

JUNE, 1966

2s 6d

Pet Fish

monthly





TROPICAL FISH



200 VARIETIES AS NEAR AS YOUR NEAREST RAILWAY STATION

All you do is to send Cash with Order and we dispatch three days later to your nearest Main Line Station advising you of time of arrival

Tropical Fish List, May 1966

GUPPIES
Standard 3/- pr.
Golden 4/- pr.
Black Delta 15/- pr.
King 4/6 pr.
Black Veiltail 12/6 pr.
Red Delta 19/6 pr.
Fancy 12/6 pr.

MOLLIES
Black 3/- ea.
Adult Black Lyretail 19/- ea.

Sailfin Black 20/- pr.
Lyretail Black 5/- ea.
Liberty 4/6 ea.
Green Velders 45/- pr.

SWORDTAILS
Red 2/6 ea.
Red Wagtail 3/6 ea.
Black 4/6 & 7/6 ea.
Berlin 2/6 ea.
Green Tuxedo 2/6 ea.
Red Eye Red 4/6 ea.

LIVEBEARERS

Red Tuxedo Swords 4/6 ea.
Albino 2/6 ea.
Hi-Fin Red 12/6 pr.
Green 2/6 ea.
Red, S. American 17/6 pr.

PLATIES
Red Wagtail 3/- ea.
Marigold Varietas 17/6 pr.
Blue 2/6 ea.
Sunset Varietas 12/6 pr.
Comet 2/6 ea.

Regular Stocks Arriving Weekly

Moon 3/- ea.
Orange Wagtail 3/- ea.
Blue Wagtail 3/- ea.
Red 3/- ea.
Yellow Wagtail 3/- ea.
Black 3/- ea.
Red Tail Black 17/6 pr.
Assorted 3/- ea.
Varietas 7/6 pr.
Tuxedo 2/- ea.
Hi-Fin Varietas 90/- pr.

TETRAS
Neon 3/6 ea. 17/6 for six
Red Fin 2/6 ea.
Roberts Ad. 12/6 ea.
Phantom 6/- ea.
Lemon 2/6 ea.
Flame 2/6 ea.
Red Nose 8/6 ea.
Bleeding Heart 10/6 ea.
Serpae 4/6 ea.
Glowlights 2/6 ea.
Rosacout 2/6 ea.
Piranha, Nattereri, 4g 90/- ea.
Cardinals 4/6 ea.
Bloodfins 2/6 ea.
Nannostomus 6/6 ea.
Trifasciatus 4/6 ea.
Margaratus 4/6 ea.
Swordtail Characins 4/6 ea.
Anostomus 28/- ea.
Penguins 2/6 ea.
Silver Hatchets 6/6 ea.
X-Ray Fish 2/6 ea.
Black Widows 6/6 ea.
Marble Hatchets 6/6 ea.
Seasons 2/6 ea.
Aetyanax Fasciatus (in colour) 15/- ea.

Glowlight Rabbers 2/6 ea.
Harlequins 2/6 ea.
Forest Rabbers 2/6 ea.
Saisentails 2/- ea.

KILLIFISH
Panchax Dayii 5/- ea.
Australis 15/- pr.
Aphyosemion 14/- pr.
Erythrum Nileus 18/- pr.
Panchax Sexfasciatus 2/6 ea.
Fundulus Fasciatus 12/6 ea.

SARBS
Large Tinfoil 8" 45. 7" 90/-
Nigger Ad. 2/6 ea.
Golden 2/6 ea.
Rory 2/6 ea.
Tinfoil 5/- ea.
Ember 10/- & 17/6 ea.
Cherry 2/6 ea.
Large Goldfish, 8" 110/- ea.
Albino Tiger 6/6 ea.
Cummings Ad. 7/6 ea.
Nigger Sm. 2/6 ea.
Hessli 4/6 ea.
Tiger 2/6 ea.

EGGLAYERS

CICHLIDS
ANGELS
Standard 3/- ea.
Black 4/6 ea.
Late Veil 3/- ea.
Veil 7/6 ea.
Late 4/6 ea.
Cichla Ocellaris, 10" 110 ea.
Brown Acara 3/6 ea.
Firemouth 3/6 ea.
Keyhole 15/- ea.
Palmatochromis Guntheri 6/- ea.
Marble cichlid 6/6 ea.
Orange Chromides 8/6 ea.
Jack Dempseys 3/6 ea.

VARIOUS OTHERS
Scott 8/6 & 10/- ea.
Bumble Bees 3/- ea.
Butterflies 10/- ea.
Moponids 15/- ea.
American Flag Fish 2/6 ea.
Chala Plakushi 7/6 ea.
Malayan Angels 10/- ea.
Knife fish, African 8/6 ea.
Labeo Labeo 6/6 ea.
Pygmy Sunfish 12/6 ea.
Red fish 30/- ea.
Protopoos Gremeni 19/6 pr.
Spiny Eels 8/6 ea.
White Clouds 3/- ea.
Black Banded Sunfish 5/- ea.
Knife fish, S. American 27/6 ea.

DANDOS
Giant 2/6 ea.
Trout 2/6 ea.
Spotted 2/6 ea.
Zebra 2/- ea.
Pearl 2/- ea.

SHARKS
Red Tail Black 4/- ea.

RASBORAS
Rasbora 2/6 ea.
Dorsocellata 2/6 ea.

LABRINTHS
Dwarf Gourami 10/- pr.
Thick Lip Gourami 3/- ea.
Kissing Gourami 4/6 ea.
Opaline Gourami 2/6 ea.
Climbing Perch 12/6 ea.
Female Siamese 2/6 ea.
Fighters 4/- ea.
Pearl Gourami 2/6 ea.
Moonlight Gourami 12/6 ea.
Green Kissing Gourami 2/6 ea.
Three Spot Gourami 2/6 ea.
Paradise Fish 2/6 ea.
Male Siamese Fighters 10/- ea.

DWARF CICHLIDS

Nannacara Anomala 7/6 ea.
Agostogramma 5/6 ea.
Raminati 3/6 ea.
Kribia 12/6 ea.
Wingsail 12/6 ea.

CATTY & LOACHES
CORYDORAS
Aeneus Ad. 8/6 ea.
Aeneus 8/6 ea.
Pebbles 6/6 ea.
Juli 10/6 ea.
Elegans 10/6 ea.
Melanostius 8/6 ea.
Giant Kuhlia 2/6 ea.
Walbari Cate 8/6 ea.
Upside Down Cate 10/- ea.
Kuhli Loach 2/6 ea.
Osocinclus 8/6 ea.
Suckling Loach 4/6 ea.
Pimelodella Gracilis 7/6 ea.
Fossilis Cate 10/6 ea.
Flying Fox 5/- ea.
Ghost Cate 5/- ea.

Apple Snails 2/6 ea.

All fish are guaranteed live delivery, and in good disease free condition. All fish to be collected at nearest main line railway station, advice given of despatch. Please enclose 7/6d. rail and packing charge.

COLDWATER FISH
Golden Orfe 4/6 ea.
Green Tench 4/- ea.
Carfish 2/- ea.
Golden Tench 5/- ea.
Breeding pairs Goldfish 6-7" 35/- pr.
Shubunkins 6-7" 40/- pr.
Comet-tails 7" 30/- pr.
Golden Orfe 4" 45/- pr.
Goldfish 8-9" 60/- pr.
Shubunkins 8-9" 75/- pr.
Comet-tails 8-9" 90/- pr.

When ordering goldfish by post, 10/- must be added for carriage.

Fully Illustrated Equipment Catalogue, on request

Keith Barraclough, 215 Gt. Horton Road, Bradford 7
YORKSHIRE Tel. 73372

Half-day closing Wednesday

Open until 8.00 p.m. Fridays

Please mention PFM when writing to advertisers



PetFish

Monthly 2s 6d

Vol. 1 No. 3 June 1966

Subscription rates: £1 15s for 12 issues; 17s 6d for 6 issues (U.S.A. and Canada \$5.00)

Editor: Anthony Evans

In This Issue

	Page
Comments and Quotes	65
Letters	66
You Know it as the Leopard Cat	67
Personal Comment	68
A Fish With a Past	69
Water Temperatures and Goldfish	71
The Making of Artificial Sea Water	72
Fish that Breed in Hard Water	74
Success with Water Lilies	75
Bacterial and Viral Infections	76
<i>Blyxa japonica</i>	77
Standardisation of Goldfish Variations	78
Vets' Congress Discusses Health of Aquarium Fishes	79
Marine Hobbyist's Dreamland	80
How to Take a Fish Show to the Public	82
Club News	85
Dates for Your Diary	91

© 1966

PetFish Publications

554 Garratt Lane,
London, S.W.17

Telephone LAKeside 2805

Advertisement Offices

47 Gresham Street,
London, E.C.2

Telephone MONarch 7644

Comments and Quotes

- A life saved ● Colour and behaviour ● Cleaning up sewage

Saved by a Fish Tank

WE have often heard of an aquarium being the means of providing hospital patients with an interest and of the general therapeutic value of fish-keeping, but never had we heard of an aquarium saving a life until we saw a piece in the London EVENING NEWS headed 'Fish Tank Saved Him'. Reported from Dresden, East Germany, it described how a man had fallen asleep on a couch whilst he was smoking a cigarette. 'The cigarette set fire to the man's newspaper which in its turn set fire to the furniture. The heat exploded a fish aquarium above the sleeping man—now unconscious from fumes. He escaped the blaze when the falling water revived him.' The fate of the fish was not recorded.

Bright Colours and Aggressive Behaviour

IN an interesting report by Anthony Storr in THE SUNDAY TIMES on the work on animal behaviour at Germany's Max Planck Institute at Seewiesen was given the following observations of Konrad Lorenz, director of the Institute, about aggressive behaviour in fishes.

'Lorenz, an ardent underwater swimmer, became fascinated by the fish of the coral reefs whilst he was on holiday in Florida. Why, he asked himself, were these particular fish so gorgeously coloured? Does this bright display have any survival value?

'Fish which, like the herring, swim in shoals, have no specific territory, travel vast distances, and show little aggression. The fish of the

coral reef, however, passionately defend their tiny bits of territory, do not form schools, and are highly aggressive. It seems clear that their bright colours have gradually evolved as a clear indication to intruders to keep off.

'At Seewiesen there are films showing every kind of behaviour in fish from nest-building to mating. But the research is not limited to descriptive behaviour. Much experimental work of a quantitative kind is being carried out: so that the interrelation between the various instinctive patterns can be measured exactly. It is possible, for example, to calculate the innate level of aggressiveness of fish by measuring the time interval which elapses after their aggressive behaviour has been temporarily inhibited by the presentation of a dummy which frightens them.'

Drinking Water from Sewage

KEEPING aquarium water clean and pure ought to be child's play when it is considered what can be done on a large scale to render city sewage fit for drinking. In a new scheme starting this year all the sewage from the Tel Aviv area is to be piped to the sand dunes for purification by exposure to air and light and by the growth of algae in it during its passage through a series of artificial ponds. After it has been allowed to seep through sand and loam to a water-impermeable surface 60 to 100 feet down the water will later be pumped into the country's water system for domestic use. Tests have shown that the water is in fact safe after only a few feet of percolation but storage underground is necessary to kill viruses that may be present.



LETTERS

Red-tailed Black Sharks

IN answer to E. Broadbank's letter 'Not as black as it might be?' (April's *PETFISH MONTHLY*) indicating the lack of colour in the red-tailed black shark (*Labeo bicolor*), may I just say that I believe that this apparent lack of colour is due to their not having the correct living conditions.

When I purchased a pair some six months ago, they were a dull grey in colour with only a hint of red on the caudal and pectoral fins. I placed them in a 24 in. x 12 in. x 12 in. aquarium, heavily planted with dark rocks and a dark background. The temperature is kept at 75-77°F (24-25°C) with a hardness not exceeding 18 parts per million (1 DH German). The water is slightly acid (pH 6.6 to 6.8) and the tank dimly lit. The fish are fed twice daily and kept strictly to a green vegetable diet. Now I am proud to say that they are a deep velvety black with deep blood-red caudal and pectoral fins.

Incidentally, even my fiancée, who is not particularly interested in fishkeeping, has remarked on their colour.
Leeds, Yorks. L. MORRELL

Living Space for Goldfish

JUST what does constitute 'cruelty' to a fish as regards living conditions? I ask this because, as an enthusiastic aquarist, I am frequently appalled by the size of the containers in which coldwater fish are kept. But at the same time, the fish are indisputably healthy and continue to thrive. A friend of my neighbour brings us his goldfish to look after for two weeks each year. It arrives in a bucket and goes straight into a clean, well prepared 3-ft. tank where it frisks around happily for 14 days. It is a plump, brightly coloured fish, now about five inches in body length, and we had been looking after it for a couple of years before I discovered that when it returned to its home its own 'tank' measured about 16 in. by 8 in. But, under the circumstances, how can I suggest that the tank is totally inadequate when the fish continues to thrive? The advocates of battery-rearing in fowls do, I know, use this very same argument that an unhealthy animal is an unhealthy one. All I can say is that our poor old annual lodger must be happy only because he can't remember for too long what he's missing!
Weybridge, Surrey. F. CROSSIE

The Milky Way

SUNDAY, as a working day, is of course a double-pay day, and recently I heard of an aquarist who slept a little longer than normal when due at work at 6 a.m. Confusion always follows in the wake of overlaying and this particular morning was no exception, for he found himself using evaporated milk for his daybreak 'cuppa' and trying to examine his 'maternity' fish tank at the same time.

As a result of the bleary-eyed confusion, plus the delight of finding a tank full of fry—plopl went the evaporated milk that was intended for the tea cup into the fish tank. With no time to do anything about it, without losing a very remunerative day at work, he left the tank as fate had now made it.

In something short of a week the tank cleared, and to his great surprise and joy the baby guppies born that Sunday morning had developed better and quicker than he'd ever seen before.

I have since tried this myself (open-eyed!) with more than pleasing results, and am hoping to continue experiments along this milky way with species of fish that are normally more difficult to feed in their early infancy.

Scunthorpe, Lincs.

G. MELLOR
Scunthorpe A.S.

Information Required

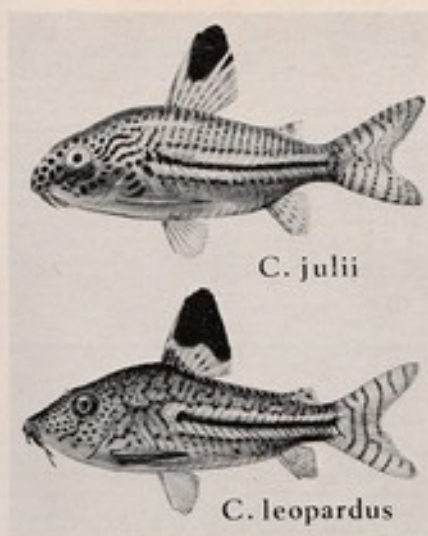
CONGRATULATIONS on a lively first issue. 'Tracing the Culprit' from 'Comments and Quotes' showed the value of deductive thinking. The catfish article gave me, at least, new knowledge of these attractive fish, and A. Fraser-Brunner's article 'Big Tank' gives one to wonder what could be obtained with a 50-gallon tank in the fish-house corner, circulating soft water through a dozen or so aquaria.

Now a word of criticism. This applies to other magazines as well as yours, and not only aquarium magazines. Briefly, there is a lack of names and prices. As an example, in the article on aquarium filtration the water-softening ion-exchange resins are mentioned at length, yet nowhere a manufacturer's name or a price or even a brand name. Yet I immediately want to know all these things. Can your contributor or yourself give us this information? Details of what sort of shop to purchase such things from would also be a great help.

Mr Kelly shows the U.S. as an aquarist's paradise. Could he tell us if the Silastic he mentions can be purchased here, or if one can have a small amount sent without import licence? I should dearly love to make many tanks in this way, as I consider the metal frame to be a very great drawback in the sense that it spoils the appearance of a well set-up community tank and one has to fiddle one's plants to hide the rear corners.
London, W.13 L. SANDFIELD

Ion-exchange resins for aquarium filter use are marketed by South Coast Aquatic Nurseries Ltd. (Eheim SUR filter-medium) and Regal Tetra Ltd. The latter firm is also introducing a compound (Aqua-Safe Sealant) for making all-glass tanks (see advertisement in this issue).—EDITOR.

SEVERAL letters have been received telling us of the difficulties experienced in some areas by correspondents who have tried to order *PETFISH MONTHLY*. Whatever you might be told to the contrary, if you want to buy through your newsagent he can obtain copies by putting an order through to his normal suppliers. If you still meet difficulties, however, don't forget the advantages of taking out a postal subscription direct from *PETFISH MONTHLY*: for £1 15s a year's magazines (17s 6d for six issues) will be posted direct to your home and you can then be sure of getting your copy each month.



You Know it as the Leopard Cat

How the observant fish-
keeper can distinguish two
similar species

By A. FRASER-BRUNNER

ONE of the prettiest and most popular of the small mailed catfishes is *Corydoras julii* Steindachner. When it was first imported for the aquarium in 1933, a number of specimens were sent to Dr George Myers at the U.S. National Museum in Washington, who described them as a new species which he called *Corydoras leopardus*. Under this name it appeared in the first edition of Innes' *Exotic Aquarium Fishes*.

'Leopard cat' it has remained ever since, although very soon afterwards it was discovered that the fish which Innes showed was already known to science by the name *Corydoras julii*. So from that time onward, Myers' name *C. leopardus* has been relegated as a synonym. No one has questioned this, so far as I am aware.

We must now jump to the years 1946-47, when I published papers dealing with new species of the group. In those papers I accepted the view that *C. leopardus* was a later and therefore invalid name for *C. julii*, and I then dealt with specimens that were very similar in appearance to *C. julii* but were found to be quite different on close examination.

