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In This Issue

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Comments and Quotes

Poisonous metals ● Piranhas declared out ● Another little drink ● Fish breeding in the desert ● Rooftop heating

Metals in Aquarium Water

A LITTLE while ago we read an article in the daily press that questioned whether lead pipes are quite as incapable of affecting water as is generally supposed. In some areas water supplies have been found to contain measurable amounts of the metal, which is well known to be poisonous to humans and is particularly menacing because it can build up harmfully by accumulation in the body over a period of time. There seem to be few observations on the degree to which lead can poison fish, although if it is in a water supply it must surely increase in concentration in a tank continually replenished with the same water.

Much more information is available on the effects of other metals on fishes, and in the REPORT of the Water Pollution Research Laboratory for 1965 (published in July) some results of experiments with the metals zinc and nickel are given. Trout eggs and newly hatched trout were found to vary in their susceptibility to the presence of zinc at different stages, eggs being most sensitive to the metal at about half-way through the time between fertilisation and hatching and fry showing increasing sensitivity again from hatching onwards to the time when the yolk sac disappears.

Such studies have to take into account several factors that can influence the effects observed, such as water hardness and temperature. Hard water enabled all the early trout stages to resist the effect of the presence of zinc more readily than did soft waters. Species differences also occur, and zebra fish have been found to be comparatively resistant to zinc poisoning in the egg stage and more sensitive to it between the ages of 4 and 13 days. Rudd can tolerate zinc concentrations up to four to six times the minimum concentrations affecting trout. Nickel was studied because it has been found as a pollutant in some rivers, but it is less poisonous to trout, for example, than zinc.

Ban on Piranhas

THE Selangor Aquarists' Society in Malaya is to hold an emergency meeting to discuss the Government's decision to ban the import, sale, cultivation or keeping of live piranhas, the man-eating fish from South America. The Government, which said it would be an offence for people to keep piranhas in their homes, added that if released in natural waters these fish would multiply and become a danger to other fish, animals, and humans.

A repeesentative of the aquarists' society agreed that they were a source of great danger, but said no aquarium would be complete without them. The society would undertake that members would keep their piranhas under control.

The Government, he said, had given special permission to the organisation to display two piran-

has, belonging to a member, at a five-day exhibition in aid of spastic children, which is being opened in Kuala Lumpur.—THE TIMES.

Another Little Drink

WE have never forgiven the fellow who, some years ago, poured whiskey into a tank containing a pet eel in a misguided attempt to jolly it up (and our annoyance was not on the score that the whiskey wasn't his). The whole disgraceful episode came painfully to mind again when a news paragraph headed 'Hooked—the Tipsy Trout' caught our eye. These trout in a river at Ovada, northern Italy, were seen to be behaving in an abandoned fashion at the water surface, so that fishermen had only to scoop them out to catch them. It was later discovered that a lorry crash near the river upstream had caused several smashed barrels of wine to be unloaded into the water.

On the whole the trout probably did better than our eel, which went the way of the goldfish that was brought to us a few weeks back. This had died after its owner, thinking it looked 'off colour', had poured a liberal helping of brandy into its bowl. There was once an aquarist who swore that alcohol was an excellent remedy when diseases were troubling his fishes, but it was later discovered that the relief was obtained by him drinking it himself . . .

Fish Breeding in the Desert

FISH could flourish in the desert according to Lev Fishelson, a Tel-Aviv University zoologist. He proposes fish-breeding in brackish ponds in Israel's Negev and Judean deserts. In laboratory experiments Dr Fishelson has found that St Peter's fish, although native to freshwater lakes, will thrive and reproduce in water containing 3½% salt, which is the salinity of the Mediterranean. He suggests that fish-breeding using sea water could be a profitable enterprise for desert settlements, also freeing other fish-pond lands in the north of Israel for agriculture. Dr Fishelson is continuing his research to find out if fish will thrive in even saltier waters, similar to those of the Red Sea.—NEW SCIENTIST.

Roof-top Heating

HOW about using your roof as a means of providing heat for a large pool of tropicals? Actually it's the heat from the sun falling on the roof that has been used in this way in a house in Germany, not to keep tropicals warm but to maintain comfortable temperatures in a 10,000 gallons swimming pool. Also it's not quite something for nothing either, because a pump is used to raise the water of the pool up to perforated pipes on the roof, from which it trickles over the warm roof surface back to the pool via the guttering. A filter is incorporated into the circuit. Even after bad weather apparently the water temperature is raised in hours by this means, much quicker than waiting for the pool to warm up from the atmosphere.

LETTERS

Keep the Flag Flying

MY heart bleeds for the Three Counties Group Aquarist Society (PETFISH MONTHLY, August). Do they imagine that the Federation exists to wet nurse societies who have so little interest that they cannot even send a delegate to Assembly meetings four times a year? Portsmouth, Southampton and Brighton are much farther from Charing Cross than the imaginary circle of 20 miles radius mentioned by Mr Thompson, and, incidentally, farther afield than the Three Counties Group, yet they never miss sending delegates in order to take an active part in formulating F.B.A.S. policy.

No, Mr Thompson! It's YOU who should 'get on the ball' and give support to that small but dedicated band of aquarists who give up much of their free time, on your behalf, co-ordinating the efforts of aquarists everywhere. To this end they have recently published a new list of judges and lecturers with the information that you so desperately require. They also publish, well in advance, the dates of forthcoming events and shows, to avoid, if possible, clashes like the one that took place with the Three Counties Show recently.

So please Mr Thompson don't suggest that we 'haul down the flag'; instead, give us a hand to keep it flying high, where it should rightfully be.

J. STILLWELL
F.B.A.S. Judge,
Secretary, Portsmouth Aquarist Society.

Hara-Kiri?

IT has often been suspected by leading authorities that fish can communicate. I myself have had an experience that may confirm this, at least if only to my mind, and this may be of interest to other readers who may have had a similar experience.

