

The AQUARIST AND PONDKEEPER

Founded in 1924 as "The Amateur Aquarist"



THE BUTTS, HALF ACRE, BRENTFORD,
MIDDLESEX

Telephone: HOUnslow 9301

PUBLISHED MONTHLY

SUBSCRIPTION RATES

The *Aquarist* will be sent post free for one year to any address for 19/6. Half-yearly 9/9. Canada and U.S.A. \$3.00 yearly; \$1.75 half-yearly.

QUERIES

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

Correspondence with intending contributors is welcomed.

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

The Editor accepts no responsibility for views expressed by contributors.



H. Joel

The overgrowth of pond and water garden plants should be removed before the onset of winter, according to the advice in the article by "Astilbes" on page 173

VOL. XIX No. 8

1954

Editorial

FOR the man chronically infected with enthusiasm for aquarium-keeping the aquarium with its contents is the only thing that matters. For him the aquarium surroundings, the setting in which it is placed, is a subject only worthy of consideration in relation to practical details such as the amount of light afforded his water plants, the extent to which protection from excessive temperature changes is given, and so on. If he is fortunate enough to have a room or outside building he can devote entirely to aquaria, then this probably looks like a workshop into which the tanks have strayed almost by chance. The majority of the aquaria is likely to be almost bare, finding special employment for breeding, rearing or stock reserve.

But, and this has often been pointed out, it is the beauty of the furnished aquarium that usually attracts a newcomer to the hobby, and from this aspect the proper setting for the aquarium is a matter of some importance. If the aquarium is seen to occupy a place in the home and, what is more, to fit pleasingly into the living room scheme, those who at the outset may laughingly deny that they could ever become as enthusiastic as our practical fish-keeper introduced above are far more likely to take the first step to being aquarists. Are aquarists' societies in their publicity ventures, and aquatic traders, paying sufficient attention to this question of the aquarium setting? To many people the rectangular frame aquarium (and more so its angle-iron stand) is an ugly creation, an anachronism in a tastefully decorated and furnished room.

The fact that numerous readers have in our pages described with pride personal designs for making their aquaria special pieces of furniture or living room fittings, strengthens this contention. Attempts have been made in recent years to modernise aquarium styles, but there always exist the limitations imposed by function; correct proportions must be kept or the tank is of no use for fishkeeping. What seems necessary now is some co-operation between aquarium-maker and furniture designer. Could this give the "aquarium in the home" a new appeal?

Northern Federation's Autumn Assembly

by C. GRAHAM
(Treasurer, F.N.A.S.)

READERS whose curiosity has been aroused by the interesting Editorial in the September issue of *The Aquarist* may like to know why the Federation of Northern Aquarium Societies decided to break away from tradition at its one day show held at Belle Vue, Manchester, on Sunday the 3rd October last, in conjunction with the Autumn Assembly.

The Federation has now had experience in the organisation of three British Aquarists' Festivals promoted by *The Aquarist*. We are exceedingly fortunate in our venue. Contrary to ill-informed criticisms which have been voiced from time to time, it can be categorically stated that without the help of the Belle Vue management the Federation could not have carried out its obligations. Those with experience in large scale events similar to the B.A.F. will appreciate the constructional difficulties involved, and the assistance of the Belle Vue staff cannot be measured. The trade have also most generously supported each Festival by the loan of tanks and the erection of trade exhibits which do much to attract the competitive, non-competitive and potential aquarist. The necessary co-ordinating link to bring the B.A.F. before the public has been a small band of volunteer unpaid aquarists of both sexes, known officially as the Show Committee, from various parts of the north of England, whose capacity for punishment has astounded me. A night journey by road in foul weather over the Pennines to attend Federation meetings is routine. This committee has maintained continuity, which in itself is one of the main contributions to successful organisation, but any tendency to vegetate is pounced upon by a critical and vociferous Federation Council.

In 1951 the first British Aquarists' Festival, sponsored by *The Aquarist* and *Pondkeeper*, set a standard in aquarium exhibitions which is not likely to be repeated for some time. It is no secret that there was a heavy financial loss on the event. The 1952 and 1953 Festivals, with less expenditure, struggled through, but at the beginning of this year the Federation decided that it could not support a B.A.F. for 1954 for two reasons: the prospective financial loss and insufficient funds to meet it, and inability to whip up enthusiasm in sufficient member stewards to construct and supervise an exhibition of this size. Nothing is more distressing to fishkeepers than to see good fish die through lack of attention, and the members of the Show Committee are themselves keen aquarists. The answer to the justifiable complaints on the losses at the 1953 Festival is a simple and physical one—lack of volunteer stewards. This, it is appreciated, is no satisfaction to the unfortunate exhibitor, and avoidance of a repetition of fish losses was very much in mind when it was decided not to support a B.A.F. in 1954.

We are a Federation and we have a duty to our member societies, and a suggestion that a one-day show in conjunction with the Autumn Assembly be held, was approved. To keep expenses to the minimum this show was limited to society entries only, no provision being made for individual exhibits. The schedule was limited to four classes: Furnished Aquaria, Groups of six pairs of fish, a combination of classes 1 and 2, plus the skill in staging the exhibit as a complete display and judged on artistic merit only,

and a fourth class for Artistic Stand Display only, which was something entirely new in the Federation competitions.

Although only about a quarter of the Society membership competed, the quality of the exhibits in class 4 (Artistic Stand Display) exceeded all expectations. All the stands were excellent, and apart from the prizewinners, the enchanting oriental design from Stretford, the original book exhibit from Doncaster, the small modern drawing room from the mining village of Wombwell, the sunken galleon with the monarch of all angels set up by the Leeds society, were of outstanding merit. The ingenuity, effort and expense which must have gone into all the exhibits have astonished us and revitalised our faith in the F.N.A.S. membership.

What of the future? Organisers of big open shows are faced with the problem of providing exhibits of sufficient interest to the general public and potential aquarists to provide sufficient finance to pay for hall capacity and essential equipment to meet increasing numbers of competitive entries. The F.N.A.S. has found no lack of competitive entries but a decline in public support. A suggestion has been put forward that individual awards within the aegis of a society exhibit would bring better fish to the show, satisfy the aspirations of the society member competitor, and with frequent changes in society exhibits public support would be increased. If this idea could be extended to other regions and the regions would compete against each other at a national venue, such a competition might be worthy of the title "Championship Show." The elimination contests would take place in the society shows, the winners going forward to the regional competition, and further elimination at this level would decide the entries for the national competition. The national show could be a small event in entries but high in quality. The snag in this ambitious plan, even when the societies have solved their own problems, is that all the shows would have to be around the same period of the year, but the suggestion may still be worthy of investigation.

The F.N.A.S. one-day show held on the 3rd of October will certainly live up to the discussions at the next Council Meeting, and the reaction of the Show Committee to this event was very succinctly expressed in the words of the Organiser, "This year we have even found time to be civil to each other." The Assembly was one of the most enjoyable we have had, and a credit to our worthy secretary, Mr. G. T. Iles, who takes complete control of the organisation at all the F.N.A.S. Assemblies. The film show, including "Under the Red Sea," rounded off a memorable day.

Cacti in the Fish House

Most cacti must have a fairly long winter's rest and so water should be practically withheld during the winter. The amount of water to be given will depend on the warmth of the house where the plants are kept. The colder the position the drier must the plants be kept. Cacti can stand fairly cold conditions but it is not good to let them get any actual frost. It is found that many cacti flower better after a good winter's rest, and so they need not have much warmth during this period. As the atmosphere in a fish house will probably be generally damp it must be realised that the plants may not need watering as often as if they were kept in a dry place.

RECENT IMPORTS:

Indian Immigrants

by A. FRASER-BRUNNER

A RATHER fine species of *Barbus* has been available to aquarists in reasonable quantities during the last few months, and, as little or no information about it is so far available in aquarium literature, it seems worth while to contribute some notes upon it. So far, it has chiefly been called *Barbus mahecola*, and it was under this name that my attention was first drawn to it by Mr. Goodman of Kingsland Fisheries. Since then I have seen a number of specimens, and have what I believe to be a pair in my aquarium.

Investigation shows that the correct name of this species is *Barbus filamentosus* (Cuvier & Valenciennes). It is at once distinguished by the lobes of the caudal fin, which are largely bright scarlet, with a black band towards the end and the extreme tip shining white. There is a large black blotch on the side of the tail above the rear part of the anal fin. All the fins, except the pelvic, are orange-red; the dorsal has a dark band along its base, and in young specimens (one inch or so long) its tip is black and white in a way similar to those of the caudal fin.

Barbus filamentosus

This is a large species, belonging to the same group of barbs as *B. lateristriga*, *B. everetti* and *B. dunckeri*, all of which reach a length of six inches or so. Like them, it has a vertical band commencing immediately in front of the dorsal fin, but this tends to become very faint or even lost with age. The sexes of adults in breeding condition are easy to distinguish. The male, as usual, has the more brilliant coloration, olive with shining green reflections on the back, silvery on sides, white below, with often a salmon-pink flush on throat and breast. The dark bar across the base of the dorsal fin is more distinct, and the middle rays of that fin become elongate and filamentous, giving the species its name. Moreover, the male develops conspicuous "nuptial tubercles" on its snout and cheek.

As with practically all fishes, spawning will be most successful if the sexes are conditioned separately. Temperatures between 75° F. by day and 65° F. by night will suit them well, and like most barbs they are omnivorous, appreciating a certain amount of vegetable matter as well as the usual fresh and dried foods. They need space, and within limits will grow more quickly and larger the bigger the tank they are given. They should not be allowed to breed until about four inches long. For spawning, a tank at least three feet long is required, planted at one end with dense *Myriophyllum* or other fine-leaved plants; if the planted end can be shallower than the other so much the better, but the depth should not anywhere exceed nine inches. Water should not exceed a hardness of 10—London tapwater needs diluting by half with distilled or clean rain-water.

It is a good plan to divide the tanks in two with a glass partition, and place the female on the plant side, the male on the other. Temperature and other conditions should be the same as the conditioning tanks. The temperature should then be raised, and the illumination reduced. When the fishes show excitement at the sight of each other through



The upper fish is a breeding male *Barbus filamentosus*. On the lower left a half-grown female is shown and to her right is a young specimen

the glass, the partition should be removed, and the drive will commence. The eggs are rather large, yellowish in colour, and slightly adhesive. They hatch in 36 to 48 hours at 80° F., with aeration. They must, of course, be protected from the parents.

The young fish are very different in some respects from their parents; they have four conspicuous cross-bands—one across the nape, passing over the gill-cover, one immediately in front of the dorsal fin, one across the tail above the anal fin, and a narrower one across the base of the caudal fin. But they show the black-and-white tips of the caudal and dorsal fins from an early age. Some females never develop the bright red on the caudal fin, so this is one way of separating them off early in life; but this is not constant, and so one cannot be so sure of the male until he develops the filaments on his dorsal fin. The more distinct dark bar along the base of the dorsal fin helps here, however.

Barbus filamentosus is an inhabitant of the rivers and water-tanks of southern India and of Ceylon. Francis Day thought that *B. mahecola* (which was also described by Cuvier and Valenciennes) was the young of this species, but it seems now that it was some other fish. In any case *B. filamentosus* is the earlier name, and therefore the valid one.

Mastocembelus pancalus

Another extremely interesting fish from India has recently been imported by Mr. Bowler, of the London Aquarium at South Bank. This is *Mastocembelus pancalus* (Hamilton). It is a member of the family Mastocembelidae, often called spiny eels, because, like the eels, they have a long body and no pelvic fins. But they are really rather strangely modified perch-like fishes, having the first dorsal fin represented by a number of short unconnected spines along the back (there are 26 of them in *M. pancalus*) and three spines in front of the anal fin. The snout is curiously long, pointed and movable; near the end of it a single nostril on each side is borne on a tube. This arrangement enables the fish to find its food by smell, pushing its nostrils well down into the sand. The long proboscis is a powerful burrowing organ, aided by the fin-spines and possibly also some small spines on the gill cover. By this means the fish is able to disappear very quickly into the sand, and sometimes remains buried with just the front part of the head thrust out, looking very much like the shoot of a plant.

