rockpools.

which likes shallows and produces tiny pale blue flowers carried on thin stems just above the surface of the water. Hair Grass (*Eleocharis acicularis*) is always worth trying in the pond because, if the locality is suitable and it finds conditions to its liking, steady growth is maintained with pleasing effect. Awl Wort (*Subularia aquatica*), when it can be obtained, is always attractive with dark but, nevertheless, distinctive leaves and the species is well worth trying.

There is one floating aquatic I should like to mention because it is interesting in its habits. After being totally submerged through the Autumn and Winter months it rises to the surface in the late Spring and produces attractive white flowers during the Summer. This is the Water Soldier (*Stratiotes aloides*) which is a native plant.

For the marginal bog area there are two native plants which are not used quite so much as they might be. One is the Flowering Rush (*Butomus umbellatus*) which to my mind is possessed of undoubted beauty. Tall growing with long, narrow, triangular or three-sided leaves and strong stems bearing umbels of pale mauve and pink shaded white flowers, it grows to a height of two or three feet and appreciates about four inches of water. This plant may be propagated by root division and the best time for this is March. Flowering occurs in June or July.

Flowering in Spring and Early Summer

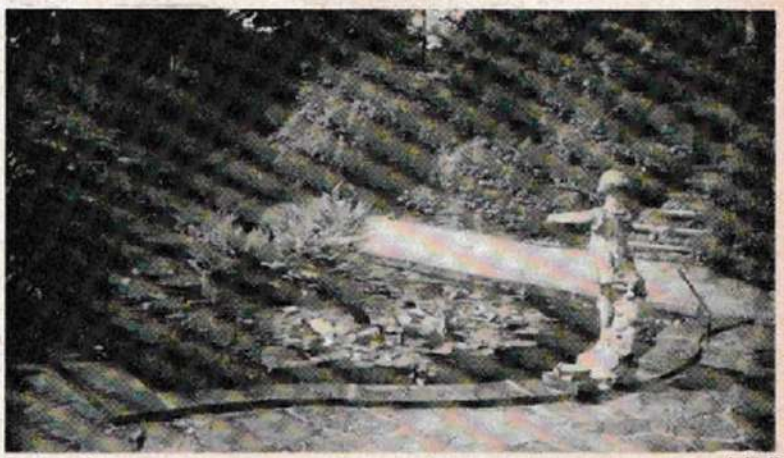
The second subject is the Bog-bean (*Menyanthes trifoliata*) which commences flowering in April and continues well into June bearing prominent clusters of white flowers. It grows to a height of 10-12 in. Plant it in the bog section with about four or five inches of water over the crown. Propagate by division, preferably in October, but this can be done in March. For covering those sections where the concrete edging shows through around the pondside, the Bog Pimpernel (*Anagallis tenella*), Creeping Jenny (*Lysimachia Nummularia*), Rockfoil (*Saxifraga Hirculus*) and that lovely Primula (*Primula Julia*) are suitable.

The Month of March

March usually presents us with variety so far as the weather is concerned but, despite its boisterous winds and periods of rain and hail, intervals of sunshine and calm reveal the response of Nature to the approaching Spring. As the month progresses the fish will completely throw off the effects of their Winter torpidity and their activity gradually increases under normal conditions. Their appetites are also quickened and a wholesome diet of livefood, particularly Earthworms, steadily helps to build up their condition.

A close watch should be kept for Fungus infection; one or two fish may be slightly infected but this will in all probability clear up on a diet of livefood. Should any be severely infected, however, further attention will be called for and prompt treatment applied. This will necessitate removal from the pond and the victim subjected to salt-bath treatment in a suitable container, preferably all glass. The strength of the solution should be one heaped tablespoonful of sea salt to each gallon of water used. Allow the fish to be immersed in this solution for half-an-hour, but it is considered by the writer that a quarantine period is advisable with pond fish which are sufficiently infected to warrant treatment. They should only be re-introduced to the pond when all symptoms of the condition have cleared. Alternatively treatments recommended on pages 129-131 of the June-July, 1950, issue of WATER LIFE might be employed. If for this purpose alone, one of the larger type all-glass aquariums or an angle-iron framed 36 × 12 × 12 in. tank is a useful accessory for the pondkeeper. A further application of the salt treatment should be given if required.

Keep a look-out for a slow and persistent lowering of the water level which is a sure sign of a crack having developed from ice pressure. This is extremely unlikely with a normal English Winter if the pond basin was strongly constructed but it does occur at times and the unfortunate pondkeeper



Photograph] [*J. Stott*

Formal pond with paved surround. Ferns disguise the base of the central fountain.

1953 WATER LIFE INDEX

Stapled in the centre of this issue is a four-page Index to Volume 8 (1953) issues of WATER LIFE. It is removable and can be placed with the 1953 numbers when there will be a complete cross-reference to all articles, features and special news items. An index to contributors is also included.

is then faced with one of the most annoying and irritating legacies that Winter can leave. The best thing to do is to face up to it with a smile and take advantage of the situation by giving the pond a thorough cleansing whilst it is drained for making the repair.

When the crack is located chip away the concrete along the edges of the crack, then fill with a mixture consisting of one part cement to three parts of sand. Allow to set, then give the repaired area a scrubbing with a hard scrubbing brush and hot, strong salt water to clean it. Finally wash down with fresh water and when dry paint over with two or three coats of water-glass solution.

March is the month when an all-out effort may be started and those plans thought of early in February can now be safely put into practical form. If structural alteration or addition is contemplated this should be dealt with first before the usual Spring routine is commenced. It is advisable to attend to the plants already established before planting newly-acquired types. All dead plants and foliage must, of course, be removed and excessive mulm, debris and decaying leaves cleared from the bottom of the pond. Some of the fast growing plants may have overgrown their position during the previous Summer and need to be thinned out or trimmed back.

Trim Back the Marginals

This will apply to the sub-aquatics as well as the plants in the side pockets and bog surround. Although a considerable amount of this work may be done in the late Autumn or early Winter it is often necessary to put the final touches, to achieve some desired effect, at this time of the year.

The enthusiastic pondkeeper and water gardener, always desirous of having an attractive show, tries to aim at obtaining a continuous display of colour and bloom through the year, which may be achieved by a studied selection of plants offering a sequence of colour as flowering period follows on in planned succession. It is, of course, possible to have a certain amount of colour at the pond even through the Winter months by means of careful and considered selection of suitable species, although locality and position may have some influence here.

Sequence of Colour

In the following list are a few selected species which may be planted now in the bog surround or side pockets with their colour and approximate time of flowering. Sagittaria *sagittifolia* var. *japonica* (white), July-September; *Sagittaria sagittifolia* (white, shaded pink), June-August; *Orontium aquaticum* (yellow), May-June; *Mimulus luteus* (yellow), July-August; *Orchis foliosa* (purple), June; *Geum rivale* (pink), May-September; *Pinguicula vulgaris* (violet), April-May; *Petasites fragrans* (white), December-February.

The *Sagittaria* varieties, *Orontium* and the *Geum* are quite tolerant of water depths above their crowns. From three to eight inches is a reasonable range.

S. sagittifolia will take up to eighteen or twenty inches above the crown with no adverse effects. The other five types are essentially bog plants.

Those plants which have produced sufficient growth to warrant root division may be propagated by this method during March. The plants are lifted and the new root growth carefully divided from the old, inner roots which can be discarded. The separated crowns should be planted as soon as possible.

If a bog garden forms part of the pond surround a light top dressing of loam with a little peat added will be beneficial after all unwanted weeds have been removed.

The smaller type of garden pond benefits from the refreshing effects of a percentage of fresh water added towards the end of the Winter. Drain away about one third of the pond water and replace with fresh. If this can be run in through a hose with a fine spray so much the better.

New Goldfish Varieties

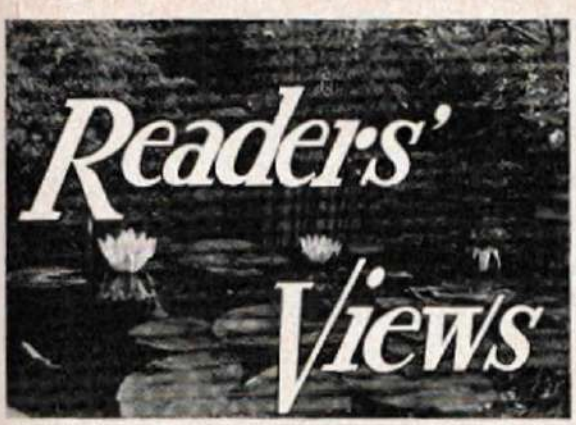
By R. J. Affleck, M.Sc., M.R.S.T.

LAST year a variety of Goldfish new to Britain—the Bubble-eye—was imported and, as a result of successful spawnings, there are hopes that in a few years the variety will become established. As if last year's effort was insufficient two further new varieties have found their way from Hong Kong—the Pearl Scale and the Pompon.

The characteristic of the Pearl Scale is the domed shape of the scales which are very conspicuous. Pigments are generally absent from the region in the centre of the scale and so the colour arrangement emphasises the scales still more. The new adult fish have bodies similar to those of a Goldfish Society's Twintail while their caudal and anal fins are divided and of moderate length. As recently as 1937 this variety was said to be restricted to the Shun Tan district of Kwantung and not known to most Chinese breeders.

The Pompon, Woollen-ball, Narial Bouquet or Hanafusa is quite an interesting variety in which the nasal septa are enlarged and look like pompons. In the imported specimens the body is somewhat similar to that of a G.S.G.B. Bramblehead, the dorsal fin is absent, and caudal and anal fins are divided and short. A few were seen in France before the war but I have no record of specimens previously in Britain.

Right: head-on view of a Pearl Scale. Below: the new Pompon. Both varieties were seen for the first time at an exhibition when on show at Olympia in January. Photographs taken by L. E. Perkins.



The Editor is not responsible for opinions expressed by correspondents

GRADE B JUDGES REDUNDANT?

SIR,—You referred on page 328 of your December issue to my questions about Grade B judges which I made at an Assembly of the Federation of British Aquatic Societies.

I am perturbed by the fact that those in Grade B are getting so few engagements as to make it difficult for them to qualify for advancement to Grade A. More shows may be the answer but I think there are too many shows already and to increase the number of open events would not meet the case since those in Grade B are not considered qualified to officiate at open shows. The need would be to have more members' shows and to persuade promoters of such confined events not to engage those in the A grade but to rely on selecting judges from Grade B.

Perhaps the simplest way out of an unsatisfactory situation would be to abolish the B grade. An individual should either be considered qualified to judge at any show or not at all.

An alternative would be for the F.B.A.S. to restrict the booking of judges (and lecturers for that matter) to those living within a prescribed area of the particular club, thus making it necessary to engage Grade B judges who are now often rejected in order to secure the services of the same few Grade A judges over and over again. Any plan that would bring about the greater use of judges who at present get no work to do must be welcomed by those in Grade A who find it difficult to accept the numerous engagements offered them, and by those in Grade B who could then hope to get promotion to the full status and be asked to judge at open events after gaining experience at some local shows.

The subject is one which might be debated and I suggest that the Judges' and Standards Committee of the F.B.A.S. would do judges, exhibitors and show-promoting societies a great service by putting forward some arrangement that would better the one now in use.

East Ham, H. S. WHITE,
London, E.6. President,
Federation of Guppy Breeders' Societies

(The lists of Grade A and Grade B judges have been compiled by the F.B.A.S. Initially, accepted judges were taken to form the nucleus, to which has been added the names of those who, after examination, have been acknowledged to be qualified for Grade B. Promotions to Grade A are announced from time to time.—Ed.)

SPACEMEN INVADE AQUARIA

SIR,—You can now buy in the shops for sixpence toy spacemen. They resemble a diver in appearance and are about 2¼ in. high. Made with a solid plastics body they have a separate clear Perspex helmet.

By partially filling the helmet with water they can be made to stand upright on the bottom of the aquarium. If the amount of water in the helmet is carefully adjusted the spaceman will move about whenever a fish passes by. This gives an added attraction to the aquarium as each time you look at it you find the spaceman in a different position.

Speke, KENNETH CAHILL
Liverpool, 19. (Aged 12)

(Adult readers usually scorn the use of artificial decorations in their tanks but younger aquarists may have no qualms about introducing a modern touch. Care should be taken to see that the toys are not made of materials which will cause the fish any harm.—Ed.)

FATE OF A FLY

SIR,—When topping up the water in a tropical tank, I noticed a housefly on the glass and tried to knock it off. The fly disappeared and I thought no more of it until I saw it in the mouth of an adult male Beacon Fish. After a while it managed to get free and floated in the water, but the Beacon went after it and soon had it in its mouth again. A Harlequin Fish made an unsuccessful attempt to steal the unusual titbit.

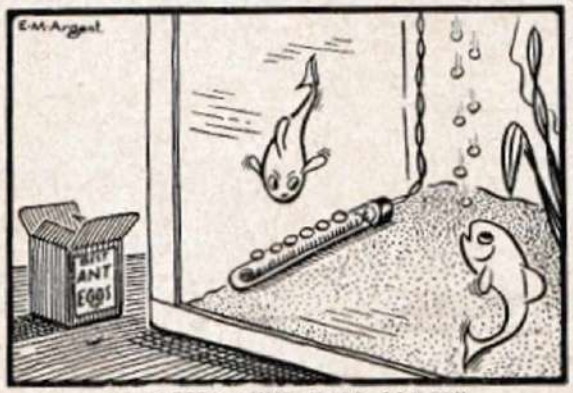
The head, legs and part of the body of the fly protruded from the Beacon's mouth for some time and as it appeared to be big for the fish I began to worry in case the fish might choke. Later the fly was swallowed and the fish suffered from no ill effects.

It was an unusual meal and even now I am surprised at the Beacon being able to swallow so large an insect.

Welwyn Garden City, E. MANDLER
Herts.

CONSOLING VIEWS OF A HERETIC

SIR,—As an individual I found two or three items contained in your December issue to be of especial interest. Firstly, the Editorial which takes note of the importance of colour in show exhibits, within the accepted standards of size and shape. Secondly, the Lebistes Study Group's announcement that, though not wishing to dissociate themselves from the standards drawn up by the F.G.B.S., desire to start afresh, feeling that many Guppies exhibited are small and colourless, and mean to study the problems of breeding for size, colour and health "with finnage last and not first". Thirdly, the reported comments made by Dr. G. S. Myers on Show Standards.



"I PREFER MINE HARD BOILED"

Now, being by nature an heretical and undisciplined type, I have for some time looked askance at the hysterical worship of standards, while at the same time, being such a novice, I have usually kept quiet. However, wishing to discover what the effects of expertly devised standards have been in realms other than fishy ones, I sought information from the canine world. Lo and behold, a recognised authority had much to say on the subject—"a tragedy in this country . . . nervous wrecks (following intensive in-breeding) . . . spinal paralysis . . . more like a caterpillar than a dog . . . legs so bowed as to be virtually a cripple . . . narrowed skull . . . ear canal drainage impossible" . . . etc.

Can it be, I thought, that this could happen to us? "No, no," I hear someone say? Let us then eavesdrop—"Monstrosities . . . appalling and ugly deformities recognised by the expert (fancier) as the perfection of a rare beauty . . . specimens deteriorate quickly . . . don't worry till they become hard to rear . . . droopage caused by fin-rays being unable to support the extended fin-area . . . lack of a dorsal causes the fish to side-slip" . . . etc.

It therefore seems to me that the show-conscious approach is not without its pitfalls, and the scientific view may well be worth examining. I feel that developed species are superior in many respects to wild stock, but certainly not in every respect—in colour, yes; in size, could be; in health, should be; in finnage, often no. There are two sides to show business, and doubtless those of us who do not conform to frantic, fanatical views that show standards are a "must" and, without doubt, "correct", may console ourselves with the thought that perhaps after all we are not mad.

Brockley, S.E.4. H. J. VOSPER.

Prior to judging, two stewards make a final check on one of the WATER LIFE *classes at the* 1954 *Exhibition, Olympia.*

READERS' VIEWS—continued

MOUTHBREEDER SPAWNING

SIR,—As a member of the Invicta Fish Breeders' Circle, breeding has become an essential part of my hobby, hence one reason for my wish to get a pair of Egyptian Mouthbreeders (*Haplochromis multicolor*), that I had conditioned, to spawn. I proceeded to clean a 24×12×12 in. tank thoroughly, sterilizing the gravel and replanting with plants that had been cleaned.

The fish spawned within twenty-four hours of being placed in this breeding tank. My wife and I sat back and awaited results, for after reading "all the books" we were certain that the female would starve rather than eat the eggs or relinquish her fascinating and strange attention to them in any way. On the fifth day, however, she upset all plans and hopes by eating the lot, so back into the community tank she went and our breeding tank became empty again.

About ten days later it was noticed early in the morning that the pair had spawned again and the female literally had a mouthful. After a short discussion with my wife, another true aquarist, it was decided to chance it and, without further ado, the female was netted and put back into the breeding tank, eggs and all.

Instead of repeating her misdemeanour of eating her eggs, the female settled down well and continued to do so until forty-eight hours later, when the heater packed up. The temperature, of course, dropped and when the fault was discovered the thermometer reading was only 62 deg.F. Panic stations again! Two large human hands were thrust into the Mouthbreeder's small home to remove the old heater and again to put in a new one, in addition to which the thermostat was adjusted. Through no apparent reason, within twenty-four hours the new heater put the temperature up to more than 85 deg., so, once again, it was out with the thermostat to adjust it. This had to be done twice.

We had written off our brood of Mouthbreeders, but they survived and twenty-one days later we had thirty-five healthy youngsters eating anything and growing fast. I have always liked the Egyptian Mouthbreeder but now more than ever and I admire the female of this particular pair for performing her parental duties so well under adverse circumstances.

Gillingham, Kent. R. G. RUSHTON

TURTLE VISITS DEVON COAST

SIR,—On December 6th last I was called by telephone to Broadsands beach, between Paignton and Brixham, to examine a turtle which had been washed ashore. Through a misunderstanding the turtle was returned to the sea before I arrived, but although I was unable to establish the species I think the occurrence well worth recording.

In 1948 the British Herpetological Society published records (going back in one case as far as 1774) showing less than forty appearances of turtles around British shores. Only one Devon record is shown, that of a Loggerhead Turtle.

I may add that I was entirely satisfied the creature that came ashore was a turtle. I talked with the man who returned it to the water, an intelligent fisherman, and he left me in no doubt about the matter. A keeper I took with me, a man with considerable knowledge and experience of reptiles, was also quite convinced.

Paignton, South Devon.

KENNETH SMITH,
Superintendent,
Paignton Zoological & Botanical Gardens.

Writing from the British Museum (Natural History), Mr. Alfred Leutscher, B.Sc. comments:—"It is a pity that Mr. Smith was not in a position to identify this turtle, because records of this kind are of interest and value to science. The five species of turtles, usually stranded on our shores, are the Luth, Hawksbill, Green, Common Loggerhead and Kemp's Loggerhead turtles. They are normally found in warm seas and their periodic appearance in British waters is not understood. It may be that they are stragglers which are carried along by ocean currents, either from the African coast, or across the Atlantic from America. The Natural History Museum (London) is always interested in these records, as well as of stranded whales, and issues a booklet to help in identification, telling what to do when a specimen is found. The marine growths in the shells of turtles sometimes gives a clue to their original home."

FOR YOUR BOOKSHELF

Guppies Galore*

THE appearance of a sizeable book solely devoted to one species shows how much there is to say about the special attractions, the peculiarities and the limitations of each of the many different kinds of fish that are found in the possession of aquarists. Here we have a book written by an American with a diploma in veterinary science and published in the U.S.A. Such copies as reach this country will be read with interest by British fishkeepers who like to breed and exhibit varieties of the Guppy (*Lebistes reticulatus*). We would point out to our home breeders that the treatise, which incorporates an impressive bibliography, is written from a different point of view to that adopted by British exhibitors. The resulting divergence is mainly over exhibition standards. Dr. Whitney naturally favours the types commonly seen in America and implies that because the British standards fail to incorporate all those types, our American friends should hasten to produce their own set of ideals.