About six months ago in a community tank of about 18 fish I kept six *Nannostomus trifasciatus*. Whilst I was inspecting the tank the lid was raised and one of these fish jumped right out of the tank on to the floor. I picked it up as carefully as I could in the hope that it was not badly injured and placed it back into the tank. For a while it seemed all right then suddenly it seemed completely to lose its equilibrium and began to swim erratically. Eventually after about twenty seconds it rose

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LETTERS

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to the surface and died. On the immediate death of this fish it seemed as though the remaining five panicked and hysteria struck them. The five fish, after observing the actions and ultimate death of the unfortunate 'jumper', then proceeded to go through exactly the same actions, all five eventually rising to the surface also dead. The time lapse from the death of the first fish to the sixth was approximately three minutes. I am reasonably certain in my own mind that the fish that was picked up from the floor and placed back into the tank did not in any way carry any foreign matter into the tank as the fellow tank mates of the deceased fish did not suffer any apparent harm and, in fact, the remainder of the fish are today still living and in perfect health.

It would seem therefore in my mind at least that some sort of communication occurred between these fish. Even several experienced acquarists that I have questioned on this subject have remained mystified. I would be interested to know if other readers have experienced any such happenings or apparent 'mass suicides'.

Streatham Hill, London, S.W.2 M. J. BIGGIN

Can Fish Think?

CAN fish think? I would very much like to read the minds of some tropical fish belonging to a friend of mine. A short-tempered man, he becomes highly incensed if he sees his fish fighting. His remedy? To swoop on the tank, thrust in his hand and bring out a squirming fish, which is given a smart tap before being returned to the water. He then glares through the side of the tank and roars at the astonished fish—'now don't let me catch you fighting again'!

Dar es Salaam, Tanzania MRS E. ROTHWELL

Evaporated Milk in Tanks

IN answer to the letter about evaporated milk for fry (PETFISH MONTHLY, August), I have several tanks (from 10 in. by 16 in. to 36 in. by 12 in.) and all have had evaporated milk put in at one time or another, making the water quite cloudy. All the fishes survived, but all the tanks contained at least 12 fish or 20 fry. My fish get a lot of rough treatment as I have three children and mind others. The fish are often not fed for several days or cleaned for two months except that the water is topped up, but they don't seem to be any the worse for it.

Slough, Bucks. MRS J. F. GERALD

Comfort at Shows

WE have been keeping fish for a little while now and recently attended our first big Fish Show. It was a very pleasant experience and we were agreeably surprised to find that it became quite a social occasion, meeting other fish club members and officials. It became very difficult to persuade my husband to leave and what I thought would be an hour's visit to an exhibition soon lengthened into a four-hour one. As I say, it was most enjoyable but for one thing—not enough seats! Please can organisers remember the wives, many with young children, and provide us with more seats. It really would add to our enjoyment.

Birmingham MRS E. FAULDS

Have the Sharks bred in Aquaria?

I READ with much interest the letter in PETFISH MONTHLY written by Mr G. Birchenough (August issue) and I agree perfectly with his remarks. I have two red-tailed black sharks which I believe to be a pair, according to the definitions of Axelrod & Vorderwinkler, i.e. the female of the species having the heavier body. The colouring of the female is not so deep as the male, the body being a grey-black and the tail orangy red. In size they are about 3 in. in length and I would like to know if this strikingly handsome fish has been bred yet and if any of your readers or experts can give me any information on breeding?

Dagenham, Essex W. W. PARKIN

We should be very interested to hear from readers who have any information on this subject. None of the standard text-books is able to give any help on the question of the breeding of these fishes.—EDITOR.

This Month's Prize Letter

BECAUSE of the apparent impossibility of sexing red-tailed black sharks the following observations might prove of interest to fellow aquarists. I have observed many times over the last eight months that when these fishes are moved from one tank to another there occurs a ritualistic type of (for want of a better word) dance, in which one fish, moving in a somewhat jerky manner upwards, downwards and tangentially is shadowed with incredible precision by another. Momentarily, they are in line ahead, then alongside each other, and when very close bodily contact occurs. These concerted movements and actions take place even when the fish have been together in the same tank for long periods. Seemingly, the fact of transference to new waters induces this ritual.

Thinking there might be a sexual basis for these activities I placed one red-tailed black shark in a 20 gallon aquarium which already contained a pair of red-finned sharks. Almost immediately the ritual started, the red-tailed black shark choosing the larger of the brown sharks for a partner, having first driven away the smaller fish. This suggests that the sexual attraction is sufficiently strong to overcome any inhibitions induced by a difference of species.

Scientifically, there is doubtless nothing on which to draw any hard and fast conclusion, but I intend to follow what seems to be a clear pointer. If any aquarist is interested, I should be glad to furnish information in greater detail.

Newport, Isle of Wight R. WALDER

It is unlikely that Labeo bicolor *(red-tailed black) would interbreed with* L. erythrurus *(red-finned shark). The mature female red-tailed black shark is much heavier bodied than the male, and it is said that the red colour in her tail is less intense and the white tip to her dorsal fin more pronounced than that of the male.*—EDITOR.

New Equipment

Pond Heating in Winter

Lotus pond heater (price £1 15s)

IT'S not too early to make preparations for the worst that winter might do to outdoor tanks and ponds. Although it is hardly practicable to stop the formation of ice altogether in an exposed body of water, it is possible to limit this in a way that will prevent complete solidification of the water surface. It is when the surface is fully iced over that harm can come to pond fishes from the poorly oxygenated state of the trapped water. Small ponds such as those normally built in gardens are in particular the ones to be most seriously affected, simply because the total volume of water is low. If part of the surface is kept free from ice, conditions will be much more satisfactory for the fish.

There is now available an electric heater of 150 watts capacity specially designed for pond use to keep an ice-free surface in its vicinity. This is the Lotus heater, the tube of which is metal and can be fully submerged. A block of expanded polystyrene at the upper end of the tube acts as a float that holds the heater vertically below the surface. Its six feet or so of three-core waterproof cable attached to it can be connected to a mains supply via a weatherproof cable connector. Connection can be made to the lead supplying a fountain or water pump for the winter period whilst these appliances are not in use. The makers suggest that one heater is used in ponds up to 25 square feet in surface area, two heaters in ponds up to 60 square feet, three in ponds up to 100 square feet and four heaters in ponds over 100 square feet in area.

Although such heaters can make little difference to the general water temperature in the pond, so that the normal winter period behaviour of the fish is in no way affected, it is of course impossible for ice to form in the heater's immediate vicinity.