Until now spiny eels have not been well known to aquarists, as most of them are not good "doers." The one usually mentioned in the books is *Macrogobius aculeatus*, a name which may possibly be found to include more than one species, from India and the East Indies. Of the genus *Mastocembelus* about 35 species have been described, from Southern Asia and from Africa, but it is possible that when they are better known they will need to be divided into several smaller genera. Some of them have the soft dorsal and anal fins united with the caudal fin—others have these fins separate; one species, *M. maculatus*, from Siam and the East Indies, differs from all the others in having the snout covered with scales. However, this question is at present being studied by a Pakistani research-worker, Dr. Sufi, at the British Museum, and we may hope to know more about the family as a whole before long.

Good Aquarium Inmate

M. pancalus turns out to be an excellent aquarium fish, for it is one of the smallest species, growing to only five or six inches long, and settles down quickly. It is less scary than



This new arrival is the spiny eel *Mastocembelus pancalus*. At the right one specimen is seen indulging in a favourite habit—with body buried and pointed snout sticking up from the sand.

some of the others, and so does not hide itself away so much. It spends a good deal of time searching for food, thrusting its proboscis deep into the sand and waving the rest of its body gracefully aloft. It is carnivorous, but does not demand live food all the time; it will take chopped earthworms, shrimp, raw meat, etc., readily. It can hang suspended, as it were, in mid-water in a vertical position, head upwards, or in other odd attitudes. It is not aggressive, but will live happily with much smaller fishes in a community tank. The colour is greyish or buff, with pale yellowish spots and rows of darker spots along the back, tending to form transverse bands; the fins are marked with small black spots and there is a black line along the side of the snout passing through the eye.

Through the kindness of Mr. Bowler, I have two of these fish, which appear to be male and female. The female is generally deeper and heavier in build, and somewhat larger than the male. I have been unable to discover any information about the breeding habits of the species, and so do not know whether it will be possible to breed them. One can but try and hope.

FRIENDS & FOES

No. 30 Mayflies

EPHEMEROPTERA

PHYLUM:—Arthropoda, from Greek *arthron*—joint, and *podos*—foot.

CLASS:—Hexapoda, from Greek *hex*—six, and *podos*—foot.

ANGLERS and aquarists alike can regard mayflies as good friends. The duns and spinners of the angler are imitations of various species of mayfly sub-imagines and imagines, and are responsible for many a good haul of trout. Aquarists who know will catch as many nymphs as possible to feed to their fishes. I know of no pond or aquarium fish which refuses to accept them with eagerness once they have tasted them. Aquarists who don't know will continue to destroy the nymphs on sight under the mistaken impression that they are dragonfly or damselfly nymphs—an appalling waste of good food.

A full-grown specimen of the nymph of the mayfly *Chloean* (magnified four times life size) is shown on the right. To its left is drawn enlarged a single leaf-like "gill" from the side of the body of the nymph.



There are nearly fifty different known species of British Ephemeroptera, belonging to 18 genera, all of which are aquatic from hatching until they emerge from the water as sub-imagines. This may take from two or three months to as long as two to three years. Large numbers of sub-imagines emerge from the water within minutes of each other, and it is a sight worth watching to see the nymphal cases reach the surface of the water, split almost immediately, and the newly emerged flies take straight off into the air. Once out of their nymphal cases the mayflies, although able to fly well, are condemned by Dame Nature to await a final moult before seeking a mate. They are the only known group of insects which moult after attaining full growth and the ability to fly.

C. E. C. Cole

Silver Tetra

(*Ctenopoma spilurum*)

(Knife Tetra, Silver Tetra)

ORDER:—Ostariophysi, from Greek *ostarion*—a little bone, and Greek *physis*—a bladder.

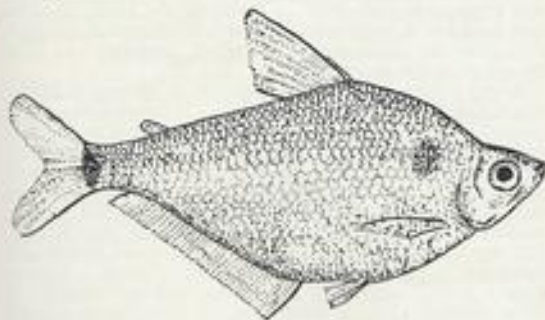
FAMILY:—Characidae, from Greek *charax*—a sea fish.

SPECIES:—*Ctenopoma*—from Greek *ktenos*—comb (referring to edge of scales, and Greek *brykon*—tear in pieces. *spilurus*—from Greek *spilos*—a spot, and Greek *oura*—tail.

ONE of the largest of our characins, the knife or silver tetra, reaches a top size of over three inches. It is a native of Guiana, and was one of the first fishes to find its way once more into this country after the end of World War II. Its reappearance was hailed with enthusiasm at a time when all fishes were at a premium, but after the first rush it sank once more into the position it occupied in 1939 and before—somewhere in the middle and lower ranges of popularity.

Yet it is a striking fish with its broad, deep sides of flashing silver, relieved only by a dark marking at the root of the caudal peduncle, and a fainter patch of black behind the operculum. Its fins seem a little small for the size of its body, apart from the long, narrow anal, which in the female shows a distinctly reddish hue as spawning becomes due. Apart from this colouring of the anal fin, the female is invariably deeper in the body than the male, and in normal pairs she grows a little larger, and, of course, is noticeably rounder as she fills with roe. Thus sexing becomes easy, even for the tyro. They are ready to breed when about half-grown.

Silver tetras are omnivorous—they readily eat both vegetable and animal substances. This is a point to remember when conditioning them for breeding. To a diet of earthworm, *Daphnia*, bloodworms, mayfly larvae, mosquito larvae, add a little common duckweed. I say a little, but it will do no harm if the whole of the top of the aquarium is covered with it. Root and leaf will both



Body of the silver tetra is flattened from side to side, very deep, and the fins are relatively small and inconspicuous

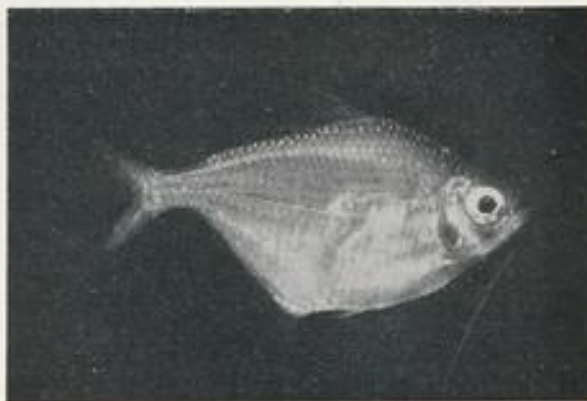


Photo:

Laurence E. Perkins

be appreciated, and any left by the time spawning begins will help to catch the semi-adhesive eggs. The remaining plants in the breeding tank should consist of fine-leaved species—*Ambulia*, *Gabomba*, *Nitella*, or *Myriophyllum* are all suitable. Plant thickly to trap and protect the greatest possible number of eggs, for the parents are the most avid egg eaters.

The male pursues the female in the spawning drive, butting her sides with his head, an action which assists in the expulsion of the eggs, as does the squeezing of the plants as she pushes her way through them. It has been observed by several breeders that the breeding pairs often indulge in a preliminary skirmish or dance before actually commencing the driving, each circling the other—like two boxers in a ring seeking an opening but a little wary of each other. The drive may be short or last several hours, during which several hundred eggs will be thrown among the plants. When spent, remove both parents (or the egg-laden weed) to another aquarium. At a temperature of 80°F. the eggs should hatch in about 48 to 54 hours, and the fry become free-swimming two days afterwards.

Now is the time to begin feeding with Infusoria and unicellular algae. The babies will be hungry always, and there will be many mouths to feed, so a succession of cultures is desirable to maintain a sufficient supply. Having served these baby foods, follow up with tiny crustacea (*Daphnia*, *Cyclops* nauplii, brine shrimp, etc.), then decide whether it is your intention to raise a large number of fishes or a few, and act accordingly: set up more tanks or dispose of three-quarters of the young fishes. Growth will be rapid in favourable conditions, i.e. plenty of room, good food, and clear water. The fry should be half-grown in about six months or slightly less.

Silver tetras can be weaned to take dried food, but will always show a preference for live. Habits they often develop of picking plants to pieces and of chasing smaller species than themselves probably accounts for their lack of popularity. In view of their temperature tolerance—from low sixties to above 80°F. they could conceivably be kept with goldfishes, but I have never heard of anyone doing so. Having little or no colour to lose, they do not suffer from being exhibited in small, weedless aquaria like so many other characins. They are not unduly "scary," and often pose in one position for an appreciable time. It is then, with the light gleaming from their sides, that they often put their normally more colourful relatives completely in the shade.

AQUARIST AT HOME:

Mr. R. J. Sowley

(YORK)

Interviewed by JAS. STOTT

I AM always pleased when, for some reason or other, I get the opportunity to visit York. It is a city which I like and find extremely fascinating with its antiquity so well preserved and, consequently, the atmosphere which it all creates. I had occasion to be in that city a few months back and so made arrangements to call on Mr. R. J. Sowley who lives in the Acomb district of York. He is a well-known member of the York and District Aquarists' Society and is actually a society committee member. He has achieved considerable success in the local shows, winning the premier award last year in the furnished aquaria classes with a coldwater tank, and taking the first in both coldwater and tropical furnished classes this year.

It appears he is equally successful in catching fish, for he has won several prizes as an angler. Although well placed for coarse fishing, the somewhat sluggish current of the river Ouse, which flows through York, and the bobbing float holds little thrill for Mr. Sowley, preferring to go further afield where he can cast a fly on the tumbling waters of a mountain rill and match his skill against that of the trout. As a matter of fact trout interest Mr. Sowley very much and it is not surprising, therefore, to find that his activities as an aquarist centre a good deal around the coldwater side of the hobby, although he keeps tropical fishes as well. At the time of my visit he was in the midst of reorganisation. In the past he has kept his tanks in one of the upper rooms of his home, but, always mindful of a possible mishap in the way of leaking tanks and cracked panels, he has for some time been planning the building of a lean-to fish house to the side of his home. This was in progress when I called on him and most of his 15 tanks were unfurnished ready for movement as soon as the fish house is finished.

When his new set-up is completed and in action he intends to concentrate his activities to veiltail goldfish on the coldwater side and zebra and pearl danios in the tropicals. I was pleased to hear of this interest in the pearl danio because when well bred and kept this fish can be attractive, and it appears to have been somewhat neglected of late. I was very much impressed with Mr. Sowley's garden pool and its surround. Here is a practical demonstration and an example of what can be done in the pond-keeping line when only a small garden is available. Although more ground is situated at the rear and side of the house, on the front it has only a small piece of ground, but it has been turned into a delightful little water garden which, apart from its beauty, is also useful, because here Mr. Sowley is trying an experiment with trout.

Informal in shape the pond basin is eight feet at the longest point and four feet six inches wide with a depth graduated from nine inches to a maximum of two feet, and constructed of concrete three inches in thickness. The pond stretches from the base of a built-up background of rock from which waterfalls drop over a series of rockwork shelving into a small and shallow pool and from there into the main pond. The surround consists of a small area of



Photo:

J. Stott

Rockwork built up in natural-appearing formations surrounds Mr. Sowley's garden pond

marsh behind which, at a higher level, there is a charming little rock garden. In general the planting was very good, offering plenty of variety in colour. Two or three different species of *Saxifrage*, *Aubrietia* and *Sempervivum*, with hart's-tongue ferns, made up the planting in the rock garden, while the marsh was well stocked with irises, various water-loving ferns and rushes. The pond contains minnows and four brown trout, all in excellent condition. The trout were two years old and approximately six to seven inches in length when placed into the pond over twelve months ago. They were averaging nine to ten inches when I saw them.