I designated these by a new name—*Corydoras fannelli*, after Mr Barry Fannell who had sent me specimens and photographs. Since that time aquarists do not seem to have found any *C. fannelli* among their leopard cats, for I have never seen it mentioned.

Some time later, however, when corresponding with Dr Leonard P. Schultz of the National Museum at Washington, I asked him to check on some characters of *Corydoras* in that collection. As a result he made an interesting discovery. He found that the original specimens upon which Myers had based his description of *C. leopardus* actually included two species, corresponding with *C. julii* and *C. fannelli*.

But here is the rub. The holotype, that is, the one

specimen selected by the author to represent the species, with which all other specimens have to be compared and judged, was a specimen agreeing with my *C. fannelli*.

This means that Myers did in fact have a new species, which he called *C. leopardus*, but among the other specimens, the paratypes, he had specimens of *C. julii*. So my *C. fannelli* is a synonym of his *C. leopardus*.

In other words, *C. leopardus* is not a dead name. It is my *C. fannelli* that has to be killed.

If you have followed this, it will now be obvious that the position is as follows:

Corydoras julii Steindachner is the common leopard cat of aquarists.

Corydoras leopardus Myers is a distinct species, of which *C. fannelli* is a synonym and not to be used.

That having, I hope, been made clear, it will perhaps be useful to point out the differences between these two species.

Summary of Differences

Firstly, *C. leopardus* has a longer snout, which is slightly concave on its upper profile (rounded in *C. julii*) and the whole form is rather more slender and compressed.

Secondly, the spots on the head and snout are much smaller and more numerous, very much smaller than the pupil of the eye (not much smaller in *C. julii*).

Thirdly, the eye is rather longer and the iris is dark, instead of golden as in *C. julii*.

Fourthly, the black stripe along the side extends forward from the tail only as far as the middle of the dorsal fin. In *C. julii* it extends forward to the front of the dorsal fin.

Fifthly, the base of the adipose fin is much longer in *C. leopardus*.

Those are features that can be seen in the aquarium, but there are also the following differences that require close examination to be discovered.

A concavity on the top of the head, between the eyes, (the interorbital fontanelle) is longer and extends farther back in *C. leopardus*; the interlocking bony plates along the side are slightly more numerous (24 over 23 in *C. leopardus*, 22 over 21 in *C. julii*); the mosaic of small platelets on the chest extends forward to the gill-openings in *C. leopardus* but ends much farther back in *C. julii*.

The apparent rarity of *C. leopardus* may be due to two factors. Firstly, a large proportion of the leopard cats seen in the aquarium today have been bred in captivity and so cannot include any outsiders. Secondly, aquarists

fail to recognize *C. leopardus* among wild stock because they are not looking for it.

I hope the above will enable any keen fish-keeper to spot specimens of *C. leopardus* if they should come his way. Even more important, I hope some of the collectors in Brazil will see this article, so that they do not mix the two species together as they have done in the past. One vital piece of information they could give us is, where exactly *C. leopardus* is found. The specimens I dealt with in the past were collected by the well-known Carl Griem, but the locality given was 'Amazon?' which is hardly explicit. Even without the query, the Amazon region is a vast area within which many species are localised in particular streams and tributaries, so for scientific purposes a much more definite statement of locality is requisite.



by ARPEE

OVERCOMING managerial opposition to fishkeeping is no easy matter. Some wives are quite set in their ideas and can never be won round. It is difficult to suggest a solution to this; divorce is perhaps rather extreme, and more practically either a mink coat or a fish house is a possible persuader. When the situation is fully examined, the weight of opinion generally comes down in favour of the last-named, on the grounds of greater utility as well as potential refuge.

If it so happens that a fish house is the only way, then farewell! It was nice to have known you, and you are on the way to a Far Better Place. Not all of us, however, are driven to such a pass, since our wives or other superintending relations may be of agreeable disposition and momentarily relent to the extent of granting permission for just one small tank. This is indeed the turning point. Tanks are rather like some of their inmates, as they tend to breed. All the same, if you have a Master Plan at the very outset the battle is virtually won. In spite of all the good resolutions in the early days you will find that it is easier to admit that you will have a shot at breeding than to claim that you want only one tank in which you can follow your artistic inclinations.

I can personally vouch for this, since I said all of this some while back and have finished up (I think) with nine tanks and countless plastic sandwich boxes, cake containers and other lesser receptacles, any one of which is capable of housing a small fish family for a week or so. I managed very nicely with a 36 inch community tank supplemented by two 18 inch breeding tanks and two 24 inch rearing tanks (plus the sandwich boxes) for quite a long time, but this is probably a minimum for

showing off your collection and breeding two of the easier egg-layers.

A problem I encountered early on was that of the appearance of so many girders, wires, tubes and bits and pieces which led into and out of the tanks. I therefore made some hardboard and wood frames for the front of each stand and painted them with a jet black matt paint. I allowed space for a slot on either side, into which half-inch thick expanded polystyrene panels could be fitted during cold weather, or at any other time when power cuts might be expected. Pot plants, judiciously placed, concealed odd trailing wires and bits of tubing, and the combined camouflage enabled one to concentrate on what really mattered—the plants and the fish. It is generally supposed that breeding and rearing tanks are something of an eyesore, and are not therefore fit for the lounge or sitting room. This is principally because the commercial breeder uses plain tanks without sand, plants or any other embellishment save the fish. Further, it is often asserted that fry are not too keen on bright light, hence the early stage tanks are relegated to some low, dim corner. On the whole, I rather agree that fry seem to like more light the more they grow, and my breeding tanks are at ground level where the light is poorest. I nevertheless refuse to have them looking as commercial as commonsense would dictate, and for art's sake line the bottoms with gravel and grow plants in them.



The most useful plant under these conditions I have found to be the dwarf Japanese rush (*Acorus gramineus paullus*). It is as tough as nails, looks most distinguished, and although it never seems to get any bigger, is almost indestructible. If the sand is deep enough it seems to take the disturbances of the breeding tank in its stride, but it is possibly better to plant it in a pot and move it as the need arises. Most of the cryptocorynes would react in a similar fashion, provided that they were potted. It should not be assumed from this that I recommend flower pots for the home aquarium. I think they look most unsightly but there is nothing on

Continued on page 70

A Fish With a Past

THE REED FISH (*Calamoichthys calabaricus*)

REED fishes, together with another genus of fishes, the polypterids, comprise a family of archaic origin and have extremely unusual features. These fishes, which are in the sub-Class Brachyopterygii, are some of the most ancient surviving relatives of a type long since extinct.

All these fishes are confined in habitat to tropical Africa, and both have certain very unusual and unique anatomical features which are worth mentioning.

They have retained certain characteristics of their ancestors not found in most modern fishes. A swim bladder is present but it is divided into two sections, a small left and a larger right section, and both of these sections lie in a position similar to the lungs of higher vertebrates, and indeed it is used as an accessory breathing organ. In fact, if they are not allowed access to an air supply they will drown, although they still have fully operational gills.

In their natural habitat they rest by day concealed under rocks and vegetation at the bottoms of the rivers and streams, waking at night and emerging from the water to hunt and capture their food on land and in shallow water, in a similar manner to amphibians, eating worms, small newts, and smaller fishes.

Of their breeding and manner of reproduction very little is known and no information on the actual breeding procedure is available, although it has been found that at certain times of the year the anal fins of the males thicken, swell, and become folded, in a similar manner to the livebearing tooth-carp. For this reason several authorities including eminent American aquarists are inclined to the idea that these fishes may indeed be livebearers.

As far as can be ascertained from the limited information available they are readily adaptable to aquarium life and can be kept with a reasonable degree of success. One point, however, which arises at this stage is that when confined they must have access to the surface and a hiding place in the tank, such as rockwork formed into caves etc.

They are extremely tolerant as far as water conditions are concerned and in their native continent they abound in waters between 72° and 83°F (22-28°C).

They eat a wide range of large live foods, although their growth rate is quite slow.

For identification, ray counts and lateral line counts show: dorsal fins 7-13 rays, anal 9-14 rays; lateral line scale counts 106-117. Sizes up to 30 inches. It has been suggested by certain authorities that the number of rays in the anal fin is an indication of the sex of the individual.

The first reed fish I obtained was from one of the large local pet stores, and at the time of purchase I was informed by the manageress (I now realise rather kindly)

that they were a fish very adept in the art of escapology, and that she had lost quite a number of specimens herself. After coaxing my new purchase into a large polythene bag and transporting it home, I checked the temperature of the tank, and released him into his new home, a 30 in. by 12 in. by 15 in. aquarium heavily planted with *Aponogeton*, *Sagittaria* and spatterdocks.

Upon release into the tank he decided to seek cover amongst the rockwork and pushed and thrashed a large cavity underneath the rocks, not to the advantage of the plant life, as while doing this his long body uprooted most of the plants. I realised after reading some literature on the fish that the answer was to give him a convenient shelter of his own, and he was duly provided with a large sheet of cork bark shaped so as to enable him to utilise the rather large cavity underneath. This was weighted down by placing the heaviest rock available over the bark. He immediately grasped the intention of this addition that gave him a ready made home and 'moved in' shortly afterwards.

During the first couple of weeks I could persuade him to eat nothing; tubifex, daphnia, even garden worms and guppies—all were refused. I was beginning to think

By G. H. JENNINGS

(Marine Study Aquatic Society, Great Britain)

that here was another fish just a little 'out of the ordinary' that was going to prove to be a difficult proposition, until it eventually dawned on me why he had refused food and yet remained reasonably well built. When introduced into the tank he was not quite alone; among several *Corydoras* and a *Gyrinocheilus* there were about a half dozen bumble-bee gobies in the tank, but now there were no bees to be seen. An expensive fish indeed!

After about two weeks I purchased another reed fish, one I thought to be a female to the supposed male I already had. This one was slightly larger than the original one, thicker in body and generally duller in colour. This one was introduced into the tank with great anxiety as I was none too sure of the compatibility of the two, but all this seemed unnecessary when they met, as the original one, far from disliking the newcomer, seemed completely and totally to ignore it.

Then, owing to an expansion in the number of tanks I had, I moved all the fishes into a larger fish room indoors, which had been furnished especially for a new range of aquaria and stands.

At this time the reed fish were moved from their existing 30 in. by 12 in. by 15 in. tank into a new slightly larger one, 36½ in. by 15 in. by 10 in. high. The change

of house did not seem to affect them in any way, and they soon settled down in their new surroundings, and things ran very smoothly in their tank for about ten days.

On the tenth day in their new tank I was checking to see that all was well but could only see one reed fish there. After turning over all the likely hiding places, and stirring up the gravel, I arrived at the conclusion that one had at last taken a dislike to the other. However, after crossing to the other side of the room to check the other tanks, I noticed the tail end of the missing reed fish behind one of the stands on the floor, and when I pulled it out found that it was completely dried up. It had obviously found a minute gap in the cover glasses of its

tank, and escaped in that fashion, although seemingly this gap was not large enough for it to get through.

Since then I have been unable to find a source of supply of reed fish and the one remaining specimen left has led a very lonely existence for the past year or so, although he is now 15 inches to his original 13 inches. He seems very adaptable indeed, putting up with further changes in tanks, and vast temperature changes that have killed many reputedly hardier species. He is fed about twice a week on tubifex and eats any smaller sick fish which are thrown into the tank.

My ambition now is to obtain some more of these very interesting fish and to try to breed them.

Personal Comment

Continued from page 68

the market that I know of to take their place. Couldn't some enterprising manufacturer of those imitation stone walls you can buy at so much a foot turn his energies to producing an object that serves the same purpose as a flower pot, yet looks like a tasteful rocky outcrop?

Aim therefore to set your tanks up to match the standard of your room, and plan the number of them so that you may have the time to maintain the standard. It is wonderful, for example, how well a tank looks after the outer glass has been cleaned over with a wash leather. So many people spend hours scraping off the algae, 'vacuum-cleaning' the interior, and so on, and fail to notice the spotty greasy blurry fronts of their tanks, which a good outer clean would transform into veritable jewels. It is a curious psychological quirk, I believe, of the keen aquarist that he generally only recognises that his tank has an inside, and anything external to it just does not exist. (One poor wretch spent his day off trying to remove a nasty black mark from the glass with a razor blade, and they had to lead him quietly away when, after he had given up in disgust, it was explained to him that the price is normally written on the outside).



· Easily my favourite columnist is Mr Fred Loads, who writes the diary of a gardener in a gardening weekly. I was very interested to read the other day that he admits he is succumbing to the aquarium hobby. As a gardener of very long standing he is probably like many of us, as interested in underwater plants as in the fish themselves, and he was quick to observe that a friend of his, in turning over the mulm and gravel in a tank, was performing the same sort of manuring function carried out by the gardener in the annual 'muck spread'. Since Fred has helped us for many years towards better gardening with minimum effort, I think it only fair to let him into the secret of the Malayan snails. Here, I think, are the aquarium's most under-rated inhabitants.

Years ago it was the vogue to buy a dozen water snails



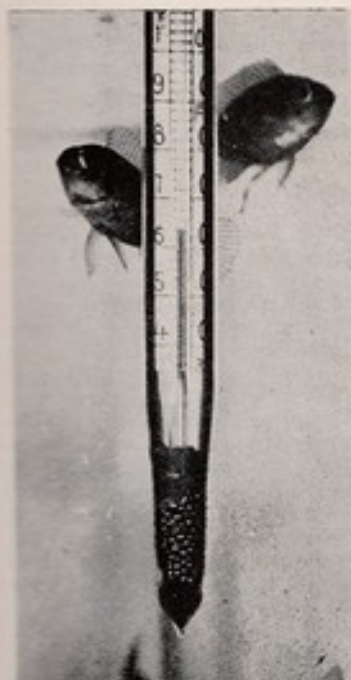
A useful plant for the aquarium with bolsterous fishes or plant-nibblers is the dwarf Japanese rush

with each tank and very soon they had taken over and reduced the foliage to a shambles. Nevertheless the undoubted charms of the red planorbis have died very hard and many aquarists still won't do without them. The majority view seems to be however, that they are a menace, and I take this line myself in all but rearing tanks, where they certainly finish off the leftovers, and where there is no plant life except the dwarf rush, which is immune to their ravages. There is only one snail for me and that is the Malayan snail, which hardly ever seems to feature in the advertisement pages these days. It is only about half an inch long, it burrows into the sand during the day and confines its excursions to the hours of darkness. Its great value is that it drags the mulm down to the plant roots, where it is needed, and does not leave the plants in shreds.

I rather think this little fellow will appeal to Fred, and if he cannot get hold of any, I will guarantee him a starter supply! If any readers know of any nasty habits of this creature, I hope they will write in quickly, as we mustn't lead Fred off the straight and narrow.

Water Temperatures and Goldfish

By CAPT. L. C. BETTS, M.B.E.



THE advent of a new magazine to cater for the interests of the fishkeeper is in itself an event of some significance to the hobbyist in general but particularly to myself when the Editor requests that I write for *PETFISH MONTHLY* on goldfish. He has asked that articles should not be a re-hash of all that has been written and said before, but rather something that puts a new angle on the subject and brings it in line with living in the twentieth century. A tall order this, for there is something timeless about fishkeeping, and what is truth today must be truth tomorrow, only the details will vary with time. Nevertheless the underlying implication is there and it cannot be gainsaid that the times have indeed changed from when I started seriously to specialise in breeding goldfish 40 years ago. Then an adult pair of shubunkins would fetch £5 a pair, whereas today eyebrows are raised if £2 10s. is demanded!

Has any progress been made in breeding techniques? in maintenance techniques? in the overall quality of goldfish available? These and other aspects will be dealt with in articles in an endeavour to prove to old and young alike that the goldfish still offers a lifetime of absorbing interest in keeping with a technological age where the search for knowledge can still compete with television. Indeed the claim goes further. With a modest outlay on tanks and fish, a strain of goldfish can be built up over the years which will give all the satisfaction of winning the football pools and none of the disappointments.

It will be my aim therefore to try to show that no more expertise is required than a basis of commonsense reinforced with a certain amount of 'know how' and an ability to understand the fundamental laws which govern all living things. With this in mind we are now ready to start.

With the goldfish's developmental background of infinite variation of physical characteristics has grown up popular misconceptions that particular varieties are less hardy than others. This is not so. The goldfish is a hardy, tough fish with an infinite capacity for survival and is in every sense of the word a pond fish capable of withstanding the normal rigours of a pond in temperate parts of the world, where winter temperatures are as low as 25°F (-4°C) and summer temperatures are as high as 75°F (24°C). If there is to be any modification to this statement it is that such extreme temperatures cannot be endured indefinitely, and people in this country would be advised not to allow freezing-in to continue longer than 14 days and general temperatures below 45°F (7°C) to persist longer than 3 months. In practice this means that, unless the winter is unusually mild, it is necessary to bring the fish indoors after March if frost persists.

There is also the question of some varieties being tougher than others. For example, the singletail varieties are tougher than the double-tailed ones since they have less digestive and blood circulation difficulties. The metallic (shiny scaled) types are also hardier than the nacreous and matt types (little or no shiny scales). However, it is all a matter of degree and all varieties will stand short periods of freeze-up.

This matter of water temperatures is also important when considering the question of breeding. All life moves in cycles and the winter period is an essential part of the resting or hibernation period for goldfish. The temperature of the water dictates the rate of bodily processes and the rate of development of the eggs and sperms. It has not been proved but it could be that fin development is inhibited even before release of the egg owing to the temperature of the water being too high in the earliest stages. Certain it is that spawnings after a winter hibernation in the pond are very much more vigorous and usually very much more fertile. In general terms,

Continued on page 73

Modern Approaches to the Making of Artificial Sea Water

Has the introduction of sea salt mixtures designed to include all the elements in natural sea water provided the 'break-through' in marine aquarium-keeping so long awaited?