New Foods

LATEST on the fish food shelves: a new flake food from Aquatic Hobby Ltd. called Kingfish Nutrition Flakes, which it is claimed has been tested for four months on all species of aquarium tropical fishes in the fish houses of a well-known south of England importer. The attractive yellow and blue metal container has a press-fitting flexible plastic lid and the five-eighths ounce size retails at 2s 9d. Also new is freeze-dried *Tubifex* from the U.S.A., packed in transparent plastic containers and called Miracle Freeze-dried Tubifex. This contains a fish-attracting ingredient that causes fish to congregate around a portion of the dried worms, which will adhere to the inside of the aquaria glass if pressed against it. Twenty or so pieces (in a one-sixth ounce container) costs 5s 6d. It has been suggested that the use of this food is one way to ensure that fishes come to the front glass for aquarium photographers!

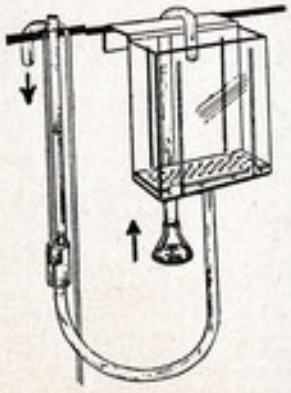
Something for 1967

ALTHOUGH it seems that some apology might be needed for drawing attention to the approach of 1967 this soon, a completely new idea from PETFISH MONTHLY for use in the New Year will be available this month. This is a PetFish pocket Diary for Aquarists, containing, in addition to the 1967 diary section, a general information section and 16 pages of coloured maps of the world, pages of important fish-keeping facts and figures including numerical data on water hardness and ways of calculating doses of drugs for aquaria. Bound in dark-green Rexalon, our Diary is available to readers at 6s 6d post free. Supplies are limited and orders should be sent as early as possible to PETFISH MONTHLY, 554 Garratt Lane, London, S.W.17.

Junior Filterfast

THE smallest of the Filterfast range of Halvin filters, the Junior, is stated to have a flow rate of 30 gallons per hour, the two larger

Continued on page 204



Halvin Junior Filterfast

A course for the would-be breeder of tropicals

Part 6

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

Breeding *Brachydanio* and *Barbus*

Photo: A. VAN DEN NIEUWENHUIZEN

Pair of nigger barbs (Barbus nigrofasciatus)

HAVING dealt in preceding articles with a few species of freshwater tropical fishes that come from and prefer hardish, slightly alkaline water, let us move on to the great majority of fishes which require, for breeding, rather softer water on the acid side, such as rainwater.

The aquarist who can obtain good clean rainwater collected from a non-industrial area, and stored in an old iron bath, glazed sink, small plastic pool, or even in enamel buckets, should be able to breed a great number of species.

With water of pH 6·8–7·0 and hardness between 50 and 150 p.p.m., he should have success with most of the brachydanios, the barbs and the anabantids, as well as some of the characins and cichlids. Perhaps the easiest for the beginner to try would be *Brachydanio rerio* (zebras), *B. albolineatus* (pearl danios), or *B. frankei* (the leopard danio). Of the barbs, possibly *Barbus nigrofasciatus* (nigger barb), *B. tetrazona* (tiger barb), or *B. schuberti* (golden barb). Amongst the anabantids those easily bred are the miniature *Trichopsis pumilus* (sparkling gourami), the small *Colisa chuna* (honey gourami) and the larger *Trichogaster trichopterus* (blue gourami) or its near relative, the opaline gourami. The medium-sized *Macropodus cupanus dayi* (spear-tailed paradise fish), the larger *Macropodus opercularis* (paradise fish) and the gorgeous *Betta splendens* (Siamese fighter) are other anabantids.

Of the characins the easiest to breed may well be *Hyphessobrycon flammeus* and *Pristella riddlei*. Considering the cichlids, two of the easiest species to breed are *Haplochromis multicolor* and *Cichlasoma nigrofasciatus*.

Breeding the Brachydanios

To deal with the brachydanios first, any of the three species mentioned will spawn readily in a 24 in. by 8 in. by 8 in. breeding tank filled with rainwater and with a temperature of 80°F (26°C) maintained. During the afternoon select a healthy active male and two females, and place these in a stainless steel wire mesh breeding trap placed in the bare tank; or, if one of these traps is not available, a good bunch of willowroot, coconut fibre or nylon wool, or a layer of clean washed pebbles can be used. Choose only well-filled females. The best breeder in the world cannot obtain a good spawning if the females lack roe.

If a trap is used cover this with glass to prevent the fish from getting out, and with any of the methods cover the tank with glass.

The fish should spawn the following morning, but if the females have not been sufficiently excited spawning may be delayed one, two or three days. If spawning has not occurred within a week change the breeders for another trio. During the period the breeders are in the spawning tank feed them with a few white worms, Grindal worms, or a few small pieces of chopped shrimp. This should satisfy their appetites, lessening their inclination to devour the eggs, yet not fouling the water in the tank.

If a glass-bottomed tank has been used, no matter what spawning medium has been placed in it the clear eggs will be seen lying on the bottom of the tank. Now remove the breeders and supply gentle aeration in the spawning tank. The eggs will hatch in five to seven days. Some eggs may become opaque and white: these are infertile. In others the developing embryo will be seen from the second day onwards.

The newly hatched fry will be seen as tiny dark splinters, ¼ inch long, hanging in a perpendicular position on the glass sides of the aquarium. The following day many will be making hopping motions as they learn to swim, but 24 hours afterwards they will be swimming freely. Now for the first time give them Infusoria in the quantities outlined in Part 4 of this series of articles. Once the fry are ¼ inch long, and on to fine dried food, most should be raised to maturity without difficulty.

Breeding the Barbs

For spawning the barbs mentioned earlier a bare tank will not do. The fish are likely to be so scared that their attention is devoted to means of escape, and not to reproduction. A 24 in. by 8 in. by 8 in. tank should contain a 1 inch layer of well-washed sand, filled with rainwater at 80°F (26°C), and planted with various plants—say, vallisneria or sagittaria, along the back and sides, short cryptocorynes in the front, and two good bunches of myriophyllum, ambullia or cabomba placed across the centre, each 3 inches from either end; then the central area could contain small Indian ferns, water wisteria or *Hygrophila stricta*. This arrangement allows the breeders sufficient room to chase about excitedly, it provides two clumps of spawn-receivers, and the short plants in the front allow the aquarist an uninterrupted view of the eggs.