There is no counterpart to our Federation of Guppy Breeders' Societies in the United States and in fairness to our older-established organisation we emphasise that the conservative policy it has adopted has much to commend it. The fertile Guppy can, with indiscriminate breeding, produce umpteen nondescript forms but not necessarily as many established strains. The F.G.B.S. standards are not regarded as the be-all and end-all for the Guppy breeders. On the contrary, they have been built up over a number of years and the chances are that additions will be made from time to time; even so, the Federation has refused to be rushed into recognising new varieties but have preferred to wait until such varieties have been bred for several generations. In fact their progressive outlook is that we should consider with due caution suggestions for new standards, primarily in regard to shape, and to turn now to colour as well as outline control. There seems to be a comparable situation in the Goldfish world. There, too, some want standards issued to meet all the crossbreeds evolved but the more restrained urge breeders to concentrate on a few varieties.

This book which deals with the fish's history, its physical make-up, feeding, heredity, breeding and ailments, as well as exhibiting, contains three coloured plates, the specimens on which, being drawn from life, give us a good idea of the colours seen on the American types, some of which conform more or less to British exhibition standards. The feeling we have is that in America there are Guppy types galore. Maybe there are. We in Great Britain prefer to discourage the appearance of too many sub-varieties while there is still so much to be done with the fish we are trying to get to line up with the present standards.

*"All About Guppies", by Leon F. Whitney, D.V., 99 pp. and cover. 3 colour plates and line drawings. Published by Practical Science Publishing Co., Orange, Connecticut. Price $1.50.

PROBLEMS ANSWERED

Queries are answered free of charge by a panel of experts. They should be sent to "Water Life," Dorset House, Stamford Street, London, S.E.1, together with a stamped, addressed envelope for the reply. All queries are answered direct but a small selection is published below.

Trouble with Plants

A few days after planting Sagittaria *and* Vallisneria *in an aquarium the leaves become colourless and drop to the bottom where they rot. This has happened on several occasions. Can you suggest a reason?—(W.H., Glasgow).*

It could be that the plants (*Vallisneria* and the *Sagittaria*) had been growing in cold water before you got them. If this is so it is more than likely that they would die. On the other hand, these two types do not do well together, one generally growing at the expense of the other. Again, they need more light than, for example, Cryptocorynes and will sometimes die where Cryptocorynes will flourish. Given sufficient light, however, they will grow quite well in company with the Cryptocorynes. We suggest that you make sure the plants have been growing in warm water before you get any more and then see they are given sufficient light. The following formula is a useful guide:—

$$\frac{\text{Length of tank in ins.} \times 32}{\text{Hours of light}} = \text{Watts required}$$

It should be pointed out that it is quite usual for the existing leaves of the plants to die back slowly when they are transplanted but, if conditions are right, new leaves will soon be formed and are usually in evidence before all the old ones are dead.

Goldfish Accommodation

I have a glass tank measuring 17½ *in.* × *8in. with a* 15 *in. depth. How many* 2-3 *in. Goldfish would it hold?—(J. Mc. C., Dunphail, Morayshire).*

The glass tank you mention holds approximately six gallons of water and, if the fish are 2-3 in. in length, then two specimens will be the limit if the tank is well planted. If you care to change the water every day the number could be increased to four.

Three Lizard Species

Do Eyed, Green and Wall Lizards thrive when kept in vivaria? Also would a 24 × 18 × 12 *in. vivarium make a suitable home for a young alligator?—(M.B., Blackburn).*

The three lizards you list usually make good vivarium inmates provided that they are healthy to begin with, and are given as much sunlight as possible. These lizards usually come to us from S. Europe where the climate is warmer and drier. The food should be as varied as possible—all kinds of insects, spiders, Mealworms and occasional pieces of soft, sweet fruit. A young alligator should live quite well in your 24 in. tank provided that it is kept warm enough (between 75-80 deg.F.) Water should be about 6 in. deep and a platform or island built in one corner.

Three lizard species for the vivarium: top left, Eyed Lizard: bottom left: Green Lizard: right: Wall Lizard. Photographs taken by WATER LIFE, *H. Bastin and W. S. Pitt.*

Quality of Black Platies

I have purchased some Black Platies which, compared with others commercially available, seem to have particularly good colouring. Are these fish valuable and what are their show points?—(F.C., Skipton, Yorks.).

The standard of the Federation of British Aquatic Societies for Black Platies states that the entire body should be an even matt black, this colour spreading as far as possible into the fins. The outline drawing shows the fish as short and deep. Body shape takes 30 points and so does colour, the remaining points being taken by other features. Shape, therefore, is as important as colour. The caudal fin should be rounded and any suggestion of a point, particularly from the lower rays, is a fault that will lose marks. Metallic scales, blue sheen, white throat or suggestion of orange colouring will all lose points as well. The show bench is the best place to look for top-quality fish of this variety. The best way to find out the worth of your fish is to enter them in one or two of the major shows. One show is hardly enough, as they might take a first at one show because there are no better fish on view at that particular event, whereas at another show the competition might be keener.

Aplocheilus lineatus

How may I sex Aplocheilus lineatus *and what conditions are necessary to induce the species to breed?—(E.W.A.P., London, N.W.10).*

Aplocheilus lineatus, formerly known as *Panchax lineatus*, are not easy to sex but the female always has more and stronger vertical bars and very few red dots on the sides; she also has a black spot at the base of the dorsal. It is said to be the easiest of the Egglaying Tooth-carps to breed. *A. lineatus* are great jumpers and their tank should always be covered. Plenty of floating plants should be present in the breeding tank. The male is capable of serving more than one female in a tank since he is a vigorous driver. The female will drop one egg at a time, producing about 20 in a day; this rate will continue for about a week, after which time the breeders should be removed. The eggs hatch in about two weeks at a temperature of approximately 75 deg.F. The fry will, of course, vary in size and should be sorted from time to time. They are rather large at first and do not need Infusoria for very long. Rearing should be carried out as for any egglayers but the diet should contain a fair amount of livefood. November to February is said to be the best time for breeding.

WATER ANALYSIS

Samples should be sent in a clean pint bottle, well packed, to Water Life Analyst, 12, Featherbed Lane, Addington, Surrey, together with a fee of 5s. per sample. The name and address of the sender and details of prevailing conditions should accompany each sample which is submitted.

Sample received from E.A.G., Sale, Cheshire. Taken from a newly set up 24 × 12 × 12 in. *aquarium planted with* Sagittaria, Cryptocoryne, Ludwigia *and Indian Fern. The Indian Fern was dying when the water was sent. No aeration was supplied and the temperature was* 75 *deg.F. A week after setting up, six Black Mollies were introduced but all were dead within* 48 *hours.*

Test for impurities:— Appearance: slightly turbid. Odour: none. Total mineral content: 0.1122 per cent, rather high. Organic matter: 0.0170 per cent, high. Nitrogen compounds: 0.000224 per cent, very high, pollution indicated. Ammonium compounds: 0.000010 per cent, very high, pollution indicated. Poisonous metals: none detected. *p*H: 6.8, satisfactory. Chlorine, as salt: 0.0079 per cent, satisfactory.

Suggested corrections:— The results obtained from the chemical analysis of this tank water reveal that it is badly contaminated by organic matter of vegetable origin. Although it is contaminated and would therefore be deficient in dissolved oxygen the death of the fish within 48 hours would seem to suggest that these were not too healthy when introduced. Clean the tank out and refill with tap water. Keep the aerator working at least until the plants have become established, when the water in the tank will have become stabilised. Feed the fish with a reliable brand of dried food and also with minced Earthworms.

In and Around the Aquaria World

— By W. J. Page —

DANIEL has been into the lion's den. To be asked to meet members of a leading organisation within the Federation of Guppy Breeders' Societies was a compliment, but to be expected to speak at length to the predominant Eastern Counties Section was another matter. Who was I, a mere casual and intermittent keeper of Guppies (as well as other fish and other creatures), to give a lecture to such stalwarts as D. Johnson, W. Myers, H. White, E. Roach and others of equal standing? To make the situation more piquant the West London group had accepted the invitation to take part in an inter-section show, thus giving A. P. Stanley and some of his confreres the opportunity to be present and so hear what I had to say.

As the tag has it, it is as well to be hanged for a sheep as a lamb so along we went well armed with data to back up the contention that the Guppy world can branch out in other directions. My conclusions were that the F.G.B.S. ought to encourage its members to get more colour into their stock, involving, as it would, modifications to the existing standards. To support that view a number of proposals were made. Among them, a reduction in the number of attempts to produce show specimens as speedily as possible; to concentrate on one aim such as breeding strains of a pre-determined coloration; to work in groups rather than as individuals; to exhibit fish periodically not so much to win prizes as to compare results; and to keep careful breeding registers, noting details of losses as well as of fish raised to maturity.

In the main, the F.G.B.S. is working on the progressive lines although at times it may seem to give over emphasis to breeding for shows. A wise move is its comparatively recent policy not to encourage prematurely the recognition of further varieties.

It could go further and decide to introduce no new standards for shape of body and fins, for, say, the next five years but, in the interim, recognise new colour forms of already accepted outlines. The stage has now been reached when the Federation might encourage two parallel lines of activity, that of breeding for exhibitions and the equally rewarding one of breeding to a set programme to increase our knowledge of the potentialities of *Lebistes reticulatus*.

* * *

HIS many friends will be sorry to learn that Mr. J. E. Edwards, to whom I referred in the last issue, has been out of action for some weeks as the result of a road accident. One lorry overtaking another on a narrow road approached Mr. Edwards' car, giving him no chance to avoid a collision. A split second decision to get off the road on to the verge and an instinctive swerve away from the steering column did not save the car from being a total wreck. It did save J.E.E's life, however, although he woke up in Redhill Hospital after sustaining three broken ribs and a number of other injuries. Some people go about getting a new car the hard way!

Mr. Edwards, whose fishroom has seen quite a lot of him lately during his enforced convalescence, had hoped to visit a number of societies during a tour through south-coast counties. That has had to be postponed but, thanks to a speedy recovery, not for long. It takes more than an argument with one of the big boys of the road to suppress such an active character.

Mr. W. G. Layzell of the F.G.B.S. (Eastern Counties Section) with cups and plaques gained by some of his fish. He is a Grade A judge of Guppies on the F.B.A.S. panel.

* * *

MILLPORT has long been a centre for marine aquarists and a number of regular visitors were sorry when, in 1950, the aquarium there was closed to the public. Built in 1904, the establishment had become out-of-date but thanks to financial assistance, including grants from the Carnegie Trust for the Universities of Scotland, it was possible to rebuild the public section of what is known as Millport Laboratory. This was opened a short while ago by Dr. J. R. Peddie, the Trust's secretary and treasurer. Much useful scientific research is carried out at the Laboratory under the auspices of the Scottish Marine Biological Association.

* * *

A REPORT on the A.G.M. of the Federation of British Aquatic Societies appears elsewhere. It was possible to fit in a short time at the meeting before I had to go to the second of four engagements on the one day. During that brief stay I heard the chairman, Mr. T. E. Butt, give well-merited praise to the team of officers who had served the Federation well during the past twelve months. It fell to the immediate past-chairman, Mr. P. Campkin, to extol the virtues of Mr. Butt who has a further year in office.

At an early stage in the proceedings, the chairman requested the secretary to retire for a short while. Looking a little surprised, "Robbie" List obeyed instructions. In his temporary absence, the chairman asked approval for the council's decision to present a pen set to Mr. List, to mark the delegates' approval of his services to the Federation, and for the cost of a bouquet of flowers which was being delivered at about the same time to Mrs. List. This further gesture was fully warranted for the secretary's wife does a lot behind the scenes to help her husband to cope with a welter of paper work.

There was no question of approving the outlay; rather, the opinions of the treasurer (Mr. R. M. Bayliss) and the vice-chairman, Mr. H. P. Lymn, who represents Nottingham A.S., were that the recognition was hardly adequate. Mr. Butt explained that it was a token acknowledgment of indebtedness to Mr. List and when the matter was put to the vote it was passed unanimously. Mr. List has persevered as secretary for some years and before then has acted as assistant secretary for eighteen months.

Later in the afternoon, Mr. Fraser-Brunner was elected to the Council and, after castigating some of the clubs for showing relatively little interest in the Federation's affairs, the treasurer, who had submitted an excellently presented statement of accounts intimated that at the end of his term of office (he is half-way through a two-year) he does not propose to offer himself for re-election.

* * *

THE third activity on the afternoon of the F.B.A.S. A.G.M. was the annual dinner of the Goldfish Society of Great Britain. My colleague, Mr. L. W. Ashdown, represented WATER LIFE at this event, while I was engaged elsewhere, but, as a vice-president it behove me to look in if at all possible and I did so when the evening was well advanced.

A festive spirit was in evidence and Capt. Betts, the society's chairman, who can be serious one minute and clown about the next, was in his element as M.C. There is an air of informality about G.S.G.B. functions, whether they are dinners, socials, general meetings or gatherings of the committee. It helps a lot to get things done amicably and I suspect that some of the more conventionally-minded officials of other aquatic organisations envy the absence of any jarring note during the proceedings at the Goldfish Society's meetings.

The society certainly suffered a loss in the deaths of their President (the late Duke of Bedford) and one of their vice-presidents (Strachan Kerr) but have been fortunate in getting Mr. Alfred Leutscher, B.Sc., to fill the vacancy as vice-president and Mr. R. J. Affleck, M.Sc., M.R.S.T., after some persuasion which was needed to overcome his modesty, to agree to become President.

After tactful approaches, the G.S.G.B., with its own idea of Goldfish standards, and the F.B.A.S., that has its own set, agreed to meet to discuss their respective aims. It is only logical that the latter should listen to the views of the specialist club's representatives and equally obvious that the former should have no qualms about making the first move to get closer co-operation.

At the preliminary meeting between representatives of the G.S.G.B. and the F.B.A.S., opposition to the former's contentions was large overridden when the scientific background on which the G.S.G.B. varieties were built up was explained at length. Although no official intimation of the meeting has been forthcoming, it seems that things are set fair for agreement. Further meetings are to be

held, the outcome of which could be the recognition by the F.B.A.S. and the G.S.G.B. of a single set of Goldfish standards, such as was advocated in the April 1952 issue of WATER LIFE, when I observed that "Common sense suggests . . . one range only. To have three distinct sets" (F.B.A.S., G.S.G.B., B.A.S.) "is confusing and unnecessary . . . Between them, surely they could devise one acceptable standard for each recognised type?"

Will the G.S.G.B. be ready to give recognition to the Fantail and will it encourage breeders of London-type Shubunkins? If it revises its scale of points applicable to metallic specimens occurring in its four basic varieties it will have cleared up an anomaly within its own standards. If, as may be the case, the standard Shubunkin of the future conforms more in shape to the G.S.G.B. Singletail than to the F.B.A.S. outline based on the Bristol idea, the set of standards re-introduced in 1952 by Bristol A.S. will have been bypassed. The hope we expressed nearly two years ago may yet be fulfilled.

* * *

WATER LIFE and its contemporary journal "Cage Birds" had a stand at the 1954 National Schoolboys' Own Exhibition to introduce the hobbies of fishkeeping and birdkeeping to the younger generation. Well-known aviculturists had loaned Budgerigars, Canaries and Foreign Birds. On the aquaria side, at the invitation of WATER LIFE, Mr. T. S. Hobday set up a tropical community tank on behalf of the F.B.A.S. and Mr. W. L. Wilson a coldwater aquarium for the G.S.G.B. Both past masters in the art, these two aquarists showed how attractive properly prepared furnished tanks can look and many were the enquiries made about starting up as junior fishkeepers.

* * *

ONCE again a successful National Exhibition of Cage Birds and Aquaria has come and gone. WATER LIFE Display, with 130 tanks, nearly all of them furnished, made a colourful show. The pictures on this page were taken at the opening luncheon, at which Sir Richard Haddon, C.B.E., presided. This luncheon, which has become an eagerly looked to annual event, is arranged by the proprietors of WATER LIFE and "Cage Birds", of which company Sir Richard is chairman and managing director, no cost falling on the show receipts.

The aquaria section ran very smoothly indeed. More of that later. Let us first answer one or two comments that have been made. The fish display is primarily that, a self-contained section adding attraction to the world's largest display of birds, and is not to be compared with an independent aquaria show with a large classification. It forms a section of the National Exhibition by invitation of the main committee. Its function must chiefly be one of attracting the lay public to the hobby, with the emphasis on set-up tanks rather than a preponderance of single fishes in competition on a highly specialised plane.

The opinion of one or two that it was too small calls for the observation that support from clubs was less than last year and that twice the number of entries could have been accommodated. A number of reasons why entries were not made were forthcoming but the fact remains that the total received was smaller than anticipated.

What was most surprising was the limited entry for the challenge class. The excuse that the time of the year is bad for plants, a legitimate one in the furnished aquaria classes, is not tenable here. Am I right in suggesting that there are very few good pairs of livebearers left amongst club members? Or could they not decide among themselves which pair was best from several claimants? It should be possible to repeat the experiment next year and we may be able to include classes for breeders' teams.

One entry was withdrawn on the grounds that we could not provide enough heat in time for when the entrant's fish would be introduced. Rather than encourage an apprehensive competitor I accepted the withdrawal although when it was made I knew that the hot water supply was already in operation, that the heaters were ready to be connected up as soon as I gave the word and that tests had shown our arrangement to be adequate.

So much for the debit side which when added up fails to counterbalance the success of the show or the good work put in by those who gave their support with entries and as helpers. On the credit side one has only to read the introduction to the report on page 35, to which I would add my personal thanks to the committee, stewards, exhibitors and the specialist clubs' members who contributed so much time and effort. Special mention may justifiably be made of Mrs. W. M. Meadows (chief steward) who with Mrs. Russell Holland helped with the office work, to Messrs. S. J. Freeman, A. H. Charles, E. F. Russell, B. Meadows and W. Howe and his son who acted as night stewards, to Mrs. Russell and the numerous folk who performed tasks so readily at my request.

Behind the scenes, Mr. B. M. Smith and his colleagues made last minute changes to the herpetological display when it was found necessary to supply tanks of a size different from that first arranged. The army of helpers on the F.G.B.S. section was encouraging but Mr. H. S. White and those who helped him had difficulty at first in persuading sections of his Federation to enter their own competition.

Turning to Mr. Fraser-Brunner and Mr. J. P. Mitchell I must commend both, particularly the former, for the amount of work they put in. Believe it or not, even the F.B.A.S. was let down by some who had offered support and it fell to the above pair to chase around at the last minute to fill the gaps.

The Goldfish Society seemed to be the least perturbed, though when I warned Mr. E. G. Weatherley that we might be short of 36 in. tanks (what a dearth there is of them) he wilted visibly. Fortunately, he received his quota in time and with the help of Capt. L. C. Betts (chairman) and Mr. R. Birkenhead (G.S.G.B. show secretary) plus the members who were responsible for the exhibits in their 21 tanks, this section was soon ready for the official opening.

The aftermath of the show brought its usual quota of property left behind, all of which has been returned to the owners, with the exception of a haversack I have at the office, filled with three large pieces of well-weathered rock. Any claimant?

Perhaps the luckiest man at the show was Mr. T. Horeman who not only helped me out of a difficulty by loaning some of the large tanks but also enhanced the display of the G.S.G.B. by exhibiting his rare Hammered (or Pearl Scale), Bubble-eyes and Pompon Goldfishes. In his hurry to help another G.S.G.B. member to catch a train from Victoria he left his own can containing these unusual fish on the pavement (!) and drove off.

