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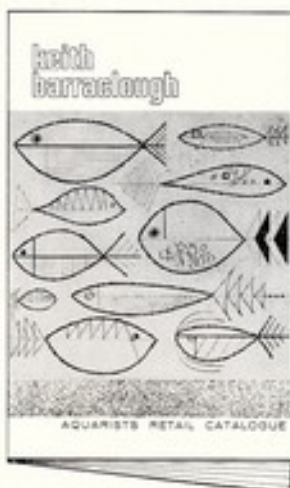
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Editor: Anthony Evans

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Comments and Quotes

Tracking down a killer • Tales told by fish scales • Battery fish-keeping? • Through the tap • Eels and blood pressure

Tracing the Culprit

WHEN infectious disease shows up in the tanks of the amateur he may or may not be able to guess at its source, but it is certain that he will not have the facilities to track down and identify the origin of the infection. With large-scale culture of fishes for commercial purposes the story is different, however, for sudden outbreak of a killer disease is disastrous: its nature has to be identified and the route of its access to the fish farm traced so that the losses can be stopped at the earliest possible moment.

The story of one trail of investiga-

tion, started by the appearance of a parasitic disease which began to kill off the stock at a trout farm in Idaho, U.S.A., has been told by Dr J. David Erickson in the *PROGRESSIVE FISH CULTURIST* (U.S.A.). The fish deaths were caused by the microscopic fungus known as *Ichthyosporidium*. It was identified by the examination of kidneys and livers from dead fish under the microscope, and as previous studies of this disease had shown that the parasitic fungus enters the fish with its food, the food used for the trout immediately became suspect.

Raw ground fish (carp) was the food used, obtained from Utah Lake, and although this source had been used for some time without causing

About PetFish Monthly

A NEW magazine is bound to be looked at critically by the readers it hopes to interest and capture for keeps. Its arrival on the scene will be questioned: is it necessary? Has it anything new to offer? For *PetFish Monthly* I hope your answers will be a firm yes! A new magazine must grow, not only in circulation but also in the ways it can serve the readers it attracts. *PetFish Monthly* plans to grow in this way, and your suggestions and comments will help to speed the development. I shall be glad to hear from all my friends in the hobby, old and new, and if you like *PetFish Monthly*—please talk about it!

Anthony Evans

trouble it was soon found that the lake carp were infected with the *Ichthyosporidium*. Further enquiry revealed that the carp had been rather overcrowded in the Lake in preceding months owing to a decrease in the water level. This overcrowding had encouraged the multiplication of the fungus and its transmission from fish to fish, with the result that heavily infected carp had unknowingly been used to feed the trout.

It's in the Scales

IT IS well known that the scales of fishes from temperate waters can give information about their wearer's age if the 'rings' seen on them under magnification are counted. The spacing and pattern of the rings reflect the different rates of growth of the scale in summer and winter during these periods of full feeding and decreased feeding respectively.

As tropical fishes do not experience such seasonal variations in temperature, scale rings of the same kind are not found on them, but it has been shown that rings are formed as a consequence of various natural changes in the pattern of the life of a tropical fish. For example, the cichlid fishes *Tilapia* in Lake Victoria show scale rings which can be related to periods of spawning activity, and other tropical fishes that suffer shortage of food during times of drying-up of their waters unconsciously record the period in their scale markings.

However, research work last year by Dr A. J. Hopson at the Lake Chad Fisheries Research Station in Northern Nigeria demonstrated that the Nile perch (*Lates niloticus*) does in fact lay down what are genuine 'winter scale rings' when immature because of an annual variation in the lake's temperature. Between December and March the water could be as much as 22°F (12°C) lower than the maximum temperatures of June to September, which can affect these fish sufficiently to form scale patterns.

All this makes one wonder how much of their history comes to be registered on their scales by our aquarium fishes, especially imported ones. The period between capture and delivery to its ultimate owner in this country is one that involves

quite a few hardships, and if spawning can make its mark on a scale these events should certainly do so! Perhaps if one knew how to read the signs all kinds of past hazards could be recalled by examination of a scale: that spell of power cuts, that session in methylene blue when white spot was suspected in the tank or that time the fish had hurriedly to be transferred to a bucket because the aquarium glass was shattered by a ball—all indelibly recorded like hieroglyphics on stone tablets!

Battery Fish-keeping?

ALTHOUGH a short while ago some modern methods of keeping farm livestock, including the 'battery system' of poultry-keeping, came in for general criticism, the general topic has provoked some thoughts on the possibility of intensive cultivation of fishes; many people have seen the breeding of fish in ponds as a solution to food problems for the underfed populations of the world. The main aims here, to raise large numbers of fish to as big a size as possible in a minimum time and in the smallest possible volume of water, are on the face of it very similar to those of the aquarium fish-breeder!

The comparison of poultry rearing in a 'deep-litter system' and fish raising in the aquarium has been made by Mr P. F. Capon, writing in the *New Scientist*. He quoted his own experience of rearing 170 rosy barbs from the egg to 1 inch body length in an aquarium 48 in. by 15 in. by 15 in., and also gave the example of the rearing of male Siamese fighting fish in isolation in small jars, in illustration of a 'battery system' type of fish culture.

On reflection, the successful aquarium fish-breeder achieves results that would be most impressive and rewarding if they could be approached on the fish-farm scale. Unfortunately additional problems arise with fishes of the size that make them valuable as food and the production of these in the numbers that make the process an economic one. Not the least of these problems is that it is impossible to arrange for the selfless and devoted care, that is given by the aquarium fish-breeder to his stock, on the scale of the fish farm!

Through the Tap

FOR the majority of us the opening of the home water tap produces nothing more than a gush of wholesome water, but in some parts of the country biologically interesting but not altogether desirable water denizens are also apt to come from the domestic supply.

Freshwater shrimps have plagued the water supply of Leicester for some time, the same little crustaceans as those that turn up in bunches of water cress. After a long campaign against these, the Leicester Water Committee have reported that the shrimps have now been paralysed and flushed out of the mains. Leicester aquarists are now denied this piped live food.

The freed state of Leicester's pipes is the envy of the Central Electricity Generating Board, however, for their problem of mussels down the mains has yet to be solved. Clusters of the molluscs are not only collecting inside the pipes used to deliver cooling water to coastal power stations but the hard shells of these that are swept on into the pumps cause mechanical damage. First step in the battle against this mussel menace is the appointment of a zoologist for two years to do research into the ways of the mussels so that measures can be devised to render the Board's pipes unsuitable for their colonies. The work is being done in laboratories at the Poole, Dorset, power station.

Eels and Blood Pressure

YOUR blood pressure may be boosted by irritation when your fish spawn and you are not around to save the eggs, or when some greenery loving specimen strips the leaves off your treasured plants, but in one fish, the eel, there has been found to be a chemical substance that can affect human blood pressure. In the hope that this substance could reveal something of the way that normal blood flow in man is controlled, work supported by a grant from the Wellcome Trust is now starting on eels at St Mary's Hospital in London and at Sheffield University.

Tropical Aquarium Catfish

FISHES of the genus *Corydoras* belong to the group generally referred to as catfish. A dictionary will describe a catfish as 'any of the various fishes having cat-like teeth or whisker-like processes round the mouth'. To the aquarist this definition is not completely satisfactory, as we would describe a catfish more precisely as fishes whose skin is either without scales or with bony plates, always having barbels and whose jawbone is rudimentary, nearly always being attached to a maxillary barbel.

Of the many types of catfish available for aquaria, all of them interesting to keep, some of them are large and pugnacious and certainly none is as peaceful as the *Corydoras* that we are about to examine in more detail.

The name *Corydoras* is over 150 years old and was first

Fishes of the genus *Corydoras*

are discussed by JOHN HAYNES

Photo: B. PENGILLEY

used by a scientist called Lacepede in 1803. *Corydoras* belong to the order Ostariophysi, which means that they are fish with Weberian ossicles in the head. This is the sensitive apparatus having a chain of bones connecting the swim bladder with the 'ear'—any change in volume of the swim bladder is thus communicated to the auditory organ. The swim bladder of these catfish is in two parts and encased in bone.

As these fishes are placed in the sub-order Siluroidea, we can tell that the mouths of the *Corydoras* cats may be toothed and non-protractile, and as they also belong to the family Callichthyidae they are smooth 'armoured' fish. In fact the general characteristic of this family are the hard plates or scutes along the flanks arranged in two series and overlapping like the tiles on a roof. The head and the ridge of the back may also be armoured.

The finnage of the *Corydoras* is most interesting—particularly if you have ever handled one! Many of the fins have powerful spines with the soft rays behind them. The most detailed account of finnage that I could find was for the leopard catfish *Corydoras julii* and is basically as follows.

Dorsal fin: one unbranched ray which is a large and powerful spine, followed by seven branched soft rays.

Anal fin: two unbranched rays one of which is a strong movable spine, followed by six branched soft rays.

Ventral fins: one unbranched soft ray with six branched soft rays.

Pectoral fins: one unbranched hard spine with nine branched rays.

C. julii has 22 bony plates above the lateral and 21 on the lower side. This arrangement, of course, occurs on both sides of the body.



Corydoras have the normal breathing apparatus of fish, with eight gill sections in all, four on either side of the mouth. In addition they are suited to an air-breathing life. This is not by the possession of any complicated labyrinth organ as in the Anabantidae but by the utilisation of the hind-gut. Air is taken in through the mouth at the surface of the water and then passes through the stomach and intestines and the interchange of oxygen, into the blood stream, takes place through the vascular lining of the hind-gut.

Corydoras are mainly found in South America over a greater part of the continent from Venezuela in the north to Brazil in the central and southern part of the country.

C. aeneus can be found in Venezuela and on the island of Trinidad, which is a very interesting fact.

These fish live in slow running rivers with sandy or gravel banks and usually stay away from the murky bottom waters. They are very rarely found in still waters.

Although this may be contrary to what one would expect, to keep *Corydoras* in a healthy condition clean water is essential. This may seem strange, since they are equipped with air-breathing apparatus, and they can be found in Nature climbing about on the banks of rivers. These fish are well equipped for the task since their

pectoral fins have hard spines that can be used as stilts.

Most aquarists keep *Corydoras* for their scavenging properties, a job that they do quite well, but if they are to be kept in the best of condition they should not be kept in a tank with other bottom-feeders such as barbs and livebearers. They do best when kept in a single species tank, where they can be fed with a high proportion of tubifex, a food which they certainly relish and thrive on. They will, of course, exist on the scraps left over by the other fish but to protect their barbels a liberal helping of tubifex will save them from scratching around in the gravel and the possibility of damage. Undamaged barbels of catfish is one of the first points a judge looks for in competitions.

As clear water is a very important factor to the health and general condition of *Corydoras* it is essential to use some form of filtration if many specimens are kept together in one tank. It must be remembered that under-gravel filters are of no use with *Corydoras*, owing to their habit of rooting about in the gravel, and the most effective filter that I have used in my *Corydoras* tank is one of the plastic thimble types. This type of filter also provides some movement in water surface thereby keeping it free from any film.

Although I have tried on many occasions to breed *Corydoras* I have not, as yet, been successful and so all that I can do is to give you some of the facts that I have learnt from books and by speaking to other aquarists that have had success in breeding, without criticism.

Firstly there is the problem of sexing, as there is no striking difference between the males and the females to be seen by visual examination. When breeding condition is present it is not apparently too difficult, as the female has a much fuller body than the male when viewed from above. Some books in fact say that the dorsal fin of the male is usually longer than the female's. Conditioning is a very important point before breeding and is best

accomplished by feeding with tubifex supplemented with some well-soaked dry food. The breeding tank should be prepared with a soft and dark bottom soil (one could use old peat that has had most of its acid constituents removed by repeated boiling). Large-leaved plants should be present such as *Cryptocoryne* and Amazon swords; a few rocks should be used and arranged to form small caves for the fish to seek refuge in. Uprturned flower pots can be used for this purpose.

Breeding pairs alone are seldom successful and it is better to use one female with two or three males. The breeding can sometimes be stimulated by the addition of fresh cold water and periodic temperature variations of 60-80°F (16-27°C). The females lay adhesive eggs, which may be found on the rocks, plants or even on the glass sides of the tank. The fry become free swimming two days after hatching and live on the bottom of the tank on *Infusoria*, so it is essential to make sure that this very vital food is available.