Place one male and one plump female in this tank in the late afternoon. This permits them to get to know, and settle in, their new surroundings. They may spawn the following morning or on the ensuing day. Their behaviour will soon indicate to the aquarist what progress is being made.

If the male is chasing and fluttering around the female with fins well spread and colour heightened, stand a couple of feet away and watch. Most probably the female will frequently swim into the clumps of myriophyllum and wait whilst the male catches her up; pressing their flanks together, with fins quivering, the pair will remain together for perhaps one or two seconds, and then with a sudden flip break apart: spawning is taking place.

Without any violent movement, slowly raise a magnifying glass and peer through it at the clumps of myriophyllum. Eggs should be seen. This examination is often better done by looking slightly upwards towards the surface light at the back of the tank, when the eggs may glisten. Do not disturb the breeders until the female shows signs of losing interest, indicating that she has now expelled all her eggs. Half a dozen or so white worms now dropped in a clear space in the front of the tank should bring the breeders forward. Carefully, and very slowly, lower a net behind them and catch them.

After their removal note the position of one or two eggs so that these can be looked at again later. A few infertile eggs will develop fungus, but there should be many more still clear. Do not attempt to remove the white eggs; they will not affect the others, and your attempts may damage the fertile eggs.

Hatching occurs 24 hours later and the tiny fry, now looking like splinters of glass hanging perpendicularly from plant leaves, will be seen shining in the diffused light. All are equipped with yolk sacs for nourishment, and this will not be absorbed until the fry are free-swimming. Once they are swimming freely feed them with Infusoria. In a few days add newly hatched brine shrimp to the diet, and a week later micro worms. When the babies are ¼ inch long they can go on to a fine dried food.

In a few more weeks some fry are bound to grow quicker and bigger than others. Remove the largest in order to give their smaller brethren a better chance. This can very easily be done if one has one of the stainless steel mesh traps previously mentioned. By placing this trap in an unplanted tank, netting all the fry out of the breeding tank and placing them in the trap, the smaller ones will go through the mesh very quickly. The larger ones remaining are promptly tipped back into the breeding tank.

Often when barbs are about ¾ inch long rapid growth seems to slow up for a week or two. Do not be alarmed. They will get going again after this period. At this time keep a careful check on the tail fins, as young barbs are occasionally attacked by an outbreak of velvet, becoming covered in minute buff-brown spots. This is quite easily cured by the addition of a heaped teaspoonful of ordinary cooking salt to each gallon of water. Should it be a persistent attack, add another teaspoonful of salt per gallon 3 days after the first dose.

Next month I will deal with the breeding of the easier anabantids.

Junior Filterfast Filter

Continued from page 202

ones being 60 and 100 gallons per hour respectively. The Filterfast is an outside filter with a difference. As with most other outside filters water is siphoned out into a chamber, and then pumped back, but the Filterfast pumps back via a length of tubing and a specially designed airstone air-lift, thus aerating and filtering the water in one unit. It has several further advantages: the return tubes can be moved to the opposite end of the tank from the outlet, thus giving a more evenly distributed flow. The rim by which it fits on to the aquarium, unlike some American outside filter units, is large enough to fit on a 1 in. angle-iron framed aquarium. The Junior Filterfast comes complete with carbon and synthetic, nylon wool and costs 28s; it is distributed to the trade by South Coast Aquatic Nurseries Ltd.

STANDARDISATION OF VARIETIES OF GOLDFISH—5

Popular Goldfish Types

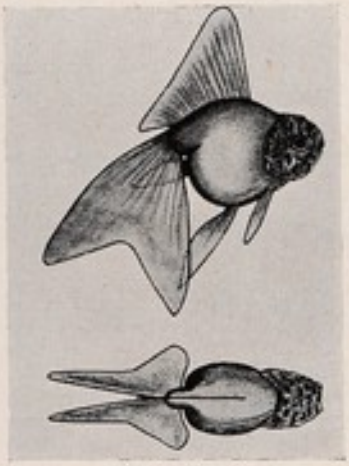


Fig. 1. Oranda

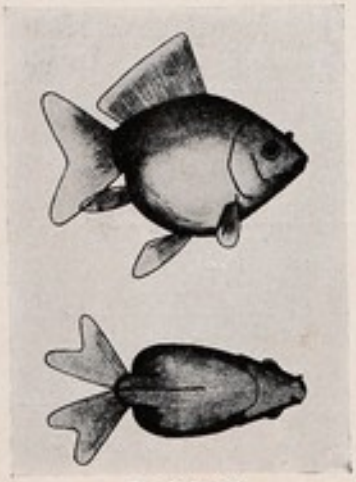


Fig. 2. Fantail

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

IN the previous articles of this series, eight basic varieties of fancy goldfish have been described. They are called basic by the Goldfish Society of Great Britain because, between them, they cover all the major variations of shape known in Britain except the outfolded operculum. This is rather unattractive and being rare in this country has never been fostered by our fanciers. None of the eight varieties is overloaded with features difficult to breed and if the hobby confines itself to these, continuance of the mutations involved would be assured. Nevertheless there are other varieties worthy of mention and the Goldfish Society has produced Standards for them on the same principles as those used for the basic eight.

Oranda

The oranda (Fig. 1) is a very fine variety but good specimens are very rare. It has a deep body and large fins, the caudal being well forked. In addition it has a raspberry-like growth all over its head which comes with maturity. Most of the orandas imported into this country from the East are young fish with very little 'hood' showing. Purchasers gamble that it will increase with age but often the 'hood' eventually covers only the upper part of the head. All the orandas seen by me have been in the metallic group, but there is no reason to suppose that they have not been produced in the nacreous and matt groups. The special characteristic is the 'bramble' on the head and for this the Goldfish Society allots 19 points out of 100, divided as follows: development in the cranial region, 9; development in the infra-orbital region, 5; development in the opercula region, 5.

Fantail

Another popular variety is the fantail (Fig. 2), which is a hardy fish for ponds or aquaria. It is not so extremely developed as the nine other varieties described in this series. The 'pearlscale' is similar in shape but also

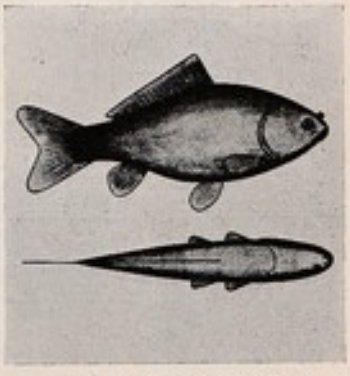


Fig. 3. London shubunkin

Popular Goldfish Types

Development of the shubunkins

possesses domed scales. The 'twin-tail' (veiltail) has longer fins and square cut ends to the tail fins. Although there are good strains of fantails, throw-outs from the more advanced twintail or pearl scale spawnings sometimes masquerade as fantails.