By J. BIENER

IN the April issue Dr Wolfgang Klausewitz, of the Senckenberg Nature Museum and Research Institute, Frankfurt, reported the first success in keeping living corals in the aquarium. Up to the present it has been possible to keep them only in tropical coastal territories where natural sea water was available. Now, since the beginning of October, 1965, the most varied kinds of living corals from the Red Sea have been successfully kept in artificial sea water by Herr Hans R. Schmidt, proprietor of the Tropicarium in Buchlag, Frankfurt, where a proper reef composed of thousands of minute living beings has been built up.

Many aquarists who have heard of this success have asked for the 'secret' of the sea water used. 'Even if I don't keep living corals,' they reasoned, 'the water in which such extremely sensitive living beings thrive must be ideal for fish.' Indeed

we believe that, since sea fish survive and even breed in it, we have come a long way towards providing them with ideal water conditions.

Now, wherein lies the secret of this artificial sea water? Briefly speaking, in a very accurate imitation of natural sea water. This may perhaps sound to the amateur easier to do than in fact it is. A brief discussion of the problems connected with the composition of the water will explain this.

Certainly all naturally occurring elements are contained in the sea, mostly in the form of their ions. Some forty separate elements are precisely measurable: sodium, chlorine, magnesium, oxygen, sulphur, calcium and potassium are the chief ones, and together they make up more than 99% of the dissolved ingredients. Of this 99%, two-thirds is composed of sodium and chlorine

alone. The many remaining materials—together less than 1%—are united under the name of trace elements. The same name is in use in agriculture for the numerous trace materials which occur in a very limited concentration in all healthy soils.

Let us draw an analogy for a moment with agriculture. Today we know that the plant diseases like the patchy drying-up disease of oats or the well-known moor swamp disease, whose causes were once so incomprehensible, result from the lack of certain trace elements, and that the addition of these materials influences growth favourably. In the U.S.A. over 10,000 tons of copper salts, 3,000 tons of zinc salts and 20,000 tons of manganese salts are distributed over the fields per year in scientifically determined concentrations. Note that the use of the right concentration is imperative; excess leads to serious damage to the growth of the plants. Thus these trace elements are vital in human and animal nutrition and their importance to living aquatic creatures is also well known. So, for example, certain kinds of phytoplankton, like *Euglena gracilis*, do not grow in cobalt-free water. The addition of the smallest traces of cobalt, on the other hand, results in the deposit of a strong growth. The trace elements are found in the sea in many organisms; sea anemones are particularly rich in molybdenum and antimony, jelly-fish in cobalt and zinc, lip-fish in silver, ascidians in vanadium.

We can conclude that, firstly, for the preparation of artificial sea water the trace elements are, in spite of their very low concentrations, essential; secondly, it is essential not to exceed the right concentration; thirdly, they must be taken from the water by animals and plants.



Living corals from the Red Sea in a marine aquarium

Therefore it is not sufficient simply to add a few measured amounts of trace element salts to the salt mixture from which one wishes to prepare artificial sea water. Not only must they be administered exactly; the main components, such as common salt (sodium chloride), magnesium chloride, magnesium sulphate etc., must be chemically pure, so that no uncontrolled quantities of other compounds present as impurities are introduced into the mixture. Careful and accurate weighing of salts less pure would be pointless because of this.

Now, if the danger of an overdose is to be avoided, can a mixture of trace elements be simply added to old water, as the salts will not be equally dispersed and the ones only partially dissolved would accumulate. Here only a change of water from time to time can help.

It is obvious therefore that to obtain even distribution of such limited quantities in a salt mixture demands special technical methods. A further important practical point is that, in making a solution from salt mixture, as the salts come into contact with the water a short-lasting high local concentration of sulphates for example can develop. Under such conditions many trace elements form insoluble sulphates, which come out of solution and under these circumstances the trace elements are lost. This danger can be avoided in specially prepared salt mixtures by allowing the very soluble trace materials to form a crystalline mixture with a moderately soluble

compound, which goes into solution first.

So much for the problem of trace elements. Other problems arise, however, in connection with the composition of sea water. It is well known that the total salt content of the seas of the world varies. In the main oceans it amounts to about 3.5%; in the Persian Gulf and in the Red Sea it is over 4%. The fact that marine animals tolerate fluctuations in density reasonably well has led, in the past, to the assumption that the composition of the salt content does not matter either—that salt is salt, and that, for example, a portion of the expensive magnesium chloride could be replaced by the cheaper sodium chloride. Such a change does not affect the density of the water but certainly affects the fish. However, their deterioration in health from this cause is a slow one and the rapid growth of parasites and diseases have, in the past, masked the true causes for their deaths.

Although it is true that in the seas of the world the total amount of the dissolved materials is somewhat different, the proportion of the different components is practically absolutely constant. That means: by diluting with pure water I can, for example, make Atlantic Ocean water out of water from the Red Sea that would resemble the water drawn out of the Atlantic in all respects. In other words, the oceans differ only in the quantity of water in which a measured amount of salt is dissolved, not in the relative composition of the

salt. And just as temperature differences play a much bigger part with deep sea animals than differences in pressure, so the presence of the correct salts is more important for our aquarium fish than fluctuations in density.

What then is the right composition?—one might well wonder when studying past aquarium literature on the subject of the preparation of sea water. Since 1844, when Dittmar analysed samples from more than seventy regions of the sea, the chemical nature and the relative similar composition of sea salt has been known. Despite this the various recipes have differed greatly from each other, and most frequently mistakes were made because the salts used differed in their content of 'water of crystallisation', which should always be clearly specified.

By means of modern analytical methods (colorimetry, polarography, spectrometry) the natural salt composition has been so exactly determined that, in my opinion, artificial sea water made from chemically pure salt mixtures prepared by special technological processes can be physiologically exactly the same as natural sea water, and has the advantages of convenience of management and purity (freedom from oil and plankton remains).

The successes in keeping corals, as mentioned before, would confirm this opinion, and they show that one of the most important problems of the marine aquarist, the question of the water, has been satisfactorily solved.

Temperatures and Goldfish

Continued from page 71

feeding stops when the water goes below 45°F (7°C), but by the time 70°F (21°C) is reached goldfish will eat almost constantly.

Fish that eat heavily rapidly become fat, and too heavy feeding will ultimately result in the fatty degeneration of the intestines, heart etc. As with humans, imbalance between protein and carbohydrate foods will accentuate fatty degeneration, but as a general rule carbohydrate feeding should be below 25% of the whole when temperatures are above 60°F (16°C). As feeding is a

major consideration in the maintenance of goldfish, this will be dealt with more fully in later issues.

Too much emphasis cannot be placed on the necessity to maintain temperatures around 60°F (16°C). It is true the fish are more active at the higher end of the scale and reasonable activity is a vital part of maintaining health. However, it is better to induce activity by movement of the water, in which the fish have a current to swim against, than the feverish restlessness that warmth brings about. Goldfish living in temperatures of 70°F (21°C) are flabby to the touch and when netted lie still and lifeless. At temperatures lower than 60°F (16°C) they wriggle and jump as they lie in the net and there can be no question which is the more desirable condition. Elevated temperatures are enervating, causing the males to release the sperms before the actual 'drive' and making the females release the eggs before they are ready for fertilisation.

A course for the would-be breeder of tropicals



Part 2

Fish that Breed in Hard Water

By D. B. McINERNY
(McLynn's Aquarium, Surrey)

ASSUMING that the reader has decided to equip himself with the three types of water mentioned in the previous article, i.e. (1) alkaline and hardish, (2) fairly neutral water, such as rain, and (3) the prepared rather acid, very soft water, which will not be ready for use for several weeks, let us now deal with some of the fishes that will live happily and breed suitably in water of the first category, which in many districts can come from the household tap.

First, the majority of livebearers will prefer these conditions, such families as mollies, platys and sword-tails, half-beaks, limias, *Phallichthys*, *Glaridichthys*, mosquitos, gambusias and guppies. If the water is not too hard all these should be happy and reproduce quite well.

All that is necessary is to provide a well-planted tank and breeding will normally take place. However, in a community tank the number of babies likely to survive is small, since most will be eaten by the adult fishes. If the aquarist wishes to build up a stock of livebearers it will be necessary to have one or two 18 in. by 10 in. by 10 in. well-planted breeding tanks, several unplanted small aquaria, a few stainless-steel-mesh traps, and three or four 36 in. by 12 in. by 12 in. growing-on tanks.

By keeping a daily watch on the adult females it will be seen which are gravid, and those more advanced can be caught and placed in one of the breeding tanks. A female mollie must never be left too late before moving; better to err by two weeks too soon than attempt to move her a day or so too late. She can come to no harm in the breeding tank, quietly awaiting her confinement; but catching her when about to reproduce often results in the young being born prematurely. These babies will not have absorbed fully the yolk sac and many, if not all, may die.

Mollies in particular dislike being trapped. A very

small trap can well cause the death of the female, so place her in a well-planted tank with plenty of floating greenery, such as *Najas*, small Indian ferns etc. If well fed, mollies are not likely to eat many youngsters, so two or three females can be placed in the same breeding tank. After each has delivered her young, noticeable by her now slim form, she may be caught and put back into the stock tank.

Swordtails may be left in the community tank until the females are so filled out that they have an almost square shape under the throat. Do not place more than two such females in the same breeding tank; this is because they are more prone to eat their young, and more agile in catching them.

The smaller livebearers mentioned above, with the exception of mosquitos, may be placed in a large trap. It is essential that such traps should allow free circulation of water and plenty of exits for the fry to escape. For this reason I prefer stainless-steel wire gauze with a mesh of approximately $\frac{1}{4}$ in. This material is expensive, but once made the traps are almost indestructible and last for years.

These traps are placed in a completely bare breeding tank containing about 4½ in. depth of water. The rim of the trap should protrude $\frac{1}{2}$ in. above the water surface, and after placing in it several gravid females the top is covered with a sheet of glass. Now place bunches of *Najas* or other floating plants outside the trap, so that when the young are born they make instinctively for this security outside the trap. If aeration is supplied, a trap

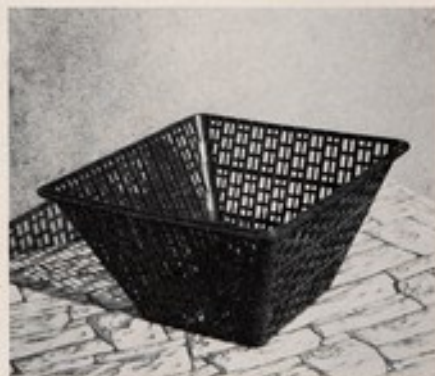
12 in. long by 6 in. wide will hold a dozen or more females. As each female gives birth she may be caught and returned to the stock tank. When all have been removed the trap is taken out, and the youngsters left where they are.

Mosquito fish, being too small for these breeding traps, may be treated as described for mollies.

Half-breeds present a greater problem, as they will devour nearly all the young, given the slightest opportunity. The only safe method with these is to divide the breeding tank into sections, placing not more than one female in any section, keeping a constant watch on each. Immediately any young are born, with a very small net catch the youngsters and place them in one of the unoccupied sections; but this may have to be done at the actual moment of birth of each baby.

The reader will notice that in dealing with livebearers no mention has been made as yet of food for the babies. This is because no previous preparation is absolutely necessary. They will take immediately any good dried food of very fine grade: sifted daphnia, cyclops, micro worms etc. Be careful, however, of overfeeding either parents or young, thus fouling the tank water. If a large number of females have been placed in a breeding trap, as many as two or three hundred babies may now occupy the breeding tank; with aeration these may remain where they are for three or four weeks, but as they grow the conditions will become overcrowded. Now the larger babies must be moved on to one of the 36 in.-long growing-on tanks. Here they can remain until large enough for sale, or some are returned to the stock tank as future breeders.

Success With Water Lilies



Planting crates made of plastic such as the one shown are ideal for planting and growing water lilies

By

Dr W. E. Shewell-Cooper

TO be successful with water lilies, they must have a full sunny position, where the sun reaches them at least from early in the day until the late afternoon. I like to do the planting just after the plants have started to grow vigorously. In every case, firm planting is necessary, and pressure should be applied round the root, but not so much pressure that the fragile parts are damaged.

To prevent the plants rising when the water is running into the pool, large stones may be placed around them and left in position for, say, 6 weeks, and by this time new roots should have developed. Special plastic planting crates are available, and some people like to use these. It is always as well to cover the plants with only a few inches of water until growth commences and then as the plants progress the pool may be filled.

Hardy water lilies can be considered in four groups. **Group 1** consists of the plants which prefer to grow in from 6 to 12 inches of water, and which will cover an area of only about 2 feet. *Tetragona pygmaea helvola* has attractive olive green foliage which is heavily mottled with maroon. It produces a profusion of small star-shaped rich sulphur yellow flowers. The flowers of *T. pygmaea alba*, perhaps the daintiest of all the water lilies, are snow white, star-shaped and tiny. I have grown it in a receptacle 15 inches across and only 9 inches deep—that will give you an idea of its daintiness.

Ostrata minor also comes into Group 1. Its foliage is pale green, the leaves are small (as are the flowers which have delightful yellow anthers and very fine scent). *Layscheri fulgens* produces larger blooms, a bright carmine in colour. The leaves

are olive green with brown red spots on them and of sweet scent. *L. lilacea* bears flowers which change from pink and white to pink and crimson later, and *L. fulgens purpurata* is a wine red to start with and then crimson later with fascinating orange red stamens.

In **Group 2** we have a far greater choice, with water lilies which will grow in a foot of water and cover an area of 4 feet. There's Albatross, a snow white with golden yellow anthers, and Conqueror, which produces very large brilliant red flowers stained and spotted with white. Masaniello, a rich rose pink with orange stamens tipped with fiery red, and Paul Harlot, whose blossoms turn from coppery pink to bright red with the inside petals yellow pink. Sanguinea, as its name suggests, is a brilliant crimson with orange red stamens; it has large green leaves spotted maroon. When the flowers of Sioux open, they are chrome yellow diffused with bezone and then they turn to a reddish orange copper.

Group 3 comprises water lilies which grow best in 2 feet of water or more, and cover an area of 7 feet. Escarboucle has bright crimson flowers and matching stamens. Formosa is a soft rose turning into a deeper rose with grand bluish white sepals. Indiana is a yellowish orange, changing as the flowers develop through bronze orange to coppery red. The flowers are offset by the deep green leaves spotted with maroon. A favourite with many is James Brydon, because it is a paony-shaped flower; it needs plenty of room though, because it is apt to spread.

Lastly, the lilies of **Group 4** need at least 3 feet of water. The plants are all spreaders and they cover an area of 10 feet. My favourite here is Gladstoniana, a pure white paony-flowered lily with green shading in the sepals, though you need a really large pond to show it well. Virginalis is a good line because it flowers from May till September. The flowers are very large and they bear shell-shaped petals, snow white and yet rose at the base. Colosse, as its name suggests, is a huge type which I have seen blooming right the way through until the end of October, and starting about the middle of May. It's a very pale pink which turns to white as the flowers get older.

DISEASES OF AQUARIUM FISHES: Part Three

Bacterial and

FURTHER bacterial diseases of fishes to those discussed in last month's article are dealt with below, and in addition information is given about viral infections.

Infective ascites (dropsy). The infective ascites of cyprinids is currently believed by some to be due to a variable aquatic strain of *Pseudomonas punctata* which becomes pathogenic only when aquarium conditions deteriorate. Recent electron microscopic studies, however, have revealed the presence of virus particles in the body fluids of infected carp, and consequently, it is perhaps wiser to conclude that the disease is due to a primary virus infection which is generally further complicated by a secondary *Pseudomonas* infection.

Be this as it may, the leading symptoms are always quite definitive: pronounced ascites with green discoloration and degeneration of the liver with spleen enlargement and anaemia. Concomitantly, cutaneous ulcers, ecchymoses or scale protrusion with inflammation of the scale pockets may develop as a result of internal pressure, and, if the fish survives, deformities of the head, spine or fins may remain.

The disease is acutely contagious and, of the exotic fishes, the dwarf gourami (*Colisa lalia*) is the most susceptible. Treatment therefore consists of immediate isolation of the specimen, followed by stripping and disinfection of the affected tank and, if possible, the evacuation of body fluid hypodermically, and the introduction of suitable bacteriophages.

In this respect, good results can be achieved with chloromycetin or streptomycin administered either by injection (0.1 mg. in 0.1 ml. of water per 10 grams body weight), or by mouth (1 mg. with 1 gram of dried food per 10 grams body weight).

Dermatitis. Dermatitis in fishes, recognised by ecchymoses on the body and fins, roughening of the scales and scale protrusion, can be

caused by the thread-forming bacteria *Chlamylobacteriales*. In such cases, the velvety, reticular lesions may be readily confounded with fungal infections but a simple correction in pH of aquarium water rapidly removes the threads, thus providing both a cure and a differential diagnosis.

Scale protrusion. More commonly, scale protrusion is caused by *Bacterium lepidotrichosae*, a small motile Gram-negative flagellated rod allied to the coli group. The bacteria have been found in the skin as well as in internal organs, and it has been shown experimentally that infection only occurs in fish which are suffering from major skin lesions with associated debilitation.

The prime treatment therefore lies in ensuring that fish are not debilitated through too high tank temperatures, uncleanness and lack of oxygen, and that careless netting or sharp protuberances in the tank do not damage the skin. Otherwise, some measure of success in combating the disease has been achieved by treating affected tanks with chloromycetin (250 mg. per Imperial gallon), or sulpharilamide (1 gram per Imperial gallon).

Diseases due to viral infections

In the earlier part of this article, an as yet unidentified virus was described as being the primary cause of the dropsy syndrome. This perhaps epitomises the fact that our knowledge of fish diseases caused by virus infections is still very much in its infancy; so much so in fact that though three such conditions are now recognised by aquarists, there are as yet no definitive conclusions as to their successful treatment. Accordingly, it is more to help the observer recognise such incurable conditions and so alleviate suffering that these diseases are included here. **Lymphocystis.** This disease is characterised by the formation of proliferous growths of connective tissue cells, somewhat resembling small

Virus Infections

By Dr WILLIAM M. STOKOE, B.Sc., M.R.C.V.S.