Back he rushed; the fish had disappeared; 999 was dialled. Somehow or other I thought the fish would be recovered but that was cold comfort for the owner who left "with his fingers crossed". It was an extremely relieved enthusiast whom I telephoned on the following Monday to say that the fish had been picked up and looked after over the week-end by Mr. P. Dee, another exhibitor. Thanks, P.D.!

A meeting of the aquaria section committee will be held soon to review the display and to make recommendations for future events. Any ideas readers may have will be considered in detail.

Photographs] [WATER LIFE

Among representatives of the aquaria section at the opening lunch of the National Exhibition of Cage Birds and Aquaria were (left) Messrs. Betts, Freeman, List, Phillips, Page, Saunders, Birkenhead and Ashdown with Miss D. Morris and (right) Messrs. Holloway, Roach, Stanley, Looker, White and B. M. Smith with Mrs. Riddle. Altogether WATER LIFE *had twenty-six guests at the luncheon.*

From Continental Journals ***by H. O. Munro***

Further Notes on Annual Fish of the New World

IN a concluding article in the August 1953 issue of DIE AQUARIEN-UND TERRARIEN ZEITSCHRIFT (DATZ) Dr. E. Meder describes his personal experiences and experiments with the strange fish of Argentine Pampas, *Cynolebias bellottii*.

Dr. Meder breeds the fish using soft water in tanks without any plants. Under natural conditions the female *Cynolebias* deposits her eggs in mud and the material used for the bottom of the tank is therefore of greatest importance. His first experiments with sea sand were not very successful as most of the eggs were not fertilised. He then changed over to bundles of nylon thread. These consisted of approximately 200, 8 in. threads tied together and weighed down with a glass bead. The bundles form a very suitable spawning medium for all types of fish which deposit their eggs in the soft bottom layer and they proved very successful with *Cynolebias*, which are prolific spawners and lay about 80 to 100 eggs at a time. As the eggs will not adhere to the nylon threads but just drop through to the bottom of the tank they can easily be removed and the unfertilised ones can be separated.

The eggs need special attention. If left in water for the whole length of the time about 10 per cent of the fry can be expected to develop normally. The rest will either not hatch at all or will be weaklings. A dry period is essential for the normal development of *Cynolebias*. To achieve this the eggs are removed from the spawning tank into suitable glass containers, and kept covered with soft water for about 20 days. After this period the water is removed and replaced by a thick solution of cleaned clay in water, which is then exposed to the air until very nearly, but not quite, dry. When the clay begins to show signs of cracking the container has to be covered to prevent complete drying out as this has proved to be fatal.

The temperature is kept between 68 and 76 deg.F. until the total hatching period (wet, drying and dry) has lasted 50 days. Then soft water to a depth of 4 in. is added and the first fry will swim about within an hour or so. They are very hardy and easily fed with nauplii. After a few days they will accept Mikro-worms. They grow rapidly and will be ready to spawn after only eight weeks, when they are almost fully grown.

It has been found that an alternative and most suitable spawning medium is washed peat mould of about 1 in. depth. The fish spawn willingly in this and there is no need to remove unfertilised eggs as the peat serves to preserve the eggs and keep them apart. The peat containing the eggs can be removed into a glass dish and again covered with water for the first 20 days. The water is then drained off and the peat left to dry until it is just humid. It is then covered in the same manner as for the clay suspension, with water added after the total time has reached 50 days.

A near relation of the *Cynolebias bellottii* is the *Cynolebias nigripinnis*, a somewhat smaller and more delicate fish, which is very attractive. The male is deep blue and strewn with shiny white spots like the night sky. The breeding habits are similar, though *C. nigripinnis* will not readily spawn in nylon bundles.

ON old Japanese prints one can often see the strange sight of a frog kept in a cage very much like a bird cage. And indeed, even to-day, these frogs are kept by the Japanese for their vocal efforts, which resemble more those of a canary than the croaking of Marsh Frogs.

Hans Geyer (writing in the November issue of DATZ) has kept these frogs for many years and describes their song as resembling distant bird sounds. Some good singing frogs will fetch very high prices in Japan. The actual species, *Rhacophorus buergeri*, is relatively small, the female being 2 in. long, the male slightly larger. They are greenish or yellowy grey on top, a dirty white underneath and have banded hind and front legs. A blue ring around the eyes is their only outstanding colour feature. In their natural haunts they are found sitting on stones on the bank of fast-flowing mountain streams. Accordingly Geyer provided them with a home in a large tank half of which was filled with water containing *Elodea* plants, the other half consisted of clay, moss and rock as well as some shady and leafy plants. The frogs mostly hide in daytime and appear at dusk when they also start their little song as long as they are undisturbed. They feed on flies, mealworms, grasshoppers and moths, but will not accept Earthworms.

They spawned several times in captivity but Geyer has not so far succeeded in rearing any of the tadpoles.

Aquatic Press Topics

Conga Tetra—an Unusual Characin

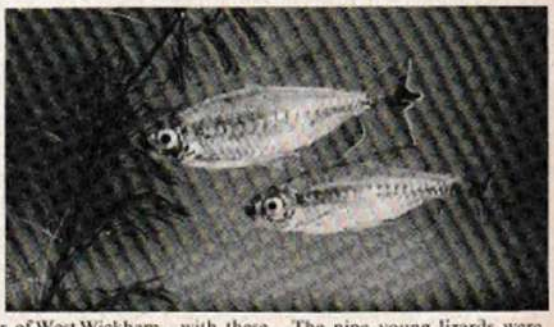
— by —

L. W. Ashdown

ONLY quite recently, and then only occasionally, have we seen the quaint *Phenacogrammus interruptus* in Gt. Britain. Popularly known as the Congo Tetra it seems to be regarded as one of the "difficult" aquarium species. Information given by Dr. E. Meder in the TROPICAL FISH HOBBYIST (U.S.A.) may help those intending to try keeping a few of these fish. First point to bear in mind is that they like plenty of room, the second is that subdued top light is best, and the third that water filtered through peat until a light amber colour is the ideal. Coconut shells give the same water colouring and provide suitable hiding places. In water of any other type Dr. Meder says the fish are particularly susceptible to Fungus. The natural waters of the Congo Tetra are soft and hardness should not go above 6 degrees. Suggested temperature is 74-78 deg. F. *Daphnia* are enjoyed but White Worms, *Tubifex*, floating insects, mealworms, shredded beef heart and dried food will also be taken.

TROPICAL FISH HOBBYIST is a lively and comparatively new periodical produced five times a year in New York with Mr. H. R. Axelrod as its managing editor and Dr. L. P. Schultz as advisory editor.

WHEN two closely allied hobbies, herpetology and fishkeeping, are enjoyed by a single individual, one often dovetails into the other. A somewhat unusual instance of this is given in No. 8 of the BRITISH JOURNAL OF HERPETOLOGY issued by the British Herpetological Society. Mr. Peter Sayer, of West Wickham, Kent, bought a pair of Green Lizards (*Lacerta viridis*) in April 1952, and at the end of that month courtship of the creatures, though not the actual mating, was observed. At this time they were kept in an indoor vivarium but with the approach of warmer weather they were transferred to a garden reptiliary.



Congo Tetras, an unusual Characin species which seems to require special conditions. Photograph by G. J. M. Timmerman.

Fourteen eggs were laid under a flat rock on June 17. They were placed in a wide-necked jar containing sand. The sand only partially covered them and water was run down the sides of the container to moisten the sand. This is where the fishkeeping activity came in useful as the jar was floated in a tropical aquarium kept at 75-80 deg. F. A glass cover on the tank collected moisture which dripped back into the jar. Just eight weeks after being laid the first eggs hatched, and nine of them had successfully hatched by next day. Some of the eggs had been accidentally turned and no success was achieved with these. The nine young lizards were each two inches long and were fed on *Drosophila*, green fly, black aphis, chopped Earthworms, shredded raw meat, small caterpillars and maggots. In April, 1953, six of the lizards were still alive and had an overall length of approximately 11 in.

For the serious herpetologist the frog and toad breeding records contained in the same issue of the Journal will be of considerable interest. From the data obtained it appears that any area of water might be used for frog spawning, ranging from a cart-rut to a river. Depth seems immaterial and water from 2 in. to 3 ft. was used. The presence or absence of water plants did not affect the spawning. Except in the records from Windermere, toad spawnings took place in water depths ranging from 6 in. to 10 ft. Where aquatic plants were not present the spawn was attached to tree-roots or rushes. A report from the Hastings district said toads were spawning before frogs in that area.

Successful WATER LIFE Display at 1954 National Exhibition of Cage Birds and Aquaria

Trophy for Best Interclub Furnished Aquarium Again Goes to Coldwater Entry

AFTER a run of pre-Christmas dates in the years 1940 and 1945-1952, the National Exhibition of Cage Birds and Aquaria had to be put forward on this occasion to January 7, 8 and 9, 1954, a change that did not affect the overall success of the event. A general comparison with the 1952 show, with which was incorporated the National Poultry Show, would present a less accurate picture than one with that held in 1951 when birds and fish only were on view in the National Hall, Olympia, the same venue as on this occasion. As in 1951, the attendance was highly satisfactory (26,777) and the excellent bird section attracted 8,240 birds as against the 1951 total of 6,318.

The aquaria section, organised by WATER LIFE, was made up of five competitive classes for furnished aquaria, one interclub challenge class (in connection with which a judging competition was held) and four specialist organisations' displays. The big response to the bird section made it necessary to plan the aquaria section carefully in order to make best use of the available space. Before the show, the aquaria section committee, consisting of Mrs. W. M. Meadows (who again acted as chief steward), Capt. L. C. Betts, M.B.E., Messrs. L. W. Ashdown, R. Birkenhead, C. W. G. Creed, F.Z.S., F.R.H.S., S. J. Freeman, J. H. Gloyn, R. O. B. List, W. J. Page (chairman), W. G. Phillips, B. M. Smith, A. P. Stanley, E. G. Weatherley and H. S. White discussed the arrangements in detail and, in turn, the chairman, who was also the section organiser, represented them on the main show committee. Co-opted to the aquaria section committee were Messrs. Fraser-Brunner and Mitchell.

Selection of Judges

A departure was made this year when the organisers, having asked the Federation of British Aquatic Societies to provide the judges, as hitherto, went further and invited them to select the individual members of the judges' panel. Whilst this change of procedure (which is an ideal arrangement in the opinion of some members of the F.B.A.S. Judges' and Standards Committee) must not be taken as a precedent always to be followed, it must be said that it worked out well. It would be wrong to enquire whether behind the scenes the invitation caused the secretary of the J. & S. committee or his colleagues any headaches but it should be said that with a number eligible the nominations were good ones and were only made after careful consideration.

The inclusion of a Birmingham judge (Mr. W. L. Mandeville, who is on the F.B.A.S. panel) was a happy choice and had not business engagements prevented him from accepting, Mr. W. C. Webley (Nottingham) would have been included. The panel list was:—Class A1 (Interclub Tropical Furnished Aquaria) and Class A5 (Junior Tropical), Messrs. H. Russell Holland and C. W. G. Creed, assisted by Mrs. Robertshaw (reserve). Class A2 (Interclub Coldwater) and Class A4 (Individual Coldwater), Capt. L. C. Betts and Mr. C. J. Saunders, B.Sc., assisted by Mr. A. Boarder (reserve). Class A3 (Individual Tropical) and Class A7 (Challenge Class), Messrs. J. H. Gloyn and W. L. Mandeville.

Under the training scheme of the F.B.A.S., Mr. S. T. Jelly was present during judging to get further experience, the section organiser's approval being readily forthcoming. Mrs. Robertshaw took a commendable attitude over Class A1, on which she was consulted as reserve judge, deliberately refraining from discussing those tanks which her club helped to set up and from making the final placings.

At the request of the organisers, the judges returned full pointings on all exhibits, basing them on the recommendations for judging furnished aquaria issued by the F.B.A.S. in Classes A1-A5, and on the standards issued by the Federation for Class A7. The F.B.A.S. Star Scheme was in operation and the specially designed prize cards not only had the appropriately coloured stars affixed but, signed by the judges, also recorded the points gained and the number of entries in the class.

Federation of British Aquatic Societies' Judges officiating at this year's show. Front row (l. to r.): Mr. J. H. Gloyn, Mrs. B. Robertshaw, Mr. A. Boarder, and Mr. W. L. Mandeville. Back row: Mr. H. Russell Holland, Mr. C. W. G. Creed, Mr. C. J. Saunders, B.Sc., and Capt. L. C. Betts, M.B.E.

Photograph] [WATER LIFE

Chief prizewinners were: WATER LIFE Trophy for best Interclub Furnished Aquaria, Stoke Newington A.S. Award of Merit for the Interclub Points Competition, Hendon A.S. Award of Merit, with WATER LIFE Diplomas to the runners-up, go to the leaders in each class. Prize cards (1st to 7th) were offered and cash prizes of £2 2s. 0d., £1 1s. 0d. and 10/6 in Classes A1, A2 and A7, and £1 1s. 0d. 10/6 and 5/- in Classes A3, A4 and A5.

Contributing to the smooth running of the event were Maryland Products from whom the bulk of the tanks and the metal staging was on hire; Mr. T. C. Horeman of Tachbrook Tropicals and Mr. R. C. Russell of Tottenham, who both loaned some of the large tanks; and Angel Electrical Industries Ltd., who loaned the heaters, thermostats and aerators.

A start was made to erect the staging at midday on Monday, January 4, and completed that evening. Hot and cold water points were in operation the same day and the electrical installation was ready for the lights and other apparatus to be connected. Next day all tanks had been tested for leaks and the lighting switched on ready for exhibitors to commence preliminary setting up in the evening. As all exhibitors were informed beforehand the heating and aeration was withheld until the Wednesday. It was connected early in the morning and was in full operation right away, so that when exhibitors came to furnish their tanks from 2 p.m. onwards they had everything ready for them. Similarly, on the Thursday morning, all was set for the judges to start at 9.30 a.m. They were left undisturbed to carry on their work which they finished by 12 noon. The awards were put up on the tanks in Classes A1-A5 soon after the public were admitted and subsequently that afternoon all were labelled with the names of the exhibitors. Shortly afterwards the interclub points competition results (subject to the awards in Class A7) were posted up. Parallel with this adherence to the pre-arranged time schedule was the progress made with the four specialist clubs' banks of tanks. Adequate space was allowed between the tanks to facilitate the setting up and in turn to give the public a good opportunity to see each exhibit without discomfort.

Straightforward as the setting up went, in spite of the fact that at one time on the Wednesday evening nearly 150 aquarists (who had their usual impedimenta of buckets, cans, siphons, tubes, and complements of fish, rockwork, plants and compost) were busy, the breaking down was even more remarkable. The show closed to the public at 8 p.m. when the section was roped off. The electricians took out all electrical fittings, those stewards not engaged in keeping out over-anxious exhibitors helped to collect shades and by 8.20 p.m. it was possible to let the army of fishkeepers besiege the tanks to take out in a few minutes what had been put in over a number of hours in the creation of many good examples of the art of aquascaping. With only one or two exceptions, exhibitors complied with the request to empty their tanks of water (into troughs) and of gravel (into a bin) and to return the tanks to the store where they were stacked by stewards into their relative sizes. To the onlookers it may have seemed a chaotic session but that there was order behind it all is confirmed by the fact that all tanks (130) and rows of staging were completely dismantled and stored away by 9.15 p.m.

Interclub Points Competition

Society	Classes A1	A2	A3	A4	A5	A7	Total	Position
Hendon A.S. ...	34	18	5	5	—	—	62	1st
Surrey A.C. ...	4	—	—	7	—	14	25	2nd
Stoke Newington A.S.	—	14	—	—	7	—	21	3rd
Streatham A.S. ...	—	—	7	—	5	4	16	4th
Hampstead A.S.	2	10	2	—	—	—	14	5th
Southall A.S. ...	—	—	—	—	6	6	12	
Twenty Club ...	—	—	—	—	—	12	12	6th
West Middlesex A.S.	—	12	—	—	—	—	12	(tie)
Potters Bar A.S. ...	—	—	—	—	—	10	10	9th
Southampton A.S.	10	—	—	—	—	—	10	(tie)
Aquarium Club, Fulham	—	2	7	—	—	—	9	11th
Enterprise A.S. ...	—	—	6	—	—	2	8	12th
Tottenham A.S. ...	—	—	—	—	—	8	8	(tie)
Bethnal Green A.S.	—	—	—	6	—	—	6	14th
Federation G.B.S.	6	—	—	—	—	—	6	(tie)
Northolt A.S. ...	—	—	—	—	4	—	4	16th
West Bromwich A.S.	—	—	—	—	—	2	2	17th
Lambeth A.S. ...	—	—	1	—	—	—	1	18th

Mr. E. Russell, of Tottenham, who regularly assists in the aquaria section at these exhibitions, looks at the Harlequins and other fish in the tank entered by Balham A.C.

Photographs] [WATER LIFE

The main support from clubs went as usual to the tropical interclub class although generally speaking the coldwater section seemed to be of a most commendable standard despite the fact that in Class A1 the average points gained work out at 67.17% against 64.76% in Class A2. Similar comparison between Class A3 and Class A4 shows 53.85% and 63% respectively. It will be noted that the same judges took A2 and A4, but the judges of A1 were different from those who took A3. What can be learnt from these figures? Is it possible that the judges tended to be sparing in their pointing? Their awards indicate the standard they believed was achieved. This means that not one tank on show was considered by them to be worthy of a gold star. Does this suggest that the somewhat arbitrary system of pointing furnished aquaria, assessing values feature by feature, results in too little consideration of the æsthetic value of the underwater pictures so painstakingly built up? And is there accordingly a tendency to down-point to the discouragement of exhibitors (clubs and individuals)?

Well Deserved Lead

Looking at Class A1, we thought that Hendon A.S. well deserved to be in the lead and that, considering they were obviously confined to showing Guppy varieties, the F.G.B.S. put on a very promising show. Among the unlucky ones in the class were West Middlesex A.S. who seemed to fall down a little on design and quality of plants and Ruislip A.S. and Stoke Newington A.S., the first again losing on design as well as planting and the latter more on the general execution of a well-thought-out plan rather than on the material used. It is possible that here the artistic was allowed to override the considerations called for by the F.B.A.S. recommendations? An attempt made to build up a pretty tank brought about a slightly artificial appearance.

In Class A2, West Middlesex A.S. gave way to Stoke Newington A.S. primarily because the leaders not only had some of the best developed coldwater plants we have seen in winter months but also because the finishing touches were better. This result means more than the loss of a red ticket for West Middlesex. They relinquish the WATER LIFE Trophy and it is Stoke Newington A.S. that takes it with a well deserved win, fully approved by five judges (Capt. Betts and Mr. Saunders with Mr. A. Boarder of Class A2 and Messrs. Creed and Holland of Class A1). In view of what has previously been said, it is worth recording this unanimous opinion of the five judges since the award was not made solely on the points given but after these judges had independently—and, then, we believe, after consultation with the other judges—decided that Stoke Newington had staged the best club entry.

The class for individual tropical tanks drew some interesting entries and Mrs. R. H. Wood very nearly equalled the leading effort by Mr. P. Dee. Both were cleverly executed pictures, rather stringently pointed we felt, the leader winning by having better fish and, on the whole, presenting a more fitting conception of a balanced tank. Had his plants equalled those in the runner-up tank the margin of points between them would have been greater.

Left: Another keen steward at WATER LIFE *shows, Mrs. Marjorie Holland of Enterprise A.S.*

Right, the G.S.G.B. technical director, Mr. E. G. Weatherley, who organised his specialist society's well-planned story of the Goldfish varieties.