No article on varieties of goldfish could be completed without mentioning the common metallic goldfish and its nacreous and matt forms, which are known as shubunkins. The latter were introduced to this country about the middle of the 1930s. A development of the latter with long fins became known as the Bristol shubunkin (see also G. S. G. B. singletail, Part 2 of this series). The earlier and simpler form was dubbed London shubunkin (Fig. 3). The shape was probably similar to the original wild type but mutations have brought the orange-gold, yellow-gold and silver of the metallic type and the blue in the shubunkin type, which shows because of the absence of the shiny guanin behind the scales etc. These types of goldfish are good for those taking up coldwater fishkeeping because they are hardy and can be kept and bred in both pond and aquarium.

In this series of articles ten types of goldfish that have shape variations from the normal have been described. For purposes of comparison the common goldfish may be considered as normal. The chart lists normal characteristics and extreme variations from the normal and shows how these characteristics are spread over the ten named varieties.

Summary of Characteristics of Goldfish Varieties

Characteristic	Single-tail	Twin-tail	Globe-eyes	Bramble-head	Pearl scale	Celestial	Pom-pom	Bubble-eye	Oranda	Fantail
BODY										
normal	+									
deep		+	+	+	+	+	+	+	+	+
FINS										
short				+	+	+	+	+		+
long	+	+	+						+	
pointed			+						+	
rounded	+	+		+	+	+	+	+		+
anals normal	+									
anals divided		+	+	+	+	+	+	+	+	+
caudal normal	+									
caudal divided		+	+	+	+	+	+	+	+	+
dorsal present	+	+	+		+				+	+
dorsal absent				+		+	+	+		
EYES										
normal	+	+		+	+		+		+	+
protruding outwards			+							
protruding upwards						+				
with sacs								+		
HEAD										
normal	+	+	+		+	+	+	+		+
brambled				+					+	
SCALES										
normal	+	+	+	+		+	+	+	+	+
domed					+					
NASAL SEPTA										
normal	+	+	+	+	+	+		+	+	+
very enlarged							+			

Fish Parasites in Pond and Tank

By Dr JAMES C. CHUBB
The University of Liverpool

Continuation of a series of articles in which the main features of fish parasites are presented and discussed for the fishkeeper

IN the first article we discussed the occurrence of parasites in the natural environment. It was shown how the parasites are, in effect, superimposed on the free-living plants and animals. It was further noted that the entry of a species of parasite to a water must be made with the hosts of the parasite, and that for the establishment of the parasite all the host species necessary for the completion of the life cycle must be present.

In a pond or an aquarium we are creating an artificial environment, but in both we can exercise a considerable amount of control over the plants and animals. Naturally the larger the plant or animal, the easier it is to control.

Unwanted parasites may enter our artificial environment when we introduce plants or animals, and may then become established. It is at this stage, when we introduce new inhabitants, that we can most easily control parasites.

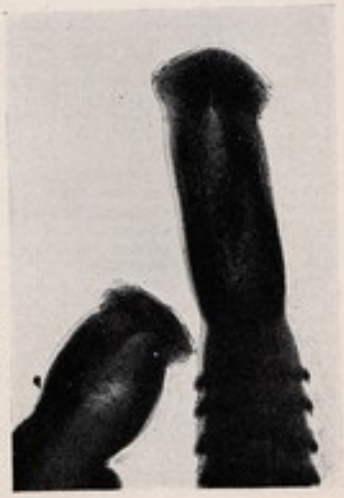
But how does one recognise the parasites, and where do they occur on the fish? Unfortunately, there are no simple answers to these questions, and only practical experience, together with a study of appropriate books on diseases and parasites of fish will provide information.

Parasites occur on the external body surfaces, including gills, and in the internal organs of the body. This division is a convenient one, because, for treatment, certain remedies are effective for a wide range of external parasites.

In the present article diseases caused by viruses, bacteria and fungi will not be considered. We shall consider the animal parasites.

The Protozoa probably cause the most trouble in aquaria and ponds. They are microscopic animals,

(Left) A monogenetic trematode Tetraonchus monenteron from the gills of pike. Four eyes are visible at the top of the photograph, and the well-developed organ of attachment can be seen at the bottom of the photograph



(Right) The head or attachment organs of two tapeworms (Eubothrium crassum) from the intestine of a brown trout. Many parasites have strong attachment devices, to prevent them being dislodged from the host

The spiny-headed worm (Acanthocephalus anguillae) has a well-armed proboscis for attachment to the intestine of the fish. These organs can cause serious damage to the wall of the intestine

although some of the larger ones are visible as minute white spots on the body surface of fish. The 'white spot' disease is caused by a protozoan called *Ichthyophthirius multifiliis*. Infection is direct, from one fish to another, and water containing free-swimming stages is a potential source of infection. Many of the Protozoa causing harm to fish are external parasites.

The group of worms known as monogenetic trematodes are also external parasites, and occur on the gills and body surfaces of the fish. Many of these parasites are small, as little as one-tenth of an inch long, while a few are larger, up to one-quarter of an inch long. They have a characteristic hold-fast organ at the posterior ends of their body.

Digenetic trematodes are internal parasites, and most have two characteristic suckers, one around the mouth, and the other about one-third of the way along the body. They have a complex life-cycle, and fish become infected by larval stages emerging from snails, or by eating other infected intermediate hosts.

Tapeworms also have a complex life-cycle, and fish become infected by eating the intermediate hosts. Tapeworms rarely kill fish, but larval forms may prevent the fish from breeding.

A less well known but important group of parasites are the spiny-headed worms or Acanthocephala. These also have an indirect life-cycle, and may cause serious loss of condition or even the death of the infected fish. The adult spiny-headed worms are found in the intestines of fish.

Some leeches are parasitic and may kill fish if they occur in large numbers. They are external parasites, as are the parasitic members of the Crustacea, the group which includes the fish louse *Argulus foliaceus*. The crustacean parasites, distant relatives of the crab and shrimp, can cause serious harm and death of fish.