(Department of Veterinary Anatomy, University of Edinburgh)

pieces of cauliflower, in the skin and particularly the dorsal and adipose fins. The growths appear relatively slowly, but their effect is insidious for affected fish grow progressively weaker until death from secondary fungus infection supervenes. Though the disease has been noted in free waters, in aquaria the paradise fish (*Macropodus*) seems particularly susceptible.

Pox (epithelioma papulosum). Pox is principally a disease of carp (*Cyprino carpio*) and Prussian carp (*Carassius carassius*) but it has on occasions been observed in *Betta* and other surface-breathing fish. Whether

or not this is significant is not clear, for the leading symptoms are the appearance of milky-white plaques, somewhat resembling opal glass, which gradually increase in size until coalescing to cover large areas of the affected fish's skin. In the ordinary course of the disease, the plaques fall off in three to four weeks, but three to four weeks later they reappear to debilitate the host further.

The disease bears no direct relationship to human smallpox, consisting rather of large epitheliomatous outgrowths from the papillary body of the skin, with inclusion bodies resembling those occurring in

the pox diseases of poultry and sheep.

Kyuro-ichthyozoonosis. This viral disease was first described in South America by Pacheco and Guimaraes in 1933. Swellings at the base of the fins, particularly the pectorals, characterise the disease and the subsequent symptoms, for thereafter infected fish swim awkwardly, wallowing in the water as they try to reach the surface where they remain as long as their bodily powers permit. The disease is fatal, however, and it runs a very rapid course, the victims usually succumbing after only five or six hours.

Post-mortem examination reveals gross discoloration of the gill sheets and peritoneal membranes. The gall bladder is usually greatly distended, inflamed and filled with an ill-smelling, amber-coloured mucus. Other than that, it might be mentioned that the only reasonable prophylactic measure that may be taken to curb the disease is to raise the temperature of infected tanks, since the virus does not tolerate temperatures above 60°F (16°C).

NEXT MONTH: Fungal Diseases.

Blyxa japonica

FOUND in China, Korea, Japan, Nepal, Assam, Thailand, Indo-China, the Malay Peninsula, Borneo and Papua, *Blyxa japonica* has narrow, sharply pointed grass-like leaves. These grow from slightly ascending stems when a cluster of the plants has developed, but isolated specimens do not grow as tall. In colour the leaves may be pale green, olive or even slightly bronzed.

Because of the difficulty in handling it after importation it is not as widely offered as such an attractive plant should be. After it has been received it is best to float *Blyxa japonica* in water for a few days to allow a few new roots to start to form. It requires only moderate lighting, so that it can be grown in the shade of larger-leaved aquarium plants.

This plant will not do well in hard water but in soft water it grows quite strongly. It is an advantage to prune established plants continuously. The old woody stems become brittle and only young shoots should be used for propagation. When it flowers the tiny white blooms ascend to the water surface on long thin stalks.



By C. D. ROE

Standardisation of Goldfish Variations



Bubble-eye goldfish

First of a series of articles
examining the origins and present-
day status of goldfish varieties

By M. D. CLUSE

would be cast out and only the golden fish would be retained. Eventually, fairly true breeding strains of golden fish would be evolved. As the Chinese civilisation and culture progressed, baked clay pans and china bowls were used for keeping goldfish in the household. The fish were thus under constant scrutiny and it was inevitable that it should be noticed that variations in shape were occurring. Some specimens had tripod or doubled tail fins, others protruding eyes or deep bodies. Some even lacked a fin along their backs. Colour was changing too. There were white fish with ink spots, perhaps later known as 'calico' fish. All these, being rare, would be considered desirable and chosen for selective breeding. It is quite likely that localities found their own special variants developed in particular areas.

THERE is little doubt that the goldfish was the first authenticated pet fish. Although in ancient times fishes of various kinds were kept in ponds, the main reason for this seems to have been to provide food for the table, whereas a thousand years ago the Chinese had domesticated goldfish and were raising them in ponds just for the bliss of admiring their colour, shape and movement. A goldfish pool existed in Peking in the twelfth century and it was used to breed fish commercially.

The wild form of 'goldfish' has an olive-bronze coloration and its natural habitat is southern China. Fishes with red scales were observed in the fourth century. Obviously there was a mutated type which, as it matured, lost its black pigment, leaving only the orange pigment with a shine given by the guanin underlying the scales. These mutants would appear, disappear and reappear as is the case, for example, with albino forms of animals in the wild. When man takes a hand and domesticates these attractive variants he is able to fix the strain by selective breeding, e.g. white rats or white rabbits.

It would thus be natural for the Chinese to catch wild golden fish and place them in their private pools. When the fish bred and matured any olive-bronze fish

Part I: Origin and distribution

In due course, some of these fancy varieties reached Japan, where they became interbred, producing further varieties. The goldfish possibly reached Europe over three hundred years ago, and Samuel Pepys recorded in his diary: 'a fine rarity; of fishes kept in a glass of water, that will live so for ever—and finely marked they are being foreign'. It seems that goldfish with protruding eyes were seen in this continent in the eighteenth century. By the middle of the eighteenth century the fish was well known in England. A hundred years later Mayhew wrote of London's itinerant vendors of gold and silver fish, which were apparently obtained from breeding establishments in Essex. Goldfish did not arrive in America until the late nineteenth century. The date is uncertain but it is known that Admiral Ammon brought some marvellous specimens from Japan in 1874.

In the meantime Chinese and Japanese goldfish

breeders had been naming their favourite varieties Ryakin, Ranchu, Demekin, Oranda Sheshigashira, Hanafusa etc. By the 1920s American and British fanciers had adopted names for the varieties which were available. Sometimes the oriental names were used, e.g. shubunkin, oranda. Sometimes rough translations were made, e.g. lionhead, celestial. Very often the names were descriptive, e.g. veiltail moor, comet, fantail, telescope-eye, fringetail, ribbontail (see *Goldfish Varieties and Tropical Aquarium Fishes* by W. T. Innes, ninth edition).

In the 1930s the British Aquarists Association produced some show standards with diagrams and marking points. In 1947, when the British aquarium hobby was pulling itself together again after the war, the Federation of British Aquatic Societies produced some provisional show standards for cultivated fishes and several varieties of fancy goldfish were included.

However, in 1948 the Goldfish Society of Great Britain was formed to encourage the keeping, breeding, showing and close study of the goldfish in all its varieties. It studied the biological facts including fish anatomy and genetics and came to the conclusion that the goldfish is the most variable of all domestic animals, and that the permutations of the numerous characteristics were innumerable. Therefore a strict discipline was needed in restricting the number of varieties which should be encouraged. It considered that the standards for goldfish then existing were unrealistic and inconsistent. The names and many of the descriptive words were misleading and untrue. The defining words were inexact. After studying many of the best fancy goldfish at that time, it decided to produce its own Standards booklet, which was first published in 1950.

Next month: Variation in characteristics of goldfish.



Vets' Congress Discusses Health of Aquarium Fishes



At a 3 days' Congress in April, attended by vets from all over Britain, papers on aquarium fish health and special fish exhibits were presented, including a display of tanks and equipment staged by PetFish Monthly and a demonstration of scale counting. This was the first time that the British Small Animal Veterinary Association has included fish at its annual Congress



Unhealthy and healthy aquarium conditions contrasted in two tanks set one above the other

An exhibit showing the life cycle of the white spot parasite, part of a display by Dr W. M. Scooke of Edinburgh University

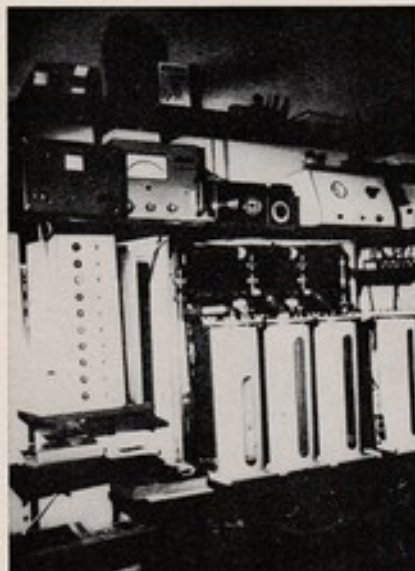


MARINE HOBBYIST'S DREAMLAND



THOMAS BEHNE

describes the ingeniously controlled marine aquarium kept by an enthusiastic fish-keeper in Germany



In the top picture the brightly illuminated aquarium is seen and the equipment to the left of it is shown in detail in the bottom picture

I HAVE always been on the search for the perfect marine tank. Although I have already seen quite a few marvellous ones, I knew there must be a better one yet to be found. So when one day I received the tip about the set-up described here, immediately I was on my way to see with my own eyes what was said to be 'the hobbyist's dreamland'. When I reached there my expectations were exceeded by far. What I saw was a section of marine Nature in a 200 gallons plexiglass tank.

Mr Horst Kipper, the owner of this great marine aquarium, told me that it did not have a steel frame as is usual but that its plexiglass panes were welded together. Various kinds of marine fishes were enjoying life among living corals in crystal-clear water. To go deeper into the matter I looked behind the scene and Mr Kipper explained to me the technical details of this copy of Nature.

Water circulation is done by two pumps (magnetic drive, not self-priming) each with a performance of 475 gallons an hour. The sea water picked up from the tank by these pumps is transported through three filter containers, each of 2 gallons capacity. The first in the line is filled with filter carbon and synthetic filter wool. It serves as a mechanical filter. The second one contains an artificial ion-exchange resin (Ehifmarin SE-R), which absorbs all waste matter, nitrates, nitrites, amino acids, colloids and all kinds of compounds of ammonia. Number 3 is also charged with an artificial resin, which, however, is designed to keep the reaction constant at pH 8.2. Together, numbers 1, 2 and 3 form a complete filter unit, and their tubing (PVC plastic) is installed in such a way that each container is interchangeable or can be switched off without interrupting the total filtering process. They can also be operated individually by hand. The whole is comparable with a railway system, with junctions to link the various lines.

After the sea water has passed through all three containers it enters the tank through two nozzles welded

into one of its sides. One nozzle sprays the water directly on the surface; the other one passes it down to the tank bottom into an undergravel filter. The pressure is so strong that the water virtually washes the gravel, taking sediment and waste matter with it. Thus the revitalising circulation is completed. There is no chance that waste matter, sediment or poisonous compounds are not removed as the sequence of the water pressure at the base, the passage through the filter media and the circulation are so well adjusted.

In addition to this assembly line for water purification there are three more containers of a gallons capacity each, for aeration and water heating. The first pair of containers (A and B) form the aeration system. The water, pumped into the first container by an Eheim pump, runs slowly over a plastic plate. The water level in this container (A) is kept at a fixed height by air pressure above it, as the containers are far below the tank water level. The air is supplied by a diaphragm pump with a magnetic valve. As the tank water pumped into this container also brings air bubbles, additional pressure develops above the water level and the water begins to flow into container B. A mercury float contact switch which is connected to the magnetic valve in the air pump, changes its position with the water level, and over a certain angle the contact is cut out, the magnetic valve shuts and the air supply from the pump stops. This lack of pressure makes the water rise again until the mercury float is in its former position and electrical contact is made once more. Then the magnetic valve opens, and the air from the pump stabilises the pressure. This process takes place at such a high speed

that when watching it one cannot notice the changes in water level.

The second container (B) is controlled in the opposite fashion. Water coming into it from container A also flows over a plate but this time it is aerated with pure oxygen. One Visa pump circulates the oxygen in and out of B, and through carbon dioxide absorbers. Because of solution of oxygen in the water in container B, the pressure above the water decreases and the water rises. Again it is a mercury float regulator which stabilises the pressure. A change of its position with the raised water level opens the magnetic valve of a separate oxygen bottle, which replaces the consumed gas. The oxygenated water then runs through container C, where two large heaters with an automatic thermostat keep the temperature at 75°F (24-25°C). From C the water is pumped back into the marine tank by another Eheim pump.

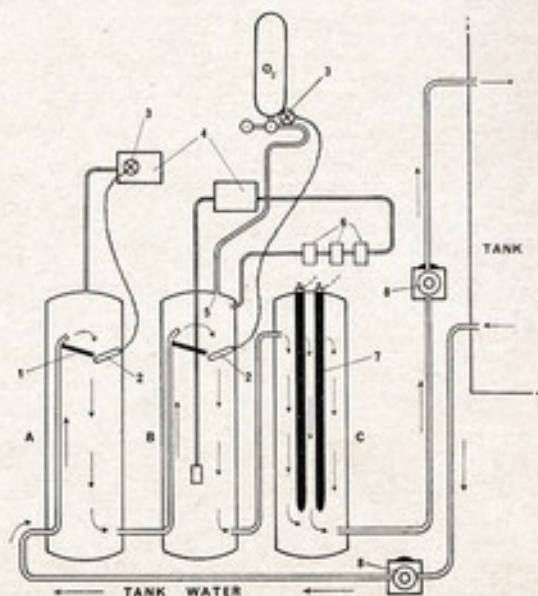
To control this ideal plant, Mr Kipper does even more. Every two days he examines samples of the tank water, checking the pH value with a Beckman pH meter, and density with a hydrometer; various electrical indicators are installed to register acid and salt contents. The entire top of the aquarium is enclosed by a large plastic box which limits the evaporation losses, and there is even an arrangement to ensure that the humid air within this box is cooled from the high temperature imparted to it by the overhead lamps so that the fresh water that then condenses can drop back into the aquarium. The result of all this effort is not only that Mr Kipper has been able to keep the most delicate marine fishes but also that he

Continued on page 84

External oxygenation and heating system

Arrows show the direction of water flow through the apparatus.

- A, B and C are the containers referred to in the article. 1, Contact plate, for aeration of water. 2, Mercury float automatic switches. 3, Magnetic valves. 4, Air pumps. 5, Tube for oxygen from cylinder (labelled O₂). 6, Carbon dioxide absorbers. 7, Heaters. 8, Eheim pumps



AQUARIUM AMERICA THROUGH THE LOOKING GLASS—3



Mr Barry Franz with Jim Kelly (left) at the home of Mr Al Klee. On the wall above the picture is the skin of a snake caught by Mr Klee in Peru

How to Take a Fish Show to the Public

By JIM KELLY

MENTION the Southern States of America to an Englishman and his thoughts immediately turn to houses with porticoes, belles in crinolines, satiny thoroughbreds and faithful Mammies, and if he is of the 'look back in anger' clan, 'Tobacco Road', hookworm and the Klu Klux Klan!

A phone call inviting me to judge a fish show in Kentucky gave this 'Limey' a chance to see things at first hand. The exhibition was the annual shin-dig of the Louisville Tropical Fish Fanciers. Through the pages of its excellent magazine, *THE SCAVENGER*—a non-profit-making club venture, names such as those of Jim Fiske, Arthur and Marion Hayley and Roger Price were no strangers to me but the show setting itself was. It was held in the corridors of the city shopping centre, which must surely rate amongst the finest and most practicable surroundings ever used for a display of tropical fish and club activities.

The colourful glass frontages to the stores opening on to the arcades, with the special displays by the firms, all helped to set the scene and the activity of the shoppers and white-coated assistants gave a sense of hustle and bustle. What an ideal way of bringing the attractions of fishkeeping to the man-in-the-street.

The long passageways between the shops contained stands loaded with every kind of fish imaginable, cold-water, tropical and marine, all benched in tanks and most of them decorated.

Rows of furnished aquaria were banked with flowers and plants in profusion; one bank of some dozen tanks were arranged in competition by local dealers all anxious to show off their prowess.

Upstairs, the coloured film 'Wonders of the Deep' was screened and for those not of a 'fishy' frame of mind, there was continuous colour T.V., all with ample seating

accommodation, and even a play area for the kids. This show had everything and that included the kitchen sink!

One stand in particular that took my eye was a large marine aquarium constructed entirely of glass. I found this was a do-it-yourself venture by one of the members who had simply cut sheets of plate glass and cemented them together with a cement called Silastic (General Electric, Silicone Products Dept., Waterford, New York). Containing some 200 gallons, this tank's only claim to support of any kind was a small inch square frame of wood round the base.

Now that marines seem to be gaining favour in Britain here at last seems one way of avoiding the toxic effects of iron aquaria.

Getting down to the job of judging the entries, I found much that confused. The judging system used necessitated fifteen sets of points for each fish and it was unnerving, to say the least, to find that each class was judged separately by at least two judges and the mean average taken.

I dreamed blissfully of our simple but effective English system based on the 'five twenties' but then reminded myself that the States societies paid each judge a fee of 25 dollars (about £8) for his services, so he was well compensated for his mathematics.

In the 'oddball classes' I saw some fine specimens of arowana (*Osteoglossum bicirrhosum*; pictured in *PETFISH MONTHLY*, May issue). These inhabitants of the upper Amazon region can grow to three feet and certainly claim the title oddball. Also in this class were specimens of piranha (*Serrasalmo rhombus*); these were very popular because some States had recently threatened to bring in legislation to ban these fish, going as far as to threaten the impounding of any held in hobbyists' tanks. It is a long story and has as many facets as a diamond, but the

'powers that be' were frightened in case the piranha was thrown into natural bodies of water and became endemic. Even strangers to the hobby have a pretty good idea what tigerfish could do to the local fish population, to say nothing of the swimmers.

The problem of finding suitable premises in which to stage a show is one that most clubs have to overcome, and I ask show secretaries not to be put off by the apparent difficulties of holding it in similar surroundings to the Louisville Show. The shopkeepers gain by the extra influx of prospective customers; the organising society by the fact that members' wives and family friends etc. not keen on aquatics have something to do and see while the hobbyists are wrapped up with the exhibits; last but by no means least, think of the prospective introductions to the hobby these folk present.