Nearly a Hat-Trick

Behind the results in the class for individual coldwater aquaria lies the story of keen disappointment on the part of Mr. R. C. Harvey. Winner of the same class in 1951 and 1952, he hoped to complete the hat trick only to be beaten by Mr. F. Pilsbury's pleasing effort by one point. Some favoured Mr. Harvey's tank and Capt. Betts, on behalf of his fellow judges, had to answer a number of questions on their placing here. Conceding that the winner had, perhaps, a better layout, Mr. Harvey's champions contended that he had the better plants. A glance at the points gained show how near the judges thought the one entry was to the other.

Only a few points separated the four entrants in the junior class for tropical tanks and these youthful competitors are to be commended on the quality they achieved. That the allocation of points to so many features in furnished aquaria (11) can make the final total different from what might be expected at first glance, is borne out in this class. A bad fault can only be penalised within the limits of the allocation of points for that feature and if other features gain above average pointings, that tank with a glaring defect can and sometimes does get the biggest aggregate pointing and so earns the first prize. How many onlookers condemn a tank or, conversely, commend it without assessing it feature by feature as the judges are bound to do? The points scheme brings about as accurate an assessment as a judge can make. Whether or not it is defective in that it limits the extent to which a major fault can put back an entry is another matter.

New ground was broken this year when clubs were invited to enter a pair of livebearers for which standards have been issued by the F.B.A.S. Some who wanted to enter were rejected since standards for these do not yet exist (e.g., Albino Swordtails) whilst one or two visiting aquarists queried the eligibility of fish, the standards of which do not appear in the official handbook "Show Standards for Cultivated Fishes" (e.g., Red-eyed Red Swordtails). They were allowed to stand as the standards have been approved by the F.B.A.S. and copies of them have been circulated to affiliated clubs and have been referred to in WATER LIFE. In connection with the class we held a simple judging competition which proved to be revealing. Let us pose the question: If a judged class is first seen with the prize labels affixed to the tanks do those examining the class more readily accept the awards without criticism? It seems that they do for on this occasion, the class was judged on the Thursday but the results were sealed until 6 p.m. on the Saturday. In the meantime the competition was open. As soon as 6 p.m. came no further forms were issued and immediately they had been returned the results were put up. Competitors were vociferous in their disagreement with the official placings. Would they have been so ready to comment adversely if they had not committed their efforts at judging to paper? Later it may be possible to analyse some of the entrants' placings and pointings but suffice it to say now that not one exhibitor made an accurate return, the winner getting four out of the seven places correct.

In happy and confident mood, Mrs. B. Robertshaw assesses the points of the two big Angel Fish in the Class A1 entry made by Hampstead A.S. The size and good condition of the fish made them a great attraction to many visitors to the show.

Non-competitive Displays

Supplementing the WATER LIFE classes were the four displays put on by the F.B.A.S., the Federation of Guppy Breeders' Societies, the Goldfish Society of Great Britain and the London Group of the British Herpetological Society.

The F.B.A.S. put on a show of twelve tanks. Behind that bold statement lies much organisation and hard work for which a sub-committee of the Federation headed by Mr. Fraser-Brunner and Mr. Mitchell was responsible. Each tank was set up to represent different regions, had a

delicately coloured background to enhance the effect, contained only gravel, rockwork and plants such as would be found in the geographical locations covered and housed fishes indigenous to those areas. The twelve tanks represented (1) Europe, (2) Europe, (3) N. America, (4) Mexico, (5) Guiana, (6) Brazil, (7) Africa, (8) India, (9) Ceylon, (10) Siam (Thailand), (11) Malaya and (12) Indonesia. Beside each tank notes told visitors the story.

A show within a show was put on by the Federation of Guppy Breeders' Societies, the affiliated section setting up furnished aquaria, with shoals of Guppies, bred by the exhibitors, on a competitive basis. Altogether 22 tanks were filled, thanks to the enthusiasm of the President, Mr. H. S. White, and these were judged for the F.G.B.S. by Messrs. A. J. Holloway, C. R. Looker, E. S. Roach and H. S. White. The result was a win for Mr. Hayward with a tank of Doubleswords, the 2nd, 3rd and 4th prizes going to Messrs. Riddle and Burfoot with Doubleswords, Bottomswords and Scarftails respectively.

The technical director of the Goldfish Society, Mr. E. G. Weatherley, was given support by a large number of members when he again told, this time in 21 tanks, a story of the development of the Goldfish. The furnished tanks were set up by Messrs. A. Sutton, W. L. Wilson, D. Cluse, A. Defelice, A. H. Nutt, F. H. Franklin and R. H. I. Read. Fish exhibited were wild-type Goldfish (by Mr. D. Cluse), an orange Common Goldfish (Mrs. B. Alderton), coloured and uncoloured Metallic Singletails (Mr. A. Sutton), chrome yellow Common Goldfish (Mr. D. Cluse), Silver Metallics (Messrs. D. Cluse and E. G. Weatherley), Matt group specimens (Mr. E. G. Weatherley), Matt Singletails (Miss D. Morris), Nacreous Common Goldfish, London Shubunkins, (Mr. S. J. Freeman), Bristol Shubunkin (Miss D. Morris), Nacreous Singletail (Mr. D. Cluse), Swallow-tail Veiltail (Mr. J. H. Dacombe), Fantail (Mr. S. J. Freeman), Fantails (Mr. W. L. Wilson), Nacreous Twintails (Mr. A. Defelice), two Hammered, Pearl Scale or Cockle Goldfish (Mr. T. Horeman), Oranda (Mr. R. H. I. Read), Metallic Twintails (Messrs. A. Defelice, T. Funk and E. G. Weatherley), Celestial (Mr. G. Frier), Globe-eyes (Capt. L. C. Betts and Mr. C. F. Whitehead), Bubble-eye and Pompon (Mr. T. Horeman), Lace-matt Twintail (Mr. E. G. Weatherley), and a Bramblehead (Mr. C. F. Whitehead).

In a contrast to the fishes were the exhibits shown by the London Group of the British Herpetological Society, in the arrangement of which Messrs. B. M. Smith, Mr. Boyce and Mrs. M. Green took a leading part. The tank included black and albino Axoloths, terrapins, a chameleon, a lizard, an iguana, American Bull-frogs, a young alligator and two snakes (Four-lined and Aesculapian).

PRIZEWINNERS

CLASS A1, INTERCLUB TROPICAL FURNISHED AQUARIA (31): 1 (81), Hendon A.S. Good plants used spaciously, allowing a large swim area. Plants were mainly set around three sides with only *Acorus* and small *Cryptocoryne* planted in the centre space where a natural and unobtrusive bottom layer added considerably to the effect. Fish were of good quality. 2 (80), Hendon A.S. An entirely different style of tank with bold use of heavy red rockwork and some large plants. Neons and *Nannostomus* of very good standard. 3 (77), Southampton A.S. Nicely contrasted plants of excellent quality. Orange-yellow bottom area. Fish consisted of a Rosaceus shoal. Altogether a most commendable effort by this South Coast society, particularly in view of the distance entailed. 4 (76), Hendon A.S. A further variation from this society with emphasis on the slim perpendicular nature of many of the plants—*Herpestis* (*Bacopa*), *Cryptocoryne Griffithii*, *Acorus* and Twisted Vallisneria. Effective, with a well-coloured Barb community. 5 (73), Federation of Guppy Breeders' Societies. Two outstanding points in this exhibit, the exceptionally fine bottom layer and the shoal of good quality Guppies. Design was there but relatively sparse planting tended to give flat appearance. 6 (71), Surrey A.C. Sandy bottom layer with emphasis on light-coloured and fine-leafed plants. Lost points on clarity. Good shoal of Harlequins. 7 (70), Hampstead A.S. Two large Angels in strikingly contrasted tank spoiled a little by artificial appearance of rock. Clean appearance.

CLASS A2, INTERCLUB COLDWATER FURNISHED AQUARIA (14): 1 and WATER LIFE Trophy (84), Stoke Newington A.S. Astonishingly fine coldwater plants for the time of year. Well grouped and not overplanted. Twisted Vallisneria runners took off the starkness of the rock. Quality fish. 2 (78), W. Middlesex A.S. Rocks stepping away to the side gave this tank interest. Only major point where it fell behind the first was on plant quality. Large well-conditioned Sunfish. 3 (77), Hampstead A.S. Masses of Hornwort with *Elodea* and *Vallisneria* for contrast. Despite heavy planting, a clean set-up with two good Common Goldfish. 4 (69), Hendon A.S. Heavy rockwork though artistically arranged. Slightly sparse planting. Two large, high-quality Golden Rudd. 5 (68), Hendon A.S. A design of clean outline though somewhat artificial. A few more plants would have improved the appearance. Two nice youngish Veils. 6 (65), Hendon A.S. Small Peacock-eyed Bass in nicely arranged tank with rather sparse planting. 7 (62), Aquarium Club (Fulham). A tank of orthodox design downpointed on plants. Sandstone showed evidence of mechanical breaking with sharpish edges showing. Three good Golden Rudd.

CLASS A3, INDIVIDUAL TROPICAL FURNISHED AQUARIA (8): 1 (65), P. Dee. Well matched rock and chips, nicely arranged, emphasising shallowest water depth at the back. Good plants and a beautiful collection of Characins. 2 (63), Mrs. R. H. Wood. A tank relying on contrasting quality plants for its effect. Attractive, but points were lost for the fish. 3 (57), J. E. Ward. Good rock arrangement. Orthodox planting with *Ambulia* and *Cabomba* along the back. Reasonable fish. 4 (52), T. P. Johnstone. No effective contrast with plants and bottom layer. Most of the fish chosen did not help in this respect. 5 (48), H. Boxall. Grey rock and gravel gave sombre appearance. Sparse planting but a good shoal of *Hyphessobrycon heterorhabdus*. 6 (47), P. W. Meyer. Rather poor plants and bottom layer of red sand and rock gave a slightly oppressive view. A mixed collection of fish. 7 (45), W. H. J. Kelsey. Poorish plants did not allow much scope. Reasonable Red Swords.

CLASS A4, INDIVIDUAL COLDWATER FURNISHED AQUARIA (4): 1 (75), E. Pilsbury. Good Common Goldfish in an orthodox aquarium nicely planted but unpretentious. 2 (74), R. C. Harvey. Tank of good design and attractively set up. Occupied by this exhibitor's usual shapely Shubunkins. If anything, a tendency to overplanting which could be penalised under "permanency". 3 (58), F. Oliver. Moderate quality Moors. Promise of design and reasonable plants. Somewhat drab set-up could have been improved with materials used. 4 (45), R. N. White. Seashore rock. Sparse planting. Fish, fair. More suitable rockwork, better postioned, would have earned points.

CLASS A5, JUNIOR TROPICAL FURNISHED AQUARIA (4): 1 (60), P. Bloxham. A promising entry with evidence of design and thoughtful planting. Fish were quite good *Hyphessobrycon rosaceus*. 2 (59), B. Bourgein. Close up, with design a little superior but fish quality not so good. 3 (58), D. Mears. Rather sparse planting but a good collection of well-sized and coloured Gouramies. 4 (55), K. Button. Reasonable fish and average plants spoiled by indiscriminate use of rectangular pieces of coal.

Class A7. INTERCLUB CHALLENGE CLASS (Livebearer Pairs) (12). 1, (Male 79 pts. Female 88. Average 83½), Surrey A.C. Red-eyed Red Swordtails. 2, (M.74. F.78. Av.76) Twenty Club. *Mollienesia sphenops*. 3, (M.72. F.76. Av.74), Potters Bar A.S. *Platypoecilus variatus*. 4, (M.74. F.73. Av.73½), Tottenham A.S. *Platypoecilus variatus*. 5, (M.73.F.70. Av. 71½), Southall A.S. *Mollienesia sphenops*. 6, (M.72. F.69. Av. 70½), Streatham A.S. *Mollinesia latipinna*. 7, (M.71. F.68. Av. 69½), (tie) Enterprise A.S. Red Swordtails. 7, (M.68. F.71. Av. 69½), (tie) West Bromwich A.S. *Mollienesia sphenops*. 9, (M.65. F.72. Av. 68½), Lambeth A.S. Moon Platies. 10, (M.70. F.64. Av.67), West Middlesex A.S. Red Swordtails. 11, (M.62. F.56. Av.59), Hampstead A.S. Sailfin Mollies. Details of the points gained in the above class, the totals only of which are given here, have been sent to all competitors. Comments on the exhibits will be made in conjunction with a review of the entries on the judging competition which we hope to publish in our next issue. By stipulating true pairs, we gave the opportunity to the judges to make full use of the points for matching. In addition to the challenge class results, all competitors (clubs and individuals) have received a full analysis of the judges' pointings for every exhibit entered in Classes A1 to A5. These will be published in our next issue.

HOW DID I GET IN THERE?

On reflection, Capt. L. C. Betts, flanked by Mr. A. Boarder and Mr. C. J. Saunders, realised that the camera has caught the mirrored likeness whilst the three judges were examining entries in Class A2.

Photograph] [WATER LIFE

Result of Class A7 Judging Competition

A RE-SCRUTINY of the entries made at the show in the judging competition held in conjunction with Class A7 confirms that the winner of the £3 3s. 0d. cash prize, as announced on the Saturday evening, was:—

Mr. C. H. Ward, 136 Green Lane, London, S.W.16

Some entrants failed to place any of the awards in the same order as the two judges, Mr. J. H. Gloyn and Mr. W. L. Mundeville, and in the main, very few correct placings were made. Mr. Ward wins the prize as being the competitor who gave the nearest return to the official results. The following is a summary of the judges' placings and points and those of Mr. Ward:—

	1st	2nd	3rd	4th
Judges:	No. 8 (83½ *pts.*)	No. 4 (76 *pts.*)	No. 11 (74 *pts.*)	No. 6 (73½ *pts.*)
Mr. Ward:	No. 8 (75 *pts.*)	No. 5 (72½ *pts.*)	No. 11 (70 *pts.*)	No. 7 (68 *pts.*)

	5th	6th	7th
Judges:	No. 3 (71½ *pts.*)	No. 5 (70½ *pts.*)	Nos. 9 *and* 10 (69½ *pts. tie*)
Mr. Ward:	No. 3 (66 *pts.*)	No. 4 (65 *pts.*)	No. 10 (64 *pts.*)

Veiltail Goldfish Takes Premier Place at Banbury

BANBURY A.S. reports that its 1953 exhibition was a record event from several angles. The number of entries received was considerably in excess of the tank space available and some had to be refused. In all 238 exhibits were staged. Best fish in show was a Veiltail Goldfish shown by Mr. K. C. Speakes. It was awarded the society's cup and a WATER LIFE Diploma. The best breeders' fish were Thick-lipped Gouramies shown by Mr. A. Simmonds who won a WATER LIFE Diploma and the Peake Cup. The Founders' Shield (highest points), the Fox Cup (best coldwater fish), the Reuben Hunt Cup (best tropical fish) and the Mather Cup (best Angel Fish) all went to Mr. D. Thomas. Remaining trophy winners were Miss J. Wood who took the Bolton Cup for best junior furnished aquaria and Mr. J. S. Scragg who gained the Charles Hunt Shield for best senior furnished aquaria.

PRIZEWINNERS

COMMON GOLDF.: 1 and 3, Miss J. Welch; 2, S. Cross. SHUBUNKINS: 1 and 2, K. C. Speakes; 3, G. Glover. FANTAILS: 1, 2 and 3, A. Shaw. MOORS AND VEILTAILS: 1, 2 and 3, K. C. Speakes. TELESCOPIC-EYED GOLDF.: 1, 2 and 3, K. C. Speakes. BRIT. COLDW. FISH: 1, K. C. Speakes; 2 and 3, S. Cross. FOREIGN COLDW. FISH: 1 and 2, D. Thomas; 3, Mrs. M. Hemmings. SWORDS: 1 and 2, D. Thomas; 3, A. Simmonds. *PLATY. VARIATUS*: 1, A. Simmonds; 2, R. Wood. A.O.S. PLATY: 1 and 3, A. Simmonds; 2, Fullerton. MOLLIES: 1, A. Simmonds; 2, D. Thomas; 3, R. Wood. GUPPIES: 1, E. J. Sewell; 2, Mrs. A. E. Harris; 3, D. Thomas. FIGHTERS: 1, D. Thomas; 2, Mrs. M. Hemmings; 3, A. Simmonds. A.O.S. LABYRINTH: 1, B. Pargeter; 2, J. S. Scragg; 3, Mrs. M. Hemmings. DANIOS: 1 and 2, D. Thomas; 3, D. E. Vine. RASBORAS: 1, Mrs. M. Hemmings; 2, E. A. Priestman; 3, Mrs. A. E. Harris. HYPHESSOBRYCONS: 1, D. Thomas; 2, V. H. Lewin; 3, E. A. Priestman. A.O.S. CHARACIN: 1, R. Wood; 2, W. Powell; 3, E. J. Sewell. ANGELS: 1, D. Thomas. BARBS: 1 and 2, V. H. Lewin; 3, H. G. Stock. A.O.S. CICHLID: 1 and 3, Mrs. M. Hemmings; 2, E. Fergus. A.O.S. TROPICAL: 1 and 2, Mrs. M. Hemmings; 3, E. A. Priestman. BREEDERS' CLASS: 1, A. Simmonds; 2 and 3, D. Thomas. SENIOR FURN. AQUARIA (TROP.): 1, J. S. Scragg; 2, R. Butler; 3, A. Simmonds. JUNIOR FURN. AQUARIA (TROP.): 1, Miss J. Wood. SENIOR FURN. AQUARIA (COLDW.): 1, G. Glover; 2, D. Graham; 3, P. E. Davidson. JUNIOR FURN. AQUARIA (COLDW.): 1, A. Matthews. AQUATIC PLANTS: 1, Mrs. A. E. Harris; 2, A. Simmonds; 3, R. Butler. AMPHIBIANS: 1, A. Simmonds; 2, B. French.

Trio of Bath Members Judge Bridgwater Event

JUDGING the 23 classes which comprised the Mid-Somerset A.S. annual show on November 11-13 were Miss A. Gurney, Mrs. Hindson and Mr. L. G. Emerys, all of the Bath A.S. Special prizewinners were Mr. V. R. Horsey (WATER LIFE Diploma and Payne Cup with an *Hyphessobrycon serpa* and Wood Cup with Beacons), Mr. C. M. Morris (Llewellyn Cup), Mr. C. Brown (O. J. Willis Cup with *Platypoecilus variatus*) and Mr. D. W. G. Binding (Crown Cup with a Shubunkin and D. H. Perrett Cup). Most points in the tropical section were gained by Mr. V. R. Horsey and, in the coldwater section, by Mr. D. H. Wills.