Although *Corydoras* are not prone to diseases such as white spot and fungus it does not mean to say that they cannot act as carriers for these, and it is well to quarantine them in the same way that you would any new fish before introducing them into your tanks. A sure sign that *Corydoras* are off colour is to find them swimming in the middle or upper waters of the tank. This usually means that the bottom of the aquarium is foul, salty or too acid. Immediately they show these signs remove them to a tank of shallow fresh water and add five drops of a 5% solution of methylene blue to each gallon of water in the tank. One exception to this rule of signs of sickness is the pygmy corydoras, *C. hastatus*, as this fish naturally swims in the middle of the tank.

I would like to stress the importance of treating fishes of this genus as speciality fishes: give them a tank of their own, feed with the right food and you will find that they will grow well, although not quickly, and give you many years of enjoyment.

New Books

Beneath their Scales

The Life of Fishes by N. B. Marshall.

Colour plates, black and white photographs, line drawings. 402 pages. Weidenfeld and Nicolson, London, 63s.

TO get beneath the scales of a fish, to experience life as it does, to feel as it does, this would be understanding fish indeed. And yet, with more than 20,000 known different kinds of fishes, would it ever be possible to know if life is the same for them all? Dr Marshall's book takes its readers step by step along the known ways in which fishes of all kinds deal with the special problems of their life in water: movement, balance, breathing, feeding, and preservation of proper composition of body fluid. Their greater dependence on sounds and vibrations than on vision for information about their surroundings, a consequence of the properties of water, is also described in detail, together with fish senses that are more difficult for us to appreciate, such as ability to detect tiny changes in salinity and pressure around the

animal. Latest research work into these matters is clearly described and discussed.

Many results of such research into fish physiology offer practical solutions for the aquarium fish-breeder. For example, knowledge that a substance produced by white cloud mountain minnows and tiger barbs, probably others as well, can stop the growth of smaller specimens in the same tank, points to the necessity of making frequent changes of water if large numbers of a brood are to be reared in an aquarium. Similar considerations explain the constant grading and separation of different sizes of fry that has to be practised in trout hatcheries.

Electricity, light- and sound-producing fishes have an informative chapter to themselves, and in 'Ways of Staying Alive' various protective mechanisms of fishes are discussed. Behaviour of fishes is dealt with in chapters covering schooling, mating, breeding and learning. Reproduction and development are given special treatment in a section titled 'Life Histories' and discussion of habitats and an account of the diversity of fishes, to introduce the subject of fish classification, forms the concluding section of the book. There is a full list of references to published work on fishes, most of it quite recent, and a detailed subject index. The photographs and drawings are of a high standard. *The Life of Fishes* should be added to his library by every ichthyophil.

Big Tank, Big Fish?



By A. FRASER-BRUNNER

The writer of this article will need no introduction to established fish-keepers, who will remember him as a leading figure in aquarium circles in this country for many years before he left to work overseas. Until last year Mr. Fraser-Brunner was Curator of the Van Kleeef Aquarium in Singapore and we are pleased to welcome him home in Britain once again.

WHOEVER has bred fishes for any length of time will have become aware of a curious relationship between the fish and the tank. Put simply, it is that fishes appear to grow bigger in a large tank than in a small one.

The usual procedure in a breeding establishment therefore is to have a series of tanks in the following order. First, a pair of conditioning tanks, one containing males (not necessarily of the same species), the other containing females. They are roomy tanks, to allow for exercise, but are kept at a comparatively low temperature to prevent the fish expending too much energy and maturing at too small a size.

Secondly, one or more breeding tanks, which may be smaller (though this depends on the fish bred) and in which all the conditions necessary for the spawning are provided. Here the temperature can be raised higher to promote activity if required. A pair of well-conditioned

These *Monodactylus argenteus* look overcrowded in this small tank and yet they grew to four inches long for the reasons given in this article

fish are introduced, and as soon as a successful spawning has been accomplished they are removed and put back into the conditioning tanks (or, if these are full of other, boisterous fish, into small rest-tanks until they can hold their own). The eggs remain undisturbed to hatch.

As soon as the young fish have hatched and reached a size sufficient for handling, they are transferred to the first of the growing-on tanks. In the ideal establishment there would be several sizes of these, in which the fish would be successively placed as they grew. The idea is to give the fish as much space as possible at each stage of growth; to place them at once in the largest tank would grow them on all right, but would present problems of culling and servicing even if one could spare the space. By having a series, the young fish 'graduate' from one size to the next and 'pass out' from the largest tanks into the conditioning tanks (or the sale-room).

In countries favoured with a warm climate the growing-on tanks can be replaced by outside pools, which provide room for a greater number of larger fish than is usually possible in tanks. In such pools, too, Nature often provides live food such as mosquito larvae, though she can supply parasites and other disadvantages as well. Generally speaking, it is more difficult to control and observe conditions in a pool than in a tank.

Aquarists, then, can make good use of the axiom that 'the larger the tank the larger the fish', but to explain why it should be so is difficult.

Supposing you lay on a good supply of oxygen, plenty of food, give correct temperatures and in fact give a fish

Continued on page 8



LETTERS

Not as Black as it Might be?

I WONDER if I am alone in thinking that the red-tailed black shark is a fish that under aquarium conditions is losing the rich black colour it should have? So many of the specimens I see in the dealers' tanks look almost grey, yet I seem to recollect that when this species first appeared it was a really deep black hue. I think it is possible that breeding by overseas suppliers is producing specimens of inferior colour, and I would like to read the comments of other fish-keepers on this matter.

Chislehurst, Kent

E. BROADBANK

Thanks to the Tubifex Men

IT occurs to me that a word of public thanks is due to that intrepid band of men the *Tubifex* worm collectors. During the spells of prolonged freezing this winter not once did my fishes miss their daily *Tubifex*, and I often thought with a shudder of the dreadful conditions under which they must have been collected. Mud-sifting cannot be fun at any time, but in frosty weather—berh!

London, S.W.16

V. PURCELL

Anything New about White Spot?

IS it possible that there is still something to be discovered about the course of the disease white spot? Because recently two instances have come to my attention that do not seem to fit into the known pattern of the life cycle of the parasite. A fellow fish enthusiast told me that in his tank, treated some months ago for white spot, every new fish introduced since then develops the disease though the old ones seem to be immune. This did not seem too strange because one merely assumed that every new fish was suspect and must have introduced the disease afresh. But now I have had an instance of this happening in my own tank. I had white spot some months ago and treated it successfully with quinine sulphate. No new fish or plants have been bought but another friend gave me two firemouths a fortnight ago. Within 4 days they were heavily infested. I did not, of course, wait to see if the old inhabitants were going to develop it too before I treated the tank, but the home tank of my two new arrivals still shows no sign of it. All my friend's fish are quite healthy. Is this a common phenomenon? Is it possible for the parasite to lie dormant and attack only new fish? Does the same thing happen with methylene blue? I should be most interested to hear of the experiences of others.

Sheffield

G. PERKINS

Goodwill Messages

ALL aquarists everywhere, and not least members of the Federation of Northern Aquarium Societies, will

surely wish to express their appreciation of all that you have done over many years to foster the hobby of fish-keeping, and to keep us up-to-date with advances in knowledge of new fish, new ideas and new equipment.

Fortunately for us all, you are merely changing your Editorial chair and so we would wish you a very happy and successful future for you in your new sphere and for your new national magazine *PETFISH MONTHLY*. With such an active and fascinating hobby as fish-keeping, there is always a great call for helpful and informative magazines, which, of course, depend on vigorous and far-seeing editorial guidance.

This, I am sure, will be the case and on behalf of the Federation of Northern Aquarium Societies I send you our very best wishes for a long and successful Editorship in a successful new magazine.

JOHN F. WILKINSON,

President,

Federation of Northern Aquarium Societies

WITH the aquarist hobby gaining new ground, and more Aquarist Societies being formed, there is a greater demand than ever from novice and experienced aquarists alike for more information and its circulation. So at this time we are pleased to see *PETFISH MONTHLY* making its appearance, and we wish it, its Editor and publishers every success with their venture.

A. G. JESSOP,

Chairman,

Federation of British Aquatic Societies

IN offering my congratulations to you on your enterprise in founding *PETFISH MONTHLY* I would also extend to you the assurance of full support from many hundreds of

Prize Letters

TO the writer of the letter judged by the Editor to be specially worthy among readers' letters published in each month's issue, *PETFISH MONTHLY* will award a prize of a well-known make of aquarium aerator (as pictured here).



PETFISH MONTHLY will be glad to have your experiences, comments, suggestions etc. in letters on any matter associated with fish-keeping. Write to the Editor, *PETFISH MONTHLY*, 554 Garratt Lane, London, S.W.17.

Messages of Goodwill

(continued)

Midlands' aquarists for a journal which will fill the needs of hobbyists, from the veriest novice to the most expert.

Your extensive association with the hobby of fish-keeping assures a successful journal and we in the Midlands wish you all the very best of luck with this publication, the first issue of which we await with keen anticipation.

T. L. DODGE,
Hon. Secretary,
Midland Aquarium and Pool Society,
Chairman,
Midland Association of Aquarists' Societies

I WAS delighted to hear of the launching of a new magazine in the field of aquaria and I should like to take this opportunity of welcoming **PETFISH MONTHLY** and wishing it every success.

H. G. VEYERS,
Curator of the Aquarium,
The Zoological Society of London

I AM glad to welcome the advent of a new publication devoted to the interests of those who keep fish for pleasure either in aquaria or pools. Newcomers to this fascinating hobby need information and advice if they are to avoid expensive and discouraging fish losses, whilst experienced aquarists like to keep abreast of current discoveries and ideas. I hope that they will buy **PETFISH MONTHLY** and maintain their interest.

M. D. CLUSE,
Vice President,
The Goldfish Society of Great Britain

ON behalf of the Nottingham and District Aquarists' Society I would offer our congratulations to you and your staff for the welcome news that another journal on our very interesting hobby is shortly to be published.

MRS H. J. CHAMBERS,
Secretary,
Nottingham and District Aquarists' Society

THE advent of **PETFISH MONTHLY** will be appreciated by most fish-keepers. I know they will show this by giving it their full support, and as head of what is now said to be the largest fish breeders' association in the world I say it cannot arrive too soon and I wish your new venture all the success it deserves.

W. G. PHELIPS,
President,
Fancy Guppy Association

*It has been very gratifying and encouraging to receive the above letters and many more expressing good wishes for **PETFISH MONTHLY**, and to the writers of all these I wish to record my sincere thanks.—ANTHONY EVANS, EDITOR.*



by **ARPEE**

IF you are invited to write a column on aquarium topics, you find that, having accepted the invitation, you have to start somewhere. You can begin with a lengthy and tedious personal introduction; you can open with a soulless five hundred words on how to prevent corrosion on feeding rings. Or you can blanket yourself with complete anonymity and then proceed with the business of trying to instruct, amuse or infuriate, as the mood takes you.

It's the latter for me, since I would hate to see my personal history in print, and I know little enough about how to prevent corrosion on feeding rings since I abhor the things and never use them. I shall therefore resort to masquerade, the principal advantages being that by this device I have a reasonable chance of continuing on speaking terms with my dealer and my family.

In this column it will not be my aim to educate, though I hope that from time to time my observations and experiences may prove of interest to some at least of **PETFISH MONTHLY**'s new readers. I assume that the majority of those who read these notes have something in common with me, and that that something does not begin and end with 'just a tank of fish'. It certainly does not begin and end, either, with a fish house crammed full of all the exotics in the book. You are probably reading this magazine because you like to wallow a bit in your hobby and get the last bit of enjoyment out of it. I very much doubt if the chap who sets up a tank as a bit of furniture will ever get much from this column, and I equally doubt whether the fish house man will, either, since he probably won't have time to read it. But there are a lot of people in between these two classes who enjoy the whole affair, don't know it all, and like to philosophise now and then.

There is every sort of good reason for starting up tropicals, and the introduction to most books on the subject give a good selection. The most telling of them all, so far as I am concerned, is that, with a bit of luck and imagination, the average aquarist can completely forget the hellish English climate for a good six months of the year through the medium of his own creation; he can, almost overnight, cause a tropic scene to emerge from a dismal corner of the room. Once this has been accomplished the remainder of the room—indeed, the whole house—may well be treated to a like fate. The remaining six months of the year can be spent gardening, as I spend them. I find the two occupations both agreeable and compatible. The ground has never been so well tilled since fishkeeping began, such is the continuous demand for earthworms; and fishkeeping in turn induces me to remain indoors for much of the winter in preference to tackling suicidal outdoor jobs at a temperature of minus ten.