Aware of the fact that he has both sexes present, Mr. Sowley intends to try hand spawning the trout during the coming breeding season and if successful in obtaining fry will attempt to rear some of them in the small, shallow rock pool which, as previously stated, is situated at a higher level than the main pond. I shall be interested to hear the result of this experiment.

In the dining room of his home is an attractive fitting which Mr. Sowley made for himself. It consists of a stand in metal with a glazed front panel down each side overlaid with wrought iron work and capable of being illuminated with coloured lamps from the back. The top of this stand carries a large tank with a well-designed top cover. Below this tank is shelving for books, underneath which is a space holding a smaller tank heated by a built-in base heater. The top tank is heated by the usual immersion heater and contained a community collection of tropicals. Among these I noticed some very nice zebras and well-developed black mollies. Mr. Sowley uses the lower base heated tank for breeding and rearing his zebras, firmly convinced that it is the best form of heating for this purpose, and he certainly had a grand lot of youngsters in the tank at the time of my visit.

AQUARIST'S Notebook



by
RAYMOND YATES

IT sometimes happens that a prize fish becomes rather badly knocked about as a result of netting, transit, panic or the undesirable attentions of other fish, so that it has badly torn fins and perhaps severe bruising with loss of scales. Where this happens it is wise to give the fish "hospital treatment" in a bare tank for a week or as long as is necessary for complete recovery to take place. All that is necessary is the addition of sea salt and acriflavine, this combination usually ensuring that no serious troubles develop. My method is to use about two teaspoonfuls of the salt to each gallon and to use aeration throughout. A solution of five grains of acriflavine to five fluid ounces of water is made up, and one teaspoonful of this solution is added to the aquarium water for each five gallons. A hospital tank should hold about five gallons to give the fish reasonable comfort. After four days a second dose of acriflavine can be added, but no more salt should be given. When all seems well it is advisable to remove half the tank water and refill with fresh, thus halving the salt content. This can be done twice on successive days before finally transferring the fish to its original tank. Where tissue has to be re-grown it would seem essential to feed live food to supply protein but, in fact, it makes no difference.

This method is most successful with angels and anabantids, where regeneration is quick. Barbs and characins are much slower at replacing torn or lost finnage. Mollies which go off colour or become covered with fungus on tail and pectorals respond immediately to this treatment, and it is a certain pick-up for harlequins which are moping at the surface. Large cichlids (apart from angels) need not be mollycoddled—leave them alone and they will recover without your help. This treatment is no use, however, for fish with hollow bellies, bloated bodies or crooked spines. Generally these fish are beyond help and are best disposed of. It is unwise to leave such fish in a community tank as when they die the other fish are sure to tear them to pieces and untold troubles can follow in such circumstances. Aquarists who keep the red-eyed red variety of the swordtail sometimes find the fins of these fish have a tendency to split, in particular, the tail. This is an inherent weakness with some of the young, and cannot be prevented. Specimens showing this trait should be passed over and not used for breeding purposes however good the colour.

When buying fish it is wise to assist the dealer by covering the jar with a cork or lid as each fish purchased is put in. Many tropicals when netted and transferred to confined quarters are great jumpers and many can, and will, jump out if given the opportunity. Such fish include most of the characins and livebearers, the danios and many barbs. Once a fish has jumped out the purchaser no longer wants it and the dealer has to return it to the tank where it may, or may not recover. Sometime fish jump out unseen and when the purchaser arrives home he finds himself short, with the result that he blames the dealer for giving him one fish less than he ordered and paid for. The dealer knows full well what has happened; after all, he knows his business and isn't there to make mistakes, but some customers are hard to convince and unpleasantness develops.

When carrying fish any distance it is wise to make sure that the water in a closed can does not exceed two-thirds of the capacity of the can. Even coldwater fish sent any distance in closed cans which are practically full will all be dead on arrival. It is always better to have a large can for small fish because this gives them more water space, more cushioning against shock, a more even temperature and more air space than the narrow confines of the more usual

Kilner or Thermos jar. Cans can be made to conserve heat by layering felt or cotton wool round them and then several thicknesses of newspaper, and if these are carried in a rubber-lined cheap shopping bag, or better still, a holdall or travelling grip, no severe loss of heat need be feared.

Tanks which have several cover lights can provide pleasant effects of light and shade by not having all the lamps on at once. This is easy to effect by plugging in a spent bulb where shade is required. Where the surface of the water is not visible to the viewer a good effect can be obtained by the use of the small circular cork table mats obtainable at chain stores. These float on the surface, move with the aeration stream and give the effect of water-lily shading. Care should be taken to use only those which have no painted design thereon which might prove injurious to the fish through the action of the water. Aquatic plants, of course, need all the light they can get and it is more helpful to them if the surface is clear of floating plants and other light obstructions such as is here suggested. Lighting effects for visitors are all very well so long as full light is provided for all other occasions. Red cellophane gives delightful tones but suffers from two disadvantages; it is damaged by heat from cover lamps and from water splashes or condensation.

Whilst at the National Aquarists Show in London in June, I came across one dealer who had surmounted the carrying jar problem for prospective customers in a rather novel way. This firm (Windmill Products—Tachbrook Tropicals) provides customers with what looks like an oiled silk bag, roughly 10 inches by 4 inches. This is made of Polythene and is very tough, although the set-up looks flimsy in the extreme. Holding over a pint of water, the bag is secured at the top with a rubber band and can then be carried home in a jacket pocket without risk, as the temperature remains steady if so protected. These bags can be used over and over again and the only damage is if the bag is punctured by a sharp instrument. Something of the same sort can be bought nowadays at chain stores, where they are sold as "lunch bags."

I have often mentioned in passing the risks of the fumes from paint killing aquarium fish. This is a very real danger and it can never be treated lightly. Recently I had a number of rooms decorated and this question came rather to the fore. Dealers have this trouble when their premises are being redecorated and it is partly overcome by the use of a quick-drying paint which dries out in a little over two or three hours. In the home this is not always possible and one worries over the effects of white lead paint, lacquer, varnish, distemper, emulsion paint, turpentine and the unpleasant fumes where old paint has had to be burnt off. The safest way is to do a little at a time, say burning off one day, painting the ceiling the next day, undercoatings the day after and final painting two days later. It is a good policy to cover the aquarium completely with a heavy cloth or blanket . . . as the fish are in total darkness they will be at rest and their metabolism will be at its lowest, which is what you want. Keep the aerator off until the paint has had at least six hours drying time, with the window (and

door) wide open. Each morning and evening remove any scum from the water surface with a sheet of newspaper and feed the fish sparingly. The removal of one or two gallons of tank water daily helps, particularly if this is done about six hours after the completion of the painting for that day. The replacement water acts as a tonic for the fish, replaces the missing aeration and diffuses any fumes which may have got into the tank. Some fish are more prone to paint poisoning than others . . . barbs and characins in particular, whereas cichlids and livebearers are more resistant.

On the whole it has been a bad year for shows and the impossible weather has not helped. I have not heard of any club insuring against bad weather but it is a point that may have to be considered in future. Many shows were most successful in the event as a show and from the social standpoint, but financially things were not so rosy. During the winter many clubs will ponder over all the pros and cons of their last show and wonder if it is worth while putting on another one in 1955. For those in doubt there is quite often an alternative method available which is worth consideration. It has become quite "the thing" nowadays for local councils to have a large show during the summer which includes such varied attractions as riding and jumping displays, P.T. displays, flower show, arts and crafts, youth organisation displays, livestock, poultry and cattle, cage birds, canine, cats, pigeons, rabbits and covies, brass bands, Morris dancing, stage turns, dancing, tradesmen, fairground, fireworks, and so on. These are usually run on a non-profit making basis and any loss is met by the local council. The organisers of these events are naturally only too keen to obtain further exhibitions which will be of interest to the public and an aquarium show proves quite an attraction. As a rule the tanks are installed in a large marquee with electricity laid on, and the effect is just as good as that at most indoor aquaria shows. As a rule all expenses are met by the council, who also provide free meals for the club stewards and pay the judges' fees.

It will be seen that this method enables a club to have a show without any financial worries, and the fact that no profit can be made is offset by the fact that a loss is impossible. No programmes are needed and furnished and/or individual fish can be shown. The public pay to see the whole show so they naturally get their money's worth and visit the aquarium section. Many new members can be obtained this way. The show can be a club show only, or open, but is usually a club show only. The arrangements for these shows differ, but the general idea follows much the same pattern. Some go-ahead clubs have taken advantage of the possibilities offered, among others, to mention only three, are Hendon, Leicester and Urmston (Manchester).

The tiger barb (*Barbus tetrazona*) is deservedly popular and is considered by most dealers to be one of the half dozen so-called "bread and butter fish" which keep the hobby going. Specimens offered for sale are generally rather small and they are rather touchy fish until they are about an inch in length. When very small they tend to suffer from a form of tail rot and this may be prevented by not feeding Infusoria in the early stages. Tail rot can appear in tiger barbs of any size if their tails get bitten and it will then spread through all the tiger barbs in the tank if ignored. This fish is almost always found to have died by suffocation when one looks into the tank in the morning, and the dead fish are often females which are probably killed by the males in the early light of dawn. They are fish which need well oxygenated water and soon suffocate if their tank water becomes polluted or if quinine (treatment for white spot) is used without constant aeration. They are known as fin nippers but will not indulge in this bad habit if fed frequently on live foods such as *Tubifex*, liver, raw meat, raw fish, roe, worms or *Daphnia*. They tend to overeat, and this

may have some connection with their liability to suffocation. They are quite good companions for the community tank (if fed live meaty foods) but will eat fry or young livebearers.

In their show schedule the Oxford, Reading and High Wycombe Aquarist Societies make a good point in one of their rules. This states that because of work in progress on electrical circuits it is requested that children should not accompany exhibitors on the day prior to the opening of the show, or remain in the hall after 8 p.m. on the closing night. This has much to recommend it. Show wiring is not always all it could be, and where children are concerned there is certainly a definite risk. Children also have no place in the desperate race against time which precedes every show or the aftermath of clearing up. This rule points this out in a rather neat manner.

Many aquarists see a good fighter on sale and, after purchase, put their new pet into a community tank regardless of the consequence which may ensue. In the first place it should be realised that fighters are usually highly coloured and have long, flowing fins. These practically ask to be bitten by any existing denizens of the community tank, who are naturally interested in any new arrival. It is unwise, therefore, to put the newcomer with tiger barbs, serpaes, black-lined and other tetras who like to use their teeth. At present there is an unnamed tetra available which looks rather like a large and more highly coloured feather fin, and this fish thoroughly enjoys the opportunity to do a little sly fin nipping. The hobbyist should also bear in mind what other fish he has which are near relatives of fighters as, like human relatives, they do not always get on very well. Paradise fish can be very difficult to keep with fighters. Then again fighters themselves can be very troublesome in worrying small fish like guppies, neons and the like. It is worth mentioning that where the tail of a fighter has been bitten it soon regenerates (although the scar shows somewhat) and anal fins, too, recover fairly quickly. If, however, the ventral fins are bitten, recovery is slow and sometimes these never grow again.

If you wish to purchase several adult fighters (for separate tanks) they can all be carried home in the same jar without danger of any fighting provided they are in complete darkness. If several fighters are kept in a tank together they rarely do any serious damage to each other although there is plenty of annoyance shown, and to make assurance doubly sure the inclusion of several full grown paradise fish does the trick. However, it is doubtful if this is a happy tank as there is a constant state of armed neutrality.

One of the most popular fish of the last year or so has been the dwarf cichlid (*Apistogramma ramirezi*). As recently as 1946 some of these fish changed hands for fantastic prices, but they are now fairly easy to obtain in the larger centres. Fishkeepers will find them splendid community fish which give little trouble and who do not worry other fish, as other dwarf cichlids do on occasion. Their owner should remember that they do not have a very long life and that they are exceptionally touchy as to temperature. It is absolutely essential that these fish are never transferred to water of a different temperature from that which they are in. Failure to watch this important point is the reason for so many losses with this fish during the first week following purchase.