PRIZEWINNERS

BREEDERS' TROP. (11): 1 and 2, V. R. Horsey; 3, D. Day. BARBS (11): 1 and 2, V. R. Horsey; 3, P. G. Blackmore. CHARACINS (8): 1 and 2, V. R. Horsey; 3, C. R. Lewis. FIGHTERS (3): 1, B. W. Blackmore; 2, R. P. Parker. A.O.S. LABYRINTH (6): 1, P. G. Blackmore; 2, D. Day; 3, C. M. Norris. A.O.S. EGGLAYER (12): 1, V. R. Horsey; 2, D. Day; 3, B. W. Blackmore. PLATIES (4): 1, D. H. Wills; 2, C. Brown; 3, P. C. Hall. GUPPIES (6): 1, B. W. Blackmore; 2, C. M. Norris; 3, J. Cleaveley. SWORDS. (5): 1, B. W. Blackmore; 2, C. R. Lewis; 3, C. M. Norris. A.O.S. LIVEBEARER (3): 1, V. R. Horsey; 2, P. G. Blackmore; 3, P. C. Hall. TROP. FURN. AQUARIA (4): 1, C. M. Norris; 2, V. R. Horsey; 3, B. W. Blackmore. TROP. PLANTS (3): 1, C. M. Norris; 2, B. W. Blackmore; 3, P. G. Blackmore. BREEDERS' COLDW. (4): 1 and 2, D. H. Wills; 3, D. W. G. Binding. COMMON GOLDF. (9): 1, D. W. G. Binding; 2, G. R. Coleman; 3, N. Lightfoot. COMETS (3): 1, D. W. G. Binding; 2, E. G. Broom; 3, G. R. Coleman. SHUS. (24): 1, D. W. G. Binding; 2 and 3, D. H. Wills. MOORS (7): 1, D. H. Wills; 2 and 3, E. G. Broom. FANTAILS (9): 1 and 2, D. H. Wills; 3, H. Kelly. VEILS. (6): 1 and 3, E. G. Broom; 2, C. Brown. A.O.V. FANCY GOLDF. (4): 1, D. H. Wills; 2, J. Brown; 3, C. Brown. A.O.S COLDW. (15): 1, G. R. Coleman; 2, D. H. Wills; 3, D. W. G. Binding. COLDW. FURN. AQUARIA (3): 1, D. W. G. Binding; 2 and 3, D. H. Wills. COLDW. PLANTS (7): 1 and 3, D. W. G. Binding; 2, B. W. Blackmore.

Lancs. Breeders' First Show

THE annual show of the Lancashire Aquarists Breeders' Society attracted 167 entries, some from as far afield as Bristol and Birmingham. Judging was done by Messrs. N. Brown and T. Whalley of Wigan. Outstanding exhibits in the breeders' classes were Orange Chromides bred by Mr. E. Cotton and Lyretails bred by Mr. J. R. Shaw.

Shields and valuable prizes were presented in most classes. WATER LIFE diploma for the best exhibit in show was awarded to Mr. J. R. Shaw with a pair of *Metynnis schreitmulleri*. A WATER LIFE diploma also went to Mr. A. T. Johnson for the best furnished aquarium. Many new members were enrolled as a result of this show.

E. Midland Guppy Show

TREASURER E. RIDDLE, of Federation of Guppy Breeders' Societies, had the task of placing awards in the first annual show of the East Midlands Guppy Section held at the Empire Hotel, Leicester, on October 31. Mr. Riddle was also guest of honour for the Section's first Annual Dinner held on the same date. Cup winners were Messrs. L. Matthews (best Cofertail), W. Burwell (best female Guppy—a Goldlaced—and best Speartail), H. Esterbrook (best Scarftail and best Pintail), J. Slack (best Doublesword) and J. Rudkin (best male Guppy—a Veiltail).

COFERTAILS: 1 and 2, L. Matthews; 3, H. Esterbrook. ROUNDTAILS: 1, W. Burwell; 2, J. Rudkin; 3, H. Esterbrook. ROBSONS: 1, W. Burwell; 2, H. Esterbrook; 3, H. Ward. SPEARTAILS: 1, W. Burwell; 2 and 3, H. Esterbrook. PINTAILS: 1, 2 and 3, H. Esterbrook. SCARFTAILS: 1, H. Esterbrook; 2, W. Burwell; 3, J. Rudkin. LYRETAILS: 1 and 2, L. Matthews; 3, A. Birch. DOUBLESWORDS: 1, J. Slack; 2 and 3, A. Lloyd. VEILTAILS: 1, J. Rudkin; 2, L. Matthews; 3, H. Esterbrook. BOTTOMSWORDS: 1 and 2, J. Slack; 3, A. Birch. TOPSWORDS: 1 and 3, J. Slack; 2, W. Burwell. GREY FEMALES: 1 and 2, J. Slack; 3, H. E. Esterbrook. GOLD FEMALES: 1, L. Matthews; 2 and 3, H. E. Esterbrook. GOLD-LACED FEMALES: 1, W. Burwell; 2 and 3, H. E. Esterbrook. COLOURED FEMALES: 1, J. Rudkin; 2 and 3, H. Ward. BREEDERS' CLASSES, MALES: 1, W. Burwell. FEMALES: 1, H. Ward.

Pakistan Society's First Exhibition

FROM August 28 to September 1, the Pakistan Aquarium Society put on its first public fish exhibition. Thirty of its members staged 449 exhibits in sections for furnished aquaria, pairs of fish, plants and accessories. Many trophies were competed for and they included the £300 Hajee Dawood Naseer Gold Cup which was won by Mr. Agha M. Jaffri. Mr. Jaffri was awarded 23 of the 58 prizes. The Hassan Ali Jumani Championship Gold Cup, up for competition in the professional section, went to the Karachi Municipal Corporation. The Jaffri Challenge Cup for the best collection of fish from the waters of Pakistan was won by the Zoological Survey of Pakistan who have done a considerable amount of good work in collecting native fish. The Gul Home Aquarium Challenge Cup was won by Mr. A. R. Sherazi.

Judging the exhibits were Dr. Sundaraj—who came from Ceylon—and Dr. A. R. Rania and Mr. M. G. Konieczny. The Prime Minister of Pakistan, the Honourable Mr. Mohammed Ali, opened the show in the presence of foreign diplomats, citizens of Karachi and government officials. The Prime Minister is Patron-in-chief of the society. An elaborate souvenir programme was prepared. The society's secretary writes to say that much of the success of the exhibition was due to the club's President, Mr. A. T. Naqvi.

At the first Pakistan A.S. Exhibition in Karachi. Above: length of staging holding the small tanks for pairs of fish. Right (l. to r.): Mr. Agha M. Jaffri (winner of the Hajee Dawood Naseer Gold Cup), Mrs. K. N. Mooraj (second prizewinner), and Mr. S. Maqsood-ul-Hasan (secretary).

Bristol's Large-scale Annual Show

Over a Hundred Entries in One Shubunkin Class

TO all Fancy Goldfish hobbyists the Mecca of their side of the hobby is undoubtedly Bristol, writes Mr. W. C. Webley. This year the Bristol show was no exception and there were enormous entries of exceedingly high quality fish. Such is expected of Bristol but the number (200) and quality of the tropical entries had to be seen to be appreciated fully.

There was a total of 109 exhibitors with an overall entry of 621 fish. The Common Goldfish Class totalled 30 entries, while most other shows manage to muster about half-a-dozen. An entry of 102 in the 3 in. Shubunkin Class contained many exceptional specimens. What a headache this class would be for any judge.

Veiltails totalled 22 entries but it was my impression that in this class quality was down on previous years. It was noticed that several specimens were showing Oranda characteristics, for which they had been suitably penalised. Moors were few in number and mostly could have been better in quality. This year Bristol made a departure for Fantails, providing separate classes for Scaled and Calico types. The former drew 18 entries of a very high overall standard while the latter contained 15 exhibits. Several exhibits in the Calico Class came nearer to a true Calico Fantail than we have seen for a very long time and Bristol's step in providing separate classes for these varieties will undoubtedly lead to the production of quality Calico Fantails free from Veiltail characteristics.

The Breeders' Classes were good, indicating that competition in future years is going to be as keen as ever. Furnished aquaria showed enthusiasm but lacked numbers. Among the tropicals were noted some fish of first-class quality, among which were some excellent Barbs.

It was two years since I had visited this show and Bristol's position in the coldwater and Fancy Goldfish world is as secure as ever. It is amazing to realise that the three leading bodies in this field, namely the Bristol society, the F.B.A.S. and the Goldfish Society, can see eye-to-eye over the staging of a show such as this (the judges were drawn from the F.B.A.S. and the Goldfish Society, presumably judging to Bristol standards where available) yet on the question of a get-together on the standards question generally no progress was made until very recently, and even now only the F.B.A.S. and Goldfish Society seem to be involved.

Knowing many of the problems associated with staging exhibits I came away with the feeling that greater attention will have to be paid to heating arrangements in future and I was also led to wonder whether the noted drop in quality and numbers in both Veiltails and Moors could be connected with, in some instances, the relatively small containers provided for large specimens.

To sum up, this was an event worth seeing and I would suggest that all serious Fancy Goldfish breeders should make every effort both to compete and visit Bristol in the years to come—competition is keen, very keen, but it does provide the best yardstick to measure the quality of one's own specimens. An exhibitor is not disgraced in being unplaced in classes of 30 or more exhibits. In the 3 in. Shubunkin class of 102 entries, many top-quality fish went home cardless. As so often happens, the judging did not give entire satisfaction to some exhibitors, but considering the size of the entry and the high overall quality of the exhibits the judges' task was completed in record time.

Fanciers at the Bristol show. Left to right: Secretary W. E. Ridler, Mr. Zenas Webb and Mr. W. Butler. Messrs. Webb and Butler are well-known coldwater fishkeepers from the Midlands.

Photograph by W. C. Webley

Speaking as a "pre-war aquarist", the Lord Mayor, Ald. K. Brown, who opened the show, explained how proud he was in those days of his feat in spawning and rearing Angels. Sea Horses in a marine aquarium at the exhibition were a great attraction, challenged only by the remarkable display of foliage plants and Macaws provided by the Clifton Zoo.

The judges, Mrs. W. M. Meadows and Messrs. B. Meadows and C. J. Saunders, B.Sc., gave praise to the high quality of the exhibits, while the teams of fish in the coldwater breeders' section they described as "outstanding". Mrs. Rudge, wife of the President, presented the 25 cups, special awards and prize cards on the evening of the second day of the show.

COLDWATER CLASSES

COMMON GOLDF., 5 IN. (30): 1 and W. Butler Coronation Cup, J. Creek; 2, S. J. Davis; 3, B. C. Britton. SHUS., 3 IN. (102): 1 and Mid-Somerset A.S. Cup, J. Whiting; 2, R. J. Parfitt; 3, A. W. G. Hall. SHUS., 5 IN. (40): 1 and T. Thornton Wills Cup, F. H. Amos; 2, R. Ovenham; 3, D. H. Wills. VEILS. (22): 1, I. J. Spencer Trophy, B. T. Child Shield, 2 and 3, C. F. Whitehead. MOORS (9): 1, A. D. J. Brooks Cup and Eric Butler Cup, C. F. Whitehead; 2 and 3, N. Grimston. A.O.V. TELESCOPIC-EYED, ORANDAS, LIONHEADS AND CELESTIALS (13): 1 and B.A.S. Cup, R. V. Coombs; 2, C. F. Whitehead; 3, D. S. Paul. NYMPHS AND COMETS (18): 1, C. F. Whitehead; 2, Z. Webb; 3, F. Hoddinott. SCALED FANTAILS (18): 1 and A. W. Rudge Cup, N. Grimston; 2, A. W. Rudge; 3, W. C. Webley. CALICO FANTAILS (15): 1, B.A.S. Cup and 3, A. W. Rudge; 2, Z. Webb. POND OR RIVER FISH (17): 1, G. R. Coleman (Sun Bass); 2, R. V. Coombs (Perch); 3, A. Sheppard (Golden Orfe). CURRENT-YEAR SHUS. (41): 1, R. G. Watson Cup and Mrs. E. R. Blunsden Cup, J. Whiting; 2, D. S. Paul; 3, R. Ovenham. CURRENT-YEAR MOORS (6): 1, C. F. Whitehead Cup and 3, N. Grimston; 2, D. S. Paul. A.O.V. CURRENT-YEAR FANCY FISH (24): 1, H. V. Jenkins; 2 and 3, E. R. Blundsen. BREEDERS' SHUS., COMETS OR COMMON GOLDF. (14): 1, R. Ovenham; 2, D. H. Wills; J. Whiting. BREEDERS' VEILS., MOORS, FANTAILS & NYMPHS, ETC. (17): 1 and S. J. Davis Trophy, C. F. Whitehead; 2, N. Grimston; 3, D. S. Paul.

FURNISHED AQUARIA AND PLANTS

COLDW. FURN. AQUARIA (2): 1, Zenas Webb Cup and 2, S. J. Davis. TROP. FURN. AQUARIA (5): 1 and J. S. Warry Crystal Goblet, R. Janes; 2, J. Martin; 3, Mrs. C. D. Howard. CLUB. FURN. AQUARIA (9): 1, Nottingham A.S.; 2, Pontypool A.S.; 3, Bristol A.S. SCHOOL FURN. AQUARIA OR VIVARIA (3): 1 and Beryl Hill Cup, St. Anne's Junior Mixed School; 2, Connaught Road Junior Boys' School; 3, Knowle Park Junior Mixed School. PLANTS (15): 1, H. C. W. Warmsley (*Vallisneria*); 2, Mrs. G. A. Jewell (*Cryptocoryne*); 3, S. J. Davis (Hornwort).

TROPICAL FISH

FIGHTERS (13): 1, Lowell Baldwin Cup and 2, H. G. Rundle; 3, W. E. Ridler. A.O.S. LABYRINTH (19): 1 and J. F. Robinson Cup, W. E. Ridler (Kissing Gouramies); 2, R. Janes (Thick-lipped Gouramies); 3, B. L. Dennis (Thick-lipped). BARBS (25): 1 and J. H. King Cup, W. Wherlock (Tigers); 2, R. J. Wood (*B. schuberti*); 3, R. Kelly (Cherries). CHARACINS (31): 1 and O. E. Organ Cup, G. A. Jewell (*Nannostomus anomalus*); 2, W. Wherlock (Hatchet Fish); 3, W. E. Ridler (*Nannostomus anomalus*). DANIOS (5): 1, R. King; 2 and 3, H. F. Gregory. CICHLIDS (7): 1, H. J. Shepherd Cup, Mabel Davis Trophy and 3, H. C. W. Warmsley (Marbled Cichlids and Firemouths); 2, Mrs. G. A. Jewell (Angels). A.O.S. EGGLAYER (19): 1 and 3, W. E. Ridler (Puffer Fish and Glass Catfish); 2, Mrs. M. Hemming (*Barilius christyi*). MOLLIES (7): 1, W. Wherlock; 2 and 3, V. A. Webster. GUPPIES (5): 1 and Percy Gibbs Cup, R. Forest-Jones; 2, W. J. and D. Hindson; 3, H. C. W. Warmsley. SWORDS. (11): 1, R. Jeffries; 2, R. Forest-Jones; 3, W. E. Ridler. PLATIES (11): 1, R. J. Wood; 2, R. Forest-Jones; 3, H. G. Rundle. A.O.S. LIVEBEARER (6): 1, D. Northcott (*Limia*); 2 and 3, R. Kelly (*Limia quadrifasciata* and *melanogaster*). BREEDERS' TROP. LIVEBEARERS (20): 1, V. A. Webster (Mollies); 2, W. E. Ridler (Platies); 3, R. Janes (Swords.). BREEDERS' TROP. EGGLAYERS (21): 1, R. Jefferies (Tiger Barbs); 2, W. E. Ridler (Thick-lipped Gouramies); 3, D. Day (Beacons). For the highest number of points in show there was a tie between Messrs. W. E. Ridler and C. F. Whitehead who therefore share the F. G. Denman Cup.

Many Special Prizes in Chester Members' Show

CHESTER A.S. staged its second annual members' show in the Town Hall, Chester, recently. There were some interesting aspects to the show, a number of awards being given for special features in the furnished aquaria classes. Mr. D. Evans won first and second prizes in the Individual Tropical Furnished Aquaria class and also took the Russell Allen Trophy. Mr. R. Moulton was third. The engraved plaque for the best collection of fish in this class went to Mr. D. Evans. Another entry of this exhibitor and one put up by Mr. J. A. Bowyer were runners-up. The best single fish in the same class was shown by Mr. R. Moulton who won an engraved plaque. Messrs. D. Evans and F. E. Stringer were second and third.

In the Individual Coldwater Furnished Aquaria Class winner of the Parbo Trophy and first and second prizes was Mr. J. Evans, with Mr. P. Evans, third. Best collection of fish in this class were those of Mr. J. A. Bowyer who was awarded an engraved plaque. Messrs. P. Evans and J. Evans were second and third respectively. The best single fish in aquaria entered in the coldwater class was shown by Mr. J. Lyon who also took an engraved plaque. Runner-up was Mr. P. Evans. Best furnished aquarium in either the tropical or coldwater classes was shown by Mr. D. Evans (Mottershead Trophy). Best collection of fish in exhibition tanks was shown by Mr. J. Evans (engraved plaque) with Mr. R. Moulton, second, and Mr. D. Bowyer, third. The best collection of plants in the competitive aquaria was that shown by Mr. R. Moulton. Mr. D. Evans was runner-up.

Several Wrexham A.S. members gave assistance as stewards at the show. The President, Mr. G. S. Mottershead, opened the event and his wife presented the prizes. It is hoped on future occasions to make it open to societies in the area.

Warrington Prizewinners

BEST fish in show at the October 31 Warrington A.S. Exhibition was a Mollie shown by Mr. C. A. Blake. This exhibitor also won the Venture Trophy for the best breeders' exhibit. Other principal prizewinners were Mr. H. Moulsdale (Bolton Cup for best furnished aquarium), Mr. D. Shepherd (1952 Challenge Trophy), Mr. D. D. Chambers (Dave Shepherd Cup), Mrs. H. Moulsdale (Petley Cup), Mr. S. Walsh (Plaque) and Mr. J. R. Shaw (Endeavour Trophy).

News from the North-west — *by "Aquaticus"*

Life in Ponds During the Winter

AT the time of writing these notes (Christmastide) there is green Duckweed still covering many a pond surface and Water Starwort is thick in the ditches. In ponds and ditches dragonfly larvæ, whirligig beetles and the pondskater bug are still to be collected. Even under more normal conditions freshwater life is usually more active in winter, especially amongst aquatic plants, than used to be supposed. I have counted over 100 yellow Irises still in flower in the great fen and *Phragmites* reed-bed association on Leighton Hall Moss, Silverdale. The Autumn rains put a good spate on the rivers and allowed plenty of salmon to get up the North Wales and Lakeland rivers for a very successful salmon spawning in November and December.

River pollution is a subject concerning all of us interested in water-life, and the injunction, granted recently in the courts against the pollution of the tidal waters of the River Dee near Chester, is important.

It is the first time that the law has agreed to the rights of migratory fish, like salmon, to have a pollution-free passage through the lower tidal estuary to the private upper waters of those people claiming damages for loss of fish down in the estuary.

At the same time we are pleased to see further restocking of north-western waters—£110 worth of trout in the Cheshire River Gowy by the Warrington A.A., and many Tench, Carp and Rudd from Somerset in the Paddock Dam at St. Helens by the Ramblers A.A. Restocking improved the greatly depleted fish-life of the Leeds and Liverpool Canal near Lydiate this past year, and since Eccleston Mere (Prescot) was restocked with Yorkshire fish the other year, several Ruff, which are uncommon Lancashire fish, have established themselves there. Restocking waters need not be confined to fish, provided a record is kept of plants and insects introduced.

Since Mr. R. E. Legge took over the curatorship of both Zoo and Aquarium at Blackpool Tower, he has had to curtail some of his long record of fish-breeding there, but it is interesting to note that about 90 per cent of the tropical fish exhibited in the new lay-out of the Tower Aquarium have been bred in the small hatchery situated on the roof. The work at present under way should be completed by early Spring. We used to look upon the Tower Aquarium as mainly of marine fish—a miniature Brighton or Plymouth. In the last two or three years there has been a gradual increase in the number of tropical aquariums and species exhibited, and ultimately the entire outer perimeter of the aquarium will be tropical, with the exception of the eastern end which will contain the small sub-tropical fish and native marine life.

Interest in Furnished Aquaria

This reflects the steadily-growing enthusiasm for home aquaria and the many aquatic societies visiting the Tower who bring a more discriminating taste than the average Lancashire tripper crowding into the Tower on a rainy day. In setting up the tropical aquaria, Mr. Legge makes every effort for individuality with each tank instead of the stereotyped aspect of so many public aquaria. Much of this is achieved by specially selected rockwork. Unfortunately the much larger central tanks, containing the big marine and freshwater fish, cannot be altered much to conform with this design because most of them have stood firmly for sixty years on slate bottoms which cannot now be disturbed.