I am a reasonably non-expansionist fishkeeper, and I

like to have my tanks around me in the sitting room. Not the fish house for me, much as I like to visit those of others; a friend once constructed one; one day he entered it through the door and was never again seen by his family.

I must confess to a couple of tanks in the spare room, but they are there for purely commercial purposes, as although I have my fish for a hobby, I feel rather strongly that once the electricity bill starts climbing, something has to be done in compensation. There are only two possible ways of effecting this, the one by dint of pure physical effort in the household, such as dishwashing or the like, or a straight-out financial deal. I have resorted to the latter, and have found that a little breeding of the right sort goes a long way, hard though the lessons may have been. I have now arrived at the stage where I distinctly do not want any more tanks, where I enjoy what I have, and still feel really good when I see the first of those little glass-like splinters in the breeding tank.

I have often been asked by friends what I recommend to them on starting up in the hobby, and it's a question I boggle at, since I cannot really have the faintest idea of others' personal tastes. You get heartened every so often, as I was a week or so ago, when some young friends of mine went into raptures over their fifth purchase after having set up their first tank. After the pair of guppies and the swordtails they had invested in a horse-faced loach, and it is quite obviously going to get well and truly pampered! I would say at a guess that these two aquarists will have a future in the hobby, since they seem

to have avoided the first big trap—that of breeding the livebearers to the point of mutual exhaustion.

So far as equipment and siting are concerned, I think the newcomer can be advised to some good purpose. The first essential, I am sure, is discipline, and by this I mean the discipline to really take stock of all your personal circumstances before investing in that next tank! I think there is no better basic equipment than the two-tier 24 in. by 12 in. arrangement, with a cupboard underneath to house the bits and pieces. All this should be in the sitting room, as if it is elsewhere it is so easily allowed to drift into oblivion. Having got the above into place you should think why you have got so far and how far you intend to go.

If you decide that you are in it for the money, gently remove the lot and advertise it for sale in the local newspaper, putting the proceeds on any horse taken at random from the same source, as this would be a considerably more reliable form of income. If you decide that it's there only to add a bit of colour to the cocktail parties, all you need to do is buy some plastic weed and sea-horses to dispose of artlessly as you are able within the tanks. (This will save you a lot of time and trouble later on, as cigarette ends and gin-soaked cheese straws are easier to remove from dry plastic than from wet platys.) If, as a third possibility, you decide that you got all the equipment for the fun of it, and assuming that your wife can tolerate the odd pool of water on the floor, by all means press on and set it all up. Your dealer will tell you what to do, or better still, you could place a firm order for this magazine, in which other contributors will give you all the advice you need.

Big Tank, Big Fish?

continued from page 5

all the necessities and comforts, the fact remains that in a small tank it will remain much smaller than if it were kept in a larger tank with exactly the same conditions. Why should it remain, say, two inches in a two-foot tank and grow to three inches in a four-foot tank? It would still have room to swim around if it were three inches long in the two-foot tank.

In my opening paragraph I was careful to say it appears that fishes grow larger in a big tank. I believe it is not true to suppose that this phenomenon has anything to do with the distance between the sides and ends of the tank. If we say, as some people do, 'bigger tank, bigger fish', we are stating the problem incorrectly.

I think the real relationship is between the fish and the amount of water the tank holds.

What led me to this idea was my experience with circulated tanks in the public aquarium at Singapore. There, in both the marine and freshwater sections, it was possible to grow fishes very large irrespective of the size of the tanks. Some of the larger species of fish could have been grown to the point where they could scarcely turn round in the smaller tanks (though of course this undesirable

state of affairs was not pursued). Some of the familiar aquarium fish there would have been an eye-opener to British aquarists for sheer size.

It was due, I believe, to the fact that the tanks were supplied with water circulating all the time from a reservoir holding about sixty thousand gallons and returning to it through filters. This meant that, whatever the size of the tank, any fish was, in effect, living in sixty thousand gallons of water.

But, of course, I am not claiming that this is the final answer. All I have done is put the problem a stage further back. We still do not know why more water should make a fish grow larger. Some factors, like temperatures, oxygenation and illumination, can be ruled out, and the only way to find out which of the remaining possibilities is the operative one is by carefully controlled experiment.

It is possible that the answer will be found at the Tropical Fish Culture Research Institute near Malacca. There are plans to enlarge this establishment and it has been my privilege to assist in the design of the extended laboratories and a large public aquarium. In the laboratories will be a graded series of tanks ranging from quite small to very large, all designed to provide control and measurement of every factor likely to affect the growth and health of fishes. If the difficult conditions in Malaysia ease sufficiently to enable this plan to come to fruition, the results may be beneficial both to the economic fish culturist or farmer and to the home fish-keeper.

OZONE

Its application to aquarium-keeping

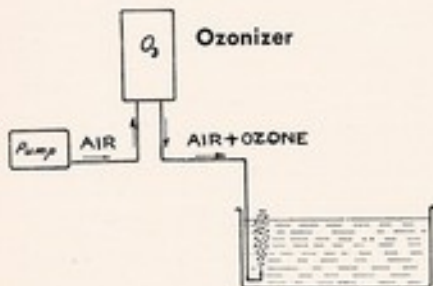
by ERWIN SANDER, Biological Association, Essen, Western Germany

WHEN, five years ago, the germ-killing effect of ozone in aquarium tanks was first mentioned in a German journal, the announcement aroused a great deal of interest. In this particular article the fact that ozone has been used for 60 years in the purification of domestic water supplies was especially stressed. In this application it has been used successfully to deal with germs and organic waste matter. The harmless nature of ozone to man having thus been proved scientifically by its use for drinking water purification, the aquarium hobbyist has been able to make use of this experience without taking special precautionary measures.

The effects of ozone can be summarised as follows.

What Ozone Can Do

1. Ozone will kill all bacteria, viruses and spores. Ozone can therefore prevent the outbreak of an epidemic. With a non-continuous use of ozone (e.g. only twice daily for 1 to 2 hours) the living organisms in the water will be so greatly reduced that transmission of disease is prevented. The outbreak of an epidemic becomes impossible. This procedure is vital with fish which have newly arrived in a weakened state from their transportation. Knowing that they are easily infected by diseases in this state, many import companies and wholesalers have installed ozone quarantine houses.



Arrangement of ozone-producing equipment and air pump

What is Ozone?

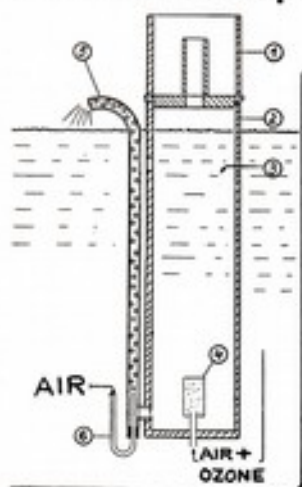
OZONE (O₃) is the three-atom form and most reactive form of the gas oxygen, produced from oxygen by the action of the sun's ultraviolet rays at the outer layers of the earth's atmosphere. Its concentration goes down through the atmospheric layer until at the earth's surface it occurs to the extent of only one-twentieth part in every million parts (0.05 parts per million). It can be manufactured by passing air between plates kept at very high voltages and can be produced from aquarium ozonisation apparatus mentioned in this article. It has been described as the strongest oxidising agent that is known, and because of this it has a disinfectant action, killing bacteria and changing waste materials in an aquarium to harmless products.

2. Ozone cures some skin diseases. This curative effect of ozone is of especial importance with fish suffering from fin rot and fungus. For this purpose the fish are treated with ozone three to four times a day for 1 hour; by the second day the white patches on the skin will be found to have turned brown. If the ozone treatment is stopped at this point, the patches will turn white again the following day, and the treatment must be continued for 10 days, for a complete cure. It is astonishing to see the edges of the fins growing rapidly again. Especially remarkable is the observation that fish with skin disease will deliberately stay in the air-ozone current. This has been observed with practically all species of fish and is a sign that the curative effect is noticed by the fish themselves. With spreading parasite diseases (e.g. white spot—*Ichthyophthirius*) the appropriate drugs should be used.

3. Sterilisation of live foods. To avoid the introduction of diseases into the tank by live foods, tubifex, water fleas etc. should be sterilised by ozone treatment in a separate container.

Ozone in the aquarium

(continued)

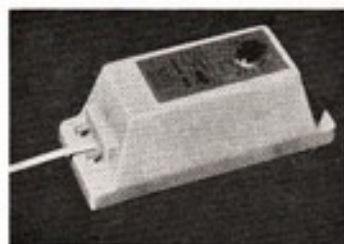


Skimming apparatus in use in an aquarium (sectional view): 1, removable foam bowl from which the residues can be washed out periodically; 2, reaction cylinder; 3, water inlet from aquarium; 4, diffuser stone releasing air plus ozone; 5, water return pipe to the aquarium; 6, air tube to air lift.

4. With ozone the redox potential* can be influenced. A high redox potential in the presence of mild reducing agents favours the growth of *Cryptocoryne*, a low redox potential favours *Vallisneria*. A regulated, steady high redox potential can be kept up with slight ozonisation. In sea water with ozone green algae grow well, brown algae vanishes.

5. Skimming off protein waste matter from sea water. The skimming off of protein is done by floating the material; an air stream, passed through a plastic tube, carries protein particles to the surface where they remain as a dirty foam that cannot affect the aquarium and can be removed periodically. Unfortunately, the method with pure air showed that the inactivating effect is low. By the addition of ozone, the skimming effect will be 20 times as efficient, owing to the catalytic effect of

* Redox potential (reduction-oxidation state) is a measurement of the balance existing between oxidising (oxygen-adding) and reducing (oxygen-removing or hydrogen-adding) substances in a sample of water. Fresh and aerated water has oxidising properties, the usual state in natural waters, but pollution with organic matter can alter this quality and, of course, render the water unsuitable for fish.—MIRCO.



On either side of the electric cable (left) are seen the two connections for the air line to take the air stream through the ozoniser.

ozone. The protein-skimmer has become an important and welcome instrument for the marine hobbyist. Here, all nitrogenous waste matter—nitrite, nitrate, ammonia, is skimmed off before causing trouble. Development of this technique now enables us to keep marine fish with less risk.

Types of Ozoniser

To provide the right quantities of ozone for the various purposes three types of ozonisers are available for hobbyists. They differ in their performance:

Type I: 10 milligrams of ozone per hour, appropriate for tanks up to 45 gallons capacity.

Type II: 25 mg. of ozone per hour, for tanks up to 110 gallons capacity.

Type III: 50 mg. of ozone per hour, for tanks up to 220 gallons capacity.

Type I cannot be regulated. Types II and III are infinitely variable and can be adjusted for the individual purpose. Especially noteworthy is the fact that the ozoniser type III is also available for operation at 12 volt D.C. for the transport of fish in ships and cars.

It's Happened Again!

WHEN we planned the front cover of this first issue of *PetFish Monthly* we said firmly: 'Not an angel fish photograph. No, definitely not an angel fish'. Angel fish and angel shapes have dominated pictures, books, catalogues, badges etc. ever since the first ones began the flood of immigration here from the Amazon. And yet it's happened again. When we saw the picture of this hand-fed group of angels we forgot all our reservations and plumped for it at once. What better, we asked ourselves, to show that *PetFish* is more than a title?—it's a way of life!

Note for fish photographers and other would-be entrants to the *PetFish* Photographic Competition (see page 22): the picture was taken with a Rollicflex camera on Ilford HP3 film, single flash exposure 1/100 sec. at f11.

DISEASES OF AQUARIUM FISHES

(Part One)

How to recognise the existence of ill-health in a fish: by Dr. WILLIAM M. STOKOE, B.Sc., M.R.C.V.S.
(Department of Veterinary Anatomy, University of Edinburgh)

PREVENTION is better than cure. Few aquarists are not familiar with that age-old adage. Yet how many are aware of its import in modern aquatics?

Too few for their own good and for the good of their stock, for though the last decade has seen many important advances in the treatment of diseases in freshwater fishes, our knowledge of their internal diseases and disturbances is still relatively scant.

Certainly scant enough anyway to make the recognition of general disease symptoms of the utmost importance in the treatment of ailing stock, the prevention of tank epidemics and the general understanding of water-borne infections.