With the Harvest Moon high in the sky we reluctantly said farewell to the 'Mall' at Louisville, and, like its famous London namesake, it had left an impression on me that I wasn't likely to forget.

I Visit Mr Al Klee

Though our hobby attracts people from all walks of life it is a fact that a high proportion of professional folk become ensnared by its attractions: doctors, lawyers, Indian Chiefs—the parade is endless and the business of club life enriched by the professional additions to our gatherings.

When I speak of 'professionalism' I immediately think of author, lecturer and hobbyist Albert J. Klee, or, as he is affectionately known, 'Mr Killiefish'.

Just talking fish with this man is a revelation and to give you some idea of how interesting he is we started a conversation on ichthyology in Indianapolis one Saturday morning at 10 a.m. and with just a break for a meal finally wound it up at 3 a.m. Sunday!

Al and his charming wife Joy live in West Chester, Ohio, and their invitation to me to visit them was eagerly accepted.

Typical of fish set-ups Stateside their tanks were in the basement of their bungalow, but on inspection I found that this was no ordinary set-up. Some months previously, Al had been on a collecting trip in Peru and his tanks were bursting with rare specimens he had brought back—enough here to make any killiefishman's mouth water; even the disputable names would keep them arguing for months.

One controversy that has 'braved the slings and arrows of outrageous aquarists' for years is what constitutes 'natural conditions'. Determined to see just what these were at first hand, Al and a few keen types had hired an ex-U.S. Army plane and after many thrilling experiences that included a near nose dive into the blue waters of the Caribbean Sea, they had returned loaded with specimens—and the answer!

One addition to the equipment taken with them was a portable water-testing kit, and I was shown its various functions in detail; everything from pH to bacteria content could be examined with this box, no larger than a small suitcase.

Al showed us many of the coloured slides they had taken: Pucapella, on Peru's mightiest river, the Rio Ucayali, where at a newly opened 'café' they ordered a drink called 'Quaker' only to find after they had con-



A killiefish (unidentified species) among Mr Al Klee's collection

sumed half of it that the other half of the cup was full of living maggots! In Al's own words: 'Sure enough, all of our cups had this unbargained for extra addition of protein'.

Anxious to hear what 'natural' conditions they had found fish living in, I was amused and had my long-standing suspicions justified: take a bucket of mud, further dilute it with water, make it acid with old leaves, give all a good stir, and voila!—though not in the best traditions of a Fanny Craddock recipe it did describe natural conditions to perfection. Yet, despite these apparent hardships the fish lived, bred and flourished.

Next we visited Al's library and this turned out to be a complex and complete system of cataloguing articles on all aspects of the hobby; even my local Civil Servant would have had a Ball among the filing cabinets. His collection had assumed such large proportions that Al was in the throes of having it all micro-filmed, which, when used with a special projector would bring any article or book page fully illuminated on to a screen at the touch of a button.

Seeing my interest in his large collection of fish books he read interesting passages from book after book, written in their language of origin, it mattered not which to this 'professional', German, Spanish, Portuguese, he wrapped his tongue round the difficult scientific jargon as if he was quoting from THE TIMES.

Among his close friends he has received the nickname 'Able Albert', a title he richly deserves.

On the patio of the bungalow the ladies had prepared supper and eight of us sat down—but even the thought of food didn't stop the conversation on aquaristic topics.

Serving behind the Counter

When having visitors to one's home, it is a human foible to tidy up the place and generally be on one's best behaviour. Though impressed by the many pet stores I had visited most knew I was coming, and I thought that the latter conditions tended to prevail. One way to meet aquarists would be to serve in a pet store, and I put this to two good friends, Betty and Bob Echolds, owners of 'The Seven Seas'.

They were enthusiastic about the idea so I clocked on

and got down to work—a busman's holiday but I was determined to learn.

I cannot say that my raucous Lancashire accent brought them any more business but serving behind the counter certainly widened my experience, and after cocking their eyebrows at my speech customers soon accepted me as just another assistant.

All sales in the U.S. end with: 'Nice having you, please call again'; it costs nothing, but to the dealers reading these words it does keep the cash register ringing with repeat sales.

Talking of 'ringing' reminds me; to the American the telephone is just an extension of their business and it was unnerving to have it ringing all day long: advice, orders . . . 'yes, we will deliver right away', formed a part of the average day. Did I say average? Their shop hours extend into the night!

Though this store wasn't large it was typical of the large city store, the windows decorated as a tropical garden complete with turtles.

One feature that would seem out of place to our Saxon upbringing was the 'Coke' machine; for the expenditure of a dime one could obtain an ice-cold drink, a pastime every visitor seemed to participate in . . . with the temperature at 80°F (27°C) outside short-sleeved shirts and iced drinks were needed.

Being familiar with customers here in Britain I was keen to note the main differences between our two peoples. It wasn't long before their spending power soon impressed me; expensive items of equipment were purchased as if they did this sort of thing every day and the dollar down and a dollar a week became a truism. Even beginners would purchase large-output pumps, and as one said: 'It will provide the air when I extend!'

School children encouraged by biology programmes were regular visitors and their standard of knowledge was very advanced. Some weeks previously I had been taken on a tour of a local High School, 'Arsenal', by Jean and Vern Parrish, themselves pet store owners, and in the

'Body Shop' I saw young boys working on car engines like seasoned Vets. Parents were encouraged to send their automobiles into the school for repair; that's what I call real 'faith'!

Maybe another reason why the hobby is so flourishing in the U.S.A.: start 'em young is a good maxim, and on reflection how many Societies on this side of the Atlantic have a flourishing Junior Section?

The price of fish was a little higher here for the 'bread and butter' species. Most of the angel fish were *Pteroplyllaw scalare*, hence the American nickname scalares; I did hear them referred to as 'ladderfish', a new nickname to my Northern ears.

When the customer was ready to select his purchases a large open plastic box was clipped to the side of the tank and filled with tank water; at the end of the selection the contents were tipped into a toughened plastic bag or large waxed carton and the lid was clipped on.

The shelves were arrayed with chemicals and drugs for every complaint our pets are heir to. Hormones are widely used and though there is much argument for and against their use I am of the 'against' school. You wouldn't throw your young son in the deep end of the swimming pool to teach him to swim? Why then dabble with things you don't understand? Indiscriminate use of these products can cause at the least unpleasant skin disorders, at the worst, even death.

I predict that hormones will become a topic of controversy in Britain before long, and my advice, based on my experiences, is leave them well alone.

Finally, a comment about the electrical system used. Gone were the familiar 240 volts and in their place was 110; all appliances had a two pin plug affixed and no earth seemed the order of the day. I leave the reasons why for one of our readers with more knowledge of the subject.

Next month: The closing chapters of Jim Kelly's tour: specialist societies in the U.S.A.

Marine Hobbyist's Dreamland

Continued from page 81

has been able to keep live corals from different oceans successfully for more than one year.

As well as his big tank, Mr Kipper has a smaller tank in which he tests the influence of different kinds of light upon marine plants and live corals. Another Eheim pump supplies this tank with water directly from a filter container for the big tank. Before the water enters it has to pass an ultraviolet-light container. This guarantees that nothing alive from outside (bacteria etc.) can influence or harm the process. His experiment has proceeded so far that he can promote or stop the growth of plants, as he likes.

It took a good deal of perseverance and research to design such a large and involved assembly line of water purification. Mr Kipper, however, stated that it would be much easier, and of course less expensive, to build on a smaller scale.

New Books Noticed

A Biology of Marine Algae

by A. D. BONEY Hutchinson 22s 6d.

The World of Reptiles

by A. BELLAIRS & R. CARRINGTON. Chatto 25s.

Breeding Aquarium Fish

by WOLFGANG WICKLER. Studio Vista 10s 6d.

Aquarium Hygiene

by HELLMUTH WACHTEL. Studio Vista 10s 6d.

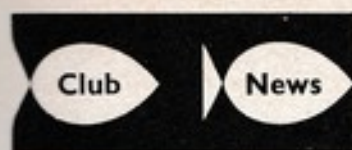
Aquarium Plants

by GERHARD BRUNNER. Studio Vista 10s 6d.

Pond Life in the Aquarium

by HORST JANUS. Studio Vista 10s 6d.

Some of these books are to be reviewed in PETFISH MONTHLY.



AT the March meeting of the **GARFORTH & D. A.S.** a most interesting and entertaining lecture on plants was given by Mr R. Winterburn of Bradford. A table show was also held and the results were: Moss trophy for livebearers: 1, Mrs M. Winfield; 2, Mr D. Britton; 3, Mrs Jempson. Clarke trophy for carps and minnows: 1, Mr R. Davis; 2 and 3, Mrs M. Winfield.

THE annual general meeting of the **BRACKNELL & D. A.S.** was held at their meeting place, The Red Lion, Bracknell, at the beginning of April, when the following officers were elected for the year: president, Mr W. Murphy; chairman, Mrs N. Jordan; secretary, Mr K. S. Phillips (40 Pond Moor Road, Easthampstead, Bracknell, Berks); treasurer, Mr R. Dove; show secretary, Mr L. Jordan; librarian, Mr D. Allen; programme secretary, Mrs N. Jordan; press officer, Mr R. C. Armstrong; committee members, Mr T. Duffy and Mr B. Johnson. New members will be made very welcome and may care to attend this month's meetings, on 2nd and 16th June at 8 p.m.

AT the annual general meeting of the **BASILDON & D. A.S.** held in April the following officers were elected: president, Mr A. J. Le Boutillier; chairman, Mr Ted Gash; vice chairman, Mr Dennis Duddley; secretary, Mr Harry Furneaux (12 Beemptions, Basildon, Essex); treasurer, Mr Derek Smith; show secretary, Mr George Clark; programme secretary, Mr B. Lupton; magazine editor, Mr A. J. Le Boutillier; F.B.A.S. representative, Mr Ken Bronze; librarian, Mr Ken Bronze; lay members, Mr Don Stockwell, Mr R. Penn, Mr B. Collins. The Society welcomes new members. Meetings are held fortnightly on Monday evenings, 8 p.m., at the Laindon Community Centre, Aston Road, Laindon, Essex. For further details please contact the secretary.

MEMBERS of the **UXBRIDGE & D. A.S.** recently heard an interesting

talk on aquarium management from Mr J. V. Morrice of Hendon & D. A.S. He spoke of the careful planning needed for siting the aquarium, of various methods of heating, proper insulation of fish house or fish room, and many other aspects of the hobby. All agreed that it was a most enlightening lecture and many useful hints and tips were learnt. Another good attendance of members in April saw Mr Stewart judge the second table show of the year; four classes of fish were exhibited and a class for furnished 4 in. by 4 in. jars was also staged. Prizewinners were: Barbs: 1, Mr Summers (*B. cuningii*); 2, Mr Fitzwater (*B. nigrofasciatus*). Cichlids: 1, Mr F. L. Bunn (Jack Dempsey); 2, Mr Bruntons (angel); 3, Mr Stapleton (*P. fasciatus*). Platys: one fish only, bringing another prize for Mr Brunton. In a class that may well become very popular—the furnished jars class—Mr Tovell took first prize and Mr Brunton second. Winners in the novice class were Mr Summers with a mollie, and Mr Spilman also with a mollie. The judge answered a number of questions on the various fishes on display and all agreed that the evening had been most enjoyable.

MR J. STILLWELL, secretary of the **PORTSMOUTH A.S.**, recently gave his fellow club members a very interesting talk on livebearing fishes with special reference to standards. At the same meeting a table show for livebearers was judged by Mr C. J. Smith, the results of which were: Male guppy: 1 and 2, Mr A. Taylor; 3, Mr G. Marks; 4, Mrs J. Stillwell. Female guppy: 1 and 2, Mr A. Taylor; 3, Mr A. Smith; 4, Mr G. Glasspool. Swordtail: 1, Mr M. Warren; 2, Mr P. Carlyon; 3, Mr M. Brooks; 4, Mr D. Forse. Mollies: 1, Mr G. Marks; 2, Mr R. Wylie. Platys: 1, Mr R. Wylie; 2, Mr W. Tyler; 3, Mr P. Carlyon; 4, Mr R. Wylie. A.O.V. livebearer: 1 and 2, Mr P. Carlyon. Best in show: Mr M. Warren.

Another very interesting talk was given at the following meeting by Mr J. Howard on reptiles, illustrated with a display of a large number of live specimens including a cayman kept by the lecturer. Prospective new members should contact the secretary at 34 Salcombe Avenue, Copnor, Portsmouth for further details.

THE recently formed **STOCKPORT A.C.** meet every Tuesday at 8.0 p.m. at the British Railways Social Club, Edgeley Road, Stockport. New members will be most cordially welcomed and those interested should contact the secretary, Mr D. P. Johnson, 17 Athlone Avenue, Cheadle Hulme, Cheshire.

MEMBERS OF **HOUNSLOW & D. A.S.** have been participating in a varied programme recently. Although a second visit to the Isle of Wight for an inter-club table show resulted in a win for the Isle of Wight A.S. by 1299½ points to 1142, the occasion was very much enjoyed and a return visit later in the year is planned. An invitation to the Society to put on a table show and talk to the patients of Eldridge Hall for handicapped people saw members turning up in force and all present had a very pleasant evening. The Club now meets at the Territorial Army Centre, Hanworth Road, Hounslow and further details are available from the secretary, Mr D. J. Woodward, 16 Ellerdine Road, Hounslow, Middlesex.

THE **SOUTHEND, LEIGH & D. A.S.** were entertained last month to a most informative talk on breeding and maintaining the barbs by Mr Cheswright, who stressed the importance of the water used to produce a successful spawning and advised the addition of a least one-third of rain-water or ion-exchange water to domestic tap water to prevent a form of tail rot that had proved prevalent in the district attacking, particularly, day-old fry of tiger and ticto barbs. At the table show for barbs results were: 1, Mr P. F. Capon (chequer); 2, Mr C. Ward (*B. aurillus*); 3, Mr B. Dunn (*B. schuberti*) and Mr A. J. Mason (tiger). Intending members should contact the secretary, Mr M. J. Willis, 17 Arundel Gardens, Westcliff-on-Sea, Essex.

OFFICIALS elected for the year at the annual general meeting of the **EAST DULWICH A.S.** are: chairman, Mr R. Salmon; secretary, Mr A. Rose (92 Addey House, Rotherhithe New Road, S.E.16); treasurer, Mr A. Blyth; show secretary, Mr S. Sears; committee members, Mrs D. Dunstan, Mr J. Open, Mr G. Scott. The retiring chairman accepted with regret the resignation of Mr

A. Gale from office as secretary owing to business commitments. A founder member of the club, Mr Gale intended to remain a club member though he no longer had the time to participate as an officer. Club meetings are held every Monday evening, 8.0 p.m., at 110a Leodship Lane, S.E.22 and new members will find a warm welcome there.

AT a meeting in April at the Castle Hotel, members of **ACCRINGTON & D. A.S.** formed a panel to answer questions on all aspects of the hobby put to it by those present. Mr A. Smith dealt with questions on cold-water fish, Mr V. Stephenson on equipment and electrical wiring, Mr B. Tattersall and Mr C. Whitsey on tropicals. There were 14 entries for the four classes in the table show, the best in show being a breeders team of guppies exhibited by Mr B. Tattersall.

FISHKEEPERS interested in joining the newly formed **ROEHAMPTON A.S.** should get in touch with the secretary, Mrs V. R. Sinden, 4 Swaythling House, Danebury Avenue, Roehampton, London, S.W.15.

A VARIED evening was enjoyed by members of **SWILLINGTON A.S.** when the inter-society table show was held at the end of April. Mr Candon of Thorne A.S. was the judge of the eight classes, and while the judging was being completed those present watched a film show and took part in a fish and plant auction. A plaque for the best fish in show was presented and won by Mrs A. Firth (Bradford). First prize winners received a rosette with card and

second and third prize winners cards alone. The winning society of the evening was Bradford. Detailed results were: Class 1, livebearers: 1, Mr L. Haley (Bradford); 2, Mr R. Harrison (Airboro); 3, Mr R. Harrison (Airboro). Class 2, barbs: 1, Mr A. Firth (Bradford); 2, Mr J. Hooper (Bradford); 3, Mrs Helm (Airboro). Class 3, characins: 1, Mrs A. Firth (Bradford); 2, Mr D. Carr (Bradford); 3, Mrs Helm (Airboro). Class 4, catfish and loaches: 1, Mr C. Holdsworth (Bradford); 2, Mrs Helm (Airboro); 3, Mrs Dickenson (Airboro). Class 5, A.O.V. egg-layers: 1, Mr D. Carr (Bradford); 2, Mrs Helm (Airboro); 3, Mr J. Hooper (Bradford). Class 6, anabantids: 1, Mr K. Glover (Swillington); Mr Cohen (Pontefract); 3, Mr L. Haley (Bradford). Class 7, toothcarps: 1, Mr G. Holmes (Bradford); 2, Mr Rumbold (Tadcaster); 3, Mr R. M. Faircliff (Tadcaster). Class 8, fighters: 1, Mr J. Baxter (Tadcaster); 2, Mr C. R. Wilson (Bradford); 3, Mr C. R. Wilson (Bradford). Secretary of the Society is now Mr P. Scott of 15 Woodland Crescent, Swillington, nr Leeds.

LEIGH A.S. enjoyed a very interesting lecture on judging fishes given by Mr F. Partington, F.N.A.S. judge and lecturer recently. The lecture covered all aspects of judging and pointing of fishes at open shows and it was considered that members should benefit in the future from his comments. It was also the first anniversary of the Society, which in only one year has become one of the strongest in the area. The year's activities have covered lectures, table shows, discussions, match

shows (of which five out of six have been won) and a club outing to Chester Zoo.