One of the attractions for members of Manchester's Belle Vue A.S. is that its monthly meetings include the opportunity to visit the Belle Vue Aquarium and Zoo. This probably explains why its membership is limited to 150. Most of the members are tropical fish enthusiasts so that the majority of the meetings are given over to this topic, with occasional lectures on coldwater fish, etc. Belle Vue is one of the very few societies which managed to keep going through the recent war. I remember reporting when it started in 1936. Several other societies were going in the north-west at that time, some had been functioning several years, but I do not know any of them now.

It would be difficult to find who were the pioneer aquarists in Lancashire natural history societies. Beside the highway at Prestwich one still sees "The Naturalist Inn," a relic of the days when East Lancashire working-men naturalists, studying pond-life, botany, geology and insects, met at public houses on Sunday mornings. Eccles was a centre of such societies as far back as 1777. In those days members were pond-hunters rather than fishkeepers, and the Conchological Society at Manchester, inspired by Canon Hornsley, spent much time collecting water-snails. The pioneers were largely collectors of specimens and the agents of museums. Some, inspired by Furneaux's writings, kept native coldwater fish. It was not until after the first world war that the present interest in tropical fishkeeping saw birth, owing to greatly improved facilities.

Eighty to ninety years ago the Manchester, Rochdale, Bolton and other microscopical societies contained many aquarists and pond-hunters. In May 1882 the Manchester Microscopical Society (which still flourishes and was exhibiting at the Accrington A.S. show) visited the then new Swineshaw Waterworks at Stalybridge. They heard an explanation of the fish culture carried out in the fish-house there in the previous five years, in which over 30,000 trout and Windermere Char, raised from spawn, were placed in the dams. The Char later failed, as they require water temperatures not more than 60 deg. F. in Summer.

Reviewing the plants seen on its field-meetings in 1953, the Liverpool Botanical Society mentions that the presence of floating Water Plantain, *Luronium* (formerly *Alisma natans*) in the Llangollen Canal was a sign that the water was acid. Peppermint grew on the bank. The sedge, *Carex rostrata*, was seen at Crafnant Lake, Capel Curig. In Snowdonian bogs and marshes at Geuallt, above Capel Curig, grew the insectivorous long-leafed Sundew and the Butterwort. In the stream, floating Club-rush (*Eleogiton fluitans*), water Milfoil and floating pondweed were seen. In the small peaty lake of Llyn Conon Buckbean and Bog-myrtle were noted—although the latter grows at many lowland haunts like Freshfield big slack, in Lancashire, and Flaxmere, in Cheshire.

Many societies will soon be planning their Summer outings. Some suggested venues in North Lancashire are amongst the watery places recommended by the Nature Conservancy as Nature reserves under the Country Parks Act. These include the Whittington Fens in upper Lunesdale where grow Grass of Parnassus, Bog Bean and the Lesser Panicle Sedge; the little calcareous lake, called Haweswater, between Silverdale and Arnside, containing several rare aquatic plants and pond-life and the north end of Esthwaite Water, lovely Tarn Hows and Blelham Tarn.

Other suggestions I can make are collecting Crayfish in Wharfedale and other limestone Yorkshire dales' rivers, seeing the Natterjack Toads breeding at Ainsdale, trolling for Char with a Bowness (Windermere) boatman (if you have not a trout licence), paddling in Llyn Idwal (Snowdonia) for the rare Awl Wort, the Quillwort, Water Lobelia (this also grows in Llyn Ogwen and Ullswater) and *Nitella* or dredging and netting in Lake Bala for the rare pond-smelt *Mysis glacialis*, and the rare freshwater Gwyniad fish—in case you are lucky!

Club Notes and News

The Editor invites clubs to send brief reports of meetings and announcements of forthcoming events for publication. Items for the April-May issue should reach this office by March 12.

MEETINGS of **Newcastle-upon-Tyne A.S.** are now held at the Hancock Museum, Barrass Bridge, on the second Wednesday of each month. New secretary is Mr. W. Tait, 52 Martello Gardens, Newcastle-upon-Tyne 7. Recent lecturers have been Mr. Wilson and Dr. Ghadially.

A SOCIAL evening was enjoyed by **Aylesbury A.S.** members on December 2. The A.G.M. had been arranged for January 13.

MESSRS. Calver and Embry set up a furnished aquarium at the December meeting of **Leicester A.S.**, describing technical points to members present. During the same month the society's Dinner was held when the President's wife presented cups and plaques. Following the January 7 A.G.M. Mr. N. J. Ballard is President, Mr. W. F. G. Meese, chairman and Mr. J. H. Williams, treasurer. Mrs. W. Gascoine was re-elected secretary.

"SHOWS and Showing" was the title of the lecture given by Mr. Shaw at the January 4 meeting of **Rochdale A.S.** Date of the A.G.M. is March 1.

ST. MARY'S HALL, Crawford Street, Marylebone, is the new meeting place of **Marble Arch A.S.** Officers elected at the A.G.M. were chairman, Mr. J. Fremont; vice-chairman, Mr. R. E. Churchman and secretary, Mr. A. Collins, 30 Norland Gardens, North Kensington, London, W.11.

A CHANGE of officers has occurred within the **Bath A.S.** Present officials are chairman, Mr. L. Cryer; secretaries, Mr. and Mrs. Edwards, 19 Kensington, Bath, and treasurer, Mr. A. Haskins.

QUESTION MASTER for the Twenty Questions session arranged in December by **Dunstable A.S.** was Mr. A. E. Green. During the same evening a breeders' table show was held in which Mr. M. A. Green was the first prizewinner.

WATER LIFE diploma winner at the Autumn exhibition of **Pontypool A. & P.A.** was Mr. H. V. Jenkins with a Veiltail Goldfish.

AT the A.G.M. of **Balham A.C.** Mr. R. Harris was elected chairman; Mr. G. West, treasurer; Mr. H. Stratford, show secretary and Mr. J. E. Searle, 68 Southcroft Road, Tooting, S.W.18, secretary. At this meeting the table show winners were announced, Mr. Stratford holding premier position in the tropical breeders' class and Mr. Searle heading the single and pairs classes.

SECRETARY of **Northampton A.S.** is now Mrs. L. Johnson, Flat 6, Fire Station, Upper Mounts, Northampton.

PRESENT officials of the **Hounslow A.S.** are chairman, Mr. Stollard; secretary, Mr. G. Vance, 7 Abinger Gardens, Isleworth, Middlesex; treasurer, Mr. Hazell and show secretary, Mr. Taylor.

MEETINGS of newly-formed **Lowestoft A.S.** are held monthly at the Esplanade Hotel, Lowestoft. A visit has been made to Messrs. Whitwell and Smykala's establishment. It is hoped to stage a show in April. Secretary is Mr. G. Howard, 132a, Bevan Street, Lowestoft, Suffolk.

CHAIRMAN and show secretary were re-elected at the A.G.M. of **Hendon A.S.** The new secretary is Mr. P. Marriott, 127 Church Drive, Kingsbury, London, N.W.9.

RECENTLY-APPOINTED secretary of **Southend, Leigh A.S.** is Mr. D. E. Connor, 60 Tintern Avenue, Westcliff-on-Sea, Essex. The last issue of the society's journal was produced in December.

Club Notes and News
— continued —

THE Keynsham society has changed its title to **Keynsham & District Aquarist Society**. A junior section has been formed. Officers elected at the A.G.M. were President, Alderman K. A. L. Brown; chairman, Mr. E. J. Rowland; treasurer, Mr. R. King and secretary, Mr. R. Vince, 8 Vandyck Avenue, Keynsham, Bristol.

MR. T. ROBERTS and the West Bromwich A.S. were winners of WATER LIFE diplomas at the annual show of **N. Birmingham P. & A.S.**

AQUARISTS residing in the **Wanstead & Woodford** areas who are interested in forming an aquaria society are asked to contact Mr. J. L. Procter, 13 George Lane, S. Woodford, London, E.18.

IN a recent interclub table show **Willesden A.C.** beat the Harrow society by 23 points to 17.

ON January 1 Mrs. T. D. Smith gave an interesting talk on "Fighters" to members of **Colindale A.S.** The A.G.M. was scheduled for January 15.

MR. D. OVERTON, retiring secretary, was appointed chairman at the A.G.M. of **Oxford A.S.** Mr. V. H. Lewin, 21 Halliday Hill, Oxford, is the new secretary.

FIRST prizewinners at November and December table shows of the **East Midlands Section of the Guppy Federation** were Messrs. W. Burwell, J. Rudkin and H. Esterbrook. Mr. H. S. White conducted a quiz at the December meeting.

MR. C. W. G. CREED spoke on "Setting Up Furnished Aquaria for Shows" at the December 14 meeting of **Ilford A. & P.S.**

THE **Netherfield A.C.** has been formed and fanciers in the locality interested in the venture should contact Mr. H. F. Woollatt, 69 Langdale Road, Bakersfield Estate, Nottingham.

SIXTY members and friends enjoyed the Christmas party of **Kettering A.S.** on December 17.

MR. E. J. MASON, 2 Albert Avenue, Weston-super-Mare, is the new secretary of **Weston-super-Mare A.S.**

THE Stonehouse A.S. is now called **Stroud & District A.S.** as meetings are held in the Bell Hotel, Stroud, on the first Tuesday of each month. Secretary is Mr. K. A. Brown, 18 Sunnyhill, Cashes Green, Stroud, Glos.

MR. GEORGE S. CANSDALE, new vice-president of **Hampstead A.S.**, attended the society's second annual social evening and presented the Levy Tropical Points Cup to Mr. K. J. A. Pye, the Coldwater Points Cup to Mr. E. G. Harris and the cup for best fish at the annual show to Mr. R. O. B. List.

SECRETARY of **Wembley A. & P.A.** is Mr. S. B. Samson, 32 Lancelot Road, Wembley, Middlesex.

AT a well-attended meeting of **Portsmouth A.C.** the advisability of introducing championship and novice classes to shows was discussed. The club now has 157 members.

THE **Merseyside A.S.**, in conjunction with Birkenhead A.S., contemplates running an open show in the Spring.

TROPICAL fish were displayed by **Dewsbury A.S.** at the local Chrysanthemum show in November.

MEETINGS of **Croydon A.S.** are now held in the Pembroke Hall, Wellesley Road, W. Croydon, on the first Thursday of each month. Mr. G. O'Neill spoke on January 7. Mr. J. E. Edwards is booked for March and Mr. H. Potter, for April.

ELEVEN coldwater and tropical tanks comprised the exhibit of **Sheppey A.S.** at the Sheppey Chrysanthemum Society's recent show.

AT the annual members' show of **Gloucester & Cheltenham A.S.** Mr. P. R. B. Sankey won the WATER LIFE diploma for best fish in show with a *Cichlasoma nigrofasciatum*.

WINNERS of WATER LIFE diplomas at the **Warrington A.S.** open show were Messrs. J. R. Shaw and C. A. Blake.

A LARGE-SCALE show is being planned by **Bury A.S.** for May 4-8. Over 50 classes are scheduled including one for tropical plants and another for vivaria. Eighteen trophies will be up for competition. Further details from the show secretary, Mr. C. D. Grimshaw, 1 Garston Street, Bury, Lancs.

THE **Friends A.S.** new meeting place is 62 Brixton Road, London, S.W.9.

NEW secretary of **Boreham Wood A.S.** is Mr. C. W. MacRae, 23 Aldenham Road, Radlett, Herts.

THE Worksop A.S. has transferred its headquarters to The Royal Oak, Bakestone Moor, Whitwell, Derbyshire, and its new title is the **Dukeries A.S.** Mr. J. Marlow, The Police House, 27, Bakestone Moor, Whitwell, Worksop, Notts., was elected secretary and treasurer at the January A.G.M. Meetings are held on the second Monday of each month and a table show for tropical fish has been arranged for February 18.

WATER LIFE diploma winners at **Peterborough A.S.** first open exhibition on December 5 were Messrs. J. Larkman and D. Wright. A full report will appear in the next issue. The club's A.G.M. was scheduled for January 18.

THE **Chingford A.A.S.** have been fortunate in booking Mr. George Cansdale to speak at its March 11 meeting which will be held at the County High School, Nevin Drive, London, E.4, from 8 to 10 p.m. Mr. Cansdale will give an illustrated lecture on "Reptiles."

NEW meeting place and times have been decided on by the **Shirley & S. Birmingham A.S.** Headquarters are the Mason's Arms and the new meeting day is the first Thursday of each month. Mr. S. Pritchatt won first and second places in the December table show. Officers elected at the A.G.M. were President, Mr. C. D. Roe; vice-president, Mr. A. T. Burden; secretary, Mr. L. A. Cross and treasurer, Mrs. G. Burden.

THE retiring officers of the **Guppy Federation's Eastern Counties Section** did not seek re-election at the A.G.M. New officers appointed were chairman, Mr. Postage; show secretary, Mr. Wignal and secretary, Mr. A. F. Holmes, 330 Grange Road, Plaistow, London, E.13. The Editor of WATER LIFE spoke at the Section's November meeting. Subsequently he was elected an honorary life member. Points Cup winner for 1953 was Mr. Palmer, with Mr. Hayward the recipient of the Novice Points Cup.

ANOTHER society holding its A.G.M. recently was **Halifax A.S.** Officers appointed were:—President, Mr. J. Stott; vice-president, Mr. A. J. L. Rashley; secretary, Mr. J. Wheelwright, 7 Avondale Place, Halifax; treasurer, Mr. H. W. Pollard and show secretaries, Mr. S. Benson and Mrs. P. L. Crighton. The annual dinner was held on December 11 when a presentation was made to the wife of the retiring President.

THE chairman, secretary and treasurer were re-elected at the A.G.M. of **Burton-on-Trent A.S.** Mr. W. A. W. Cox was appointed President with Miss P. M. Evershed re-elected a vice-president and Mr. C. Diggins voted to a similar position.

OFFICIALS of the fancy Goldfish section in the **Nottingham A.S.** are chairman, Mr. A. Adcock; secretary, Mr. W. Town and table show organiser, Mr. Scott. Calverton Fish Farm was visited on January 10 and the New Year party was arranged for January 2. Later in the same month there was a seven-class table show. The club's annual outing will take place on May 30, when a visit will be made to Chester.

WINNER of the home aquaria trophy of **Ashton-under-Lyne A.S.** was a junior member, Mr. J. Lawton. The Guppy Trophy was competed for at a table show arranged for January. Members have recently enjoyed seeing Dr. F. N. Ghadially's film on breeding the Brown Acara. Dr. Ghadially also gave a talk on "Breeding the Tiger Barb."

OFFICIALS elected at the A.G.M. of **Worcester A.S.** were:—chairman, Mr. C. Bevand; secretary, Mr. N. F. Starkey, 4 Sidbury, Worcester; show secretary, Mr. V. A. Carter and treasurer, Mr. C. W. Brazier.

Goldfish Society's Dinner

EARLY in December the Goldfish Society of Great Britain held its annual dinner and party. There is certainly little reason to worry about the spirit of the society if this function was any criterion. With the prospect only six days ahead of an important meeting between the society's officers and the Judges' and Standards Committee of the F.B.A.S. there was small evidence that either officers or members let this point bear heavily on them. They had come to enjoy themselves and enjoy themselves they did. Captain L. C. Betts, society chairman, acted as M.C., assisted by his daughter.

One member came from Nuneaton so that he might be present and altogether there was a goodly gathering of members, their families and guests. The guests were Mr. and Mrs. Butt, F.B.A.S. chairman and his wife, and L. W. Ashdown, representing WATER LIFE. Mr. Butt presented a gavel to the society as a memento of his visit. Music and artistes were provided by a society member, Mr. Taylor.

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Underwater Explorers

THE newly-formed Underwater Explorers' Club is attracting a large number of members. Wearing goggles and breathing aids, they are quickly learning the art of swimming for long distances and relatively deeply examining the aquatic life of our seashores and rivers. Some of the members are learning the art of underwater photography.

Club Notes and News
— continued —

THE Keynsham society has changed its title to **Keynsham & District Aquarist Society.** A junior section has been formed. Officers elected at the A.G.M. were President, Alderman K. A. L. Brown; chairman, Mr. E. J. Rowland; treasurer, Mr. R. King and secretary, Mr. R. Vince, 8 Vandyck Avenue, Keynsham, Bristol.

MR. T. ROBERTS and the West Bromwich A.S. were winners of WATER LIFE diplomas at the annual show of **N. Birmingham P. & A.S.**

AQUARISTS residing in the **Wanstead & Woodford** areas who are interested in forming an aquaria society are asked to contact Mr. J. L. Procter, 13 George Lane, S. Woodford, London, E.18.

IN a recent interclub table show **Willesden A.C.** beat the Harrow society by 23 points to 17.

ON January 1 Mrs. T. D. Smith gave an interesting talk on "Fighters" to members of **Colindale A.S.** The A.G.M. was scheduled for January 15.

MR. D. OVERTON, retiring secretary, was appointed chairman at the A.G.M. of **Oxford A.S.** Mr. V. H. Lewin, 21 Halliday Hill, Oxford, is the new secretary.

FIRST prizewinners at November and December table shows of the **East Midlands Section of the Guppy Federation** were Messrs. W. Burwell, J. Rudkin and H. Esterbrook. Mr. H. S. White conducted a quiz at the December meeting.

MR. C. W. G. CREED spoke on "Setting Up Furnished Aquaria for Shows" at the December 14 meeting of **Ilford A. & P.S.**

THE **Netherfield A.C.** has been formed and fanciers in the locality interested in the venture should contact Mr. H. F. Woollatt, 69 Langdale Road, Bakersfield Estate, Nottingham.

SIXTY members and friends enjoyed the Christmas party of **Kettering A.S.** on December 17.

MR. E. J. MASON, 2 Albert Avenue, Weston-super-Mare, is the new secretary of **Weston-super-Mare A.S.**

THE Stonehouse A.S. is now called **Stroud & District A.S.** as meetings are held in the Bell Hotel, Stroud, on the first Tuesday of each month. Secretary is Mr. K. A. Brown, 18 Sunnyhill, Cashes Green, Stroud, Glos.

MR. GEORGE S. CANSDALE, new vice-president of **Hampstead A.S.**, attended the society's second annual social evening and presented the Levy Tropical Points Cup to Mr. K. J. A. Pye, the Coldwater Points Cup to Mr. E. G. Harris and the cup for best fish at the annual show to Mr. R. O. B. List.

SECRETARY of **Wembley A. & P.A.** is Mr. S. B. Samson, 32 Lancelot Road, Wembley, Middlesex.

AT a well-attended meeting of **Portsmouth A.C.** the advisability of introducing championship and novice classes to shows was discussed. The club now has 157 members.

THE **Merseyside A.S.**, in conjunction with Birkenhead A.S., contemplates running an open show in the Spring.

TROPICAL fish were displayed by **Dewsbury A.S.** at the local Chrysanthemum show in November.

MEETINGS of **Croydon A.S.** are now held in the Pembroke Hall, Wellesley Road, W. Croydon, on the first Thursday of each month. Mr. G. O'Neill spoke on January 7. Mr. J. E. Edwards is booked for March and Mr. H. Potter, for April.

ELEVEN coldwater and tropical tanks comprised the exhibit of **Sheppey A.S.** at the Sheppey Chrysanthemum Society's recent show.

AT the annual members' show of **Gloucester & Cheltenham A.S.** Mr. P. R. B. Sankey won the WATER LIFE diploma for best fish in show with a *Cichlasoma nigrofasciatum*.

WINNERS of WATER LIFE diplomas at the **Warrington A.S.** open show were Messrs. J. R. Shaw and C. A. Blake.