There is really only one way to ensure little or no trouble from parasites in a pond or aquarium, and that is to attempt to see that only clean fish enter the water. This may be done by examining the fish carefully, and rejecting any unhealthy fish. Then the remaining fish should be placed in quarantine for 2 to 8 weeks. Eight weeks may seem a long time, but some external parasites may not be detectable at first, and this time may also reveal evidence of internal infections in the fish. If any fish die during quarantine, they should be opened up and carefully examined for any signs of parasites.

If all fresh stocks of fish are carefully quarantined, it is unlikely that any serious trouble will occur. However, if parasitic infections are found, some chemical treatments are effective. These can be carried out by dipping or by prolonged treatment.

The dipping technique, where the fish are immersed in the appropriate disinfectant for a short time only, is very useful when fish are being transferred to clean aquaria.

For the prolonged treatment, the necessary amount of chemical is added directly to the aquarium or pond and allowed to remain for the prescribed period, before the water is drained off and replaced by fresh water. As an alternative to draining, some chemicals may be left in the water indefinitely, and will eventually disperse.

Chemical treatments for the commoner fish parasites are available from the dealers. External parasites, Protozoa, monogenetic trematodes (*Gyrodactylus* and *Dactylogyrus* especially), can be conveniently treated by using 1 part of commercial formalin to 5000 parts of water for 1 hour at 32–60°F (0–15°C), and 1 part to 6000 parts of water for temperatures of 60–85°F (15–30°C). White spot disease, *Ichthyophthirius*, must be treated on alternate days until there is no longer any trace of the disease. If formalin is given as an indefinite prolonged treatment 15 to 25 parts per million should be used.

For some of the parasites, for example larval tapeworms in viscera and muscle, and the spiny-headed worms, there are no known treatments. Fortunately, these parasites are not usually very troublesome in small ponds and aquaria.

Formalin

FORMALIN, a 40% solution of formaldehyde gas in water, is one of the cheapest and most widely used anti-parasite agents in commercial fish-farming. It must be used cautiously, since undiluted formalin and small dilutions of it can kill fish, and for this reason it is more usually employed with large fishes of the coldwater types, which are less likely to be seriously affected by minor inaccuracies in dosing. With small tropicals doses need to be measured with care and concentrations properly calculated. The concentration 15 to 25 parts per million mentioned in this article is given by mixing 1 millilitre of formalin into 10 gallons of water.

Unexpected Losses

I recently purchased some guppies, platys, mollies, neons and harlequins. On inspection at my office half an hour later, one lyre-tail mollie had had its tail eaten. The fish were placed in my home tank within 2 hours of purchase after the temperatures had been equalised for some 20 minutes. A day later all the neons and harlequins were dead with their tails eaten and five fancy guppies had their tails in shreds. Within two days 13 out of 16 fishes purchased were dead while fishes already in my home tank have remained quite healthy. Can you give me some idea as to the cause of these losses?

Assuming that the fishes were swimming actively with fins erect when first seen and bought, the most likely explanation of so many swift deaths is that they suffered some considerable degree of chilling during the two hours that elapsed before they reached the home tank. Although the temperature was equalised by floating the fish in the tank for 20 minutes their water may have already chilled by anything up to 10°F and this would account for many deaths. The tail biting is difficult to account for, from the new fishes listed, but if one of the platys were, in fact, a platy-sword cross, then this becomes much more likely. These fish are not always easy to distinguish, though mature male specimens may develop a short 'sword', but they can have the sword-tail tendency to bullying and this may be the answer.

Tank Glazing

I am about to glaze a tank for the first time and I should like to know how long the putty must be left to harden before the tank can be used.

It is a good idea to paint the inside of the angle-iron frame with gold size before placing the putty and glass in position. Then, with the use of a good aquarium putty, the tank can be filled with water after two or three days. It should be well rinsed and is then ready for plants and gravel. If the glasses do not fit quite snugly the small portions of exposed putty may well cause a slight greasy film to gather at the surface. This can be removed by drawing a sheet of clean newspaper over the water surface.

Contaminated Food

My dried foods frequently develop enormous numbers of tiny pin-point-sized insects which change the flakes or grains to a dusty powder if the tin is left undisturbed. Are these harmful to fish and can I do anything to eliminate them?

As soon as these mites (which, to be precise, are not insects at all) are seen the food should be spread on a biscuit tin lid or on an enamel plate and placed in a hot oven. The temperature must not be so high as to char or otherwise change the food, and it is advisable to check this by placing just a small portion in the oven first for observation. Keeping the food hot for about half an hour will kill the mites, and the food can then be placed in a clean dry jar with a screw top. The mites are not harmful to fish but food that has been much changed by their presence should not be used for fish, and it is, of course, a waste of time to give such food the heat treatment. Badly infested food should be scrapped. Do not return heat-treated food to the original container.

Terrapins in a Pond

Up to August last year I had a pond full of eighteen or twenty 7 in. or 8 in. goldfish. They were exceedingly tame and used to eat out of my fingers. Round about this time I saw in the pond two water turtles with shells 4 in. long. I do not know where they came from and I have not seen them since, but nor have I seen the fish. They no longer come to the surface and spend the whole time at the bottom. Could this be the condition of the water or the result of the terrapins' presence?

There would appear to be nothing wrong with the water since if it were foul the source of the trouble would probably be due to decaying matter in the depths of the pond, which would cause the fish to gasp at the surface, not remain at the bottom. The change in the fishes' habits could certainly be due to the continued presence of the terrapins, who may have hibernated in the matter at the bottom of the pond. Although terrapins can remain submerged for long periods of time in an emergency, they must surface for air in the end and if a watch can be kept for a sufficient length of time they will reveal their presence. Another possibility is that the fish are being harassed at the surface by cats, gulls or kingfishers. Continued attack from any of these sources would make them so nervous that they would dive to the bottom for cover at the slightest shadow.

Continued on page 226

Readers' Queries

QUESTIONS on fish-keeping from readers of PETFISH MONTHLY will be answered by post if accompanied by a postage-paid addressed envelope for reply. A selection of answered questions will be published each month. It is regretted that queries cannot be answered by telephone Address letters: Readers' Advisory Service, PETFISH MONTHLY, 554 Garratt Lane, London, S.W.17.