Recently I noticed a rather clever way of marking tanks with the names of fish. The names were printed in Indian ink on to cellophane and fastened on to the front glass with Cellotape. The result was that there was nothing to distract the eye from the interior of the tank, as the entire label was transparent.



*A page for
the beginner
contributed
by
A. BOARDER*

THE preparation for the winter months must be the most important task at this time of the year, to ensure the safety of the fishes. Unless correct methods are used now there may be trouble in the early spring. Many losses experienced in April could have been avoided providing some extra care had been taken at the commencement of the winter. The feeding of all types of fishes should be carefully considered from now on. Where tropical fishes are those under consideration, because the temperature of their tanks is kept up in the seventies the fishes can keep feeding all through the winter. Not so with the coldwater fishes. These will gradually lose their appetites as the weather becomes colder, and in fact there is a distinct line where fishes of the types we keep begin to lose all interest in feeding. It is difficult to lay down an exact temperature line where all fishes stop feeding as so much depends on the particular species. As the goldfish types are the ones mostly kept I shall deal with those first.

Most goldfish will feed well as long as the temperature of the water is about or above 50°F., but when under this they are not so interested in food. They do occasionally eat a little when it is fairly cold but they take so much longer to digest the food that they require much less. For this reason it must be realised that it is not wise to treat all coldwater fishes in a similar manner. Those in an outdoor pond will be much colder than those kept in a tank in the house. In a living room with an occasional fire the tank may be between 50° and 60°F. most of the time, and also the water temperature may rise well above this range at times. This will mean that such tanks must receive more food for the fishes than if the same types were out of doors. If fishes are kept in warm water in the winter and do not get enough food they may become weakened and then will suffer for it in the spring.

For fishes in a living room it will not be necessary to withhold food for long but when food is offered only a very small portion should be given at a time. If this is readily taken more can be given, but make sure that too much is not put into the tank. There is no definite time of the year when goldfishes stop feeding, this is regulated almost entirely by the temperature of the water. Coldwater fishes can be kept feeding and growing all through the winter if necessary merely by slightly warming the water. Not that this is to be recommended. For mature fishes I consider that it is much better to keep them at a cold temperature throughout the winter, especially if they are needed for breeding the following year. They appear to spawn much better when they have had a long winter's rest than if they had been kept too warm and fairly active for that time.

If this season's fry are being dealt with it is possible to keep them growing all the winter as long as a temperature of about 55°F. can be maintained. It is not absolutely necessary to keep fry at this temperature. They will survive even if the temperature goes down to 36°F. as long as the water is pure, but it should be realised that they are not likely to grow under such treatment.

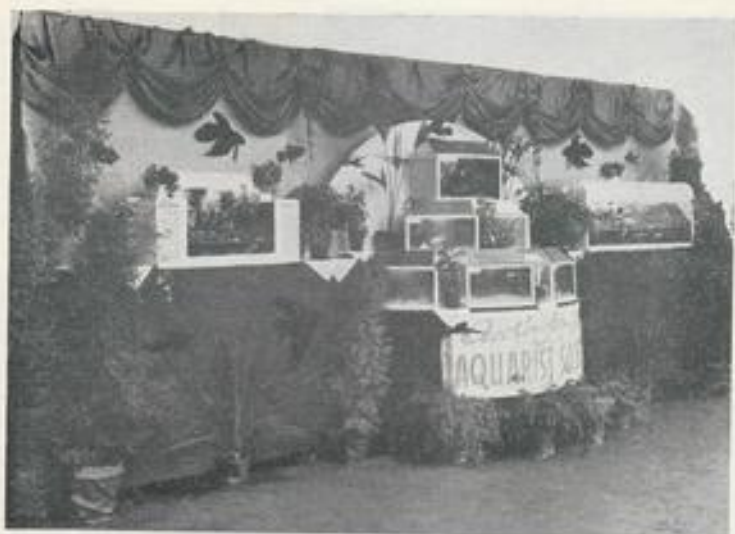
Most types of coldwater fishes kept in the pond can be tried with food occasionally during the winter. Unless it is an exceptional winter it will be found that there are many days when the temperature is well over 50°F., and if the fish in the pond are moving about well a little food can be given. I find that by far the safest plan is to offer a small garden worm at such times. If the fish are seen to take this fairly quickly a little more can be given so that each fish gets a small portion. Some warm spells last for a week or two in most winters, and it is then that the fish become more active; if they cannot find any food in the pond they are only using up nourishment that was stored up to take them through the winter. In consequence the spring will surely find them in a weakened condition, when they can fall to attacks of fungus and similar troubles.

Pond Cleaning

November should be the month for cleaning out the pond. All concrete ponds will benefit from this annual clean up but large natural type ponds may present rather a problem. Where the water plants have become well established in the base of the pond it is almost impossible to give such ponds a thorough clean out. If, however, some attention is not given the pond can gradually become so silted up with mud or mulm that the water gets more shallow every year and in time what was once a pond may well become a bog. When any pond is cleaned out in the late autumn it will be found to contain a considerable amount of waste matter in the form of dead leaves and mud and it can well be realised that if a similar amount is allowed to remain in the pond year after year, the depth of water must be lessened.

It is a fairly simple matter to clean out a small concrete pond, especially if the water plants have been set in large pots or containers. This cleansing is more important than may be realised, for many fish are lost in the winter not just because the pond freezes over, but because when this happens any foul gases caused by decaying vegetation and uneaten foods cannot escape into the atmosphere and the water is unable to get any fresh oxygen from the air. I do not think that it is the pressure alone which causes trouble to the fish when the water in the pond freezes rather thickly. I have had quite small fancy goldfish in tanks out of doors which have frozen up so thickly that when a small hole has been made in the ice the water has spurted up in a fountain for some seconds. The fry do not appear to have been harmed in any way by this pressure, but perhaps they gradually adapt themselves to the changed conditions.

I know that some pond keepers do not believe in opening part of a pond which has iced over but I have found that a safe method is to place a water can filled with boiling water on the ice, if rather thick, when a neat round hole will be made. The can does not fall in the water after this as the spout and handle prevent it. If an opening is not made in the ice during long periods of severe frost fish can die, especially if the water is not perfectly clear and pure.



A New Approach

At the one-day show held by the Northern Aquarium Societies last month, the entries to form a self-contained display on pages A. BOARDER reported a mental deviation from conventional

Accrington Aquarist Society's large stand included two long aquaria with above-water rocks and plants as scenery. The display took third prize for artistic stand display.

IT can be said at the outset that the Federation of Northern Aquarium Societies' experiment last month of letting clubs stage their tanks in their own style proved a great success. Nothing has been quite like this before, but if my guess is correct this show will not be the last of its kind. The spacious Exhibition Hall at Belle Vue, Manchester, was ideal for the purpose; the clubs erected their stands around the sides and three dealers occupied the central area.

Each club had to show a furnished tank and six pairs of fishes. They could have as much space as they wished, and were quite free to put on whatever type of stand they liked. The displays were on the whole most original in conception and were so novel that they would have been a great attraction anywhere. The preparation must have taken a long time, as some of the arrangements were very elaborate. What was very noticeable was the fact that these displays were not roughly assembled but were beautifully finished to the last detail. The pity was that the show was only for one day.

Belle Vue, Manchester's society, relied on a rather formal display with a range of tanks resembling the actual set-up in the Belle Vue Aquarium. Tanks were framed and over each tank a fine painting of a fish was displayed on the screen board. The base was artificial stone walling surmounted by foliage plants.

Dewsbury and District A.S. showed a well designed display of tanks, all small but about the only ones in the show with clear water. Over the top were shown some well executed overlays of fish, etc. Several fine sketches decorated the screen, including a mermaid, but the writing was not quite suitable.

The next display (**Wombwell A.S.**) was in the form of the interior of a sitting room, showing two tanks inset as pictures on the walls. I thought this idea the best one for intimating to the public the value of furnished aquaria for indoor decoration.

Blackpool and Fylde A.S. exhibited their tanks on pillars covered with wall paper of the willow pattern design, with Chinese type covers to the tanks. A formal display but quite attractive.

Accrington and District A.S. had a large stand about 20 feet long and 9 feet high. It was rather too elaborate, with many drapings. Besides the usual seven tanks required, this club had added two very large tanks which

were set up with above-water designs with rocks, plants and amphibians. One even had a working water wheel.

Burnley and District A.S. showed a tiered arrangement of tanks which was quite attractive, and their back-board was illuminated to represent a sunset.

Leeds and District A.S. had by far the most attractive and original display. It was a sunken galleon surrounded by all the under-water inhabitants, including sea horses. A netting was arranged with models of fishes thereon and many weeds growing up made it look very real. The galleon was complete to the guns and figurehead (sea-horse), whilst outside the ship was the treasure chest among the rocks. Tanks were let into the sides of the ship to represent fishes swimming about inside the galleon. I thought this a grand display but it was a pity that the poor set-up of the tanks let the side down badly.

Stretford and District A.S., were also very original in showing a Chinese pagoda arrangement with Chinese characters and hoods to the tanks. Tanks on Chinese design pedestals, together with ornate large vases of flowers, made a very fine show. Well carried out to the last detail.

Ashton under Lyme A.S. had a very novel idea. They



First award for artistic stand display went to Rochdale Aquarist Society (stand pictured on the right). The stand took over twelve hours to arrange and had a star-studded back and roof cloth of dark blue.

Bury Aquarist Society's arrangement (pictured top of page 169) won the second award for artistic stand display. It showed the aquaria as caves in a plant-covered rocky wall surrounding a small frontal pond.

ch to Showing

the Federation of Northern
each society staged its
and artistic display. On these
the results of this experi-
mental showing technique.



showed two large coloured maps, one of South America and one of Africa, with tanks of suitable fishes inset in their geographical positions. A very good effort.

Macclesfield A.S. exhibited a design which I liked very much indeed. A huge genie sat cross-legged with a furnished tank in his lap. On either side were six tanks arranged in the form of steps. All tanks were surrounded by artificial walling and in front was a lily pool with a fine cactus garden around it. A startling, very novel idea, well carried out.

Urmston and District A.S., had a more formal three-sided arrangement, with the tanks surrounded with many foliage plants.

Bury A.S. had a long, low design of rocks with the tanks as caves. A small pool in the front completed the picture; very well done but rather drab in colour.

Doncaster A.S. had one of the most original designs of the show, and the beautiful way in which it was carried out showed the master touch of an artist. It was in the form of a huge open book. The lettering, superbly done in old English illuminated style, described the commencement of fish-keeping and tanks were inset as illustrations. A lovely design and one I greatly admired.

Rochdale A.S. made a design in a large frame with dark blue material as a roof cloth studded with stars. The tanks were arranged rather formally on imitation stone walling with plants in between. The front had a small pool together with plants and fish, with a fountain playing. Looking back on the show the following stand out in

my mind:—the galleon design, the Chinese pagoda, the genie and garden, the open book and the maps. What a great pity that there were not more aquarists from the south to see this wonderful display! I cannot remember seeing one there; perhaps they thought it was for the Federated clubs only, but the show was open to the public all day. I feel sure that this new way of exhibiting would make a great attraction for any show in the south. I think that if only a suitable hall could be obtained a similar show could be put on in the London area. Many clubs who could not put up a show on their own could participate in such a venture.

Unfortunately for the dyed-in-the-wool aquarist the fish appeared to take rather a back seat; there were some fine specimens, but of course the elaborate designs of the stands overshadowed the actual fish. I don't know what was the matter with the water but nearly all the tanks were far from clear. The furnished tanks were not quite up to standard and it appeared that too much thought had been put into the show piece than to the setting up of the tanks. It would have been a good idea to have a rope in front of some of the displays to keep people from getting too near and spoiling the effect. As a suggestion, I recommend that when the next show is held a few classes are added for stated species of fishes so that the production of fine quality fish can be encouraged. Neglect of this point may be a mistake for the future of specialist breeders.