A LARGE-SCALE show is being planned by **Bury A.S.** for May 4-8. Over 50 classes are scheduled including one for tropical plants and another for vivaria. Eighteen trophies will be up for competition. Further details from the show secretary, Mr. C. D. Grimshaw, 1 Garston Street, Bury, Lancs.

THE **Friends A.S.** new meeting place is 62 Brixton Road, London, S.W.9.

NEW secretary of **Boreham Wood A.S.** is Mr. C. W. MacRae, 23 Aldenham Road, Radlett, Herts.

THE Worksop A.S. has transferred its headquarters to The Royal Oak, Bakestone Moor, Whitwell, Derbyshire, and its new title is the **Dukeries A.S.** Mr. J. Marlow, The Police House, 27, Bakestone Moor, Whitwell, Worksop, Notts., was elected secretary and treasurer at the January A.G.M. Meetings are held on the second Monday of each month and a table show for tropical fish has been arranged for February 18.

WATER LIFE diploma winners at **Peterborough A.S.** first open exhibition on December 5 were Messrs. J. Larkman and D. Wright. A full report will appear in the next issue. The club's A.G.M. was scheduled for January 18.

THE **Chingford A.A.S.** have been fortunate in booking Mr. George Cansdale to speak at its March 11 meeting which will be held at the County High School, Nevin Drive, London, E.4, from 8 to 10 p.m. Mr. Cansdale will give an illustrated lecture on "Reptiles."

NEW meeting place and times have been decided on by the **Shirley & S. Birmingham A.S.** Headquarters are the Mason's Arms and the new meeting day is the first Thursday of each month. Mr. S. Pritchatt won first and second places in the December table show. Officers elected at the A.G.M. were President, Mr. C. D. Roe; vice-president, Mr. A. T. Burden; secretary, Mr. L. A. Cross and treasurer, Mrs. G. Burden.

THE retiring officers of the **Guppy Federation's Eastern Counties Section** did not seek re-election at the A.G.M. New officers appointed were chairman, Mr. Postage; show secretary, Mr. Wignal and secretary, Mr. A. F. Holmes, 330 Grange Road, Plaistow, London, E.13. The Editor of WATER LIFE spoke at the Section's November meeting. Subsequently he was elected an honorary life member. Points Cup winner for 1953 was Mr. Palmer, with Mr. Hayward the recipient of the Novice Points Cup.

ANOTHER society holding its A.G.M. recently was **Halifax A.S.** Officers appointed were:—President, Mr. J. Stott; vice-president, Mr. A. J. L. Rashley; secretary, Mr. J. Wheelwright, 7 Avondale Place, Halifax; treasurer, Mr. H. W. Pollard and show secretaries, Mr. S. Benson and Mrs. P. L. Crighton. The annual dinner was held on December 11 when a presentation was made to the wife of the retiring President.

THE chairman, secretary and treasurer were re-elected at the A.G.M. of **Burton-on-Trent A.S.** Mr. W. A. W. Cox was appointed President with Miss P. M. Evershed re-elected a vice-president and Mr. C. Diggins voted to a similar position.

OFFICIALS of the fancy Goldfish section in the **Nottingham A.S.** are chairman, Mr. A. Adcock; secretary, Mr. W. Town and table show organiser, Mr. Scott. Calverton Fish Farm was visited on January 10 and the New Year party was arranged for January 2. Later in the same month there was a seven-class table show. The club's annual outing will take place on May 30, when a visit will be made to Chester.

WINNER of the home aquaria trophy of **Ashton-under-Lyne A.S.** was a junior member, Mr. J. Lawton. The Guppy Trophy was competed for at a table show arranged for January. Members have recently enjoyed seeing Dr. F. N. Ghadially's film on breeding the Brown Acara. Dr. Ghadially also gave a talk on "Breeding the Tiger Barb."

OFFICIALS elected at the A.G.M. of **Worcester A.S.** were:—chairman, Mr. C. Bevand; secretary, Mr. N. F. Starkey, 4 Sidbury, Worcester; show secretary, Mr. V. A. Carter and treasurer, Mr. C. W. Brazier.

Goldfish Society's Dinner

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Club Notes and News—*contd.*

NEW meeting nights of **Oldham A.S.** are the first and third Wednesdays of each month. First prizewinners at the November 25 table show were Messrs. B. Taylor and A. L. Brocklehurst. A social evening was held on December 2. Officers appointed at the A.G.M. were chairman, Mr. A. L. Brocklehurst; secretary, Mrs. V. Tripp and treasurer, Mrs. J. Brunt. Mr. Honeybill visited the society on January 6, and discussed the breeding of Fighters, amongst other topics.

MR. STICHWELL won the class for Danios and Mr. Legg the class for Goldfish at the November table show of **Bournemouth A.C.** Weedon Cup for livebearers went to Mr. Swain. The President spoke at the December fixture and winners in the table show were Messrs. Walker, Woodward and Shaw.

A SECTION of the Federation of Guppy Breeders' Societies has now been formed in **Reading.** Mr. E. S. Roach gave a talk at the inaugural meeting. Secretary is Mr. R. Lawn, 27 Chester Street, Caversham, Reading, Berks., and the meeting place is the White Hart Hotel, Reading.

THE **Brixton A.S.** presented a tropical aquarium to the Belgrave Children's Hospital on December 19. The ceremony was performed by the Mayor of Lambeth.

APPOINTED as secretary at the A.G.M. of **Enterprise A.S.** was Mr. H. Russell Holland, 96 Ridgeview Road, London, N.20. This society meets on the first and third Thursdays of each month at Oakleigh Primary School, Oakleigh Road, N.20. On January 7 a meeting was held to discuss the club's future policy. Vice-president A. E. Izzard showed films on fish breeding at the January 21 fixture and a table show for Guppies is scheduled for February 4. Arrangements have already been made for two outings and more are being considered.

THREE members of **Guest, Keen & Nettlefolds (Midlands) Ltd. P. & A.S.** gave talks on their fishkeeping experiences at a recent meeting of the club. A tropical aquarium has been installed in the clubroom.

NICKOLLS Challenge Cups for breeding successes in the 1953 season went to Mr. R. Coldman (egglayers), and Mr. L. Ede (livebearers), members of **Southern A.A. (Brighton),** which organisation ran the competition.

"SETTING Up An Aquarium" and "Sexing Fish" have been the titles of talks given by Messrs. F. Bentley and H. Loder at recent meetings of **Belle Vue (Manchester) A.S.**

MR. H. A. HALLET, 12 Millfield, **Harlow,** Essex, is hoping to form a society in his area. Interested fanciers are asked to contact him.

FIRST prizewinners at the show staged by **Plymouth A. & P.S.** in conjunction with the Young Plymouth Exhibition were:—Mr. J. Nichols (furnished aquaria), Mr. Lane (furnished aquaria — also took President's Cup), Mr. D. Baldry (Rosy Barbs), Mr. Lane (Mountain Minnows), Mr. S. Ryder (Neons, Glowlights, Rosaceus, Serpae), Mr. T. Easterbrook (Giant Danios), Mr. A. Gimblett (Fighters), Mr. Ryder (Cichlids—also best fish in show), Mr. Ryder (Guppies, winner of the Guppy Shield), Mr. D. Baldry (Platies), Mr. Cross (Swordtails), Mr. T. Radmore (Mollies), Mr. Lane (Catfish), Mr. T. Coslett (Nannacara), Mr. K. Henderson (A.V. Egglayer) and Mr. J. Nichols (A.V. Livebearer). Junior Cup went to Mr. T. Radmore and premier awards in the coldwater section went to Messrs. D. Baldry, Ryder and D. Smith. Centrepiece at the show was a tropical garden. An aquarium has been presented to the Lee Mill Children's Hospital.

FANCIERS interested in the new **Dover A.S.** should contact Mr. J. A. Wilson, 18 Beach Street, Dover, Kent.

AN aquarists' society has been formed within the Greenock Academy. Anyone wishing to contact this organisation should write to Mr. D. Brown, **Greenock Academy A.S.,** Greenock Academy, Nelson Street, Greenock, Renfrewshire.

CHAIRMAN of newly-formed **Spelthorne A.C.** is Mr. A. G. Mills. The secretary and treasurer is Mr. A. J. W. Wilson, Parkside, 180 Uxbridge Road, Feltham, Middlesex. The club competed at WATER LIFE's recent Olympia show and has become affiliated to the South-west Middlesex A.A.

MISS I. EVANS, 101, Raleigh Road, Feltham, Middlesex, is now secretary of **Feltham A.S.**

THREE most recent lecturers at meetings of **W. Surrey A. & P.C.** were Messrs. Fitzgerald, McInerny and Cundall who spoke on "Reptiles and Amphibia," "Tropical Fish and Aquaria," and "Life History of the Water Flea," respectively. Date of the A.G.M. is February 10.

CAPT. A. C. TAYLOR presented the Thurlborn Home Aquaria Challenge Cup to Mr. H. Fromont at the December 7 meeting of **Cambridge F.C.** Runner-up in the competition was Mr. R. Thurston with Mrs. White in third place. Junior section winners were Messrs. Gawthrop and G. Barnes.

MR. N. FARREN tied for second place and Mrs. M. D. Bradbury tied for third place in the tropical furnished aquaria class at the **Coventry P. & A.S.** show reported in our last issue.

AS a result of the A.G.M. of **Bethnal Green A.S.** current-year officials are chairman, Mr. J. Taylor; treasurer, Mr. L. Lamnan and secretary and show secretary, Mr. W. A. Richardson, 98 Warner Place, Hackney Road, London, E.2. Meetings are held every Tuesday at the Men's Institute, Bethnal Green Road and more coldwater enthusiasts would be welcomed.

NEW address of **Skipton A.S.** secretary, Mr. F. Cheery, is 71 Newmarket Street, Skipton, Yorks.

THERE was a poor attendance for the A.G.M. of **Norfolk & Norwich A.C.** when Mr. C. Williamson was elected chairman, Mr. L. Smith, treasurer, and Mr. R. D. Aldridge, secretary.

A.T.A. Go Gay

THE fourth annual dinner of the Aquatic Traders Association, held on January 27 at the Windsor Castle Hotel, Victoria, London, S.W.1, turned out to be another very successful event. Organised on behalf of the Association by Mr. and Mrs. R. Fairbairn (Fairbairn Aquaria) there was an attendance of 150, presided over by Mr. T. Horeman and Mrs. Horeman. The toast to the chair was proposed by Mr. P. Shepherd (Little Wizard Products) to which Mr. Horeman replied. Capt. L. C. Betts (A.T.A. Chairman) welcomed the visitors, the response being made by Mr. George Cansdale. The toast of the A.T.A. was given by Mr. C. W. Brown, Advertisement Manager of WATER LIFE, the reply to which was made by Mr. Jordan. This year the services of a toastmaster added tone to the proceedings. Dancing followed an excellent meal and during the evening a number of artistes appeared. The Association and the organisers are to be congratulated on a well run event which should do much to preserve the friendly spirit existing among the leading representatives of the aquaria trade.

Inter-section Guppy Competition Results

FOR some months past the Eastern Counties, West London, South London and North London Sections of the Federation of Guppy Breeders' Societies have been participating in a series of inter-section table shows. Final placings give Eastern Counties the lead with West London as runners-up.

At the last Assembly the Overseas Secretary reported that stocks of fish had been sent to Canada, Holland and Johannesburg. Consignments were on their way to Cape Town and Aden. The treasurer announced that the total credit balance then stood at just over £47. The annual show had shown a profit of £14 13s. 10d., with a further £9 18s. 1d. in the form of stock.

The Management Committee gave notice that it proposed to ask for 1/- increase in subscriptions from all members at the A.G.M. (January 23). Nominations for the posts of vice-president and general secretary had been received. They were for Messrs. E. S. Roach and A. J. Holloway.

Mr. P. A. Campkin (chairman of the F.B.A.S. Judges' and Standards committee) was a visitor at the Assembly and he presented judging boards and certificates to all successful trainee judges.

Overseas members are now eligible to qualify for the silver pin award subject to the executives' approval of their claim. Stipulation is that the applicant must have gained a first award in a class for Guppies alone with a fish of standard variety competing against at least 19 other entries. Full details are available from the overseas secretary.

Mr. Sermon has donated 10 cups and six silver pins to the F.G.B.S., of which he is an honorary member. The West Midlands Section has now been formed with Mrs. G. M. Davis, 120, The Broadway, Walsall, Staffs, as its secretary.

Presentation at F.B.A.S. Annual Meeting

THIRTY-FOUR societies were represented at the December 12 A.G.M. of the Federation of British Aquatic Societies. Presentations were made to Mr. and Mrs. R. O. B. List as a mark of esteem and for the good work put in for the Federation.

Among the reports presented was one from Mr. J. H. Gloyn (Judges' and Standards Committee secretary). He spoke of the liaison which had been achieved between the Northern Federation and the F.B.A.S. Both organisations had approved new pointings for furnished aquaria. Thanks were accorded to Mr. T. S. Hobday of Hendon for setting up the Federation's tropical tank on WATER LIFE's stand at the National Schoolboys' Own Exhibition.

Elections resulted in Mr. R. O. B. List being re-appointed secretary. His election was unopposed. Mr. A. Fraser-Brunner became vice-chairman by 34 votes to nil. Five vacancies on the Council were filled by Messrs. J. E. Edwards, J. H. Gloyn, G. G. Willis, E. H. Riddle and J. P. Mitchell. Messrs. W. Key and F. G. Wood were returned unopposed to the position of auditors.

Three proposals were put before the meeting for discussion and decision at the next Assembly. They were presented by Croydon A.S. and seconded by Balham and Croydon Tropical Breeders. One suggested that the annual subscription to the F.B.A.S. be reduced by one third, subject to a minimum payment of £1. The second stated that if the first proposal were rejected then a discount of one third be given for prompt payment (minimum £1). The third proposition was that there should be a downward revision of charges to affiliated member societies for the services of Federation lecturers and judges. This relief to benefit the member societies collectively to an annual amount of £75.

Bethnal Green Show

PRIZEWINNERS in the breeders' egglayers class of Bethnal Green A.S. annual show were given incorrectly in our last issue. These should read Mr. R. E. Chapman (1st), Mr. H. G. Rundle (2nd) and Mr. R. Belcher (3rd).

Four Thousand Attendance at Accrington's Display

FOR the fourth occasion the Accrington A.S. staged its annual show consisting of furnished aquaria only. The event was of four days duration and in that time 4,632 people were admitted. This total included 288 schoolchildren who visited in organised parties. Messrs. Legge and Williams were the judges. The Cocker Challenge Cup for best exhibit in show went to Mrs. D. Loder.

OPEN FURN. AQUARIA: 1, Mrs. D. Loder; 2, N. Atkinson; 3, A. Smith. MEMBERS' FURN. AQUARIA: 1, Mrs. E. Stephenson; 2 and 3, W. M. Scaife. NOVICES' FURN. AQUARIA: 1, W. Spencer; 2, H. Crabtree; 3, R. Graham. JUNIORS' FURN. AQUARIA: 1, G. Stanley; 2, Miss C. Spencer; 3, Miss B. Stephenson. ORNAMENTAL AQUARIA: 1, J. Pettifer; 2 (tie), W. M. Scaife and H. Crabtree. COLDW. FURN. AQUARIA: 1, J. Pettifer; 2, J. Livesey; 3, W. Spencer.

Rare Find in Norway

FOSSILISED freshwater fish, said to be about 350 million years old, have recently been found during road operations on the Kroksund-Vik road at Ringerike, Norway. The fossil locality was first found by Dr. Denison (U.S.A.), who found fragments of eurypterids on October 4th. Two days later he returned to the same place, accompanied by Prof. A. Heintz and Prof. L. Stormer, both of the Paleontological Museum, Oslo. The first fossilised fishes were found by Prof. Stormer, who came across a loose slab with several more or less complete specimens. The same horizon was also found in situ in the road cutting, and several additional fishes were found here as well as eurypterids.

Prof. Heintz states the fishes are cephalaspids and appear to belong to two new species. According to the Professor, the one species seems to be near Hirella (Micraspis), whereas the other is probably near Saaramaspis. The new fauna was discovered close to and below the boundary of what is called by Oslo Museum the Upper Ludlow (stage 9g) and the overlying (Downtonian) sandstone (stage 10). Prof. Stormer is now examining the several species of eurypterids.

Layers with marine fossils (e.g. bryozoans) occur both just over and just below the fish- and eurypterid-bearing beds, but since the latter contain no other fossils than fishes and eurypterids, they are believed to have been deposited in brackish water or fresh water (as the overlying Downtonian sandstone). The fossils, which are preserved at the Paleontological Museum, Oslo, are so well preserved that even trace of the nervous system emanating from the head can be seen.

Aquarists' Internationale

Further Items from Correspondence Received by Mr. R. W. Andrews

GENE WOLFSHEIMER, Los Angeles, U.S.A. has finally got his male albino Betta to achieve a spawning. It was anything but a normal spawning and Wolfsheimer had to literally midwife the whole affair. The male blew a fine bubble nest but, as usual, he just did not seem to see the female, who fortunately proved co-operative by swimming alongside the male under the nest. With her help they started spawning clumsily. When the eggs started to drop the male did not appear to notice them. The female on the other hand, just could not eat them fast enough, so a long plastics tube and some shallow dishes were hastily assembled, the tube being used not only to siphon out eggs into the dishes but also as a weapon to beat off the female who tried desperately to get at the eggs all the time.

About 200 eggs were finally transferred to the dishes, which contained only a quarter-inch of water plus a little Methylene blue as Fungus deterrent. A fair percentage of the fry hatched and Wolfsheimer considers he has sufficient second generation stock to enable him to carry on his efforts to establish an albino strain of the species.

Medaka Eggs by Air

Mrs. B. W. Bradley, Texas, U.S.A., has recently co-operated with me in a live ova-by-air mail experiment. Ten Medaka eggs were packed by her in a glass tube (as has normally been used in such experiments) and a further ten eggs from the same spawning were placed in a double plastics bag. The two separate egg containers were each wrapped in a layer of cotton wool and packed in a stout cardboard box, which arrived undamaged at my home in London approximately three and a half days after mailing. On inspection it was found that all the eggs in the tube had died off, whilst, of the eggs in the plastics bag, seven were in perfect condition, showing developing embryo. Eventually six of these eggs hatched, the fry now being fully free-swimming.

This new method for shipment of live ova, which incidentally was Mrs. Bradley's idea, appears to have many advantages over the glass tube as a container; for instance, as opposed to the weight of a thick glass tube, the negligible weight of the bag allows a greater volume of water—from the spawning tank—to be used. This water is, I believe, of vital importance until the eggs have hatched out. Freightage costs have always to be considered in experiments of this nature. Another important point is the welfare of the eggs in relation to opposing containers. It is customary to fill the glass tube completely to the top, this being done to prevent the water jogging up and down in transit and so damaging the eggs. In so filling the tube no air space is left, thus the only oxygen supply is that already in the water. With the plastics bag, only a quarter of its total capacity need be filled with water, leaving space which contains a reservoir of atmospheric air. The ideal method might be to blow the bag out with pure oxygen, as is now done with a new type of live fish containers. It does not seem to matter if the water jogs about in the bag, for the soft material yields and moulds itself to any such water pressure.

Soothing Influence?

AMERICAN service stations attract custom from motorists by employing glamour girls to fill up their cars with petrol and oil and generally service the vehicles in no time at all. In Britain, a more subtle approach is being made at a new filling station in South-east London. Probably to offset the irritability which seems to affect so many motorists when they have to pay so much in tax for each precious gallon of petrol, an aviary containing colourful (winged) birds and an aquarium (with equally exotic fish) have been incorporated in the general design. The fish are viewed through port-hole type apertures in a brick wall.