The intention of this first article therefore is to elaborate the general indications by which an upset in aquarium health can be recognised with a view to making more definitive diagnoses as the different diseases are dealt with systematically in following articles.

Not that the diagnosis of any disease can usually be made without proper investigation and, if possible, extended observation of the 'patient'. And the fish, an actively mobile aquatic creature, necessarily shows its own characteristic range of symptoms.

One of the first to be observed, for instance, is usually a change in the normal mode of swimming. Locomotion, obviously out of control, becomes aimless: the fish swims jerkily and in small circles, is unable to maintain an even keel, or to raise itself should it sink to the bottom. In extreme cases the loss of equilibrium can go so far as to make the fish swim upside down, abdomen turned towards the surface. And if symptoms like these appear amongst fish under observation, one specimen should be sacrificed for investigation, for symptoms of disease in fishes can differ according to its particular nature.

Even so, there are several other common denominators by which it is possible to recognise whether or not a fish is in good health.

Contours

Healthy fishes show clean, plump bodies and erect, unswollen, not ragged fins. A persistently clamped dorsal fin is a sure sign of ill-health for which a remedy should be sought, be it due to nothing more than too low a tank temperature.

Swelling of the belly on the other hand—other than in egg-bearing females or pregnant live bearers—may be due to internal parasites, in which case blood-flecked excrement and associated enteritis should be evident, or more commonly it is caused by dropsy, whereupon the accumulated fluid can often be evacuated by means of a hypodermic needle.

Coloration

Loss of colour and general pallor is a typical and alarming sign usually caused by metabolic or circulatory disturbances. Bacteria and microsporidia, affecting the skin or the muscles, may also cause the same symptoms. On the other hand, discoloration may occur temporarily through lack of light or oxygen, or both: it can occur if a fish is frightened, or if a strong light is shone into a tank which has been in darkness for some time, while females of some species often lose colour after spawning.

If discoloration occurs without apparent cause, however, and if it continues for some time, it can be taken as symptomatic of disease.

Diseases of the skin such as fungus, 'ich' and 'velvet' can frequently be recognised not only by discoloration of the body, the appearance of small blood-stained patches (ecchymoses) in the skin and muscles and the formation of a grey slime, white spots or ragged white or brown patches, but by the behaviour of the affected fish, when irritation causes it to rub its body against stones, plants or other surfaces.

The latter can also be indicative of minor digestive upsets in greedily-feeding fishes like barbs though, when a pinch of bicarbonate, or a few drops of whisky, added to the water prove ideal remedies.

Respiration and Appetite

The respiratory rate of healthy fish depends largely on their size, metabolic rate and surrounding water temperature. Irrespective of pace, however, the rate should be regular and without any bursts of gasping. Otherwise, pale gill sheets are an inevitable sign of ill-health, those of healthy fishes appearing bright pink unless the gills are pigmented as in the fighting fish *Betta splendens*.

The recognition of feeding anomalies is extremely difficult, for complete refusal to feed is not necessarily a sign of illness. Many fish fast while their ovaries mature simply because their enormously swollen ovaries leave no space for the dilation of their stomachs and intestines. Also, many fish, notably the *Pterophyllum* species, may take only one kind of special food and starve to death if this is not available.

On the other hand loss of appetite (anorexia) may be subsidiary to several other causes, the least harmful of which can be a simple rise in tank temperature. If accompanied by swelling of the belly, however, particularly amongst fish with laterally-compressed bodies, it is usually indicative of constipation.

NEXT MONTH: Bacterial diseases of fish.

C. D. ROE introduces a new aquarium plant:



Alternanthera sessilis (Linné) Decandolle

ONE of the more recent plant introductions to aquarium-keeping is *Alternanthera sessilis*, which has been called, incorrectly, 'red hygrophila'. It is found in the tropics of the Old World in constantly moist or flooded areas and also has now become native to warm parts of the New World as a result of being introduced there by man. Although by no means a rare plant in its natural habitat, it is only in recent years that it has been brought to the notice of aquarium-keepers.

The leaves are long and lanceolate, up to 3 inches in length and half-inch wide, and are carried on much branched woody stems. The colour of the leaves varies from dark wine-red to dark green on the upper surface and they have a bright red under surface; the colour of

the stems is almost invariably also bright red. *Alternanthera sessilis* will stand relatively low temperatures and in fact has been quite successfully grown in Great Britain out of doors in the summer. Like many of our aquarium plants, it is not suited to permanent submerged growth but as it is quite inexpensive it can be used as a decorative feature and replaced every six months or so.

It enjoys soft and preferably acid water and is most unhappy when put in an aquarium with alkaline water; under these conditions it will lose all its leaves. Propagation is simply done by taking cuttings, which may be rooted in damp soil or even by standing them in jars of water. The best time for taking cuttings is during the summer, and they should be protected from great heat

or brilliant sunshine. Unless constantly pruned *Alternanthera versicolor* flowers profusely, many tiny florets being carried in the apices of the leaves in tight deep pink clusters.

The stems bearing the inflorescence do not seem to do as well submerged as those produced before the flowering, so that it is better to keep the plant well cut back,

under which conditions it produces stronger and more vigorous growth far more suited to submerged life in the aquarium.

This plant can also be produced simply in a greenhouse from seeds, which are readily produced, but this tends to be a slow method.

PETFISH Test Report on the Dynaflow Motor Filter

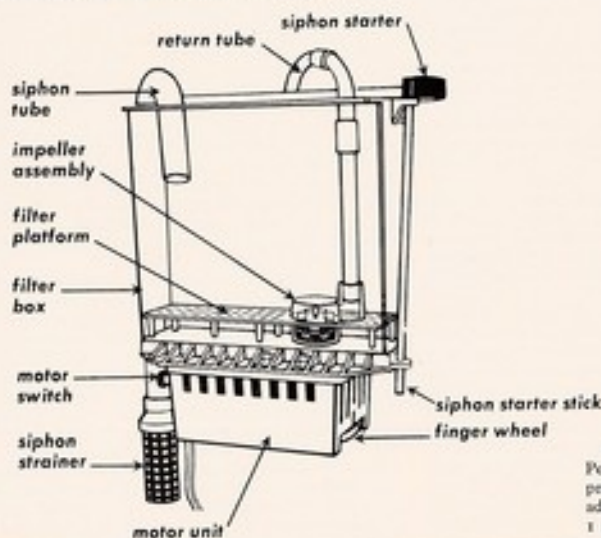
POWER filters are perhaps the most exciting advance made in aquarium apparatus in recent years, and we foresee a big future for this type of equipment. The Dynaflow is the most compact model we have seen, ideally suited for the home aquarium, and its cost compares well with the combined cost of a good aerator and filter unit when its additional operational advantages are borne in mind.

Construction. The sturdy plastic rectangular filter (7 in. by 2 in. by 6 in. deep; capacity 1½ pints) carries beneath it the electrically driven switched motor unit, which when not locked in position can easily be made to slide off. The filter is hooked on to the tank frame by a plastic flange, 1 inch wide; this is too narrow for many tanks, but a stainless-steel adaptor is available as an extra to provide for attachment to these. Inside the filter is an impeller which forces water from the bottom through a pipe into the aquarium. It is driven

magnetically by the motor, not by a direct drive passing through the filter case. A grid enables all types of filter media to be packed above the impeller intake. A plastic intake pipe delivers water from the aquarium to the top of the filter.

Performance. Starting the filter is easy to do, filling of the intake tube being facilitated by a 'starter stick', which also serves neatly to lock the motor in position when it is not being used as a starter. The motor is unbelievably quiet in operation and does not run hot.

Measured output was ¼ gallon/minute, with a good aerating action from the powerful return. An adaptation tried and found successful was the lengthening of the return pipe by attachment of wide bore plastic tube so that the intake and return areas could be well separated in the aquarium. This is specially advantageous in long tanks.



Dynaflow supplied by Inter-Pet, Dorking, Surrey. Retail price £5 17s 6d. Stainless-steel adaptor for tank frames over 1 in. wide 4s extra.

QUARANTINE

An ounce of prevention—how the old adage applies to the keeping of healthy stock for both professional and amateur

UNDoubtedly the best method of keeping the aquarium disease- and trouble-free is to avoid introducing troubles into it. An obvious remark, you might think, but the practical details involved in conforming to this rule are all too seldom observed sufficiently rigorously by fish-keepers. It all means taking great care and being aware all of the time what dangers are constantly threatening the health of the aquarium's inmates.

Imported fishes are frequently parasitized, and although their parasites may cause them only minor inconvenience whilst the fishes are in their natural wide open spaces, in the confined volume of the aquarium water the parasites can increase to an extent that will cripple and probably kill their hosts. This problem will always be with us, so it must be faced by regarding any newly acquired fish as a potential purveyor of disease to your tanks. Not until you are sure that it is in fact quite healthy should it be placed with your present stock.

How can this clean bill of health be assessed? Only by subjecting the new fish to a period of quarantine. To say that an animal is in quarantine does not mean that it is diseased, only that it is isolated under observation to ensure that it is not so affected. If it does prove to be unhealthy, treatment can be given to cure it and restore it to health. Another advantage of the quarantine procedure is that fishes received in an undernourished state, as newly imported specimens frequently are, can be given a special feeding routine to build them up before they are subjected to the intense and vigorous competition for food that can go on in a well-stocked community tank, for example.

Point number one about quarantine, then, is that the new fish must be isolated. Obviously, several new fishes from the same source can be kept together for the quarantine period, but it would be adding to your risks to place together fishes from separate sources. What are the details of the procedure to be used?

A quarantine aquarium can be kept for all new stock. How big it should be depends on the maximum number and size of fishes you are likely to be receiving. Overcrowding must be avoided. An 18 in. by 12 in. by 12 in. or a 24 in. by 12 in. by 12 in. tank would be suitable for the average fish-keeper. The tank should not be furnished in the usual meaning of this term. It need contain no more than the water, the heater and the thermostat, but for the comfort of the fishes, if the aquarium base is of glass and is not blacked out, a thin layer of coarse grit can be included. No special lighting is required, but an inspection lamp should be used overhead for a thorough check each day to be made on the quarantined stock.

Point number two to be given emphasis concerns the

period of quarantine. The word itself originally denoted a period of 40 days, but it was not coined exclusively for aquarium application! Experience shows that nothing less than 10 days is safe, and 14 days is a time giving almost full security. That is to say, if a new fish is behaving normally, swimming actively, feeding readily and bearing no external visible signs of disease such as blotches, lumps or spots after 14 days in the quarantine tank you are unlikely to be introducing disorders to the healthy tanks if you then transfer it there.

Commonsense has to be used in this matter, however. If several fishes in a batch undergoing quarantine were to die during the period it would be wisest to extend the isolation time beyond 14 days, even though the remaining specimens seemed to be well. Be wary, too, if fishes that seem otherwise well keep flicking against the bottom grit or the heater wire. They are showing signs of irritation that may mean parasites are present.

Water temperature in the quarantine aquarium is best kept in the upper seventies or at 80°F (26-27°C); this will encourage early manifestation of symptoms if hidden disease is present and will also promote the liveliest behaviour that the fishes should be capable of showing.

Keep the quarantine tank clean. The siphon tube (for use exclusively in the quarantine tank) should be used over the bottom to take out sediment at least once during the 14 days, and about a bucketful of water should be removed and replaced by fresh water, if several fishes are in the tank. This is because in the absence of plants the water can become overcharged with soluble waste matter from the fishes. On the whole it is best not to include a chemical in the quarantine tank water as a routine, so that if a recognisable disease does break out the proper chemical cure can then be used. It is never a good procedure to have a mixture of different chemicals in the water.

Water plants can be a vehicle of disease for the aquarium if they have come freshly from an affected tank, and ideally new plants should undergo a quarantine period in a tank without fishes. However, many fish-keepers find that they can avoid trouble from this source by giving plants several rinses in clean water; some add weak disinfectants such as potassium permanganate or sodium hypochlorite to the water used for the first rinses.

Use of the quarantine procedure is probably a counsel of perfection that will not be followed by the man who has only a single community tank, and this is unfortunate since such a man is more likely to be discouraged from the hobby by persistent losses through disease than is the keeper of several tanks. For the latter type of aquarist, however, the quarantine system should be an accepted and never to be neglected routine.