The Northern Federation is to be congratulated in thinking up such an attractive method of showing fishes and there is no doubt that we shall see more of this type of exhibition.

Results

Class 1. Tropical Furnished Aquaria: 1st, Bury & District A.S.; 2nd, Dewsbury & District A.S.; 3rd, Accrington & District A.S.

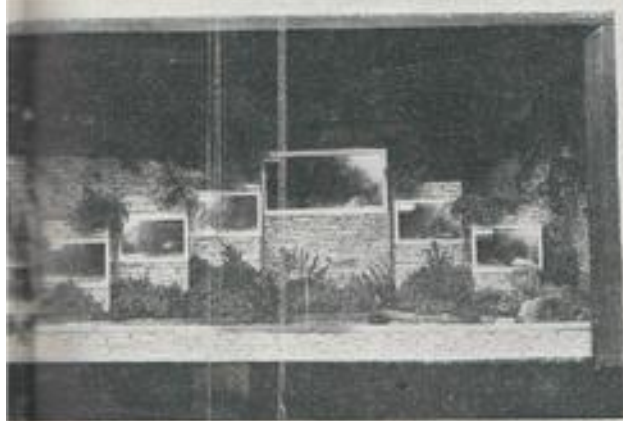
Class 1A. Coldwater Furnished Aquaria: no entry.

Class 2. Six pairs of any Tropical or Coldwater Fishes: 1st, Dewsbury & District A.S.; 2nd, Leeds & District A.S.; 3rd, Blackpool & Fylde A.S.

Class 3. Class 1 or Class 1A judged on artistic merit of staging as complete display: 1st, Bury & District A.S.; 2nd, Dewsbury & District A.S.; 3rd, Blackpool & Fylde A.S.

Class 4. Artistic Stand Display: 1st, Rochdale & District A.S.; 2nd, Bury & District A.S.; 3rd, Accrington & District A.S.

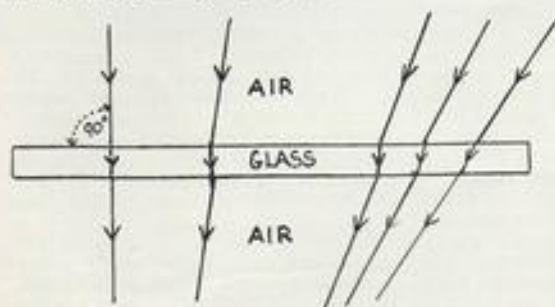
Judges: Messrs. R. M. Dixon (Belle Vue), W. L. Mandeville (Birmingham), C. D. Roe (Shirley), W. C. Webley (Nottingham), Dr. Archibald Young (Glasgow).



Microscopy for the Aquarist-2 by C. E. C. COLE

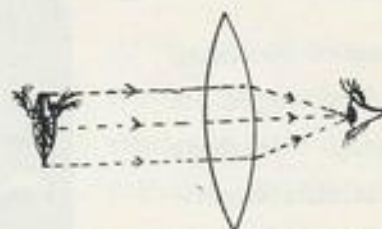
WERE it not for the behaviour of light rays, beams, pencils, or waves, the whole science of microscopy would be impossible. So let us talk a little about light. Light rays are generated by what is called a luminous source. There are many of these, of course, but best known and most obvious of all is the sun.

From any luminous source the rays proceed in straight lines until they encounter an obstacle. Every ray carries with it on its travels an image of its point of origin. Earth and its enveloping atmosphere is an obstacle to some of the rays from the sun. Before meeting the atmospheric belt those rays have covered the best part of 93,000,000 miles. Now, when light rays meet an obstacle they react in different ways according to the nature and structure of that obstacle. They may pass straight through it, or be absorbed either wholly or partially—they may be dispersed or concentrated, or finally they may be reflected or diverted through a great many varying angles.



How glass affects light rays passing through it

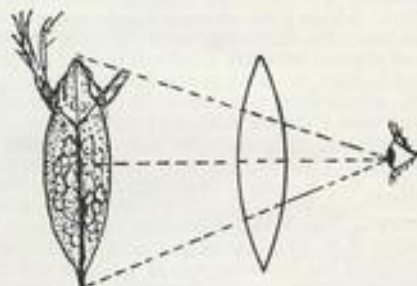
In microscopy we are primarily concerned with the effects glass has upon the passage of light rays. As aquarists we need to know also what influence water exerts, so we will confine our attention to these two substances. Firstly then, all light rays meeting a clear glass surface at exactly right angles to it will pass straight into its thickness. If both sides of the glass are parallel the rays will emerge and continue as though the glass had never existed, apart



The eye is placed at the point where rays of light from the object converge after passing through the lens

from a small percentage absorbed in the thickness of the glass, and another small proportion which were thrown back at the point of contact.

Rays meeting the same glass at angles other than right angles (up to a maximum angle) will still penetrate and pass through, but while they are in the glass their line of travel

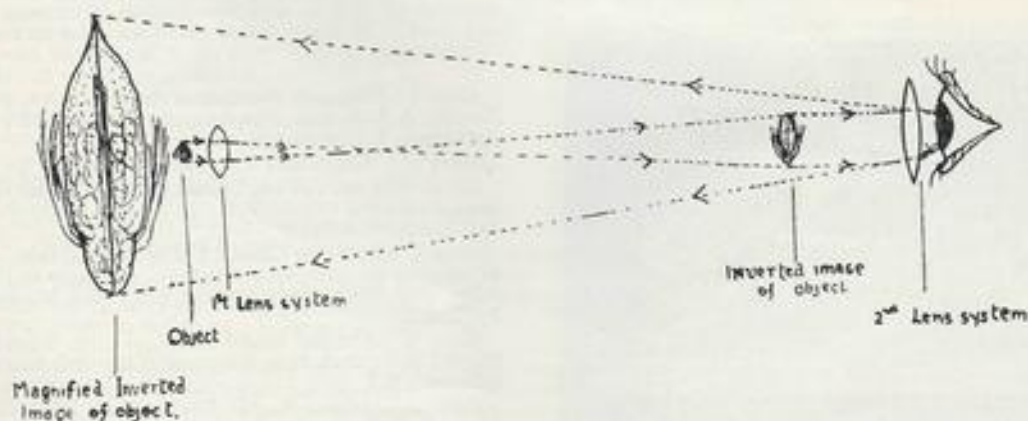


In a single lens magnifying system the object appears to the eye as shown above

will change direction a little. A course parallel to the original will be assumed upon emergence once more into air.

If one or both surfaces of the glass are domed, only the rays which pass through the centre of the thickest part

(Please turn to page 173)



Magnification is accomplished in the compound microscope by this lens system

OUR EXPERTS' ANSWERS TO READERS' QUERIES

I am a beginner in tropical fishkeeping and have a 15 gallon tank containing a collection of small fishes including among them zebra fish, guppies and barbs. I have been told that guppies are very prolific breeders, but up till now I have not seen any fry. Do you think they have been eaten by the other fishes?

Unless your aquarium is thickly planted along the back and two ends, we do not think you will be able to breed guppies successfully in your aquarium. Active species like zebra fish and barbs snap them up the moment they are born. To save the young of livebearers, it is advisable to set aside a tank for breeding purposes. Plant it thickly on the bottom, and see that floating vegetation mats the surface to a depth of at least half an inch. When the fry are born, most of them will escape into the tangled mass of vegetation and keep out of sight of the parent fish. Even so, it is best to remove the parent fish from the breeding tank immediately after the fry have been born. The fry of livebearers should be fed on dust-fine dried food, micro worms and the yolk of hard-boiled egg. A mere crumb of this, rubbed between the fingers, is enough at a time for a score or more of livebearer fry.

Can you please tell me whether small American terrapins will live in my tropical aquarium?

Baby terrapins will live in the tropical aquarium, but as they increase in size they will prove a source of danger to large or small fishes. Quite small terrapins will kill and eat guppies and the like. Larger fishes such as gouramis will have their fins ripped to pieces. If you can provide a small heated aquarium for the terrapins they will be more comfortable, and your fishes will not run the risk of being chewed to pieces. An aquarium for terrapins should be stood in a sunny position, or have a bright electric light immediately overhead. The water should be shallow, the bottom should be kept scrupulously clean, and some flat-topped stones should be placed on it for the terrapins to use as an island. They do not like to be in the water all the time. Feed them on finely chopped fresh herring, and some lean raw meat or washed liver.

I have a tropical tank measuring 24 ins. by 12 ins. by 12 ins. It has been giving me a lot of trouble one way and the other, so last weekend I netted the fish, emptied the water away, rinsed the sand under a running tap, and washed the sediment off the plants. Then I set up the tank afresh. A few hours after putting the fish in the aquarium again, all of them were gasping at the surface of the water, and though I provided artificial aeration, several of the fishes have died. Can you offer any explanation for the casualties?

You changed the environment of the fish too quickly. This would not do them any good. It would have been better if you had strained some of the original water—the water they were accustomed to—through a piece of muslin and emptied this back into the clean tank, topping up with boiled water left to cool down to normal aquarium temperature. We think you should also check up on such things as rockwork, the health of the plants, and so on. Plants with decaying roots will soon poison the water. Rockwork formed of lumps of marble, limestone, and broken brick soon cause trouble by making the water too alkaline. We hope you did not paint the aquarium frame and put the fishes back before the tank had been given a good soaking? Freshly painted surfaces in contact with water soon upset fish and lead to serious trouble.

I have fitted up an aquarium in a lobby which gets a good light. The temperature keeps at about 65° F. all the year round, rising by a few degrees when the sun shines. I have been keeping guppies in this tank with considerable success. Can you please give me the names of other fishes that would live in this aquarium without a tificial heat?

The undermentioned fishes should do well at ordinary living room temperature, though we advise you to keep the

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

water at about 72° F. for a week or two before permitting it to sink to 65° F. or thereabouts, for most dealers keep their fishes in the high seventies, and a sudden change from a high temperature to a low one would not do the fish any good: white cloud mountain minnows, *Corydoras paleatus*, *C. aeneus*, Australian rainbow fish, the medaka (*Oryzias latipes*), and the half-striped barbel. There are a few other, but unless you are sure the temperature will not fall below 65° F. in the winter, it is unwise to carry such experiments too far.

Is it possible to make paraffin heaters suitable for placing under metal screened aquaria?

If you can make a good soldered joint, and possess a pair of sharp metal cutters, it is quite easy to make oil-heaters for the tropical aquarium. All you need do is to obtain some screw-in type burners—incubator lamp burners, for example—and after cutting round holes to take them in a leakproof flat tin, solder the burners into position, and make a hole in the top of the tin, covered by a movable disc of metal, to introduce the paraffin.

I should like to breed the blue gourami. Can you tell me the best way to go about it?

You will need to keep the fish in clean, clear, shallow water with plenty of fine-foliaged plant life growing close to the top of the water. Keep the aquarium well covered to exclude draughts blowing across the surface. And keep the top of the water free from scum by drawing a sheet of paper across it before the bubble nest has been built, and after the fry have hatched out. It is advisable to remove the female fish after spawning is over, and the male fish directly the babies are free-swimming. Feed the fry on fresh cultures of Infusoria, and during the second week after hatching out, get them on to micro worms and dust-fine dried food. Keep the temperature constant, though an occasional rise in temperature at the surface of the water will not do them any harm.



Photo:

Laurence E. Perkins

Blue gourami (*Trichogaster trichopterus*)

COLDWATER FISHKEEPING QUERIES *answered by* A. BOARDER

I have a goldfish which during the last month has developed a large swelling of the body just below the gills. The scales appear to protrude but the fish eats all right and the dorsal fin is held erect. What do you think is the matter?