PetFish Guide to Aquarium Filters

Not all of the individual makes of filters are discussed here but the main features of the basic designs are given

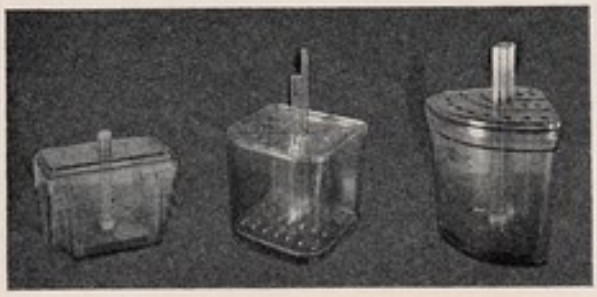
Air-lift

MOST aquarium filtration apparatus utilises the air-lift principle to move water through the filter. Bubbles of air from an aerator lift water between them as they ascend a vertical tube. It follows that a steady stream of bubbles, each separated by a short column of water, will cause the maximum volume to be 'lifted'; a too rapid flow of large bubbles of air will achieve no significant lift of water, so a clamp should be fitted to the air tube to permit adjustment of the flow to the right amount. Tubes fitted up as air-lifts can be purchased as separate items if you want to design your own filter.

More recently, very great lifts of water have been achieved by the introduction of air-lift tubes in which the air supply is separated into a large number of tiny bubbles by passage through a small air-stone at the bottom of the lift tube. With these maximum air supply to the air-stone will promote maximum passage of water up the tube and in addition, of course, considerable extra aeration of the water is obtained.

Internal Bottom Filters

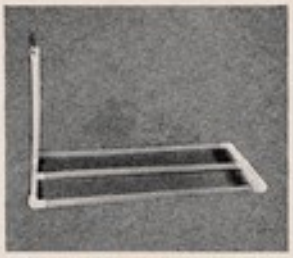
THE case holding the filter medium stands inside the aquarium on the gravel. Some bottom filter types are triangular so that they can fit into a corner, and with any type it is usually possible to conceal the filter by means of a carefully placed rock or plants. Remember, however, that these filters have to be taken out of the tank periodically for their filter media to be renewed, so make allowance for this when installing one. Operation of the air-lift within the box of the filter causes water to be moved out of it, the place of the removed water being taken by water from the aquarium entering through slots in the case, usually in the top. As the entering water is drawn towards the air-lift it has to traverse the filter media layers.



A selection of types of internal bottom filters available in the shops. A corner type with a sloping top (by Hykro) is shown above this photograph

Undergravel Filters

WITH undergravel filters the gravel on the bottom of the tank becomes the filter medium and, as the actual filter is situated beneath this on the tank base, the time to install this type of filter is when the tank is first set up. Two main kinds are on the market, one like a shallow inverted plastic tray having numerous narrow slots in its upper surface and the other a simple grid of plastic tubes with holes drilled along their walls. Water is caused to move through the slots of the tray type or into the tubes of the other kind as soon as the air-lifts attached to the filters are operated. When the filters are in position beneath the gravel this means that the water thus being lifted away from beneath the gravel is replaced by water moving down into it from above. As the water passes through the gravel towards the filter any particles it is carrying are trapped by mechanical separation in the interstices of the gravel. The clear filtered water is returned to the tank from the top of the air-lift tube, and to allow the additional advantage of absorption by filter carbon to be obtained, in one type of undergravel filter there is facility for attaching a small container of the carbon to the top of the air-lift return pipe.



Windmill (above) and Hykro (right) undergravel filters

Operation of these filters causes water circulation in the gravel bed—an area usually quite stagnant in the ordinary tank. Aerated water through the gravel means that oxygen-using bacteria living there can bring about breakdown of the waste materials trapped in the gravel and can convert these into substances utilisable by water plants. Because of this the undergravel filter can go on giving good service for a very long time without any attention being required to the filter or gravel.

Outside Filters

AS the box of filter medium is outside the tank, with these filters the task of changing the glass wool and carbon is made easier. Intake and return pipes of the filter cross the top bar of the aquarium and the aquarium cover must be capable of accommodating these. Some outside filters air-lift the water into the filter box and return it to the tank after its passage through the layers of filter media by means of a siphon tube; others achieve the same end by siphoning water into the filter box and air-lifting the water from the box back into the tank. With outside filters there should be provision for overflow into the aquarium in case the return pipe becomes blocked, and the end of the intake pipe in the aquarium should have a guard so that young fish or loaches cannot find their way into it.

Power Filters

MUCH greater rates of movement of water through the filter medium than can be obtained with an air-lift are given by the use of a motor-driven pump. This elaboration of the filter apparatus is bound to make the power filters more costly than the other kinds, but it should be borne in mind that an air pump can be done without when power filters are used so that this expense saving offsets some of the cost.

The rapidity with which water can be cleared by power filters means that after a spell of duty on one tank the unit can be transferred to another tank instead of being continuously used on a single aquarium. However, such rapid circulation of aquarium water as is obtained with power filters requires efficient filter media and containers capable of holding a large enough quantity of the filter medium if frequent changes of it are to be avoided when several tanks or one large tank are being served.

Power filters available in Britain are the Dynaflo (see PETFISH MONTHLY, April, for review) and the Eheim range.

Eheim power filter

How to Make Your Own Power Filter

The power filter described here costs about two pounds to make and has a throughput of 100 to 150 gallons per hour. It can be made from easily obtainable parts without special tools or other equipment

The unit in place on the top bar of an aquarium. A loop of plastic-covered wire (not mentioned in the text) is used to hold the container housing the pump (right) in position

Requirements and Costs

1 impeller pump (complete with motor)	30s 0d
2 snap-top plastic containers	6s 0d
1 small wide-mouthed plastic bottle	1s 6d
4 nylon pot-scourers	3s 0d
Nylon wool or floss	
5-amp twin plastic-covered flex	
Waterproof and non-toxic adhesive	

Prices above are given as a guide, but the complete power filter should not cost much over £2 to produce. Its capacity will depend on the filter medium used and should be between 100 and 150 gallons per hour.

By CLIFF HARRISON

WITH the increasing popularity of large tanks and large fishes, a power filter is a very useful time-saver to many aquarists, even a necessity for those with goldfish or cichlids. But the high cost of power filters is their main draw-back.