ANOTHER committee receiving full praise for the success of the club during the past year was that of **WORCESTER A.S.** at its first annual general meeting. Officers were thanked for the hard work they had put in and the following were re-elected for 1966-67: chairman, Mr C. A. Postins; vice-chairman, Mr N. Smith; secretary, Mr P. Price; treasurer, Mr P. Fairhurst. Mr A. Beecroft became assistant secretary and Mr M. Haines, Mrs M. Haines, Mr J. Jones and the Rev. Sell were elected as committee members. Meetings are held every other Thursday evening and details can be obtained from Mr Price at 64 Ronswood Hill, Worcester.

SO much interest was shown by club members of **READING & D. A.S.** in each section of the talk by Mr Morrice on aquarium management that the lecture never did get completed. The 15 members present were informed of the club's success in the recent inter-club show in the Three Counties Competition at Didcot and members were urged to make an all-out effort to keep this up in the remaining shows.

QUITE a large contingent of members of **BRIGHTON & SOUTHERN A.S.** joined members of **THE MARINE STUDY A.S.** when they held their survey and collecting expedition at Black Rock recently. The meeting was arranged to enable members of Marine Study A.S. to collect native marine specimens and also to study and map the local marine flora and fauna. A general survey of the area was conducted and a photographic record made. All results are available to interested members. It is hoped to undertake another of these surveys in either August or September, probably in the Bourne mouth area, and an invitation is extended to all individuals, clubs etc. who may care to join in. Further details will be published later when available.



Brighton A.S. members Mr J. Pelham, Mr P. Pavey, Mr R. Browning and Miss P. Carr, with Mr G. Kluger (Marine Study A.S.) to the rear, collecting specimens at Black Rock, Sussex

AT the annual general meeting of the **NOTTINGHAM & D. A.S.** the following officers were elected: president, Mr H. Lynn; chairman, Mr H. Odam; vice-chairman; Mr C. Hill; secretary, Mrs H. Chambers (Norwood View, Kirklington, Newark, Notts); treasurer, Mr K. Binns; show secretary, Mr W. J. Christian (40 Moor Lane, Bunny, Nottingham); breeders leader, Mr F. Newman; bulletin editor, Mrs B. Goodliffe; lecture secretary, Mr N. Goodliffe; social secretary, Mr C. Hill; librarian, Mrs D. Bates; catering officer, Mrs I. Bullyment. The secretary asked for special care to be taken to send letters to the appropriate officer to ensure early attention and explained that last year some shows had been sparsely attended by members of the club because schedules from other societies had arrived too late as a result of being sent to the secretary rather than the show secretary. The show secretary confirmed that the arrangements for the inter-society show between Burton, Derby, Notts, Tropicals and Nottingham & D. A.S. has been

completed and would take place at the Community Centre, Kirkewhite Street Nottingham on 5th June at 2.0 p.m. An appeal was made for fish for the two tanks maintained at the local children's hospital and Mr Bullyment was thanked for attending the tank at the Sherwood Hospital so diligently.



Mr A. Stebbing, chairman of Ilford & D. A. & P. S., in his fish house (Ilford Pictorial and Guardian photo)

AT the April meeting of the Liverpool section of the **FANCY GUPPY ASSOCIATION** Mr Jim Kelly gave a fascinating illustrated lecture on his recent tour of the U.S.A. Always a pleasure to hear, it was felt that this lecturer's latest one surpasses all the others. The interest shown was demonstrated by the fact that eight new members were enrolled. Yes, guppies are booming on Merseyside! And a great welcome awaits anyone wishing to join this go-ahead section. For further information please contact the P.R.O. Mr W. Armitage, 12, Orrell Lane, Liverpool, 9.

AT recent meetings of the **ILFORD & D. A. & P. S.** a variety of activities has ensured the continued interest of club members. A talk by Mr Alfred Leutscher on amphibians and reptiles of the British Isles was accompanied by coloured slides taken by Mr Leutscher in Epping Forest and in his own home. The first table show of the year attracted a large number of entries. Winners were: Any variety livebearer: 1, Mr

Use of Hormones Discussed by F.G.A.

AT the annual general meeting and judges conference of the **FANCY GUPPY ASSOCIATION**, the chairman, Mr J. Kelly, welcomed members and expressed his appreciation for the interest shown in the affairs of the Association. (This was borne out by the attendance of 92 members from sections at Radlett (Herts), South London, Liverpool, Glasgow and Manchester. The secretary, in his report, mentioned the progress that had been made during 1965. Increases in membership both at home and overseas had strengthened the Association considerably. Two new sections had been formed during the year, one at Liverpool and one in South London. The South London section now had a membership of fifty, and a significant point was the number of husband and wife memberships. This sharing of the hobby was something that other sections could well try to emulate. The new badges which had been introduced during the year had been favourably received by members; there were

now identical pattern badges throughout the Association in three finishes—bronze, silver and gold. The number and quality of fish at table shows all over the country had shown increases which proved the great interest being taken in breeding fancy guppies. The secretary concluded by expressing his thanks to section officers for liaison with him, to fellow members of the management committee for their help and to all members for a peaceful and gratifying year.

The treasurer, Mr J. Jeffery, in presenting the accounts remarked on the favourable state of the financial position of the Association. The business of the annual general meeting was concluded with the unanimous acceptance of the proposal that the retiring officers be re-elected.

At the judges conference that followed, a proposal by Mr K. Rigby (Liverpool), seconded by Mr B. Hawkins (Radlett), that owing to diminishing entries and poor quality

flagtails should be transferred to a.o.v. classes, was carried. A proposal by Mr R. Beresford (Manchester), seconded by Mr G. Goodall (Radlett), that any fish entered in a.o.v. males, a.o.v. females or colour class, being non-standard fish, will not be eligible for best in show awards was carried. Finally, the proposal by Mr J. Jeffery (Manchester), seconded by Mr J. Brownhill (Manchester), that (a) although the F.G.A. does not debar the use of hormones, it does discourage the use of those of which little is known, (b) where hormones known to be dangerous have been used, members are required to notify the show secretary when benching fish, and (c) that a notice to this effect will be exhibited at all F.G.A. shows, was carried.

The association secretary is Mr R. Beresford, 99 Valley Road, Arden Park, Bredbury, Cheshire, from whom information about the Association may be obtained.

Hattam; 2, Mr Hattam; 3, Mr Robinson. Any variety egg-layer: 1, Mr Hattam; 2, Mr Ruth; 3, Mr Ruth. Forthcoming meetings will include a sale of fish, plants and equipment for members and a table show for any variety fancy goldfish, any variety platy and any variety characin. For further details contact Mr R. Ruth, 13 Dunkeld Road, Dagenham, Essex.

AT the sixth annual open show of the **MIDDLESBROUGH & D. A.S.** a record 284 entries were received with competitors coming from Garforth, Swillington, Tadcaster, Tyne-side, Durham, Sunderland, Seaham, Peterlee, Horden, West Hartlepool, Stockton, Saltham and Middlesbrough. Results were: Furnished aquaria: 1, Mr P. Reynolds; 2, Mr K. Glover; 3, Mr B. Brunt. Furnished jar: 1, Mr J. G. Robertson; 2, Mr R. Noble; 3, Mr K. Dodd. Fighters: 1, Mr J. Baxter; 2, Mr P. Reynolds; 3, Mr N. Mason. Labyrinth: 1, Mr F. Pattinson; 2, Mr G. Auston; 3, Mr F. Pattinson. Ange fish: 1, Mr G. Watson; 2, Mr J. Allan; 3, Mr R. Toulmin. Dwarf cichlids: 1, Mr J. Chamberlain; 2, Mr D. Porter; 3, Mr J. Chamberlain. Cichlids: 1, Mr D. Robinson; 2, Mr V. Kinsley; 3, Mr G. Auston. Guppies: 1, Mr J. Heslop; 2, Mr B. Pedersen; 3, Mr V. Cowlam. Swordtail or platy: 1, Mr P. Clarke; 2, Mr K. Smales; 3, Mr J. Chamberlain. Mollies: 1, Mr M. Windfield; 2, Mr P. Reynolds; 3, Mr F. Patterson. Livebearers: 1, Mr E. N. Smith; 2, Mr P. Reynolds. Barbs: 1, Mr A. F. Whitlock; 2, Mr G. Grafton; 3, Mr M. Robinson. Raubora or danios: 1, Mr V. Kinsley; 2, Mr B. Wingfield; 3, Mr J. G. Robertson. Egg-laying toothcarps: 1, Mr W. Cathull; 2, Mr J. G. Robertson; 3, Mr N. Whiteley. Characins: 1, Mr E. M. Smith; 2, Mr W. A. Sickling; 3, Mr M. Coxon. Catfish or loach: 1, Mr A. Trotter; 2, Mr K. Glover; 3, Mr and Mrs Clennett. Coldwater twintail: 1, Mr G. Grafton; 2, Mr J. H. Hurst; Mr A. Hunt. Coldwater singletail: 1, Mr J. H. Hurst; 2, Mr A. Trotter; 3, Mr J. H. Hurst. Egg-layers: 1, Mr R. Atherton; 2, Mr M. Coxon; 3, Mr E. M. Smith. Breeding pairs: 1, Mr Winfield; 2, Mr and Mrs Clennett; 3, Mr P. Reynolds. Breeding egg-layers: 1, Mr W. Faircliff; 2, Mr W. Cathull; 3, Mr B. Pederson. Breeding livebearers: 1, Mr J. Williamson; 2, Mr

Tropical Aquarium Breeders Show

FIRST TROPICAL AQUARIUM BREEDERS annual open show was held at Switchgear and Cowan Social Club, Stretford on 20th March. Results: best in show won by Mr J. Allen (T.A.B.) with an excellent *Nannarawa*. Best breeders won by Mr K. Wilbraham with a team of emperor tetras.

Guppies: 1, Mr J. Heap (Salford, 70 pts); 2, Mr J. Allen (T.A.B., 50 pts); 3, Mr J. Wile (Hfield, 25 pts). Molliés: 1, Mr A. Gardner (Stretford, 70 pts); 2, Mr J. Dolan (Ashton, 60 pts); 3, Mr J. E. Shore (Oram, 65 pts). Swordtails: 1, Mr T. Mitchell (Mfield, 70 pts); 2, Mr M. Wille (Stretford, 67 pts); 3, Mr R. E. Rothwell (Leigh, 65 pts). Platy: 1, Mr J. Turner (Ashton, 75 pts); 2, Mr G. Rich (Sparton, 70 pts); 3, Mr F. Gregory (Oram, 65 pts). Small barbs: 1, Mr F. Gregory (Oram, 71 pts); 2, Mr G. Hodgkinson (Gorton, 60 pts); 3, Mr F. Gregory (Oram, 68 pts). Large barbs: 1, Mr Parkes (Mside, 84 pts); 2, Mr A. Wiles (Stretford, 75 pts). Labiosa & sharks: 1, Mr A. Southgate (Belle Vue, 75 pts); 2, Mr R. Hughes (Belle Vue, 70 pts); 3, Mr K. Wilbraham (Oram, 75 pts). Small characins: 1, Mr J. Robinson (Mside, 74 pts); 2, Mr M. McKay (Oram, 71 pts); 3, Mr F. Gregory (Oram, 68 pts). Large characins: 1, Mr F. Mulla (Mside, 78 pts); 2, Mrs P. A. Nicholls (Oram, 75 pts). Medium characins: 1, Mr F. Filiger (T.A.B., 75 pts); 2, Mr J. Robinson (Mside, 69 pts); 3, Mr G. Bownell (Hfield, 66 pts). Dwarf cichlids: 1, Mr J. Allen (T.A.B., 87 pts); 2, Mr J. T. Sutton (Oram, 74 pts); 3, Mr A. Mathias (Leigh, 71 pts). A.O.V. cichlids: 1, Mr F. Mulla (Mside, 70 pts); 2, Mr F. Mulla (Mside, 74 pts); 3, Mr K. Parkes (Mside, 72 pts). Angels: 1, Mr A. Malby (Oram, 70 pts); 2, Mr G. Crook (Stretford, 69 pts); 3, Mr G. Bownell (Hfield, 66 pts). A.O.V. anabantid: 1, Mr W. Parkin (Hfield, 80 pts); 2, Mr B. Preston (Heywood, 77 pts); 3, Mr L. Kaye (Hfield, 72 pts). Fighters: 1, Mr T. G. Wylans (Mside, 75 pts); 2, Mr A. Malby (Oram,

75 pts); 3, Mr L. Kaye (Hfield, 60 pts). Small catfish: 1, Mr T. Davies (Heywood, 82 pts); 2, Mr J. E. Shore (Oram, 70 pts); 3, Mr L. McCourt (Gorton, 70 pts). Large catfish: 1, Mr F. Mulla (Mside, 60 pts); 2, Mr G. Hodgkinson (Gorton, 59 pts). Loaches: 1, Mr K. Parkes (Mside, 74 pts); 2, Mr A. Gardner (Stretford, 71 pts); 3, Mr K. Parkes (Mside, 66 pts). Toothcarps: 1, Mr R. Wile (Stretford, 70 pts); 2, Mr R. Wile (Stretford, 77 pts); 3, Mr K. Hill (Heywood, 75 pts). Raubora: 1, Mr R. Wile (Leigh, 74 pts); 2, Mr F. Gregory (Oram, 72 pts); 3, F. Filiger (T.A.B., 69 pts). Danios: 1, Mr T. Davies (Heywood, 74 pts); 2, Mr F. Gregory (Oram, 68 pts); 3, Mr R. Wile (Leigh, 66 pts). Pair egg-layers: 1, Mr W. Parkin (Hfield, 78 pts); 2, Mr B. Rowbotham (Mfield, 74 pts); 3, Mr E. Jackson (Belle Vue, 69 pts). Pair livebearers: 1, Mr J. Turner (Ashton, 72 pts); 2, Mr G. Hodgkinson (Gorton, 71 pts); 3, Mrs R. Wile (Stretford, 70 pts). A.O.V. coldwater: 1, Mr A. Gardner (Stretford, 82 pts); 2, Mr W. H. Smith (Stretford, 78 pts); 3, Mr A. Wile (Stretford, 74 pts). Breeders livebearers: 1, Mr J. E. Shore (Oram, 71 pts); 2, Mr J. Logan (Gorton, 68 pts); 3, Mr A. Wile (Stretford, 74 pts). Breeders egg-layers: 1, Mr K. Wilbraham (Oram, 78 pts); 2, Mr J. Turner (Ashton, 75 pts); 3, Mr K. Wilbraham (Oram, 71 pts). Juniors: 1, Master R. Parkes (Mside, 74 pts); 2, Miss L. Shore (Oram, 70 pts); 3, Master G. Glendon (Sparton, 67 pts). A.O.V. tropical: 1, Mr J. V. Hill (Ashton, 55 pts); 2, Mr T. Mitchell (Mfield,

The 'W. Parkin Trophy', to be competed for each year by visiting societies, was presented by Mr W. Parkin to Oram, which won with 34 pts. Second were Merseyside with 30 pts, and third were Stretford with 24 pts. The prizes were presented by Mr Jim Kelly, F.G.A. The judges were Mr C. Walker, F.N.A.S., and Mr A. Lindley, F.N.A.S.

G. Grafton; 3, Mr L. Collins. School children: 1, S. Fearley; 2, B. Cowlam; 3, R. Forbes. T. F. H. Trophy for best lady exhibitor: Mrs E. M. Smith. Best fish in show: Mr R. Atherton (scat).

MEMBERS of the **BRIGHTON & SOUTHERN A.S.** recently benefited by a slight confusion that arose with the booking of two judges, Mr Ellis and Mr Morrice, for the one meeting. While Mr Ellis judged the table show for catfishes and scavengers, Mr Morrice gave a short talk on judging fish and a plant and fish auction was held to the mutual benefit of both the club and the 20 members present. The table show awards were as follows: 1, Mr E. Cummins (leopard catfish, 72 pts); 2, Mr C. Ward (bronze catfish, 71

pts); 3, Mr J. Coleman (bronze catfish, 71 pts); 4, Mr E. Cummins (leopard catfish, 70 pts). There were also one or two other interesting fish in the show, an albino *Clarias* for example that, although too small to win an award, was a very nice specimen.

INTERESTING news has recently been received from Mr Ron Tench, secretary of the **WARRINGTON A.S.** about the thriving state of that club's membership. Revived about 3 years ago from the ashes of an earlier society, the membership of the club is buoyant and attendance on the increase—over 50 were present to see a slide show on the barbs at the April meeting. Meetings are held every

Continued on page 90

Hattam; 2, Mr Hattam; 3, Mr Robinson. Any variety egg-layer: 1, Mr Hattam; 2, Mr Ruth; 3, Mr Ruth. Forthcoming meetings will include a sale of fish, plants and equipment for members and a table show for any variety fancy goldfish, any variety platy and any variety characin. For further details contact Mr R. Ruth, 13 Dunkeld Road, Dagenham, Essex.