It is always very difficult to say what is the matter with a fish without having seen it or knowing more about the trouble. The swelling may just be that the fish is a female and has developed many eggs which cause the swelling. I do not like the sound of the protruding scales, however, as this may mean that the fish has a form of dropsy. If the latter is the case I do not think that you are likely to cure the fish. This disease is a little understood one as far as fish are concerned, and although I could suggest reputed cures I do not think that they are likely to ensure that the fish would be quite healthy after. I think that where fish develop such complaints they are better destroyed in case there may be a spread of the disease among other fishes. In any case I am not in favour of patching up any fishes for the purpose of breeding from them. Any fish with an inherent weakness would soon be killed in natural waters, which prevents unhealthy animals breeding; in other words, it is nature's way of ensuring the survival of the fittest. It is as well that we try to copy nature as much as possible.

In my box for breeding white worms I often find wood lice and other creatures. How can I keep them out?

Some of these intruders can be attracted by the food which you have placed in the box. I find the best method is to place a piece of glass over the box which must fit closely. Unless the top of the box is quite level there are bound to be gaps where the pests can enter. One which can be troublesome is the centipede, as this will eat many of the white worms. As a rule centipedes run out of the box when disturbed. If a glass cover is used see that it is well shaded, as the enchytrae do not like too much light.

I have two goldfish in a glass bowl and they have spawned. I lost most of the eggs as they were eaten. However they have now spawned again and I have managed to save a few of the eggs. A couple appear to have two eyes in them but the others are white. How can I tell if the eggs are good and how should I feed the young ones?

You would have little chance of rearing goldfish fry in a bowl with the parents. If most of the eggs were not eaten then the fry would be. Fertile eggs remain fairly clear until the small embryo can be seen inside. This usually appears after two or three days as two tiny dots, the eyes, and a dark line. The infertile eggs will turn white and grow a fungus-like growth around them. The rearing and feeding of fry would take too long to describe in detail here but it has already been dealt with in "Stepping Stones for Beginners" in *The Aquarist*, in earlier issues this year. Why not get my booklet, *Coldwater Fishkeeping*? All you require to know is there described in detail.

What are the chances of fish breeding in a tank 25 feet by 3 feet by 2 feet? This is well planted and stocked with about thirty fish up to eight inches—goldfish, shubunkins and bitterling. In a tank of this size it would not be possible to remove the parent fish after spawning.

Your chances of breeding and rearing fish in the tank are very small. Some would probably spawn, but if the eggs were not eaten the fry would be when they hatched out. The bitterling would only breed if there were some healthy mussels in the tank. However, it is quite possible to breed some youngsters if you take certain precautions. Keep a fairly large bunch of fine-leaved water plants floating on the surface of the water. If the goldfish or shubunkins spawn they will do so on this bunch. Once you can see some eggs you can remove the bunch with some eggs to a spare container for hatching in safety. Even an old toilet basin would do for hatching and the eggs would soon hatch if the



Photo:

Laurence E. Perkins

tank could be placed where it gets some warmth; 70° F. is an ideal temperature for hatching.

Is there any water plant which goldfish prefer to lay their eggs on?

I do not know their individual likes and dislikes but I find that the finest medium for the retention of eggs is hornwort (*Ceratophyllum demersum*). The accompanying photograph shows a small bunch I have just lifted from my pond. I think this weed is the very best to use for several reasons, and I can hardly ever get enough when my fish are very busy spawning. In the first place it has no roots and so a floating bunch can be made which, when eggs have been deposited on it, can be transferred to a hatching tank with the knowledge that it is not likely to die and decay because it has been moved. Its fine leaves also provide ample shelter for eggs and later for the fry. Hornwort usually shrinks up to almost a small hard horn for the winter but if kept out of doors it will soon start to grow when spring arrives.

PARADISE FISH

Up until last year I was breeding many paradise fish under coldwater conditions and could seldom find anyone to take my excess stock. Since I have been without these fishes I have received numerous requests for them! Will any aquarists who have kept some of my strain of hardy paradise fish and who have spare fishes please write to me c/o *The Aquarist* to help to satisfy the present demand?—

A. BOARDER.

In the Water Garden in NOVEMBER *by Astilbes*

CONTINUE to remove as many dead leaves as possible from the water lilies and cut down any dead foliage from such plants as rushes and flags. It is imperative to see that the water in the pond keeps a good colour. If the water takes on a milky hue and begins to smell it is possible that there is too much decaying matter in the pond and it may need cleaning out. Towards the end of the month there will be the risk of sharp frosts and although in a fairly large pond there may be little danger of the pond actually freezing over, it is well to be on the safe side. The purer the water at the commencement of winter the better for the plants and also for any fish in the pond.

The great majority of water plants will not be harmed by any frosts which may occur as long as the crowns of the plants are well under water. If the water level is allowed to get too low, so that the crowns of such plants as water lilies are exposed, they might be severely damaged by such frosts. See that the pond is topped up if there is any wastage, making sure that all plants have sufficient covering. Should a severe frost cause cracks in your pond, and water escapes, it should be made up as soon as possible. If the leak is a bad one and cannot be repaired quickly it would be a good plan to cover any partially exposed plant crowns with a dressing of bracken or similar substance to protect from frost.

Formal ponds with straight sides are liable to crack badly if too much ice forms on them, but I am sure that the same can happen to those ponds with graduated sides. Once a pond freezes over and the ice thickens it is sure to create a great pressure on the sides of the pond whatever its shape. It is often said that as long as the sides of a pond slope away gradually, no pressure is likely from the ice. I do not think this is so; once a certain thickness of ice has formed there can be no sliding upwards as more ice forms, and pressure will surely be exerted on the sides of the pond. If a pond is rather small and the risk of freezing up is great it would be advisable to insert a small heater in the pond so that at least one part of the pond could be kept free from ice.

Notes for the Future

If you have been taking notes respecting the growth or failure of your pond plants it may be a good idea to sort the results of your findings in an endeavour to see if you can do anything in future to correct matters. During the height of the growing season you may have noticed that one or more of the plants had become so rampant that it had taken too much water space. Such plants can gradually crowd out the more delicate plants if left unchecked. It may be a good plan to remove a part of these strong-growing plants when the actual growing season has stopped and not to wait until the spring. If the water level is lowered, the removal of some of the extra growth will be fairly easy. You will probably find that if the removal of this unwanted growth is done now it will give the other occupants of the pond a much better start in the spring.

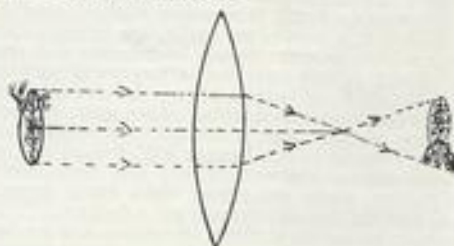
If any pond-keepers have been trying the more tender or

tropical water lilies in an outdoor pond it is essential that if the pond cannot be warmed in any way during the winter, such species should be removed from the pond and wintered under cover. If taken from the pond and kept in an airy frost-free place the leaves and roots will die off and can then be removed. The tubers can be stored in moist sand or peat, where they will remain safe in a temperature of about 50° to 55° F. They could then be started in warmth in the late spring so that they may be re-planted in the open sheltered pond. Many species of these tender water lilies could be grown in a pond in a warm position, especially if the temperature of the water does not fall below about 65° F. Between the months of May and September, many ponds can maintain this temperature if not too small. Once a fair sized pond warms up, the water may hold a good amount of heat for weeks on end, but much will depend on the position of the pond not only in the garden but also geographically. In the southern counties of England many of the more tender water lilies could be grown in an open pond as long as they were removed to safety for the winter.

Microscopy for the Aquarist

(continued from page 170)

will go straight through without any deviation. All rays parallel to the axis will change course and converge upon each other. In section, the cylinder of light on one side becomes a cone of light upon the further side of the lens. The point where all the rays meet is the main focal point, known as the principal focus.



How an inverted image of an object is formed in a magnifying system

Now let us take an object—say a *Daphnia*—and place it at one side of the lens. Light rays from every point of the *Daphnia* (reflected light rays) will pass through the lens and converge as explained above. If we place our eye at this point the light rays will enter our eye and produce an image of the *Daphnia* upon our retina. But we see the *Daphnia* larger than it really is, because to our eye it is as though the rays travel straight through the lens, making the object the base of a much larger cone—see diagram. This image is the same way up as the original.

In a compound microscope our eye cannot be placed at the crossing of the rays from the object, so these continue and produce an image which is inverted. The second lens system treats this image as the object, and the result is a still larger image, which remains inverted. Next month I shall commence to discuss the various parts of the microscope.

Post-Mortem Examination of Fishes:

W. Harold Cotton, F.R.M.S., F.Z.S., 39, Brook Lane, King's Heath, Birmingham, 14. (Phone: Highbury 1693)

Specimens should be sent direct to Mr. Cotton with full particulars of circumstances, and a fee of 3s.

It is important that the following method of packing fish be adopted:—Wrap fish, very wet, and loosely in grease proof paper and then in wet cloth. Re-wrap in grease proof or wax paper and pack around with cotton wool in tin box. Despatch as soon as possible after death, with brief history of aquarium or pond conditions.

Quinine or Mercurochrome?

IN a recent issue of *The Aquarist* Mr. Skinner of Wakefield asked for some amplification of my views on the relative merits of quinine and mercurochrome for white spot. Numerous drugs have been tried out on this disease at varying strengths and with varying reactions. In the main, only quinine and mercurochrome have proved to be of recognised value in eliminating this pest although isolated successes with other drugs have been recorded. For all practical purposes these other drugs can be discounted when recommending a cure to the average aquarist, whose main concern is the rapid elimination of the disease in his tanks. Let us therefore consider the major advantages and disadvantages of these two remedies.

Quinine is obtainable either as sulphate or hydrochloride; the former is stocked by most chemists but is difficult to dissolve in water and for this reason most aquarists prefer the hydrochloride, which offers no trouble, but which is rarely stocked by small chemist's shops as there is little commercial demand. Both salts of quinine are expensive (half an ounce will cost about five shillings) and two or more doses are usually required where a complete cure is expected. Quinine normally does not show in the tank water and it does not affect plants to any extent except *Vallisneria*, which dies. Where quinine treatment is used aeration is essential (preferably for 24 hours a day) and it seems to have a bad effect on some kinds of fish, mainly barbs in general and *Barbus tetrazona* in particular.

Fish which die off following the use of quinine usually do so because of lack of aeration, plus, in some cases, increased temperature brought about by the aquarist owner too rigidly following book instructions. Quinine is used for other purposes, and it is a well-known fact that it is harmful to male sperms, so the treatment is considered risky by some from the standpoint that the fish may later prove infertile. Quinine treatment must be carried out in a darkened tank and at least a second dosage given two or three days after the first. If treatment is given at the onset of white spot it is usually successful, but in my opinion, not very reliable once the disease has become well established. Many dealers have had a tragic and misplaced belief in the ability of quinine to cure the disease when it has taken a firm hold in their tanks. Then again, it depends on the type of fish. Fish which are very resistant or at least fairly resistant to this parasite will often recover with quinine treatment, but nothing will save head and tail lights, pulcher, ulreys and similar tetras except mercurochrome, once the disease has really got a firm hold.

Quantities to use are a matter of opinion and are based on trial and error. Reference to books on the subject will indicate that few authorities agree. However, the accepted range is between one and four grains per gallon. For my own part I prefer the lower concentrations as being safer. However, nowadays I cannot see any point in recommending quinine at all when mercurochrome is one hundred per cent. successful at infinitesimal cost. Four ounces (fluid) of a 2 per cent. solution cost only eightpence or so and this quantity will last a very long time.