Aquarium America through the Looking Glass

By JIM KELLY

Chairman, Fancy Guppy Association

JIM KELLY'S visit to the U.S.A. was originally scheduled for two weeks, but so many other invitations were received that it was extended to two months, in which time he lectured, judged fish and visited fish-keepers from New York to Chicago and on to Kentucky, through five States. He made appearances on television and radio and returned to Britain with the International Silver Trophy as Editor of the Year, two society fellowships, three life memberships and honorary memberships of numerous societies of various interests.



Jim Kelly (right) with Mr. Paul Hahnel (left) and Mr. Al Klee (centre) at the Indianapolis Aquarium Hobby Club Show

UNLIKE Alice, my trip to Wonderland didn't start with a slide down a rabbit hole! That thought crossed my mind as I lounged on the comfortable seat of the 707 Jet Stratocruiser thousands of feet above the Atlantic heading west. My curiosity for all things aquatic was like that of the Cheshire Cat and my broad grin as I thought of what lay before me would have rivalled his best feline expression!

It had all started some months before with an invitation: a request to visit the Aquarium Hobby Club of Indianapolis and speak at their Banquet.

As I am overseas' secretary of the Fancy Guppy Association, fish-keepers of the New World were no strangers to me; every week saw me exchanging some dozens of letters with them on the hobby—but letters are so inadequate.

No doubt, like me, you dear reader have gazed at the wonderful coloured illustrations of fish in American publications and wondered just how much of that wonderful colour was due to the printer's art? And with nothing in the picture for comparison just how did these fish compare in size and quality with those here in this tight little island we call home?

The invitation to 'Go West Young Man' would enable this writer to see for himself and find out the answers to many questions. As hobbyist, dealer and active aquatic society member, I felt qualified to make a comparison but, unlike Lewis Carrol, I would deal in facts and not in fictional imaginings.

Leaving Manchester Airport promptly at 12 noon on a blustery, typically Mancunian rainy day in September I landed at Kennedy Field, New York at 3 p.m. No! I didn't travel by rocket . . . Eastern Standard Time is five hours behind Greenwich and as you at home were sitting

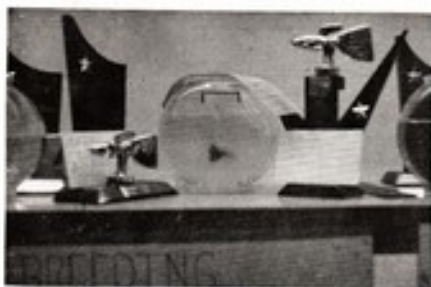
down to your evening meal I stepped out of the plane on to terra firma in the middle of a bright sunny afternoon.

Customs and immigration formalities over, I found I had five hours to spare before my next flight to the Middle West, and, thinking that curiosity kills only cats—not humans, I decided to explore in the limited time at my disposal the cement architecture that poses as New York City.

The skyscrapers don't creep up on you: turn yet another corner and—wham! They rear up like monstrous pencil boxes of steel and glass, a frightening experience even for someone who has skied in the Alps and nodded to Ben Nevis. The traffic moved in jerks from one stop light to the other, a traffic signal instructed me 'Don't Walk' and judging by the number of cars I thought Americans at least had obeyed; the citizens all seemed intent on breaking the four minute mile and I promptly christened New York 'the elbow city'.

For weeks I had studied my exchange rates of dollars and cents and as I jingled my nickels and dimes in a very English pocket decided to try out my learning. Approaching a coffee stall, I asked (in the best drawl I could muster) for a *coop of coffee*. Perhaps the waitress would think I was out of town? Her request for 'two bits' not only showed I was out of town but way out! Like every tourist since St. Paul I meekly held out a fistful of coins and instructed her to take the necessary amount. Two bits, indeed!

Lesson one: when in America don't imitate, be your-



Winning guppy entry flanked by trophies

self. The Americans love everything British but hate phoney Americanisms.

My next flight and the wonderful welcome I received from the Stimsons would lengthen this narrative and I have dwelt on tourism too long as it is, *PetFish Monthly* is an aquatic magazine and this is a 'fishy' tale, so let's talk topics.

The first U.S. fish show I visited came as a blow to my British conditioned mind; gone were the serried rows of tanks and jars and, instead, I saw rows and rows of drum bowls; these are very similar to our goldfish globes but are about twelve inches across and have two flat sides.

To settle any doubts that may be in your minds about the clarity of these bowls let me hasten to explain that all I examined had perfectly clear glass in them and the contents were as easy to view and judge as if they had been in fish tanks; the glass was remarkably free from the distortion so common with our fish bowls. Of course, one does find tanks at American shows but they are generally reserved for 'Aquarium Beautiful' and 'Oddball' classes (these latter being our Furnished and A.O.V. classes respectively).

Shock number one! The fish were generally larger and better coloured than fish from our side of the Atlantic. Preferring not to make my mind up on the evidence of just one fish show I reserved my judgement, but at the end of my tour, after seeing many such shows, my first opinion held good. Some of it, particularly the colour,



An array of 'drum bowls'—used extensively in the U.S.A. for exhibiting single fishes

was in some cases due to the use of hormones but I will have more to say about these in a later article.

Being a Guppy Man it is only natural that I wasted no time in inspecting these fish and found they followed the same trend: granted they did not display the true-to-standard shape of our guppies, but for size they simply took your breath away!

Short-tail varieties like cofertail and round were absent; there were a few sweettails but most of the entries were of the triangle tail variety or, as we prefer to name them, the delta. Everyone seemed to be breeding the broadtails. Gone was the European classification of outline, and classes were divided by colour: red, blue, green—it was like sliding down a rainbow!

British exhibitors would be off-beam if they expected here to win prize cards, silver cups or the 'round Robin' shields (the last-named for the benefit of non-competitive readers are suitably inscribed with past winners' names and are returned annually like a tax return, and to me these are as antiquated and stale as high button boots and last week's milk). The Stateside hobbyist, if successful, keeps his trophies and place winners receive a coloured ribbon with the show legend emblazoned down it in letters of gold.

The trophy stand looked like auction day at Sotheby's and I looked in vain for the armed guard, pistol at his side, so familiar here. It's no wonder hobbyists travel hundreds of miles to these shows, for who wouldn't have been proud to have one of these beautiful prizes adorning the sideboard?

For a nation where nobody lives much more than fifty miles from the sea, Britain has sadly lagged behind other countries of the world in marine fish-keeping. Although my wife and I have kept marine tanks for many years I know we are in the minority.

The same applies to marine classes in large British shows. Very few shows cater for this branch of the hobby and talks with show secretaries have revealed that, when they have included marine classes, the response has been very poor; probably the high cost of equipment and fish are contributory factors.

Not so in the United States. Most shows boast marine set-ups and well they look; the brilliant colour of their occupants swimming amidst equally colourful rocks and coral are an asset to any show.

Those who balk at the prohibitive price of stainless-steel tanks can take a note out of the American marine-keeper's book and use all-glass tanks (home-made mostly and stuck together with Silastic, a clear sealer sold in tubes). At one show in Kentucky I saw a 200 gallons tank thus constructed, the only strengthening being a wooden frame round the bottom of the tank! Experimentation with various types of sealers here in Britain might help solve this 'Gordian Knot' of the marine aquarist.

So much for the exhibits, now for the exhibition itself. Something to make our show organisers drool are the gate figures: it's a poor fish show with less than a four figure attendance and even modest club events bring the crowds in like a Barnum freak. How do they achieve this?

From my limited experience I put it down to the fact that they do not charge for admission. This, plus terrific advertising and publicity campaigns, draws in the crowds. Before the Indianapolis Show I even appeared on radio

and television, getting good free plugs in when possible for the club.

This may come strange to our typically English reserve, but in the States they don't believe in hiding any light under the proverbial bushel... rather flood-light the bushel!

If they don't charge for admission where does the money come from to stage these extravaganzas? Primarily from entrance fees to show fish. These range from 4s. to 7s. per entry, in comparison with our sixpence through to two shillings; the entrance fees look prohibitive, but it does mean that a would-be exhibitor thinks twice before choosing his entries and helps cut out quite a lot of 'make weight' common with cheaper priced entrance fees.

Another source of revenue are the raffles, tickets being sold, not only in the show hall, but for many weeks before the show (members, clubs and shopkeepers are pressed to take tickets and with complete aquarium set-ups as minor prizes it isn't surprising they sell so many).

Finally, the fish auction; this takes place at the end of each show when the exhibitors sell their fish. The better

I have read that in the United States no man meets a stranger and from experience I can say this is true. New York and its occupants are the Englishman's preconceived notions of Americans, but if you really want to see the citizens of this great collection of States then reserve your judgement until you visit the Middle West.

It's a wee bit embarrassing to have complete strangers come to you and, slapping you on the back, start into first name terms, and then to find out that they know as much about you as you do yourself (thanks to pre-publicity again). But I have always hated pomposity and it was an experience to meet and chat with such enthusiastic people—more introductions, more names that previously were just endings to letters or heading some magazine article or scientific treatise. The list would read like an aquatic 'Who's Who', and space doesn't permit a mention of them all.

One fish-keeper who I had met before in Britain was my good friend Paul Hahnel, who had flown down from New York for the show. Paul and I spent the rest of the week together as guests of the Scimmons in 'Big T'. Flying to a fish show in Britain might not fit in with our usual idea of modes of transport and might brand the participant as either a millionaire or an eccentric, although chatting with some friends at the British Aquarists' Festival last year I found that they had done just that and I hasten to add they come into neither of the categories just mentioned; perhaps some of the New World enthusiasm is finally reaching our shores.

If I have appeared to have seen the hobby in the New World through rose-tinted spectacles then let me assure you that I viewed it all impersonally, determined to report only what I saw—and I liked what I did see. American hobbyists follow fish-keeping with the relentlessness of a hungry elephant and their enthusiasm to learn more bubbles like a good aerator.

They not only accept criticism but at times ask for it; perhaps here lies the secret that has made keeping fish America's number two hobby in popularity? I realise it is a big country and can swallow Britain some thirty times, but one place I visited with a population no larger than our Brighton boasted an attendance at their local fish show bigger than we had at our British Aquarists' Festival. In the light of this is it time to start wondering where we in this country are going wrong? That is a question I leave my readers to answer.

Mr. Kelly's next article in PetFish Monthly will tell of his further journey south, visits to hobbyists in their homes (including one with some two hundred tanks in a poultry shed!). Read how the 'man-in-the street' keeps his fish in the U.S.A.



Marine aquaria are commonly seen at fish shows in the U.S.A. Here a Moorish idol displays in front of coral decoration

the prize, the better the price and to give you an example of prices I have seen nondescript guppies go for 20 dollars (about seven pounds!).

Having no Pet Animal Act restrictions as we in Britain have, hobbyists can openly buy and sell the products of their endeavours, a small percentage of each transaction going to the organising society.

Walking around any show makes one thirsty, and here the Stateside folk really come into their own. No cup of tea and a piece of cake for these aquarists! Eating and drinking are an American pastime and they are past masters of the art. Gastronomers can linger over tables simply groaning with good things to eat and can swill it all down with various beverages from coffee to ice-cold cokes; as American as baseball or hot dogs.

Smorgasbord being a favourite, here food is laid out like our cafeteria systems and one goes by the tables loading up a plate with whatever takes one's fancy; the price to participate in this (guaranteeing the purchaser as much as he can eat and drink) is about five dollars (35 shillings in sterling!).

Are You an Amateur Photographer?

YOU will want to see the details of PETFISH MONTHLY'S Photographic Competition on page 22 of this issue.

Petfish Monthly looks at

Aquarium Filtration

Modern filtration techniques have led to the development of new filter media, and an understanding of what these are meant to do is important for the full advantages of their use to be gained by the fish-keeper

FILTRATION is now very widely used by fish-keepers but not always with the greatest understanding of what it can accomplish and often without the fullest advantage being taken of all that the use of a filter has to offer.

Development of filtration techniques in spheres other than aquarium-keeping has, for example, yielded new filtering materials that can be valuable for use with aquaria, and these are already being marketed by some aquarium suppliers. They are not being widely used at present, however, simply because confusion exists about the general purposes of filtration media.

New 'power' filters giving very great rates of flow of water through the equipment are appearing and are proving popular, but again without the realisation that even greater benefits can accrue from their use with modern media.