AT the sixth annual open show of the **MIDDLESBROUGH & D. A.S.** a record 284 entries were received with competitors coming from Garforth, Swillington, Tadcaster, Tyne-side, Durham, Sunderland, Seaham, Peterlee, Horden, West Hartlepool, Stockton, Sneath and Middlesbrough. Results were: Furnished aquaria: 1, Mr P. Reynolds; 2, Mr K. Glover; 3, Mr B. Brunt. Furnished jar: 1, Mr J. G. Robertson; 2, Mr R. Noble; 3, Mr K. Dodd. Fighters: 1, Mr J. Baxter; 2, Mr P. Reynolds; 3, Mr N. Mason. Labyrinth: 1, Mr F. Pattinson; 2, Mr G. Auston; 3, Mr F. Pattinson. Ange fish: 1, Mr G. Watson; 2, Mr J. Allan; 3, Mr R. Toulmin. Dwarf cichlids: 1, Mr J. Chamberlain; 2, Mr D. Porter; 3, Mr J. Chamberlain. Cichlids: 1, Mr D. Robinson; 2, Mr V. Kinsley; 3, Mr G. Auston. Guppies: 1, Mr J. Heslop; 2, Mr B. Pedersen; 3, Mr V. Cowlam. Swordtail or platy: 1, Mr P. Clarke; 2, Mr K. Smales; 3, Mr J. Chamberlain. Mollies: 1, Mr M. Windfield; 2, Mr P. Reynolds; 3, Mr F. Patterson. Livebearers: 1, Mr E. N. Smith; 2, Mr P. Reynolds. Barbs: 1, Mr A. F. Whitlock; 2, Mr G. Grafton; 3, Mr M. Robinson. Raubora or danios: 1, Mr V. Kinsley; 2, Mr B. Wingfield; 3, Mr J. G. Robertson. Egg-laying toothcarps: 1, Mr W. Cathull; 2, Mr J. G. Robertson; 3, Mr N. Whiteley. Characins: 1, Mr E. M. Smith; 2, Mr W. A. Sickling; 3, Mr M. Coxon. Catfish or loach: 1, Mr A. Trotter; 2, Mr K. Glover; 3, Mr and Mrs Clennett. Coldwater twintail: 1, Mr G. Grafton; 2, Mr J. H. Hurst; Mr A. Hunt. Coldwater singletail: 1, Mr J. H. Hurst; 2, Mr A. Trotter; 3, Mr J. H. Hurst. Egg-layers: 1, Mr R. Atherton; 2, Mr M. Coxon; 3, Mr E. M. Smith. Breeding pairs: 1, Mr Winfield; 2, Mr and Mrs Clennett; 3, Mr P. Reynolds. Breeding egg-layers: 1, Mr W. Faircliff; 2, Mr W. Cathull; 3, Mr B. Pederson. Breeding livebearers: 1, Mr J. Williamson; 2, Mr

Tropical Aquarium Breeders Show

FIRST TROPICAL AQUARIUM BREEDERS annual open show was held at Switchgear and Cowan Social Club, Stretford on 20th March. Results: best in show won by Mr J. Allen (T.A.B.) with an excellent *Nannarawa*. Best breeders won by Mr K. Wilbraham with a team of emperor tetras.

Guppies: 1, Mr J. Heap (Salford, 70 pts); 2, Mr J. Allen (T.A.B., 50 pts); 3, Mr J. Wile (Hfield, 25 pts). Molliés: 1, Mr A. Gardner (Stretford, 70 pts); 2, Mr J. Dolan (Ashton, 60 pts); 3, Mr J. E. Shore (Oram, 65 pts). Swordtails: 1, Mr T. Mitchell (Hfield, 70 pts); 2, Mr M. Wille (Stretford, 67 pts); 3, Mr R. E. Rothwell (Leigh, 65 pts). Platy: 1, Mr J. Turner (Ashton, 75 pts); 2, Mr G. Rich (Sparton, 70 pts); 3, Mr F. Gregory (Oram, 65 pts). Small barbs: 1, Mr F. Gregory (Oram, 71 pts); 2, Mr G. Hodgkinson (Gorton, 60 pts); 3, Mr F. Gregory (Oram, 68 pts). Large barbs: 1, Mr P. Fakes (M'vide, 84 pts); 2, Mr A. Wille (Stretford, 75 pts). Labors & sharks: 1, Mr A. Southgate (Belle Vue, 75 pts); 2, Mr R. Hughes (Belle Vue, 70 pts); 3, Mr K. Wilbraham (Oram, 75 pts). Small characins: 1, Mr J. Robinson (M'vide, 74 pts); 2, Mr M. McKay (Oram, 71 pts); 3, Mr F. Gregory (Oram, 68 pts). Large characins: 1, Mr P. Mulla (M'vide, 78 pts); 2, Mrs P. A. Nicholls (Oram, 75 pts). Medium characins: 1, Mr F. Filiger (T.A.B., 75 pts); 2, Mr J. Robinson (M'vide, 69 pts); 3, Mr G. Bownell (Hfield, 66 pts). Dwarf cichlids: 1, Mr J. Allen (T.A.B., 87 pts); 2, Mr J. T. Sutton (Oram, 74 pts); 3, Mr A. Mathias (Leigh, 71 pts). A.O.V. cichlids: 1, Mr F. Mulla (M'vide, 70 pts); 2, Mr P. Fakes (M'vide, 72 pts). Angels: 1, Mr A. Mally (Oram, 70 pts); 2, Mr G. Crook (Stretford, 69 pts); 3, Mr G. Bownell (Hfield, 66 pts). A.O.V. anabantid: 1, Mr W. Parkin (Hfield, 80 pts); 2, Mr B. Preston (Heywood, 77 pts); 3, Mr L. Kaye (Hfield, 72 pts). Fighters: 1, Mr T. G. Wylans (M'vide, 75 pts); 2, Mr A. Mally (Oram,

75 pts); 3, Mr L. Kaye (Hfield, 60 pts). Small catfish: 1, Mr T. Davies (Heywood, 82 pts); 2, Mr J. E. Shore (Oram, 70 pts); 3, Mr L. McCourt (Gorton, 70 pts). Large catfish: 1, Mr P. Mulla (M'vide, 60 pts); 2, Mr G. Hodgkinson (Gorton, 59 pts). Loaches: 1, Mr K. Fakes (M'vide, 74 pts); 2, Mr A. Gardner (Stretford, 71 pts); 3, Mr K. Fakes (M'vide, 66 pts). Toothcarps: 1, Mr R. Wille (Stretford, 70 pts); 2, Mr R. Wille (Stretford, 77 pts); 3, Mr K. Hill (Heywood, 75 pts). Raubora: 1, Mr R. Wille (Leigh, 74 pts); 2, Mr F. Gregory (Oram, 72 pts); 3, F. Filiger (T.A.B., 69 pts). Danios: 1, Mr T. Davies (Heywood, 74 pts); 2, Mr F. Gregory (Oram, 68 pts); 3, Mr R. Wille (Leigh, 66 pts). Pair egg-layers: 1, Mr W. Parkin (Hfield, 78 pts); 2, Mr B. Rowbotham (M'vide, 74 pts); 3, Mr E. Jackson (Belle Vue, 69 pts). Pair livebearers: 1, Mr J. Turner (Ashton, 72 pts); 2, Mr G. Hodgkinson (Gorton, 71 pts); 3, Mrs R. Wille (Stretford, 70 pts). A.O.V. coldwater: 1, Mr A. Gardner (Stretford, 82 pts); 2, Mr W. H. Smith (Stretford, 78 pts); 3, Mr A. Wille (Stretford, 74 pts). Breeders livebearers: 1, Mr J. E. Shore (Oram, 71 pts); 2, Mr J. Logan (Gorton, 68 pts); 3, Mr A. Wille (Stretford, 74 pts). Breeders egg-layers: 1, Mr K. Wilbraham (Oram, 78 pts); 2, Mr J. Turner (Ashton, 75 pts); 3, Mr K. Wilbraham (Oram, 71 pts). Juniors: 1, Master R. Fakes (M'vide, 74 pts); 2, Miss L. Shore (Oram, 70 pts); 3, Master G. Glouffe (Sparton, 67 pts). A.O.V. tropical: 1, Mr J. V. Hill (Ashton, 55 pts); 2, Mr T. Mitchell (Hfield,

The 'W. Parkin Trophy', to be competed for each year by visiting societies, was presented by Mr W. Parkin to Oram, which won with 34 pts. Second were Merseyside with 30 pts, and third were Stretford with 24 pts. The prizes were presented by Mr Jim Kelly, F.G.A. The judges were Mr C. Walker, F.N.A.S., and Mr A. Lindley, F.N.A.S.

G. Grafton; 3, Mr L. Collins. School children: 1, S. Fearley; 2, B. Cowlam; 3, R. Forbes. T. F. H. Trophy for best lady exhibitor: Mrs E. M. Smith. Best fish in show: Mr R. Atherton (scat).

MEMBERS of the **BRIGHTON & SOUTHERN A.S.** recently benefited by a slight confusion that arose with the booking of two judges, Mr Ellis and Mr Morrice, for the one meeting. While Mr Ellis judged the table show for catfishes and scavengers, Mr Morrice gave a short talk on judging fish and a plant and fish auction was held to the mutual benefit of both the club and the 20 members present. The table show awards were as follows: 1, Mr E. Cummins (leopard catfish, 72 pts); 2, Mr C. Ward (bronze catfish, 71

pts); 3, Mr J. Coleman (bronze catfish, 71 pts); 4, Mr E. Cummins (leopard catfish, 70 pts). There were also one or two other interesting fish in the show, an albino *Clarias* for example that, although too small to win an award, was a very nice specimen.

INTERESTING news has recently been received from Mr Ron Tench, secretary of the **WARRINGTON A.S.** about the thriving state of that club's membership. Revived about 3 years ago from the ashes of an earlier society, the membership of the club is buoyant and attendance on the increase—over 50 were present to see a slide show on the barbs at the April meeting. Meetings are held every

Continued on page 90

Classified ADVERTISEMENTS

FISH

GOLDFISH wholesale and retail, all sizes, cefe, comets, fantails, moons, orandas, catfish, terrapins etc. P.C. for lists. Pursey, 12 Cranleigh Gardens, Bridgewater 2794.

PLEASE MENTION PETFISH MONTHLY when replying to advertisers.

OLDBURY'S OF CHESTER. 100 varieties tropical fish, freshwater and marine. 40 varieties plants. Equipment. Live foods. Evenings after 7 p.m. Weekends from 2 p.m. 36 Pearl Lane, Vicars Cross, Chester 40671.

GUPPIES GALORE Now available: large-bodied broadtailed veils and deltas. Evenings after 7 p.m. or write V. Partington, Wayside, Peel Lane, Little Hulton, Walkden, Manchester. S.A.E. with enquiries please.

SUPERB VEILTAIL GUPPIES Awarded 'Water Life' diploma. Best in open show. £1 per pair, carriage 5s. C. R. Perry, Professional Aquarist, 615 West Street, Crewe.

GOLDFISH How to breed and rear goldfish is simply and fully explained in the Foyles Handbook of that name. Price 4s 6d post paid from PetFish Publications, 554 Garratt Lane, London, S.W.17.

WATER PLANTS

TROPICAL AQUARIUM PLANTS Selection of choice plants. 10s post free. Box 52.

CLASSIFIED ADVERTISEMENTS

Rates: 6d. per word (minimum charge 6s.); Box Number 2s. extra if required. Remittance with order to be sent to

PetFish Monthly
554 Garratt Lane, S.W.17

REPTILES AND AMPHIBIA

REPTILES, AMPHIBIANS. S.A.E. for list. J. & D. Naturalists, 36 Nazby Avenue, Crosby, Liverpool 23.

EQUIPMENT

SHOW JARS. New glass show jars, with black screw tops, 4 in. square, 6 in. deep. 3s each, 33s dozen, for collection only (South London area). Box 53.

AQUATIC SUPPLIERS

KINGPETS keep fish in BATH, tropical and coldwater; full range of equipment includes bow fronts, Eheim filters, Keyslot angle for stand construction. Garden pools, pumps, plants, fountains, waterfalls. 23 Brock Street, Bath. Phone 4028.

PLYMOUTH TROPICALS for your fish, plants and equipment. 127 North Road, Plymouth. Phone 62663.

PLACE an order with your supplier for next month's issue of PETFISH MONTHLY now.

FRANK STONE. Specialist in aquarium plants, literature and lighting. Fish room at 35 Steeles Road, Havestock Hill, London N.W.3. open Sundays 10.30 a.m. to 1 p.m. Postal enquiries to 53 Nassington Road, London, N.W.3. Phone SW15s Cottage 6503.

BOOKS

CHILDREN can be introduced to aquarium-keeping with *Your Book of Aquaria* by Anthony Evans (Faber and Faber, London). 9s 6d from any bookseller or 10s 3d post paid direct from PetFish Publications, 554 Garratt Lane, London, S.W.17.

AQUARIUMS. The complete Foyles Handbook guide to aquarium- and pond-keeping. Price 4s 6d post paid from PetFish Publications, 554 Garratt Lane, London, S.W.17.

YOUR COPY of PETFISH MONTHLY will not be missed if you ask us to send it to you by post each month. Send 17s 6d (for 6 issues) or £1 15s (for 12 issues) to PetFish Publications, 554 Garratt Lane, London, S.W.17 and please state the month of the issue with which you wish the subscription to start.

BEKAY TROPICALS

- 100 Species of tropical fish
- 25 Varieties of aquarium plants
- Coldwater fish, plants and pond plants in variety
- Live daphnia and tubifex available

Aquarium plants by post S.A.E. lists

Open Weekday Evenings 5.30—7 p.m.

Saturdays 10 a.m. Sundays 10—12.30 p.m.

MIDDLE ROW, OLD STEVENAGE, HERTS.

CHELTENHAM AQUATICS

50 Aquaria stocked with unusual and rare fishes as well as common varieties. All the latest equipment, displayed in four showrooms with room to browse. Reptiles and amphibia and other livestock. We specialise in supplying schools, colleges, etc. S.A.E. for catalogue "T"

CHELTENHAM AQUATICS

Everything for the water garden. Outside display of pond fish, plants, ornaments, pumps, fountains, etc. S.A.E. for catalogue "WG"

10 & 11 SUFFOLK PARADE, CHELTENHAM GLOS. Telephone: CHELT 34949

Opening hours 9.00—1.00
2.15—4.00

Friday until 7.30 p.m.
CLOSED MONDAY

Club News

Continued from page 88

fourth Tuesday (31st May, 12th June etc.) at the Ring O'Bells Inn, Church Street, Warrington, at 8.15 p.m., and an interesting and varied programme has already been arranged by a vigorous committee for 1966-67 with slide shows, debates, lectures and discussions in addition to social activities. New members will be heartily welcomed and Mr and Mrs Tench, 288 Manchester Road, Warrington (phone 31635) will be only too pleased to supply further details on request.

THE success of the **ISLE OF WIGHT A.S.** in the third annual event against Hounslow A.S. marked another milestone in the 15-year history of the society. Mr J. Stillwell, F.B.A.S., of Portsmouth, judging the show, said that the general quality showed great improvement on previous years. The fish of the show, a firemouth exhibited by Mr N. Weller of Ryde, was outstanding and well worthy of the 83½ pts it gained. The party of 33 from London were entertained by the 28 club members and friends to luncheon and a buffet tea at the Trevallyn Private Hotel, Sandown. Prize winners were: Barbs; 1, Mr W. Pratt; 2, Mr D. J. Woodward; 3, Miss J. Nolan. Catfish; 1, Mr E. Davison; 2, Miss J. Nolan; 3, Mr W. Pratt. Cichlids; 1, Mr N. Weller; 2, Mr A. Shepherd; 3, Mr J. Lucas. Tetras; 1, Mr A. Thorn; 2, Mr L. Davis; 3, Mr C. Walker. Livebearers; 1, Mr N. Weller; 2, Mr L. Davis; 3, Mr J. Thorn. Guppies; 1 and 2, Mr A. Shepherd; 3, Mr A. Lucas.

ENFIELD & D. A.S. held their guests from the Harlow A.S. to a draw at their first challenge show held recently in St. Andrew's Church Hall. Mr K. Knutt judged the 52 entries and explained in detail the reasons for his decisions. Club members' placings were as follows: Cichlids; 3, Mr B. Senior. Catfish; 2, Mr D. Burrell; 3, Miss Winter. Livebearers; 1, Miss Collins.

NEWS of another thriving society. In January 1963, a group of aquarists re-formed the **YORK & D. A.S.** Membership has now grown to 53 and as the society grew so the meeting room at the British Legion

PETFISH photo competition

Entry form on page 94—for Rules and Conditions see last month's issue. A selection of readers' entries will appear next month.

seemed to get smaller; new premises were sought and a room at the Woolpack Hotel was found to be ideally suited to the club's needs, being spacious, centrally heated and reasonable central to the city, and ready for occupation at the end of April. A good variety of club activities should ensure the continued growth of the society. Recently, members had the chance of seeing the set of coloured slides entitled 'The Hendon Lecture'. Then, one of the club members, Mr B. W. Wilding who assists the police with many recovery jobs from the river in York, gave a most interesting talk of this other hobby of his of underwater swimming and took along his equipment to demonstrate his talk. Mr Keith Barraclough has spoken on the subject of marine tropicals and at the end of April Wakefield A.S. will join in an inter-society show and social evening. A monthly newsletter is now being produced and will ensure that members are informed of all club activities. Prospective new members will be made very welcome and should contact the secretary: Mr G. B. Hawkesby, 65 Beaconsfield Street, Acomb, York.

THE April meeting of the **DUNDEE A.S.** was very well attended though entries for the table show for breeders egg-layers and breeders livebearers were low. Results were: Breeders egg-layers; 1, Mr F. McNaughton (*Barbus conchomius*); 2, Mr W. S. Russell (*Macropodus opercularis*); 3, Mr W. S. Russell (*Betta splendens*). Balgillo trophy: Mr F. McNaughton. Breeders livebearers; 1, Mr A. L. Hastie (*Xiphophorus helleri*, green); 2, Mr A. L. Hastie (*Xiphophorus helleri*, albino); 3, Mr W. S. Russell (*Lebistes reticulatus*, double sword); 4, Mr A. L. Hastie (*Xiphophorus helleri*, red). Balgay trophy: Mr A. L. Hastie.