Mercurochrome is quite harmless to the fish when used in the correct strength and does not damage the tougher plants. However, it is rather hard on *Cabomba*, *Hygrophila* and *Aponogeton*. Another disadvantage is the discoloration of the tank water, which turns a miserable shade of dark red tinged with green, the plants look lifeless and the charm of the aquarium is gone. After a week some of the tank water can be siphoned off and replaced with fresh but it takes quite a time to remove traces of the colour of the mercurochrome. This is a disadvantage but is a small price to pay for the certainty of a cure. Many yarns have been told in the past of the bad effects of this drug, which

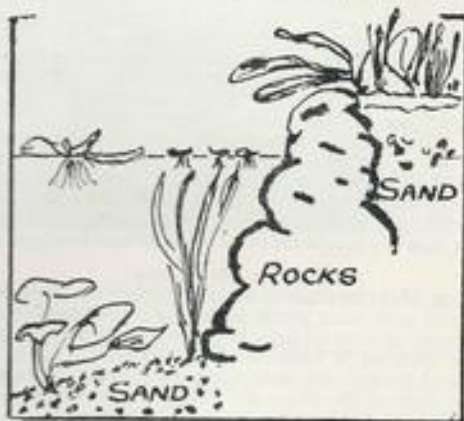
was supposed to have a delayed action effect on the fish, but these can be discounted with other "fishy" tales. Of course the right amount must be used and if this is exceeded trouble may ensue.

What is the right amount? The two leading authorities in aquarium literature differ widely in this, one suggests 4 drops per gallon and the other up to 16 drops per gallon of a 2 per cent. solution. For my own part I have always found 2 drops per gallon most effective, the fish being untroubled in any way. The white spots do not disappear immediately but no new ones form. I prefer to wait a full week before siphoning off any of the discoloured water. It is a wise precaution to have a supply of mercurochrome available as this is not always easy to obtain, and speedy treatment in the early stages is more than half the battle. Fish which have been severely attacked by white spot often die from a resulting general debility or the follow-up attack of fungus.

In conclusion, fishkeepers should realise that very little is known by even the experts in the hobby about fish diseases. We can probably deal with about five per cent. of the troubles which affect our finny pets; for the rest we are completely in the dark.

Raymond Yates

A Natural Background



Sectional view through aquarium with background

AN effective and natural-looking background to an aquarium can be achieved by combining the use of bog and marginal plants together with the underwater species. A tank size of at least 36 ins. by 18 ins. by 18 ins. is recommended, as otherwise swimming space for the fishes will be severely restricted. The sketch gives a general idea of the set-up. Half-an-inch of sterilised soil will encourage the growth of the small bog plants and mosses, and the water depth should be about two-thirds that of the tank so that they have sufficient growing space. The use of a glass cover is advisable, as otherwise the heat from the electric lighting will wither the plants. Floating plants and rushes can be shown to advantage in a tank furnished in this manner. Those readers who live in and around London can see an excellent example of this type of set-up in the Insect House at the London Zoo, where live specimens of various water beetles are displayed.

R.W.

OUR READERS

Write

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

Dangerous Mites

OVER a period of some 12 months I have lost fishes by deaths without apparent causes. Every usual fault was checked, and the casualties were written off as due to our old enemies the bacteria arriving with *Tubifex*. But a fellow aquarist who had a similar experience urged me to send specimens for post mortem examination.

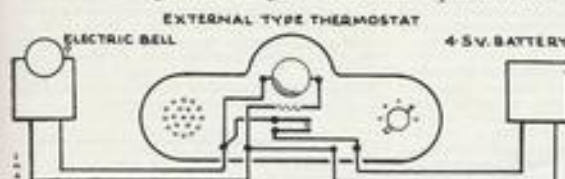
The report on the dead fish stated that death was due to the presence of *Acara farina* mite in the intestines. Examination of the dried food used revealed large quantities of this mite visible to the naked eye. A further, independent case of mysterious losses was quickly traced to the same well-advertised brand of food. Most dried food has a high content of wheat germ—perfect culture medium for the *farina* mite. If all dried food is examined under a magnifying glass before use we may have less mysterious deaths.

If life is detected in a sample of food in this way please do not think you have obtained a cheap source of live food as I did (to a Yorkshireman it is "sommel for nowt"). It would be interesting to learn why the *Acara farina* mite is fatal.

R. GILL, Bradford, Yorks.

Heating Failure

I OFFER the following suggestion for prevention of death to tropical fishes from water chilling. A thermostat is fitted to the aquarium and wired up with a battery and bell as shown in the diagram. This shows an externally-fitting type, but the immersion type can be used equally well. In the diagram the variable control is on the right; the neon indicator at the top does not of course, operate from a battery. The temperature control is adjusted so that when the tank water is at 70°F the bell is set ringing, giving audible warning of the danger. The usual aquarium ther-



mostat must be adjusted to operate the heater above this temperature at which the warning thermostat operates.

This system will not give warning of heater failure in any additional tanks controlled by the heater thermostat. But in view of the fact that it will guard against power supply or thermostat failure perhaps some manufacturer will incorporate a supplementary control in his product to provide this warning facility and so prevent losses of valuable fishes.

F. E. APLIN,
New Malden, Surrey.

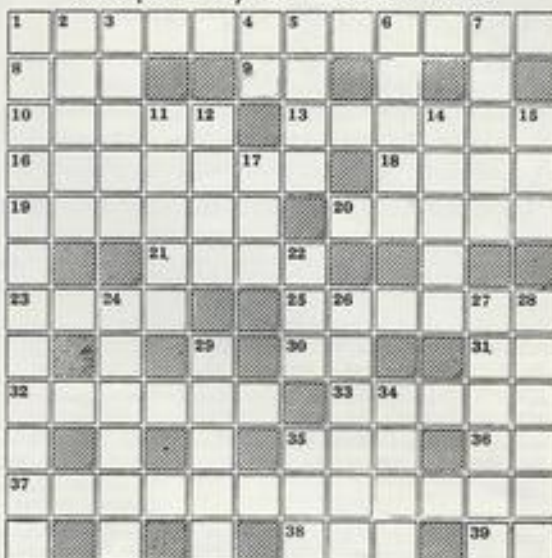
Lizard Breeding

I HAVE been trying to breed Spanish lizards and *Anolis carolinensis* and have got to the stage of getting eggs—eight from the Spanish lizards and three from the others. I removed the eggs the first time to a separate container and kept them buried in gravel and covered with damp moss at a temperature of about 75-80°F, but the eggs just dried up and went mouldy. The next time I left the eggs as deposited and exactly the same thing happened. I wonder if any of your readers could please advise me of the proper procedure to ensure hatching of the eggs.

A. R. BELL, Holywood, Co. Down.

The AQUARIST Crossword

Compiled by J. LAUGHLAND



CLUES ACROSS

- 1 *Atelania tuberculata* (7, 5)
- 2 Moorish idol gives this response usual at altar (1, 2)
- 3 The ego of the medaka (2)
- 4 Fast stroke of human is slow motion of snail (5)
- 5 Australian marsupial makes mat bow (6)
- 6 Rich set are most wealthy when upset (7)
- 7 This stick is a child's jumping toy (4)
- 8 This gnostic was, in a way, a snake fan (6)
- 9 Hurl (5)
- 10 This fish is *Asteroleia*, an Echinoderm (4)
- 11 The vitellus of a seed (4)
- 12 Genus of the oyster family (6)
- 13 Learned divine is also an alcoholic (1, 1)
- 14 From the sign (1, 1)
- 15 Sucking fish of serpent (6)
- 16 General term for tall marsh grasses (5)
- 17 In fishes this organ is more useful for maintaining balance than as an aid to hearing (3)
- 18 That is in a diet deficient in 30 across (1, 1)
- 19 Pipe fishes; they sound sharp (6, 6)
- 20 High explosive (1, 1, 1)

CLUES DOWN

- 1 Order of toothed carps, or Cyprinodonts (12)
- 2 Colloquially an insignificant fellow; to the aquarist, evidence of a leak (1, 4)
- 3 British fish found in a loch disturbed (5)
- 4 Morning (1, 1)
- 5 Est (4)
- 6 The pupa of an insect (5)
- 7 The perfect stage of an insect (5)
- 8 To make a swift motion (5)
- 9 Native of Latvia (4)
- 10 Drill or 1 across? (5)
- 11 This path is an angler's haunt (3)
- 12 The biggest pond of the lot (3)
- 13 This pole may catch a perch (3)
- 14 A mollusc, flaccid to begin with, a dear at the end, and a real sticker (6)
- 15 In breeding, a line. May be filter (6)
- 16 Whirlpools (6)
- 17 Estimate (6)
- 18 Brilliant start for a seafish (5)
- 19 Before disturbed rest (4)
- 20 Newt (3)

PICK YOUR ANSWER

1. *Hyphessobrycon eos* (the dawn tetra) was named by: (a) Cope. (b) Durbin. (c) Ellis. (d) Gill.
2. *Acanthophtalmus leohli* (the leopard eel) has: (a) 2 barbels. (b) 4 barbels. (c) 6 barbels. (d) 8 barbels.
3. *Rivulus cylindraceus* is popularly known as: (a) Green Rivulus. (b) Herring-bone Rivulus. (c) Ocellated Rivulus. (d) Slender Rivulus.
4. The goldfish known to the Japanese as the Watonai was obtained by crossing a common goldfish with a: (a) Lionhead. (b) Shubunkin. (c) Telescope. (d) Veiltail.
5. *Pistia stratiotes* (the water lettuce) was introduced into England in: (a) 1803. (b) 1843. (c) 1883. (d) 1923.
6. The flowers of *Cardamine rotundifolia* are: (a) Blue. (b) Red. (c) White. (d) Yellow.

(Solutions on page 176)

News

from AQUARISTS' SOCIETIES

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

A copy of *The Aquarist's Directory of Aquarium Societies* will be sent free to any reader on receipt of a stamped, self-addressed envelope.

VISITORS and prospective members are welcomed at the meetings of the **Chingford and District Amateur Aquarist Society** on the first Tuesday and third Friday each month at the County High School, Nevin Drive, Chingford, London E.4. Election of a new secretary for the society is announced elsewhere on this page.

HUMAN eyes are trained to move from left to right when viewing anything, and this fact should be remembered when setting up a decorative aquarium, said Mr. W. L. Mandeville, addressing the **Coventry Pool and Aquarium Society**. During his talk on furnished aquaria Mr. Mandeville demonstrated three pictures which by their design gave the effect of great depth.

ANNOUNCEMENT is made of the voluntary retirement of Messrs. G. S. O. Saunders and A. Hancock from the secretaryship of **Gropdion Aquarists' Society**, after nine years of continuous office. Also retiring after a similar period as president of the society is Mrs. Wood Roberts, who has attended in office at every society meeting, despite many other commitments.

A TABLE show for barbs (including carps and minnows) was held by the **Derwent Aquarist Club** following a talk given by Mr. W. J. Christian of Nottingham on the fine arts of tropical fish keeping and breeding. Two committee members judged the fishes and gave detailed criticisms of the exhibits for the benefit of members.

FIVE clubs from Northern Ireland were represented at the first show put on by the **Dublin Society of Aquarists**, and the show attracted 173 entries.

THE Autumn Assembly of the **Grimsby and Cleethorpes Aquarists' Society** commenced with a lecture on the balanced aquarium given by Mr. A. Fraser-Brunner. A series of lantern slides showing various fishes and the natural waters they inhabited was shown by the speaker. Several members of the local Royal Air Force



Photo: "Kent Messenger"

Visitors to the **Medway A. S. Show** surround secretary Mr. R. Brittain as he points out fishes in the miniature pool

station attended the meeting, together with invited parties of aquarists from Lincoln and Gainsborough. Afterwards all present inspected the society's aquarium on Cleethorpes Promenade.

IT is hoped that a show of aquaria will be made by the **Leicester Aquarist Society** at the Chrysanthemum Show in Granby Hall, Leicester from 11th to 15th of this month. Recent talks enjoyed by the society have been given by Mr. W. R. Burwell and Capt. L. C. Betts. At this month's meeting a film show is to be given, with films selected for the society by the secretary of the local Visual Aids Society.

MONTHLY meetings of the **Llantwit Major Aquarist Society** are now held on the second Wednesday at the Llantwit Major Youth Club. Secretary of the society is Mr. R. S. Wigg, 17, Ham Lane South, Llantwit Major, Glamorgan.

AT the recent annual general meeting of the **Medway Aquarist Society** it was announced that their first annual show this year increased the society's membership by 50 per cent. President of the society is Sir Garrard Tyrwhitt-Drake, owner of Maidstone Zoo.