What do we hope to accomplish with filtration? Most aquarists will at once answer that they are seeking that 'gin-clear' appearance of the aquarium water that is so much admired. Certainly this is a desirable aim, and it is achieved by obtaining complete removal of all the tiniest particles of matter suspended in the water. Note the word 'suspended'. It is such particles, and under this heading we would include microscopic living organisms such as bacteria, that are responsible for murkiness or cloudiness of water, and they are capable of being separated from the water by what might be termed a sieving effect.

That is to say, if the cloudy water is passed through some material with holes, pores or channels of small enough size to hold back and trap the suspended bits it will be quite clear on emerging from the material. Packed layers of graded sands and gravels, having various grain sizes, can provide such a sieving action, and in imitation of what is done with this medium at public waterworks, fish-keepers of earlier days used large jars or tanks set up with gravels in this way as their filters. It requires rather a lot of this material to get good results, however, and it is fiddling to set up, so that fibrous materials have come to be used in their place.

A layer of interlacing fibres will, of course, give a mesh or sieve of the kind we need, and man-made fibres such as those of glass wool, nylon floss or plastic sponge are now widely used. Some fish-keepers prefer not to use glass wool because small fragments of it are apt to leave the filter in the water and also because it irritates their skin. Nylon floss is free from this defect.

By sieve action alone, then, we can get water as clear as it will ever be. But this does not mean that the aquarium water is now pure and of first-class quality. A watery solution of salts of arsenic can be crystal-clear but nevertheless poisonous! Clear aquarium water after filtration can similarly be charged with dissolved chemical substances produced by the fishes in their urine and droppings. In an old aquarium with water that is never changed these and similar substances can cause a yellowish tint to the water, revealed when it is examined in a glass jar held up to daylight.

High concentrations of these substances are harmful to fishes: their presence causes loss of appetite and colour and growth stops. Water plants, too, come to appear 'scooped' in such over-rich water. Therefore, when a filter is used the opportunity should be taken to include a medium that will have an absorbing action (distinct from the sieve action of sand or fibre media) to keep the amount of such dissolved solids to the minimum.

Granules of carbon (charcoal) have been used for some time to serve this absorbing function. Its action arises from the fact that it is a highly porous material, providing an enormous total surface in contact with the water on which dissolved solids become concentrated by physical forces. Properly, this process is termed adsorption and it is something that happens at the charcoal's surfaces without the carbon entering into any chemical change.

Obviously, there is a limit at which an absorbing medium ceases to be efficient, just as there is a point at which sieve action of a mesh medium will stop when the fine holes are blocked by the suspended particles it is holding back. Notice that the charcoal itself will have some sieve action but as this action will soon prevent the adsorbing function it is necessary to see that the suspended particles are removed first. This is why in packing a filter the glass wool or nylon floss must always be placed so that it comes into contact with the water from the aquarium first (on the top when the water is being delivered from above).

There is also a limit to the types of substances that charcoal will remove from water. Because of this it can disturb the balance between the dissolved components, which might show itself as an increased acidity of the water, for example. This is not to belittle the use of charcoal, it is merely to indicate its limitations.

Charcoal is cheap and efforts to restore charcoal that has been in use for some time are not worthwhile. Periodically it must be removed from the filter and replaced by

fresh. Practical points emerging from this are that the larger the container for the filtering materials the less often will they need to be renewed and that filtering apparatus should be easy to get at and dismantle for this job to be done.

The newest filter media are those known as the 'ion-exchange resins'. The action of these on dissolved solids in water could be said to involve an extension of the adsorptive action of charcoal in that the substances are firmly held by chemical interaction within the resin's fine structure. The chemist prepares these ion-exchange resins in a variety of forms, the mode of preparation determining the degree of porosity and also which types of substances will be removed from the water passed through the resin. One type of resin can be used for removing those salts from water that cause 'water hardness', but resins are also available that can be used to purify sea water without upsetting its mineral content. These are examples with relevance to aquarium use, and two distinct kinds of medium are on the market for use with freshwater or with marine aquaria.

The efficiency of this chemical interaction within the filter resin is such that much greater quantities of the particular dissolved substance for which the resin is designed can be removed than is the case with charcoal. Although they may seem expensive, the other great advantage of these resins is that they can be easily treated ('regenerated') after a period of use so that they can be returned to the filter for a new period of work. The regeneration process should be done as directed by the makers of the resin, and this involves little more than

agitating the resin in a warm solution of table salt and then washing it in clean water.

Ion-exchange filter resins are for use along with the other filter media discussed above, and unless the supplier directs otherwise they should be placed to contact the water last, in the sequence: sieve filter medium, charcoal absorbent medium, ion-exchange medium (although to prevent mixing of charcoal and resin granules during packing further fibre medium can be included between these two layers).

Continuous use of the complete filter set-up is recommended for breeding aquaria and rearing tanks (with fish well past the fry stage), and for marine aquaria. Planted community aquaria may show a decline in plant growth if there is prolonged use of the absorbing media, owing to the complete removal of dissolved solids used by the plants as foods. For this reason the resin media are of special use in filters that can be moved from tank to tank, so that each tank is treated in this way for a limited period.

It is difficult to recommend the interval that should be allowed between changes of media or regeneration times, because circumstances in different aquaria vary so widely and so do types of filters. Factors influencing renewal times include size of tank, capacity of filter, rate of flow through filter, number of fishes in the tank, types of fishes and feeding employed. In practice, most fish-keepers come to judge by sight when the fibre medium is beginning to fill up with dirt and change all the filter contents in one go.

Is it New to You?

Recent importations and reintroductions

A FAIRLY rare algae-eating fish from South America has recently shown up in the importers' lists and is now being offered for sale by some dealers. This is the anostomid fish *Prochilodus insignis*, which is attractive not so much in coloration, although this can be spectacular in the young specimens, but in the black and white stripes most obviously displayed on the longish tail fin. Characteristic of the group is the modification of the mouth to form a grazing disc, and *Prochilodus insignis* takes a large proportion of its food in the form of vegetable matter, notably algae and soft plants.

It is an active fish once it settles down in a tank and is not harmful to other fish. Several kept in a community will swim around together and may leap from the water occasionally, so well-covered tanks are essential. This fish is eaten in Guiana, and it might be guessed from this fact that it can grow to a large size; around twelve inches is adult length, but it is unlikely to reach this size in an ordinary aquarium, nor has breeding in aquaria yet been reported.

FOR the first time in ten years or so large numbers of albino sailfin mollies have been imported from the U.S.A. The characteristic sail-fin dorsal develops enormously in the males under spacious living conditions after about a year, and the body length can be in excess of three inches. Don't be put off therefore by the not

overlarge dorsal fins on fish in the dealers' tanks: give these mollies the right conditions, not forgetting the recommended addition of some sea salt to their aquarium, the right mixture of vegetable and animal food and Nature will out! Well-developed adult specimens command quite high prices, and in view of this the prices asked for the young albino sailfins, up in comparison with those asked for other mollies, are worth paying to develop your own spectacular specimens.

CHARACINS are often spoken of as a group as if they are all exactly alike in appearance and habit, but just to see the diversity that can be found within the family have a look at the Brazilian darters (*Characidium fasciatum*) now on the stock lists. In fact these fish have more the body form of the sucking loach *Gyrinocheilus*, although they are in no way related and come from the opposite half of the world; properly they are placed in a separate family (Hemiodontidae) from the characina, but in older classifications they will be found listed with them.

Not brightly coloured, but nevertheless an attractive fish, the Brazilian darters have swimming habits that are described by the popular name. This fish spends a lot of time in the tank bottom regions and likes to have a few hiding places. It is reported to prefer the lower range of tank temperatures, around 70°F (21°C), and is partial to tubifex and white worms. It will reach about four inches in length and has been bred in aquaria. The body markings of the Brazilian darters are very variable, which makes rather difficult the usually suggested means of sex differentiation, namely the presence of small brown spots on the dorsal fin of the males.



Living corals of various kinds, all



exhibiting their tiny polyps, are shown in these pictures



L I V I N G C o r a l s

THE calcareous skeletons of tropical corals are often used as a decoration for sea-water aquaria. However, such ornaments have little in common with a living coral reef: the bushy acropora corals have been specially bleached and the shining reddish skeleton of the organ coral has a deep carmine coating, colours which are never to be found in a living reef. It is only when these decorative pieces are overgrown with green or brown algae that they resemble natural corals. Even then they are far from actually being living corals for they lack those thousands of tiny polyps, about a millimetre in size, which form the live substance of such a coral.

The polyps were once the inhabitants of the numerous cavities on the surface of the decorative stones in our aquaria and which mark them as being part of a coral rock. In certain tropical waters the tiny polyps absorb the calcium carbonate which is dissolved in the water and secrete it as a solid substance which shapes into the characteristic skeletons of the various species. The shape of these coralline organisms is extremely varied: some are bushy, some look like large umbrellas or antlers, others resemble heads of cabbage or form

roundish stones varying in size from about six inches to ten or twelve feet in diameter.

For millions of years coral polyps have been building up large reefs, and the result of their activity can be seen not only in the gigantic submarine mountains and ridges of the tropics but also in such high, now dried-up, mountains, as the Dolomites, i.e. the southern part of the Alps.

To have living corals and thus grow a natural coral reef in the aquarium has always been a dream of those who have a sea-water aquarium. Occasionally there have been reports in scientific journals about successful coral-keeping, but invariably from tropical areas. On further investigation most of the experiments turned out to be a failure and they were soon given up.

But at last the problem of how to grow living corals seems to be solved: coral-keeping was made feasible not in tropical or subtropical coastal regions but right in the heart of Germany.

On a recent visit to the glasshouses of the tropical aquarium Tropicarium Frankfurt, in Buchschlag, I noticed a 44-gallon basin containing a coral reef. But to my surprise this was not the usual type of mere decoration but a real living reef. The familiar limestone for-

becomes clouded. But when the filters and the circulation pump are turned on again the water clears within half an hour. The basin, incidentally, contains no sand whatsoever. Natural coarse coral limestone serves as a basis for the corals. Apart from the need for a vigorous circulation of the water there has to be ample supply of oxygen. Besides the usual co-habitants such as tube worms, polychaeta, a few crabs and a slug, there is one *Stichaster* anemone, together with a few *Amphiprion* percula. It would be dangerous to add other fishes since a great many are polyp-eaters. Thus many *Chaetodon*, *Forcipiger*, angelfish, *Oxymonacanthus longirostris*, probably some *Acanthurus*, certainly most of the trigger fishes and many puffers, prickly globefish and boxfish would devour the polyps or destroy the corals in some other way.

How was this success with corals achieved? So far, all attempts at keeping coral polyps alive have failed. The only explanation seems to lie in the chemical composition of the water. Dr. Biener, a chemist from Frankfurt, recently succeeded in developing an artificial salt which is practically identical with natural sea water. The sea salt mixtures produced so far contain only the essential basic substances such as sodium chloride and potassium iodide. But they invariably lack the numerous 'trace

in the Aquarium

by Wolfgang Klausewitz

Natural Science Museum and Research Institute, Senckenberg, Germany

mations were densely populated by wide-stretching coral polyps. It was a truly fascinating picture, and I was struck by the sight of these thousands of tiny 'sea anemones'.

A great variety of species participate in the building up of this reef. Herr Hans R. Schmidt, the owner of the Tropicarium, has had most of them sent by air from the southern part of the Red Sea (Massawa); a few others came from the coast of Florida. I was able to identify with certainty the following species: *Acropora*, *Stylophora*, *Galaxea* and *Fungia*; in the *Favia* and *Platygyra* the existence of polyps could not be fully ascertained. Further attempts at keeping living corals are being made with the soft, crustaceous *Echinopora* and the *Millepora*. Those corals coming from the coast of Florida seem to belong predominantly to the *Lobophytia*.

As I was told by Herr Schmidt, most of the corals have been in the aquarium since November last, some of them for as long as six to eight weeks at the time of my visit. The majority of the species are open also in the daytime, not only during the night. A few of the samples which were apparently partly broken in transit seem to be forming new colonies of polyps on those parts which had died off. The aquarium, which is about four feet long, is made of Eternit (asbestos cement sheeting) and has a glass front. There is no glass on top, and it is situated some seven feet below the free glass roof of one of the hothouses, with no artificial lighting, only daylight (sometimes direct sunlight).

The polyps are fed daily with 'mussel milk', *Artemia* (brine shrimp) nauplii and pulverised dried food (TetraMin). Since during feeding the circulation pump has to be turned off for a few hours, the whole water

elements', i.e. metal compounds which occur only in minute quantities in sea water—in 'traces', as the name properly suggests. These trace elements are (amongst others): aluminium, barium, chromium, iodine, cobalt, mercury, silver, strontium etc.