Marine Adventure

Cadets Visit South of France

THIRTY enthusiastic merchant navy cadets from the London Nautical School enjoyed an unusual holiday last autumn and came back to a new term armed with experiences that will serve them in good stead when they attend their usual courses of instruction in biology. Under the leadership of one of their masters, Mr. Norman Fortune-Flower, the lads have been to the South of France, where in the shore waters of the Mediterranean Sea, they have studied at first hand the teeming fish life.

The whole adventure has been unconventional as school journeys go. For weeks beforehand, the party were busy assembling camping gear and apparatus intended to help them in seeing at close quarters marine fishes that frequent the warm waters of Cap Ferrat, Monaco and Nice. The school's workshop and stores were filled with tents and cooking gear, with large quantities of food, with home-made but effective harpoons goggles (some made from discarded gas masks), frogmen's "flappers" and, of course, a quota of cameras, some of which were enclosed in water-tight boxes so that underwater photography could be attempted.

Independence was the keynote of the activity for not only did the party camp *en route* but the journey from London to Southern France and back, and the travelling to and from along the French Coast, was made by motor coach. This having been arranged, the party was in no way inconvenienced by the railway strikes in France at the time.

Clad in swimming trunks and armed with impedimenta for their submarine sport and study, they had thoroughly enjoyable field days—or should we say Neptune-like excursions?—off a number of well-known Riviera resorts, observing and taking notes of the wide variety of fishes and other creatures they saw, their methods of swimming, the food they ate and the type of surroundings the different species seemed to prefer. The life led during the three weeks away from their own country was a healthy one, packed with excitement, pleasure and fun, combined with many opportunities to gain useful knowledge. Back at school, where discipline is carefully maintained, the explorers are busy settling down to their full curriculum of normal subjects liberally mixed with nautical subjects.

One of the party, Cadet A. Batt, has described the variety of anemones, perch, bass and eel-like fish he saw and the fact that he likened the colours and characteristics to those of different freshwater tropicals including female Green Swordtails, White Clouds and Zebras, gave the game away. He has for some time been the owner of a community aquarium and is a keen and knowledgeable aquarist.

Club Notes and News—*contd.*

NEW meeting nights of **Oldham A.S.** are the first and third Wednesdays of each month. First prizewinners at the November 25 table show were Messrs. B. Taylor and A. L. Brocklehurst. A social evening was held on December 2. Officers appointed at the A.G.M. were chairman, Mr. A. L. Brocklehurst; secretary, Mrs. V. Tripp and treasurer, Mrs. J. Brunt. Mr. Honeybill visited the society on January 6, and discussed the breeding of Fighters, amongst other topics.

MR. STICHWELL won the class for Danios and Mr. Legg the class for Goldfish at the November table show of **Bournemouth A.C.** Weedon Cup for livebearers went to Mr. Swain. The President spoke at the December fixture and winners in the table show were Messrs. Walker, Woodward and Shaw.

A SECTION of the Federation of Guppy Breeders' Societies has now been formed in **Reading**. Mr. E. S. Roach gave a talk at the inaugural meeting. Secretary is Mr. R. Lawn, 27 Chester Street, Caversham, Reading, Berks., and the meeting place is the White Hart Hotel, Reading.

THE **Brixton A.S.** presented a tropical aquarium to the Belgrave Children's Hospital on December 19. The ceremony was performed by the Mayor of Lambeth.

APPOINTED as secretary at the A.G.M. of **Enterprise A.S.** was Mr. H. Russell Holland, 96 Ridgeview Road, London, N.20. This society meets on the first and third Thursdays of each month at Oakleigh Primary School, Oakleigh Road, N.20. On January 7 a meeting was held to discuss the club's future policy. Vice-president A. E. Izzard showed films on fish breeding at the January 21 fixture and a table show for Guppies is scheduled for February 4. Arrangements have already been made for two outings and more are being considered.

THREE members of **Guest, Keen & Nettlefolds (Midlands) Ltd. P. & A.S.** gave talks on their fishkeeping experiences at a recent meeting of the club. A tropical aquarium has been installed in the clubroom.

NICKOLLS Challenge Cups for breeding successes in the 1953 season went to Mr. R. Coldman (egglayers), and Mr. L. Ede (livebearers), members of **Southern A.A. (Brighton)**, which organisation ran the competition.

"SETTING" Up An Aquarium" and "Sexing Fish" have been the titles of talks given by Messrs. F. Bentley and H. Loder at recent meetings of **Belle Vue (Manchester) A.S.**

MR. H. A. HALLET, 12 Millfield, **Harlow**, Essex, is hoping to form a society in his area. Interested fanciers are asked to contact him.

FIRST prizewinners at the show staged by **Plymouth A. & P.S.** in conjunction with the Young Plymouth Exhibition were:—Mr. J. Nichols (furnished aquaria), Mr. Lane (furnished aquaria — also took President's Cup), Mr. D. Baldry (Rosy Barbs), Mr. Lane (Mountain Minnows), Mr. S. Ryder (Neons, Glowlights, Rosaceus, Serpae), Mr. T. Easterbrook (Giant Danios), Mr. A. Gimblett (Fighters), Mr. Ryder (Cichlids—also best fish in show), Mr. Ryder (Guppies, winner of the Guppy Shield), Mr. D. Baldry (Platies), Mr. Cross (Swordtails), Mr. T. Radmore (Mollies), Mr. Lane (Catfish), Mr. T. Coslett (*Nannacara*), Mr. K. Henderson (A.V. Egglayer) and Mr. J. Nichols (A.V. Livebearer). Junior Cup went to Mr. T. Radmore and premier awards in the coldwater section went to Messrs. D. Baldry, Ryder and D. Smith. Centrepiece at the show was a tropical garden. An aquarium has been presented to the Lee Mill Children's Hospital.

FANCIERS interested in the new **Dover A.S.** should contact Mr. J. A. Wilson, 18 Beach Street, Dover, Kent.

AN aquarists' society has been formed within the Greenock Academy. Anyone wishing to contact this organisation should write to Mr. D. Brown, **Greenock Academy A.S.**, Greenock Academy, Nelson Street, Greenock, Renfrewshire.

CHAIRMAN of newly-formed **Spelthorne A.C.** is Mr. A. G. Mills. The secretary and treasurer is Mr. A. J. W. Wilson, Parkside, 180 Uxbridge Road, Feltham, Middlesex. The club competed at WATER LIFE's recent Olympia show and has become affiliated to the South-west Middlesex A.A.

MISS I. EVANS, 101, Raleigh Road, Feltham, Middlesex, is now secretary of **Feltham A.S.**

THREE most recent lecturers at meetings of **W. Surrey A. & P.C.** were Messrs. Fitzgerald, McInerny and Cundall who spoke on "Reptiles and Amphibia," "Tropical Fish and Aquaria," and "Life History of the Water Flea," respectively. Date of the A.G.M. is February 10.

CAPT. A. C. TAYLOR presented the Thurlborn Home Aquaria Challenge Cup to Mr. H. Fromont at the December 7 meeting of **Cambridge F.C.** Runner-up in the competition was Mr. R. Thurston with Mrs. White in third place. Junior section winners were Messrs. Gawthrop and G. Barnes.

MR. N. FARREN tied for second place and Mrs. M. D. Bradbury tied for third place in the tropical furnished aquaria class at the **Coventry P. & A.S.** show reported in our last issue.

AS a result of the A.G.M. of **Bethnal Green A.S.**, current-year officials are chairman, Mr. J. Taylor; treasurer, Mr. L. Latman and secretary and show secretary, Mr. W. A. Richardson, 98 Warner Place, Hackney Road, London, E.2. Meetings are held every Tuesday at the Men's Institute, Bethnal Green Road and more coldwater enthusiasts would be welcomed.

NEW address of **Skipton A.S.** secretary, Mr. F. Cheery, is 71 Newmarket Street, Skipton, Yorks.

THERE was a poor attendance for the A.G.M. of **Norfolk & Norwich A.C.** when Mr. C. Williamson was elected chairman, Mr. L. Smith, treasurer, and Mr. R. D. Aldridge, secretary.

A.T.A. Go Gay

THE fourth annual dinner of the Aquatic Traders Association, held on January 27 at the Windsor Castle Hotel, Victoria, London, S.W.1, turned out to be another very successful event. Organised on behalf of the Association by Mr. and Mrs. R. Fairbairn (Fairbairn Aquaria) there was an attendance of 150, presided over by Mr. T. Horeman and Mrs. Horeman. The toast to the chair was proposed by Mr. P. Shepherd (Little Wizard Products) to which Mr. Horeman replied. Capt. L. C. Betts (A.T.A. Chairman) welcomed the visitors, the response being made by Mr. George Camsdale. The toast of the A.T.A. was given by Mr. C. W. Brown, Advertisement Manager of WATER LIFE, the reply to which was made by Mr. Jordan. This year the services of a toastmaster added tone to the proceedings. Dancing followed an excellent meal and during the evening a number of artistes appeared. The Association and the organisers are to be congratulated on a well run event which should do much to preserve the friendly spirit existing among the leading representatives of the aquaria trade.

Inter-section Guppy Competition Results

FOR some months past the Eastern Counties, West London, South London and North London Sections of the Federation of Guppy Breeders' Societies have been participating in a series of inter-section table shows. Final placings give Eastern Counties the lead with West London as runners-up.

At the last Assembly the Overseas Secretary reported that stocks of fish had been sent to Canada, Holland and Johannesburg. Consignments were on their way to Cape Town and Aden. The treasurer announced that the total credit balance then stood at just over £47. The annual show had shown a profit of £14 13s. 10d., with a further £9 18s. 1d. in the form of stock.

The Management Committee gave notice that it proposed to ask for 1/- increase in subscriptions from all members at the A.G.M. (January 23). Nominations for the posts of vice-president and general secretary had been received. They were for Messrs. E. S. Roach and A. J. Holloway.

Mr. P. A. Campkin (chairman of the F.B.A.S. Judges' and Standards committee) was a visitor at the Assembly and he presented judging boards and certificates to all successful trainee judges.

Overseas members are now eligible to qualify for the silver pin award subject to the executives' approval of their claim. Stipulation is that the applicant must have gained a first award in a class for Guppies alone with a fish of standard variety competing against at least 19 other entries. Full details are available from the overseas secretary.

Mr. Sermon has donated 10 cups and six silver pins to the F.G.B.S., of which he is an honorary member. The West Midlands Section has now been formed with Mrs. G. M. Davis, 120, The Broadway, Walsall, Staffs, as its secretary.

Presentation at F.B.A.S. Annual Meeting

THIRTY-FOUR societies were represented at the December 12 A.G.M. of the Federation of British Aquatic Societies. Presentations were made to Mr. and Mrs. R. O. B. List as a mark of esteem and for the good work put in for the Federation.

Among the reports presented was one from Mr. J. H. Gloyn (Judges' and Standards Committee secretary). He spoke of the liaison which had been achieved between the Northern Federation and the F.B.A.S. Both organisations had approved new pointings for furnished aquaria. Thanks were accorded to Mr. T. S. Hobday of Hendon for setting up the Federation's tropical tank on WATER LIFE's stand at the National Schoolboys' Own Exhibition.

Elections resulted in Mr. R. O. B. List being re-appointed secretary. His election was unopposed. Mr. A. Fraser-Brunner became vice-chairman by 34 votes to nil. Five vacancies on the Council were filled by Messrs. J. E. Edwards, J. H. Gloyn, G. G. Willis, E. H. Riddle and J. P. Mitchell. Messrs. W. Key and F. G. Wood were returned unopposed to the position of auditors.

Three proposals were put before the meeting for discussion and decision at the next Assembly. They were presented by Croydon A.S. and seconded by Balham and Croydon Tropical Breeders. One suggested that the annual subscription to the F.B.A.S. be reduced by one third, subject to a minimum payment of £1. The second stated that if the first proposal were rejected then a discount of one third be given for prompt payment (minimum £1). The third proposition was that there should be a downward revision of charges to affiliated member societies for the services of Federation lecturers and judges. This relief to benefit the member societies collectively to an annual amount of £75.

Bethnal Green Show

PRIZEWINNERS in the breeders' egglayers class of Bethnal Green A.S. annual show were given incorrectly in our last issue. These should read Mr. R. E. Chapman (1st), Mr. H. G. Rundle (2nd) and Mr. R. Belcher (3rd).

Four Thousand Attendance at Accrington's Display

FOR the fourth occasion the Accrington A.S. staged its annual show consisting of furnished aquaria only. The event was of four days duration and in that time 4,632 people were admitted. This total included 288 schoolchildren who visited in organised parties. Messrs. Legge and Williams were the judges. The Cocker Challenge Cup for best exhibit in show went to Mrs. D. Loder.

OPEN FURN. AQUARIA: 1, Mrs. D. Loder; 2, N. Atkinson; 3, A. Smith. MEMBERS' FURN. AQUARIA: 1, Mrs. E. Stephenson; 2 and 3, W. M. Scaife. NOVICES' FURN. AQUARIA: 1, W. Spencer; 2, H. Crabtree; 3, R. Graham. JUNIORS' FURN. AQUARIA: 1, G. Stanley; 2, Miss C. Spencer; 3, Miss B. Stephenson. ORNAMENTAL AQUARIA: 1, J. Pettifer; 2 (tie), W. M. Scaife and H. Crabtree. COLDW. FURN. AQUARIA: 1, J. Pettifer; 2, J. Livesey; 3, W. Spencer.

Rare Find in Norway

FOSSILISED freshwater fish, said to be about 350 million years old, have recently been found during road operations on the Kroksund-Vik road at Ringerike, Norway. The fossil locality was first found by Dr. Denison (U.S.A.), who found fragments of eurypterids on October 4th. Two days later he returned to the same place, accompanied by Prof. A. Heintz and Prof. L. Stormer, both of the Paleontological Museum, Oslo. The first fossilised fishes were found by Prof. Stormer, who came across a loose slab with several more or less complete specimens. The same horizon was also found in situ in the road cutting, and several additional fishes were found here as well as eurypterids.

Prof. Heintz states the fishes are cephalaspids and appear to belong to two new species. According to the Professor, the one species seems to be near Hirella (Micraspis), whereas the other is probably near Saaramaspis. The new fauna was discovered close to and below the boundary of what is called by Oslo Museum the Upper Ludlow (stage 9g) and the overlying (Downtonian) sandstone (stage 10). Prof. Stormer is now examining the several species of eurypterids.

Layers with marine fossils (e.g. bryozoans) occur both just over and just below the fish- and eurypterid-bearing beds, but since the latter contain no other fossils than fishes and eurypterids, they are believed to have been deposited in brackish water or fresh water (as the overlying Downtonian sandstone). The fossils, which are preserved at the Paleontological Museum, Oslo, are so well preserved that even trace of the nervous system emanating from the head can be seen.

Aquarists' Internationale

Further Items from Correspondence Received by Mr. R. W. Andrews

GENE WOLFSHEIMER, Los Angeles, U.S.A. has finally got his male albino Betta to achieve a spawning. It was anything but a normal spawning and Wolfsheimer had to literally midwife the whole affair. The male blew a fine bubble nest but, as usual, he just did not seem to see the female, who fortunately proved co-operative by swimming alongside the male under the nest. With her help they started spawning clumsily. When the eggs started to drop the male did not appear to notice them. The female on the other hand, just could not eat them fast enough, so a long plastics tube and some shallow dishes were hastily assembled, the tube being used not only to siphon out eggs into the dishes but also as a weapon to beat off the female who tried desperately to get at the eggs all the time.

About 200 eggs were finally transferred to the dishes, which contained only a quarter-inch of water plus a little Methylene blue as Fungus deterrent. A fair percentage of the fry hatched and Wolfsheimer considers he has sufficient second generation stock to enable him to carry on his efforts to establish an albino strain of the species.

Medaka Eggs by Air

Mrs. B. W. Bradley, Texas, U.S.A., has recently co-operated with me in a live ova-by-air mail experiment. Ten Medaka eggs were packed by her in a glass tube (as has normally been used in such experiments) and a further ten eggs from the same spawning were placed in a double plastics bag. The two separate egg containers were each wrapped in a layer of cotton wool and packed in a stout cardboard box, which arrived undamaged at my home in London approximately three and a half days after mailing. On inspection it was found that all the eggs in the tube had died off, whilst, of the eggs in the plastics bag, seven were in perfect condition, showing developing embryo. Eventually six of these eggs hatched, the fry now being fully free-swimming.

This new method for shipment of live ova, which incidentally was Mrs. Bradley's idea, appears to have many advantages over the glass tube as a container; for instance, as opposed to the weight of a thick glass tube, the negligible weight of the bag allows a greater volume of water—from the spawning tank—to be used. This water is, I believe, of vital importance until the eggs have hatched out. Freightage costs have always to be considered in experiments of this nature. Another important point is the welfare of the eggs in relation to opposing containers. It is customary to fill the glass tube completely to the top, this being done to prevent the water jogging up and down in transit and so damaging the eggs. In so filling the tube no air space is left, thus the only oxygen supply is that already in the water. With the plastics bag, only a quarter of its total capacity need be filled with water, leaving space which contains a reservoir of atmospheric air. The ideal method might be to blow the bag out with pure oxygen, as is now done with a new type of live fish containers. It does not seem to matter if the water jogs about in the bag, for the soft material yields and moulds itself to any such water pressure.

Soothing Influence?

AMERICAN service stations attract custom from motorists by employing glamour girls to fill up their cars with petrol and oil and generally service the vehicles in no time at all. In Britain, a more subtle approach is being made at a new filling station in South-east London. Probably to offset the irritability which seems to affect so many motorists when they have to pay so much in tax for each precious gallon of petrol, an aviary containing colourful (winged) birds and an aquarium (with equally exotic fish) have been incorporated in the general design. The fish are viewed through port-hole type apertures in a brick wall.

Marine Adventure

Cadets Visit South of France

THIRTY enthusiastic merchant navy cadets from the London Nautical School enjoyed an unusual holiday last autumn and came back to a new term armed with experiences that will serve them in good stead when they attend their usual courses of instruction in biology. Under the leadership of one of their masters, Mr. Norman Fortune-Flower, the lads have been to the South of France, where in the shore waters of the Mediterranean Sea, they have studied at first hand the teeming fish life.

The whole adventure has been unconventional as school journeys go. For weeks beforehand, the party were busy assembling camping gear and apparatus intended to help them in seeing at close quarters marine fishes that frequent the warm waters of Cap Ferrat, Monaco and Nice. The school's workshop and stores were filled with tents and cooking gear, with large quantities of food, with home-made but effective harpoons goggles (some made from discarded gas masks), frogmen's "flappers" and, of course, a quota of cameras, some of which were enclosed in water-tight boxes so that underwater photography could be attempted.

Independence was the keynote of the activity for not only did the party camp *en route* but the journey from London to Southern France and back, and the travelling to and from along the French Coast, was made by motor coach. This having been arranged, the party was in no way inconvenienced by the railway strikes in France at the time.

Clad in swimming trunks and armed with impedimenta for their submarine sport and study, they had thoroughly enjoyable field days—or should we say Neptune-like excursions?—off a number of well-known Riviera resorts, observing and taking notes of the wide variety of fishes and other creatures they saw, their methods of swimming, the food they ate and the type of surroundings the different species seemed to prefer. The life led during the three weeks away from their own country was a healthy one, packed with excitement, pleasure and fun, combined with many opportunities to gain useful knowledge. Back at school, where discipline is carefully maintained, the explorers are busy settling down to their full curriculum of normal subjects liberally mixed with nautical subjects.

One of the party, Cadet A. Batt, has described the variety of anemones, perch, bass and eel-like fish he saw and the fact that he likened the colours and characteristics to those of different freshwater tropicals including female Green Swordtails, White Clouds and Zebras, gave the game away. He has for some time been the owner of a community aquarium and is a keen and knowledgeable aquarist.