FANCY goldfish, mostly bred and reared by members, were shown at a table show held by the **Norwich Fishkeepers' Circle** last month. Afterwards a short talk was given by the exhibitors Messrs. C. Faux, A. Husor, W. Bayley and H. Roper. Members of the junior section visited the Zoological Gardens for their annual outing in September.

MEETINGS of the recently formed **Rhondda Aquarist Society** are now held on the third Tuesday of each month, 7.30 p.m., at the Prince of Wales Hotel, Treorchy, Rhondda, S. Wales.

WITH the first award for the best artistic stand display at the P.N.A.S. Autumn Assembly last month **Rechdale and District Aquarist Society** members now have over 160 awards gained in the past 12 months, including more than 60 valuable trophies.

WINNER of the Nickolls Challenge Cup for home aquaria at the **Southern Amateur Aquarist** (Brighton) annual competition was Mr. F. Braby. In the ladies' section of the competition Mrs. S. Ede took first place.

AT the exhibition of aquaria staged by the **Winchester City Aquarists** this year in aid of the British Empire Cancer Campaign and the Winchester and District Voluntary Tuberculosis After-care Committee the sum of £35 11s. was collected and shared between the two "good causes". Star attraction at the show was a 35-gallon marine aquarium containing many types of anemones, four hermit crabs, a shore crab, a spider crab, rock gobies, prawns and shrimps.

New Societies

Greenford Aquarists' Society Secretary: Mr. G. Muir, 112, Mansell Road, Greenford, Middlesex. Meetings: Every Tuesday, 8 p.m., at the White Hart Hotel, Greenford Road, Greenford, Middlesex.



At the opening of the **Danish Aquarists' Show** in Copenhagen, Dr. Anton Bruun (right), the noted zoologist and leader of the *Galatea* expedition, is seen with members of the committee welcoming a visitor from England—Mr. Kenneth Hayes (director of *Thameside Tropicals*)

Horbury and District Aquarists' Society Secretary: Mr. G. Outhwaite, 22, Co-operative Street, Horbury, Wakefield, Yorks.

Secretary Changes

CHANGES of secretaries and addresses have been reported from the following societies:

Canterbury and District Aquarists' Society (Mr. F. Suttie, 28, North Lane, Canterbury); **Chingford and District Amateur Aquarist Society** (Mr. H. J. Potter, 71, Longshaw Road, Chingford, London E.4); **Feltham and District Aquarist Society** (Mr. P. Bryant, 129, Fernside Avenue, Hanworth, Middlesex); **Merseyside Aquarists' Society** (Mr. A. Hart, 4, Grace Road, Walton, Liverpool 9).

Crossword Solution

M	A	L	A	Y	A	N	S	N	A	I	L
I	D	O		M	E	Y	M				
C	R	A	W	L	W	O	M	B	A	T	
R	I	C	H	E	S	T	P	O	G	O	
O	P	H	I	T	E	T	H	R	O		
C		S	T	A	R	E					
Y	O	L	K		O	S	T	R	E	A	
P	I	B	D	T							
R	E	M	O	R	A		R	E	E	D	S
I	P	I	E	A	R	I	E				
N	E	E	D	L	E	F	I	S	H	E	S
I	T	L	T	N	T	S	S				

PICK YOUR ANSWER (Solution)
1(b). 2(c). 3(a). 4(d). 5(b). 6(c).

THE AQUARIST

Antwerp Revisited

A report from the International Conference held in Belgium last month, by our Advisory Editor

A. FRASER-BRUNNER

REMEMBERING the "Wonderland" Exhibition which I reported upon in this journal in 1951 (Vol. XVI, No. 8), receipt of an invitation to this year's show filled me with pleasurable anticipation.

This enterprise is in a class by itself, quite different from anything we know in Britain. It is not held every year; the first was before the war, in 1937, I believe, the second in 1951, the third this year. This seems to be a sound policy, for a show on such lavish scale must make an enormous public appeal in order to cover its cost, and if held too often would quickly lose its novelty. People flock to this show, knowing that if they miss it this time they will have to wait several years before getting another chance. Organisers of some of our annual shows would have been envious to see the long queues waiting for admission and the dense throng moving round the hall.

In its setting, at least, this show was an improvement on the last one. The whole roof of the hall was draped with white material, which improved the lighting effect immensely. Round the hall, beneath the gallery, a false wall had been built, into which were set aquaria and glass-fronted aviaries. The central floor space was planned with pools and winding streams and flower-beds, whereon flamingos, ducks and various tame birds dispersed themselves. A long ramp led up to the stage, at one end, on which a jungle of living plants was populated by stuffed animals from the Congo. A similar jungle was to be found in the annex, and from there it was possible to board a river steamboat, the bow of which projected into the main hall, in one of the streams; this boat was occupied by a semi-circle of furnished aquaria.

The great staircase at the other end of the hall was provided, on its first landing, with a long aviary (glass-fronted—wire cages and aviaries seem to be a thing of the past in Belgium) containing a wide selection of native birds, and some vivaria. The gallery was devoted to collections of insects, exhibits by the local natural history society, and postage stamps with motifs bearing on natural history. The show in general was tasteful and appropriate.

Such a fine show as this is possible only by the collective effort of a number of societies, including the Zoo, under the patronage of the City Council. Each society was responsible for a number of exhibits, and each exhibit was made the particular responsibility of one of its members. Care was taken, also, to ensure that each exhibit was different, so that as wide a range as possible was covered.

Aquaria

Aquaria were, this year, rather more numerous than aviaries. All were treated as natural pictures. The birds were shown in glass compartments, illuminated from above; behind the back glass real plants were growing, the effect being most attractive. All the aquaria were furnished, with a variety of beautiful designs incorporating many fine plants. Some of these were community tanks, but many contained shoals of one species only. The value of soft water with natural acidity provided by peat or cork for many of the small tropicals is well known in Belgium, and the colours of some of the fishes would have astonished aquarists here. The exhibits were not competitive.

From the point of view of the public a show of this kind is far more attractive than those which are usual in this country, where rows of small tanks containing fish after fish of the same species, mostly looking miserable and off colour,



Photo:

Mr. Keller (Germany), standing, extreme right, is addressing the Antwerp conference. At the committee table (left to right) are Messrs. Veldhuizen, De Witt, Lodewyckx, Dubois and A. Fraser-Brunner

G. W. Allan

mean nothing whatever to anyone except the pot-hunters. Whether anything like the Antwerp exhibition could be staged in this country I do not know, but I agree with colleague Raymond Yates when he says that there are too many small shows, and that everyone would benefit by combining resources for bigger, less frequent, efforts. Certainly the combination of aquarian and horticultural societies is a very happy one which should be encouraged.

Fishes

Concerning the fishes shown at Antwerp, there is little to report. As might be expected, species from the Belgian Congo were much in evidence, but there were few additions to those which I described in 1951. Some of these have since found their way here, such as the beautiful *Phenacogrammus interruptus* and *Pterinus caudalis*. Some of them, too, were actually the same specimens as shown at the previous exhibition—for instance the catfish *Synodontis aequata* which looked so beautiful when young, but is now much bigger and has lost its bright spots. What new ones there were can hardly be considered as more than collectors' pieces. Perhaps the one most likely to achieve popularity if it gets here in any number is the Congo puffer *Tetraodon schoutedeni*, which is a very handsome species and does very well in an ordinary aquarium, even in a community tank. It is a strictly freshwater form, requiring no salt. I have had two for some time, and they have got very tame, feeding from the fingers; they like white-worms, tubifex, chopped earth-worms, though the latter must be given sparingly as too much seems to upset them. The colour of this species is olive on the back, which is crossed by three vague crossbars; the sides are greenish with intense black spots; the belly is white, becoming suffused with lemon yellow when the fish is in good condition; the fins are creamy, but the caudal fin has a rust-coloured patch centrally.

Another introduction from the Congo, which is quite excellent for the aquarium, is a little "glass catfish" called *Epiplatys debauvi*. This is semi-transparent, with three black stripes along the side, and does not grow much more than 2 inches long; it swims with a waggling motion in mid-water, and is on the move the whole time. This species is available in this country, but for some reason has not yet become popular. M. Van der Weyer, a leading Belgian dealer, told me that he could ship these by the thousand if necessary, but he has had little demand from Britain. One reason, I think, is that this species shows to best advantage if kept in a small shoal, rather than singly or in pairs, and maybe the price is at present too high to permit this.

The Antwerp Aquarium and Terrarium Society had invited a number of foreign aquarists, including myself and Mr. C. W. Creed, with the object of holding an International Congress. Mr. Creed and I therefore acted as delegates for the Federation of British Aquatic Societies for the purpose of this meeting. Holland, Germany, the Saar, France, Luxembourg and Egypt were the other countries represented. A very full and hospitable programme had been arranged for the delegates, covering three days. We attended parties and luncheons, lectures and film-shows, a reception by the Mayor of Antwerp in the historic City Hall, and toured the Zoo.

The Conference itself began rather badly, as the Belgian Society were under the impression that it constituted a meeting of the World Federation. In fact, no such meeting had been convened, so a number of important members of the Council were not present, while others at the conference were not entitled to take part in such a meeting. The situation was eventually clarified, however, and those present resolved themselves into an independent Conference to provide suggestions and criticisms on international questions for consideration by the W.F.A.

One natural criticism was the long delay between the formation of the World Federation and any manifestation of activity on its part. This was explained by the Secretary, Mr. Veldhuizen, and the Treasurer, Dr. de Witt, as largely financial; now that subscriptions had been forthcoming from the member countries, the plans laid down at the initial Congress could be implemented; priority would be given to the production of a journal, the *World Aquarist*, which would be its main instrument for the distribution of information and concerning the activities of member bodies. This publication will include abstracts of important work taken from the aquarium literature of every country; the basic language will be English, but other languages will be used when it is useful to do so.

One suggestion put forward, which is likely to be adopted by the Council of the World Federation, was the extension of the Secretariat to include a Correspondent in each member country, responsible for keeping contact between aquarists in his own country and the Council; also, a national editor, responsible for collecting and preparing material for the journal, is to be appointed for each country. Various other recommendations were made, but perhaps the most valuable outcome of the Conference was the conviction of those who came to criticize that the welfare of the World Federation of Aquarists is in capable hands, and that the time being taken over the foundation will ensure a lasting edifice.

PRICE
36!
EACH

THE AERATOR OF THE FUTURE

The pump without a diaphragm
producing unlimited power

Guaranteed for 1 year

**YOU CAN RUN THE HURRICANE
FOR LESS THAN 6d. PER MONTH**

Manufactured in England under licence by

BROSIAM LTD.

(ENGINEERING DIVISION), LONDON, N.W.3



The name is embossed on the case of every genuine
"HURRICANE" PUMP. MAKE SURE YOU GET A
BROSIAM

HURRICANE

WATER will not increase in hardness.
PLANTS grow vigorously and brighter green.
FISH are healthy and in better colour.

**CHANGE YOUR !
COMPOST NOW !**

All composts contain lime in the form of sea shells—chalk—limestone—granite.
EXOTIC LIME-FREE COMPOST is acid tested, treated, and GUARANTEED
COMPLETELY LIME-FREE. Test it yourself against any other compost.

EXOTIC LIME-FREE COMPOST NOW AVAILABLE IN SMALL GRADE

4 stone 16/- 6 stone 21/- Carriage free.

WE HAVE EXCELLENT REPORTS—IT LOOKS WELL IN THE AQUARIUM

* **Have you got your Insulated Carrying Jar? 2lb. size 3/6 each**

* To prove a good food mix a little of several kinds—feed and see which the fish prefer—TROPICAL
FLAKES—will surprise you. Try this one packet test—proof of the food is in the eating.

INSIST ON TROPICAL FLAKES 1/3 and 5/-, Post free. Also B 12 GROWING FOOD with vitamins B 12

EXOTIC SUPPLIES, 63 LEEDS ROAD, BRADFORD 1

Dealers send for compost sample and attractive quotation