The sea salt which Dr. Biener has developed and which is on the market under the name of Tropic-Marin-Neu contains the following 30 trace elements: aluminium (as chloride); antimony (as chloride); barium (as chloride); beryllium (as nitrate); lead (as acetate); boron (as sodium borate); bromine (as sodium bromide); cadmium (as chloride); caesium (as chloride); chromium (as acetate); iron (as sulphate); fluorine (as sodium fluoride); iodine (as sodium iodide); cobalt (as cobaltous chloride); copper (as cupric nitrate); lithium (as chloride); manganese (as sulphate); molybdenum (as sodium molybdate); nickel (as carbonate); phosphorus (as disodium hydrogen phosphate); mercury (as mercuric sulphate); rubidium (as chloride); silver (as nitrate); silicon (as sodium silicate); strontium (as chloride); vanadium (as sulphate); tungsten (as phosphotungstate); zinc (as chloride); tin (as sulphate).

Since the corals have been kept in this kind of sea water the polyps have fully opened and seem to live in exactly the same way as in their natural surroundings. It might even be possible for the corals to build up a natural reef in the aquarium. This discovery also represents, of course, an important scientific achievement, since at last it will be possible to keep living corals for laboratory experiments and to undertake general biological and special physiological research work which is long overdue and which scientists have envisaged for a long time.

PETFISH photo competition

Will your fish 'click' in our photo competition?

IT is not often that two hobbies are so complementary as fish-keeping and amateur photography. Many keen aquarists already know that the care lavished on the health and decoration of the tank or pond produces a whole range of subjects upon which they can test their skill as photographers. Achieving good results in fish photography does call for patience and persistence but presents a fascinating challenge. The triumphs of the fish world—the size of that giant Oscar, the brilliance and spawning drive of those ruby barbs, the beauty of the garden pond in summer and the colourful tropical tank in the living room—merit recording on film at their peak.

Categories

PetFish Monthly invites you to send in your entries under the following categories:

- I Black and white photographs**
 (a) Fish/aquarium scene (b) Garden pond
- II Colour prints and transparencies**
 (a) Fish/aquarium scene (b) Garden pond

Rules and Conditions

The following rules should be adhered to:

1. The competition is open only to amateur photographers.
2. Each entry or set of entries (no limit to number) must be accompanied by a completed entry coupon from a current issue, and sent to PETFISH MONTHLY (Photographic Competition), 554 Garratt Lane, London S.W.17. Final closing date for entries will be announced later.
3. All reasonable care will be taken of prints and transparencies but responsibility cannot be accepted for entries lost, delayed, mislaid or damaged in the post or otherwise. Proof of posting cannot be accepted as proof of delivery.
4. Each print or transparency should bear the name and address of the sender in capital letters.
5. Black and white prints should be glossy preferably, of not less than postcard size. Negatives should not be submitted.
6. Prints and transparencies will be returned only if a stamped and addressed envelope for this purpose is provided.
7. Entry into the competition will be deemed to constitute submission of the photograph for reproduction in PETFISH MONTHLY and reproduction fees will be paid for any material not in the prize-winning categories that is published.
8. All prize-winning photographs will be published in PETFISH MONTHLY without further fee.
9. The judges will be the Editor of PETFISH MONTHLY and one other (name to be announced). Their decision is final and no correspondence can be entered into concerning the competition.



FIRST Prizes £5
RUNNERS UP £2

Entry Form PETFISH MONTHLY Photo Competition

Please complete in BLOCK CAPITALS

Name

Address

Category of entry

I have read and will conform with the Rules and conditions of the PetFish Photo Competition. I declare that the entry (or entries) submitted are my own work as an amateur and not that of a professional photographer.

Signed

Date

Valid until 30 April 1966



FISH were included at this year's social get-together of **CORBY & D. A.S.** members, two table shows being on the programme. The first, for catfish, consisted of entries by senior members and other members present gave their opinions on the placing of the exhibits. Mrs Burrell analysed the ideas to make these awards: 1, Mr R. Still; 2, Mr T. Kelly; 3, Miss Bell. The second table show was of any variety tropical fish staged by junior members, and winners here were: 1, Mr M. Pheasant; 2, Mr A. Brooks; 3, Mr G. McPhee, judges being Mrs Burrell and Mr P. S. Baldwin.

MONTHLY meetings of **DERBY REGENT A.S.** are now held at the Engineers' Club, Osmaston Road, Derby. At the annual general meeting a year of growth and varied activity was reported. Mr T. Ridgeway succeeded Mr J. Burrell as chairman, the latter being elected president. The secretary (Mr T. F. Jerram), vice-chairman (Mr A. Bettany), treasurer (Mr J. Darbyshire) and show secretary (Mr A. Widdowson) were all re-elected. Mr P. Kendrick was appointed assistant secretary, Mr A. Pinnock librarian and Mr K. Hallam and Mr McLoughlen were appointed to the general committee. The show committee is represented by Mr Widdowson, Mr Kendrick, Mr Bettany and Mr Hallam.

FORMED as an off-shoot of the local Museum Society, **SCUNTHORPE A.S.** made its bow earlier this year. The Society meets monthly at the Natural History Section of Scunthorpe Museum, and has 30 members. Further members from the many aquarists in the locality are being sought.

MEMBERS of the **PORTSMOUTH A.S.** who entered the Society's annual home furnished aquarium competition were visited by Mr C. Sprinks, who judged the entries. First in the tropical section was Mr M. Mason (2, Mr N. Franklin; 3,

Mr P. Wyllie) and in the coldwater section the results were: 1, Mr S. D. Forse; 2, Miss W. Ryder; 3, Mr W. J. Ryder.

LACK of enthusiasm for coldwater fish-keeping by members was a complaint made at the annual general meeting of **SOUTHEND, LEIGH & D. A.S.** A local paper passed the comment 'with our climate can you wonder that even aquarists try to get away from it all in their fish tanks'.

CHANGE of meeting place for **MEDWAY A.S.**; meetings are now held on the second and fourth Wednesdays of each month at Dane-court School, Watling Street, Gillingham. Refreshments are available and any interested visitors are welcome.

FORMED only last December, **MORAY A.S.** have already held an exhibition of tropical fishes that attracted entries from Buckie and Inverness. Mr J. Rawlins judged the fish: in the livebearers section Mr G. Steer took first award and Mr J. Mellis was first in the egg-layers section.

REVIVAL of the **NORTH OF SCOTLAND A.S.** took place last month when a general meeting was held at the Y.M.C.A. Building, Union Street, Aberdeen. Past members and newcomers to the hobby are being encouraged to join.

LECTURERS who have visited **NOTTINGHAM & D. A.S.** in recent months to give talks have included Dr Cole, Dr G. Coat, Mr P. Bird, Captain Edwards and Dr F. N. Ghadially. It is hoped to arrange an inter-society show with Burton, Derby and Notts. Tropical Societies this year. Members of the Society have travelled as far afield as Corby and Liverpool to enter various table shows, in most cases bringing home a number of cards, cups etc. between them. A.G.M. of the Society was scheduled for March.

AT the A.G.M. of **BASINGSTOKE & D. A.S.** the president (Mr R. Forest Jones), chairman (Mr E. W. Leavey) and secretary (Mr V. Leavey) were re-elected. Lectures, film shows and discussion groups are among the year's activities that are planned.

A.G.M. of Federation of British Aquatic Societies

DELEGATES present were Mr Donnelly (Bedford), Miss A. Hawes (Bethnal Green), Mr R. Browning (Brighton & Southern), Mr E. L. Arthur (Chelsea), Mr J. D. Wilson (Catford), Mr K. Nutt (Chingford), Mr A. H. Gale (East Dulwich), Mr S. E. Payne (Erith), Mr G. Kluger (Hampstead), Mr P. Sleet (Hastings & Bexhill), Mr F. Tomkins (Independent), Mr D. W. Ellis (Kingston & District), Mr J. Stewart (London Transport A.S.), Mr G. H. Jennings (Newport, Mon.), Mr J. Scillwell (Portsmouth), Mr R. D. Eason (Riverside), Mr J. Linsale (Roehampton & Beacontree), Mr W. T. Ryder (Southampton), Mr R. G. Mealand (Surrey A. Circle), Mr S. D. Forse (South Wales Characin S.), Mr E. R. Nicoll (Thurrock), Mr L. F. Clements (Tottenham), Mr C. G. Bull (Uxbridge), Mr R. Elsdon (Walthamstow), Mr W. E. Barker (Weybridge),

Mr G. D. Forrest (Weymouth), Mr E. F. Large (Willesden), Mr D. Malton (Witham). Also present were a number of non-delegates, including a good contingent from the Portsmouth Club, others from Erith, Brighton, Kingston, Thurrock and Uxbridge; Mr F. C. Katrinsky, Mr Frank Stone (chairman) and Mr K. J. A. Pye (general secretary).

In the general secretary's report on behalf of the Council he mentioned the new Certificate of Merit, rules for which had been ratified at the September meeting of delegates. There had been a new supply of badges for ordinary members and unfortunately the price had to be raised to 3s. The Federation ties could now be had in lizard green as well as blue, both with the gold fighter motif (price 10s. 6d. in terylene). During the year fourteen societies holding open shows had been allocated a Federation Open

Show Trophy and it was evident that these were gaining popularity. The Major Trophy was competed for at Basingstoke, the Junior at Newport (Mon.), the Colindale Plant Trophy at Bracknell; the new trophy for the British Tropical Furnished Aquaria Competition was used by the donating club Uxbridge & D. A.S.

It had been agreed that in future if possible the Assembly meetings would be on the first Saturdays of the usual months (March, June, September and December).

As much information as possible had been sent out to the clubs by the Show Committee, giving such things as show dates for the current year, as it was found that clubs usually kept to the same time each year. Also, where known, dates of the 1966 Open Shows were given separately. Other information consisted of sources of tanks and equipment for loan or hire.

New judges appointed were Mr G. H. Jennings (Class B all classes Trop. & C.W.), Mr G. D. Forrest (Class B Trop. only), Mr D. W. Ellis (Class B Trop. and C.W.), Mr H. Towell (Class B Trop. & C.W.); it was reported that Mr D. Hancock had been upgraded to Class A Trop. only, and Mr J. Stillwell Class A Trop. only.

Mr A. G. Jessopp (Erith) was elected as the new chairman, Mr F. Tomkins (Independent) vice-chairman, Mr K. J. A. Pye as general secretary, Mr R. D. Eason as assistant general secretary; Mr Sargent (Catford) agreed to carry on as treasurer until March. The following were elected to the Council: Messrs. Brown, Forrest, Gale, Large and Towell, to join Messrs. Arthur, Donnelly, Ellis, Mr Frank Stone continuing to serve as Immediate Past Chairman. Mr Large has since had to resign due to unforeseen commitments.

Rules governing the Federation trophies had been brought up to date and these were confirmed in the Assembly meeting which followed the A.G.M. Mr Gale requested information from clubs having junior sections; details can be sent to Mr A. H. Gale, 16 Chesterfield Grove, Dulwich, S.E.22.

The Open Competition for *Razbora* species was held during the meeting; first was Mr George Kluger with *R. eithoceni* (82 points).

New Marine Society

THE keeping of marine aquaria is a branch of the hobby that is likely to receive a considerable boost by the inauguration of the **Marine Aquatic (Study) Society of Great Britain** this year. The marines have, as yet in this country, attracted comparatively few followers. In the past, the work involved in maintaining a marine tank caused all but the most daring experimenter to shirk the effort, though tanks housing rock-pool creatures found off our own shores, like the gobies, crabs and anemones have been kept with great success and interest to their owners. All the time, however, new techniques of keeping marine fishes were being tested, particularly in Germany, and enormous improvements have been achieved; salts to make artificial sea water have been marketed and filtration methods and media developed. The fish, too, are now available. Importers are not lagging behind in their efforts to bring them into the country in bulk. The amazing beauty of many of the marine tropicals and the challenge that their rearing presents to keen fish-keepers must result in a rapid expansion in this side of the hobby during the next few years.

In fact, the time is just right for the new Marine Aquatic (Study) Society of Great Britain, which circulated its first monthly journal to members in January. While hoping to promote aspects of the hobby not yet studied in detail by any other association, it intends to cater specifically for the marine aquarist and to give special support to societies making available marine classes in open shows.