ATTENDANCE in full force by members of **BRADFORD & D. A.S.** at their April meeting is reported in the Society's latest Newsletter (consumption of 148 pies and 15 lb of peas is recorded!). A slide show and table show were the main events of the evening. The monthly table show in April was for barbs (1 and 3, Mr A. Firth; 2, Mr J. Hooper). May's monthly table show staged anabantids. Points so far collected from three of these table shows put Mrs M. Firth currently in the lead (13 pts) and Mr D. Parkin (9 pts) and Mr A. Firth (7 pts) following up. First Wednesday of each month is the Society's meeting date, in Room 5 at Unity Hall, Rawson Square, Bradford.

NINETEEN classes are planned for the **British Killiefish Association** Show being held with the co-operation of the Midland Open Aquatic Show and Trade Exhibition in Birmingham this August (see Dates for Your Diary, this issue), and these are being judged by Mr Alf Robbins, who will be coming from Ireland for this office.

WITH the March issue of the Monthly Bulletin of the **NOTTINGHAM & D. A.S.** Mr Hugh Walker ended his spell of editorship and also relinquished chairmanship of the Society. Mr Walker, an inaugural member of the Society 29 years ago, was Nottingham's secretary for the first 9 years and chairman for the ensuing 20 years. He has been aided in his editorial work by his wife, who for her numerous services to the Society was recently awarded the Society's Appreciation Cup for 1966. Mr Walker is still an active member of the Society but is hoping to have more time now to spend with his collection of reptiles that forms his main hobby interest.

Dates for your Diary

4th June. **DIDCOT & D. A.S.** are staging the twelfth Three Counties Open Show at Didcot. Schedules and entry form from show secretary Mr G. Youlden, 6 Battle Road, R.A.F. Benson, Oxon.

4th June. **CATFORD A.S.** Open show at Holbeach Road School, Catford. Further details from show secretary: Mr K. D. Owen, 42 Elmer Road, Catford, London, S.E.6.

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

11th June. **BRIGHTON and SOUTHERN A.S.** Show at Ralli Hall, near Hove Station.

11th June. **LLANTWIT MAJOR A.S.** Show at the Town Hall, Llantwit Major (entries from South Wales societies only). Further details from Mr R. S. Wigg, 17 Ham Lane South, Llantwit Major, Glam.

11th and 12th June. International Tropical Fish Exhibition organised by the **FANCY GUPPY ASSOCIATION** and the **BRITISH KILLIFISH ASSOCIATION**. Drill Hall, Manchester Regiment, Ardwick Green, Manchester, Saturday 12 noon-8 p.m., Sunday 10 a.m.-7 p.m. Show organiser: Mr R. Beresford, 99 Valley Road, Arden Park, Bredbury, Cheshire.

19th June. **SWILLINGTON A.S.** Open Table Show at Swillington County Primary School, nr. Leeds. Schedules from show secretary Mr K. Hemingway, 10 Carter Avenue, Whitkirk, Leeds 15, Yorks.

19th June. **ACCRINGTON & D. A.S.** Open Table Show at the Hargreaves Arms, Manchester Road, Accrington. Benching from 12 noon;

judging starts at 2.15 p.m. Further details from press officer Mr C. Whitsey, 47 Lynwood Road, Blackburn.

2nd July. **BRACKNELL & D. A.S.** Open show at Victoria Hall, Bracknell, Berks.

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

9th and 10th July. **ROMFORD & BEACONTREE A.S.** Dagenham Town Show. Show secretary: Mr J. M. R. Fyne, 3 Ashvale Drive, Cranham, Upminster, Essex.

30th July. **BARRY A.S.** Annual Show at Holton Road Primary School, Barry (entries from members only). Further details from show secretary, Mrs E. Steer, 160 Inverness Place, Cardiff.

6-13th August. **PORTSMOUTH A.S.** Open Show at Portsmouth Community Centre, Twyford Avenue, Stanshaw, Portsmouth. Open to public 8-13th inclusive. Benching 6th August; judging on 7th; prizegiving and breakdown evening 13th. Further details from show secretary Mr W. T. Ryder, 493 Commercial Road, Portsmouth, Hants.

14th August. **GORTON & OPENSHAW A.S.** Second Annual Open Show at the Conservative Club, Gorton Lane, Manchester 18. Enquiries to secretary Mr. L. McCourt, 36 Railway Street, Gorton, Manchester 18.

24-27th August. **MIDLAND OPEN AQUATIC SHOW and TRADE EXHIBITION** at Bingley Hall, Broad Street, Birmingham 1. This year 51 open classes are being featured and in addition the British

Killifish Show and the Midland Open Guppy Show are all being staged together for a single admission charge of 2s. Details from secretary of the Midland Aquatic Show Committee, Mr J. Edwards, 34 Veronica Close, Selly Oak, Birmingham 29.

27th August. **HOUNSLOW & D. A.S.** Open Show at Chatsworth School, Heath Road, Hounslow, Middlesex. Show schedules from Mr R. Scurry, 35 Argyle Avenue, Hounslow.

3rd 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.

4th September. September Convention of the **FEDERATION OF SCOTTISH AQUARIST SOCIETIES** at The Good Templar Hall, Gray Street, Broughty Ferry, Angus. Host Club: **DUNDEE A.S.**

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.

18th September. **GARFORTH & D. A.S.** Open Show at Church Hall, Church Lane, Garforth, Leeds. Benching 1.00-2.30 p.m. Further details from Mr R. A. Clarke, 66 Derwent Avenue, Garforth, Leeds.

16th October. **STONE A.S.** Open Show at the Walton Community Centre, Stone, Staffs. Schedules available shortly from the show secretary Mr K. J. Harvey, 61 St. Vincent's Road, Stone, Staffs.

29th and 30th October. **BRITISH AQUARISTS FESTIVAL** at Belle Vue, Manchester. Enquiries to show secretary: Mr G. W. Cooke, Spring Grove, Field Hill, Batley, Yorks.

COME SOUTH—FOR A FINE DISPLAY OF TROPICALS—
FOR A COMPREHENSIVE GARDEN POOL SERVICE—

WINGATE

Catalogues Available

Telephone 2406

7, MARKET STREET, WINCHESTER

WHOLESALE ONLY

Leading exporters of Tropical Fishes

Aquatic plants of all varieties

Exporters to all parts of the world

The Leading Firm in Singapore

We invite Your Inquiries

Price List on request

**TROPICAL FISH
AQUARISTS**

TELEPHONE: 81487

Cable Address:
"TROPICFISH"
Singapore

P.O. BOX GEYLANG 51
GEYLANG POST OFFICE
SINGAPORE 14

Fishfarm:
268-F LORONG BUANG KOK
OFF PONGGOL
SINGAPORE, 19

South London's

 newest
 shop for
 Tropicals


Over 50 tanks—all fish quarantined

Full range of equipment

Tanks and Stands made to your
design

BROCKLEY AQUARIA

(opposite Brockley Station)
1 HAREFIELD ROAD, S.E.4
Phone Tideway 1674


**PHILLIPS
fish food**

Fine Grade for Tropicals and
Coarse Grade for Cold-water Fish*

Extra high in protein and rich in vitamins and minerals, Phillips Fish Food contains dried shrimp, daphnia, meat meal, white fish meal, alfalfa, milk powder, cod liver oil, wheaten cereal and yeast, scientifically blended to provide a well-balanced, nourishing food.

For all Cold-water Fish - - 1/6d
For Tropicals - - 1/6d

*Phillips Cold-water Fish Food contains
SAPROLEGNIL
to protect against the ravages of "cotton wool" fungus.

PHILLIPS YEAST PRODUCTS LIMITED, Park Royal, London N.W.10

Please mention PFM when writing to advertisers

ADDITION TO
THIS FINE
RANGE OF
AQUARIUM FOODS



Not only for young fry,
but one of the finest live
foods for all species

Available in four sizes:

No. 1	3/9
No. 2	6/6
No. 3	12/6
No. 4	25/-

with full instructions

S U R E G R O W

SUREGROW TROPICAL FISH FOOD

Small	1/6
Large	2/6

★

SUREGROW FRY FOOD

1/6

★

SUREGOLD GOLDFISH FOOD

Small	1/6
Pond size	4/-

★

SUREGROW DISEASOLVE

Small	2/-
Breeder	6/-
Giant	20/-

★

SURE SYNTH FILTER WOOL

3/6

★

SUREKARBON POWER FILTER GRADE

9/-

★

PRODUCTS
YOU CAN DEPEND ON

All from your Local Dealer or direct from

SOUTH COAST AQUATIC NURSERIES

OLD BATH ROAD
COLNBROOK SLOUGH
BUCKS

"I saw your advertisement in PFM"

**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 June 1966



McLYNN'S FISH-FOOD

THE FOOD IN THE PLASTIC BOX
CONTAINS EVERY ESSENTIAL INGREDIENT
WILL NOT FOUL THE WATER
1/6, 2/6, 5/-, 6/6 & 17/6

From your Pet Shop or direct from McLYNN'S

McLYNN'S AQUARIUM

VISITORS BY APPOINTMENT
11 a.m.-5 p.m. CLOSED ALL DAY WEDNESDAY

FOR THE BEST BOOK

ALL ABOUT TROPICAL FISH

by D. McInerney of McLynn's Aquarium 75/-
postage 3/-

McLYNN'S AQUARIUM

EWHURST, Nr. CRANLEIGH, SURREY
Telephone: EWHURST 446

Hykro From Denmark

The world's leading aquatic appliances and the finest fish foods, not the highest priced but the finest value obtainable. Hykro Flakes and goldfish foods have been on sale since 1936 and are used by all discerning Aquarists and Breeders.

The Breeder's Pack Flakes, at 32/6d., contains 1 kilo (over 2lbs). The New Vacation food: one block dropped in your tank when you go on holiday will keep your fish well fed and in good health for up to two weeks and does not foul the tank. Only one shilling. The New Hykro Variety Food is fantastic! One trial will convince you—3s. per large drum.

The Hykro Nylon clamps, 4-ways, and tees, are reasonable, as strong as metal and do not rust.

Hykro lines are obtainable at all good Aquarists and Pet Shops.

JOE GRASSBY, Esq., F.R.H.S. (Sole Importer)

THE GLEN FISHERIES MOBBERLEY CHESHIRE

Please mention PFM when writing to advertisers

SOME PEOPLE TRY THEM ALL

-MOST COME BACK TO THE WINNER



The reason, of course, is TetraMin's premium quality. Other flake foods may look, smell and even feel like TetraMin. But none combine TetraMin's extra high protein content and natural fish foods that tropicals thrive on.

It's made by TetraKraftWerke, West Germany, world's largest and most experienced fish food manufacturer. Among experts that's the name for premium quality. You can rely on it for scientifically balanced feeding—the finest diet for your fish. TetraMin: It never clouds water. In ten varieties and many sizes for every feeding need.

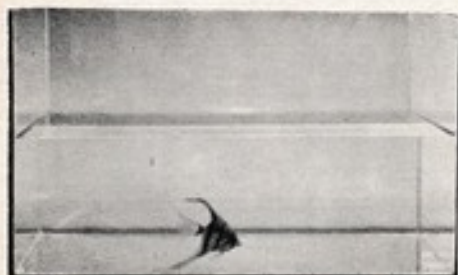
FREE FULL-COLOUR FEEDING BROCHURE

Send a stamped addressed envelope for the newly available full colour tropical fish feeding guide, complete with feeding and temperature tables to Herb-Royal Ltd., Dept. P6, Colley Lane Estate, Bridgwater, Somerset.

Herb  Royal

**NATURALLY
the BEST!**

HERB-ROYAL LTD, Colley Lane Estate, BRIDGWATER, Somerset. Tel: Bridgwater 8221

FREE pH-Tester with every ORDER**INSTANT AQUARIA with Aqua-Safe Sealant**

**NO RUST! NO METAL!
NO LEAKS!**

12s 9d per tube

Enough to build two 10-gallon tanks without metal. Excellent for show tanks, triangulars, etc.

Bulk supplies available to manufacturers

WATER SOFTENER

Complete with tap-connecting hose **£2.0.0**

Save on distilled • no carrying • when and where you want it • purer than rain • use on hot or cold taps.

Used generally it saves a fortune on shampoos etc.

WATER-SOFTENING MATERIAL for filter use: **5s 6d** post free.

FILTER RESIN See independent assessment in *PETFISH MONTHLY* (April 1966, pages 18, 19) **9s & 16s**

MAXSORB superactivated charcoal. Only **4s** per lb. S.A.E. for leaflet

METHYLENE BLUE Proved cure for velvet, white spot, flukes **4 ounces 4s**

From **ROBERT P. L. STRAUGHAN**, Famous Marine Expert

**Saltwater Aquarium
in the Home**

The most accurate and comprehensive book available. Over 300 pages and colour plates of home marine aquaria.

50s

**Sea Horse
Book**

Detailed instructions on keeping dwarf and large sea horses. Don't buy sea horses without ordering this book.

5s 6d

**Saltwater Aquarium
Magazine**

4s 4d per copy

£1. 5s per year

FISH FOODS Send 4d stamp for **BARGAIN PRICE LIST** and leaflets

Postage: up to 10s add 1s; over 10s add 2s; over £3 carriage free

REGAL TETRA LTD. **133 SIRDAR ROAD**
LONDON N.22

Books by post for the fish-keeper

All about Tropical Fish

by Derek McInerney and Geoffrey Gerard

Widely recognised as one of the most helpful books on aquarium-keeping with its numerous practical tips for breeding fish. Numerous colour photographs, black and white pictures and illustrations in line. 75s (post 3s)

A Manual of Aquarium Plants

by C. D. Roe

Loose-leaf pages bound spirally. Profusely illustrated to show common and less common aquarium plants, which are arranged alphabetically by their generic names. Descriptions and cultivation notes are given for each species. 17s 6d (post 1s)

Aquarium Plants

by H. C. D. de Wit

Translation of a work from Holland written by a professor of botany. With chapters on growing water plants and on algae; floating plants; submerged plants. Notes on cultivation. Many illustrations; one colour plate. 35s (post 1s 3d)

Aquarium Techniques I and II

by A. O. Janze

Part I is titled Care and Equipment, and deals with choosing and making aquaria, lighting, equipment, setting up and maintaining aquaria, fish foods, pests and fish diseases. Part II (Fishes and Plants) covers coldwater and tropical fishes and plants with sections on breeding, feeding baby fish and cross-breeding. Some colour plates, many line illustrations. each 12s. 6d (post 9d)

Dictionary of Tropical Fishes

by Hans Frey

Translation from the German. Alphabetically arranged descriptions of and notes on fishes and plants with colour plates, line illustrations and half-tone photographs. 65s (post 3s 3d)

Encyclopedia of Tropical Fishes

by H. R. Axelrod and William Vorderwinkler

Aquarium fishes are discussed in groups formed by common breeding habits—egg-scatterers, nest builders, livebearers etc. Half-tone illustrations and complete section of colour plates. 63s (post 3s 3d)

Freshwater Fishes of the World

by Günther Steerba

Translation of a work by a German scientist. An invaluable reference book particularly for identification of all types of freshwater fishes. Useful notes on aquarium feeding habits and breeding habits are given. Many fine photographs in black and white and colour, some line illustrations and maps. 84s (post 3s 6d)

Salt-water Aquarium Fish

by H. R. Axelrod and W. Vorderwinkler

A practical book on setting up and maintaining a tropical marine aquarium, with chapters on sea water, feeding salt-water fishes, their diseases and descriptions and notes about many suitable aquarium specimens. Many photographs in colour, some black and white. 63s (post 1s 6d)

The Life of Fishes

by N. B. Marshall

Written by a scientist specialising in fishes, this interesting book discusses their anatomy, physiology, behaviour and general way of life. Aspects of fish reproduction are explained and an account of the various habitats of fish is given. Colour plates, illustrations in line and half-tones. 63s (post 3s)

Tropical Aquarium Fish

by A. van den Nieuwenhuizen

Sub-titled 'Their Habits and Breeding Behaviour', this sumptuously produced book is specially remarkable for the beautiful photographs in colour and black and white by its skilful Dutch author. 90s. (post 3s)

Tropical Fish in the Aquarium

by J. M. Lodewijks

A useful beginner's book with descriptions of common fishes accompanied by colour drawings. Line illustrations show various techniques and equipment. 16s (post 11d)

Foyle's Handbooks

each 4s (post 6d)

Practical handbooks in hard glossy covers.

Aquariums	Anthony Evans
Goldfish	Anthony Evans
The Water Garden	H. C. Witham Fogg
Tropical Fish	Derek McInerney

For the Young Aquarist

Your Book of Aquaria Anthony Evans
9s 6d (post 10d)

Many other titles can be supplied on request

When ordering please indicate your name and address clearly and enclose remittance



publications

554 GARRATT LANE LONDON S.W. 17 Phone LAKeside 2805

"I saw your advertisement in PFM"

Shirley Aquatics LIMITED

STRATFORD ROAD MONKSPATH SHIRLEY SOLIHULL
WARWICKSHIRE

Phone: BIRMINGHAM SHIRLEY 1300

Water Plant Nurseries and Fish Hatcheries

Tropical Aquarium Plants



Cryptocaryne wendtii de Wit

and Fishes

Many rare species
of fishes stocked

The world's greatest
selection of plants



Symphysodon discus Heckel

SEND S.A.E. FOR
FREE LIST

SALTWATER AQUARIUM FISHES

Britain's finest display of healthy marine fishes
acclimatised to aquaria and easy to feed

NEW TROPIC MARIN

The artificial sea salt with the guarantee

Even Delicate Coral Reef animals can thrive in
sea-water made with this salt

Price: 5 gallon size 10/-d.
20 gallon size 40/-d.

Plus postage 5 galls 3/6d, 20 galls 3/0d,
50 galls 4/6d, 100 galls 7/6d.

Send 2s in stamps for booklet

"THE MARINE AQUARIUM MADE EASY"

EVERYTHING

for the WATER GARDEN

Over 3 acres of water gardens

OPEN for inspection

1st APRIL — 30th SEPT

Fancy Fishes for Cold Aquaria



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. 150 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 10s) please add 1s 6d post and packing.