In a discussion with members of the Founding Committee—chairman



Secretary (left) Mr G. H. Jennings and Mr J. V. Morrice (vice-chairman)

and vice-chairman Mr. J. V. Morrice and Mr. A. Jessop, both F.B.A.S. judges and lecturers, and secretary Mr G. H. Jennings, F.B.A.S. judge and a Member of the Marine Biological Association, U.K.—it was stressed that the Society will be undertaking study projects. The data collected from members for instance on water conditions, feeding and breeding of individual species will be collated and stored for reference purposes after monthly publication in the News Sheet.

This is a truly excellent idea and could be of immense value to the hobby. Before the marine tank becomes standard in every hobbyist household, much more will have to be learnt. To be able to call upon such a body of available data will be invaluable and of no little scientific importance. Furthermore, the mere effort of analysing and recording our observations is excellent training and should be done by all serious fish-keepers.

Anyone interested in joining in this work should contact the secretary, Mr G. H. Jennings, 2 Gatcombe Road, London, N.19 for membership forms and further information.

British Ichthyological Society Report

FOUNDED almost five years ago as the Scottish Ichthyological Society in Glasgow, by a small group of amateur biologists, the **British Ichthyological Society** (as it was later named) has now grown into a national organisation. Probably the most important aim of the

B.I.S. is to interest anglers, aquarists and skin-divers in the study of ichthyology, and it is certainly here that the Society has made the greatest impact. The B.I.S. JOURNAL, which has been published continuously for four years, has now become a bi-annual review, and a

regular newsletter has been introduced to keep members abreast of developments in biology and ichthyology of interest to them, as well as Society news. Last year the Society published the first in a series of booklets on selected aspects of the science of freshwater biology, *A Beginner's Guide to Scale Reading*. This has had a favourable response, not only in this country but also in the United States. The next booklet in the series, *Freshwater Invertebrates*, will be out shortly. The many enquiries addressed to the Society has revealed large numbers of aquarists and anglers who wish to make a fairly deep study of ichthyology, but who do not want to commit themselves to a course at a university.

With these people in mind, the Society designed for its members a comprehensive correspondence course, which, with the aid of a few books, allows them to bring their understanding of the subject to a very high level. The low cost of this course (30s. in Britain) has no doubt added to its popularity, and many members in the United States have taken it. Successful completion of the course is also a first step towards Fellowship of the Society. The Society also offers more personal advantages, in the form of an advice service, free to members, a scale-reading service, and also water tests and surveys. Members have the

chance to co-operate in field research and a few can join in special surveys, like the one carried out over the last two years on the Upper Great Ouse.

The World Wildlife Fund has given a grant for a study into the habits and distribution of the British burlbot (*Lota lota*), and although so far a live British specimen has eluded us, much valuable data have been collected about their former haunts. The Society has also obtained from the continent preserved specimens for study. On a wider scale, the Society is co-operating with the Nature Conservancy and the Botanical Society of the British

Isles, to map the distribution of the fish species of the British Isles, and for this, field observers are urgently needed.

Full membership of the Society costs 30s., an entry fee of 10s. and a subscription of £1. The Society welcomes anyone with a genuine interest in the study of fish. Enquiries from clubs, associations and institutions are also welcomed. Further details can be obtained from the secretary, Mr David Marlborough, 98 Stoneyfields Lane, Edgware, Middlesex.

JAMES McM. URE, Chairman,
B.I.S.

Aims of ASLAS

FIRST formed in 1949 to foster and promote the interests of South London fish-keepers' societies, the **Association of South London Aquarist Societies** has considerably extended its boundaries since then and now has 16 member clubs in areas as far apart as Crawley, Reigate and Hounslow. Membership is in fact open to any society interested in the services ASLAS has to offer, such as the panels of show judges and lecturers (travelling expenses only charged), the tank loan service for open or inter-club shows and displays (free to member clubs and at a nominal fee to non-mem-

bers), the annual open show and a '12 fish any variety knockout competition' with some fine challenge cups and shields to be won. A monthly newsletter of club news is issued and ASLAS members try to help people with aquarium fish problems.

Mr John Thorne, chairman of ASLAS, has asked *PETFISH MONTHLY* to print this message: 'If any club would like to join our ranks or learn more of our activities we would be very glad to hear from you. Also if any individuals would like to try club meetings to further or to impart their own knowledge and are uncertain of the nearest Society to their home we would be pleased to put them in touch. Please write and join us, as the bigger we grow the stronger we grow. Thus the stronger we are, the bigger and better our activities can become'.

Officials of ASLAS for 1966 are: chairman Mr J. Thorne (10b The Grove, Isleworth, Middlesex), secretary Mr C. J. Harrison, treasurer Mrs J. Thorne and committee members Mr E. Keep, Mr R. Thomas, Mr D. Ellis and Mr G. Greenhalf. Headquarters are at Sutton Adult School, Benhill Avenue, Sutton, Surrey.

Dates for your Diary

2nd April. **HOUGHTON & D. A.S.** Annual Open Show at Herrington Burn Welfare Hall, Houghton-le-Spring.

7th May. **CHELSEA A.S.** Open Show at Chelsea Community Centre, 385 Kings Road, London S.W.10. Benching: 1.30-3.0 p.m. Prize-giving: approx. 7 p.m. Show schedules are available from show secretary Mr R. Cox, 42 William Parnell House, Bagleys Lane, London S.W.6.

21st May. **WIMBLEDON & MERTON A.C.** at Holy Trinity Hall, The Broadway, Wimbledon.

4th June. **FEDERATION OF BRITISH AQUATIC SOCIETIES** Assembly.

9th July. **BASINGSTOKE & D. A.S.** Annual Show. Details awaited.

8-13th August. **PORTSMOUTH A.S.** Annual Open Show.

August. **BRITISH KILLIEFISH ASSOCIATION** Members' Show in Birmingham. Details awaited.

2nd September. **FEDERATION OF BRITISH AQUATIC SOCIETIES** Assembly.

3rd and 4th September. **NOTTINGHAM & D. A.S.** Third National Fish Show at the Drill Hall, Derby Road, Nottingham. Show secretary: Mr W. J. Christian, 40 Moor Lane, Bunny, Notts.

17th September. **NEWPORT A.S.** Fourth Annual Open Show at the Drill Hall, Stow Hill, Newport. Classes (24) include one for marine fish. Show secretary: Mr M. J. Parry, 45 Western Drive, Gabalfa, Cardiff.

Thanks for Get-Well Wishes

MR. W. G. PHILLIPS, President of the Fancy Guppy Association, asks us to convey his sincere thanks to the numerous senders of get-well messages after his successful operation and stay in hospital earlier this year.

British Killiefish Association

ALTHOUGH formed only seven months ago, the **British Killiefish Association** has nearly 200 members, including fish-keepers in Africa, U.S.A., India, Spain, Denmark, Switzerland, Ireland, Sweden, Hong Kong and Germany. A comprehensive News Letter is circulated to these each month together with illustrated information pamphlets on keeping and breeding killiefishes (or tooth-carps). Members can advertise, free of charge, eggs, fish etc., and these are sent by post; some fish sent overseas by post have arrived safely after nine days in transit. Meetings of the Association are held at least twice yearly, and local groups are formed, such as those in London, Manchester and Sheffield, that meet more frequently. The New Species Propagating Committee of the Association has up to the present time imported a number of new species into this country, i.e. *Rachocia brevis*, *Nothobranchius orthocentrus*, *Austrofundulus transiliv*, *Austrofundulus myersi*, *Pterolebias zonatus*, several new *Ritularia* species plus a number of *Aphyosemion*. The Association enjoys close contact with the British Museum, the officials of which have been most helpful, and its technical editor keeps in contact with universities in this country and abroad for up-to-date information relative to the Association's interests. Secretary of the Association is Mr W. Devison, 2 Shaw Road, Tipton, Staffs.

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Presentation to Retiring F.B.A.S. Chairman

ON the occasion of his retirement from the chairmanship of the F.B.A.S. at the Federation's A.G.M. Mr Frank Stone was presented with a plaque by Mr J. Stilwell, on behalf of the F.B.A.S., to commemorate his five years of office. This is the longest time that the chairmanship has been held by anyone, and Mr Stone had been general secretary for several years before his election to that position.

For the convenience of readers, available addresses of secretaries etc. of clubs mentioned in this month's **CLUB NEWS** are given below:

BASINGSTOKE & D. A.S.: Mrs V. Leavy, 39 Alexandra Road, Basingstoke, Hants.

DERBY REGENT A.S.: T. F. Jerram, 36 Almond Street, Derby.

MEDWAY A.S.: C. F. Sawyer, 138 Boundary Road, Chatham, Kent.

MORAY A. S.: T. Burke, 2 Hatton Way, Kinloss, Forres, Morayshire.

NORTH OF SCOTLAND A.S.: c/o Y.M.C.A. Building, Union Street, Aberdeen.

NOTTINGHAM & D. A.S.: Mrs H. J. Chambers, Norwood View, Kirklington, Newark, Notts.

PORTSMOUTH A.S.: S. D. Forse, 118 Cuthbert Road, Fratton, Hants.

SCUNTHORPE A.S.: (Chairman), A. Robinson, 73 Newlands Avenue, Scunthorpe.

SOUTHEND, LEIGH & D. A.S.: V. C. Pickett, 2 Whitehall Road, Great Wakering, Essex.

Round and About the Trade

JUST introduced by **SOUTH COAST AQUATIC NURSERIES LTD.** is a new compact version of the Eheim power filter for use with tanks up to 20 gallons capacity. Called the **Compact Eheim No. 388**, its output is 35 gallons per minute. Like its bigger brother, which it resembles in general appearance and mode of operation although differing in design, it can be equipped for use with either freshwater or seawater tanks.

THE well-known **Tetramin** fish foods and remedies, produced in Germany, are now being distributed in this country by **Herb Royal Limited**, Colley Lane Estate, Bridgewater, Somerset.

ARMITAGE BROS. LTD., makers of **Gussie** fish foods, have arranged that distribution of their products in the south is now to be undertaken by **Easterling's Supplies Ltd.**, 55 Honey Lane, Waltham Abbey, Essex.

In Loving Memory

This Memorial slab to 'the old fish' stands in the garden of Fish Cottage, Blockley, Glos. and the grave is tended by Mrs M. Dalrymple who lives there. 'He was so tame you understand, He would come and eat out of our hand'



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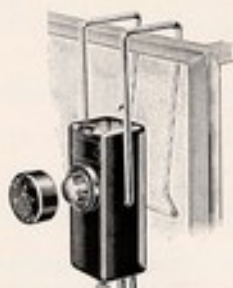
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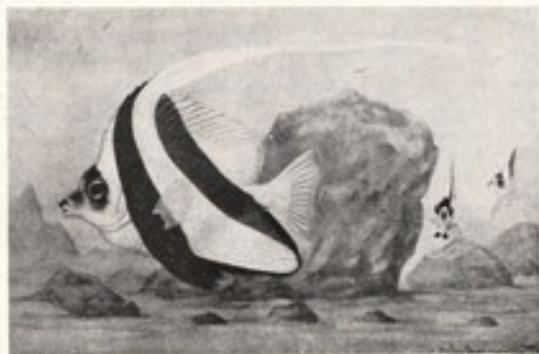


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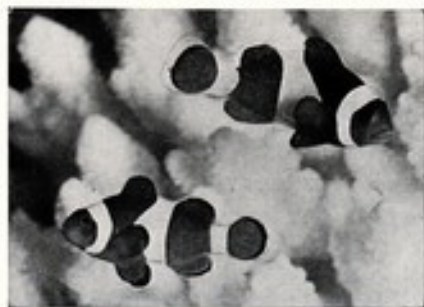
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Fantail goldfish for pond or aquarium

PLEASE NOTE—All enquiries requiring a reply MUST be accompanied by S.A.E. Our premises are situated on the main Stratford-Birmingham road, 8 miles from Birmingham, Midland "Red" Bus No. 130 from Bus Station, Birmingham, passes the door, alight at "The Crown," Monkspath.

HOURS OF BUSINESS: Weekdays 10 a.m.—5 p.m. Sundays 10 a.m.—12.30 p.m. (Also Sunday afternoons May-July only).

CLOSED ALL DAY EVERY MONDAY

TERMS OF BUSINESS: Cash with order please. Plants by post (minimum order 30s) please add 1s 6d post and packing.