However, there are on the market some excellent mains-voltage impeller pumps (of a type normally used in washing machines), and these lend themselves readily to conversion as the basis of a high-output power filter.

After many experiments, it was found that the pump worked best if the impeller housing was actually immersed in the water, rather than pumping through a length of hose pipe. The motor itself has therefore to be completely sealed from the water, and a snap-top plastic container was found to be ideal for this purpose.

The first job is to take apart the impeller unit by undoing the four bolts on the top of the housing. The rubber washer, sandwiched between the two halves, is no longer required, but may be used as a pattern for the hole to be made in the bottom of the plastic container. This hole must be located off-centre, about ¾ inch from the side, and should be fractionally smaller than the internal diameter of the rubber washer. Four bolt-holes are located and drilled around this hole; the two mating parts of the impeller housing are coated with adhesive, the bottom of the container is sandwiched between them, and the four bolts are inserted and fully tightened. (Although an epoxy-resin glue was used on the original, a non-hard-setting adhesive such as Evostick or Bostik should prove to be equally successful.)

A small hole is next made in the side of the container near the top, to accommodate the electric flex. When the pump has been wired up, this hole, too, should be sealed with adhesive.

To test for leaks after drying, the pump should be stood overnight in about 6 inches of water: if any water finds its way in, it may be necessary to re-seal the joints. Although the snap-top cover will keep out splashes and condensation, the unit should never be completely submersed, and an occasional check should be made for fresh leaks as a precaution against blowing a fuse (or worse).

The filter-box is made from a similar snap-top plastic

box, the size and shape depending on individual requirements. By heating the box over a low flame, and pushing inwards with a screwdriver handle or similar object, a neat, leakproof hole can be made about ½ inch from the bottom to attach on to the pump outlet pipe. Another hole, about ¾ inch diameter, is cut near the top of the box, in a position to return the filtered water to the tank.

A couple of nylon pot-scourers should be placed at the bottom of the filter box, to strain out the coarse debris and to disperse the jet of water. Nylon floss should then be tightly packed in, and topped with two more scourers to prevent the pressure of water forcing the nylon upwards. The top is snapped on, and your power filter is ready for use, though a perforated plastic bottle should first be fitted over the inlet to prevent fish and plants being sucked upwards.

So—You would like to start an Aquarist's Society?

By G. H. JENNINGS (Hampstead Aquarist Society)

1. The Founding

THERE must, as a matter of course, be several well-tried methods of founding an aquarist's club and any fishkeeper who has been in the hobby for any length of time probably has his own ideas about how this should be done. This article is aimed therefore more at those who have no access to an existing society, either by geographical location or intent.

Two major factors will have to be taken into consideration before any positive action can be taken. (1) Are there enough interested persons in your locality? This can only be found out by advertising your intention in the local press, in PETFISH MONTHLY or by posting notices in local pet shops. (2) Have you been able to locate a suitable meeting place? Church halls, community centres and reception rooms should be available in most areas, or, failing this, perhaps one of your prospective members would be prepared to put a room at the club's disposal until such time as permanent accommodation is available. Alternatively, can a rota system of homes be arranged?

In such connections, it is always very useful to call upon the assistance of local personalities who are known to be interested in fishkeeping. They may be prepared to accept presidency of the society and their wide local contacts may serve the club in good stead.

Minor problems can be dealt with as they appear. The date and place of the first meeting should be made available to prospective members by means of the above-mentioned media—possibly a few of the prospective members may be able to get together beforehand to arrange an agenda for this meeting. The first point on the proposed agenda, if enough members are present, would be the election of an acting committee to 'get the club on its feet'. Or, if a reasonably large attendance is attained the committee proper can be elected.

This leads to another question. How many on the Committee? Ideally, I would suggest nine, composed of: chairman, vice-chairman, treasurer, secretary, assistant secretary, show secretary, assistant show secretary, public relations officer and one other committee member. Leaving one committee member with no office will allow him to take over in an acting capacity should any of the officers be incapacitated for any reason. The committee of nine will also give a good attendance, even if several members do not attend any particular committee meeting (and a 100% attendance is, unfortunately, too much to be hoped for). It may be thought that a show secretary is hardly necessary at the beginning, but such an officer can relieve pressure on the secretary by corresponding with other societies and federations. The committee should meet regularly, preferably at no greater interval than three weeks.

Fortnightly club meetings seem to be the most satisfactory. At weekly meetings it is a little harder to obtain regular audiences, although a number of clubs do manage this; meetings at intervals longer than 14 days tend to get forgotten by even the most enthusiastic fishkeeper. One last point—I would suggest that it is not advisable to break-up for the summer holidays until perhaps the club is really well established. Trying to gather the remnants of the society together again after any long break may take several months!

(The constitutional aspects, the rule book, shows and inter-club gatherings will be discussed in later issues.)

Profile of a Professional

By H. J. VOSPER

Mr TOM HOREMAN—the man behind the name Tachbrook Tropicals

WHEN a man who has been dealing professionally with matters aquatic, among other activities, for a full half a lifetime decides to build a fish and plant house for his personal enjoyment you can be sure of two things. One is that his enthusiasm for this hobby has not waned despite the years of continuous involvement and the other is that the result will be something out of the ordinary, to say the least.

It might also be expected that the venture would not be rushed into without careful planning, and in fact the fish and plant house newly established in the grounds of Mr Tom Horeman's home in the Surrey countryside is the result of seven years' planning and effort. Tom Horeman is the owner of London's well-known hobbyists' landmark, Tachbrook Tropicals, but what is less well known is that he stands at the head of a wide-ranging industry with ramifications across southern England and far from tenuous connections reaching to the Americas, India, Australia and the Far East. His business links with continental Europe are as strong as the commercial airlines which so frequently carry him across to the capitals of France, Belgium and Germany.

Tom's home is a quiet retreat in the form of a smallish, modern-style bungalow of personal design set on a slope overlooking a most pleasant little valley. This latter is the scene visible through the wall-long lounge window, the foreground dominated by a group of conifers and an Alpine garden through which an artificial streamlet wends it way. On the slope below the house, but still part of it, is the glass-walled sun lounge—in which unexpected visitors make themselves at ease should both Tom and his wife Pat be not at home.

From the lounge can be glimpsed a corner of the modern fish and plant house which, he will explain, is the excuse for living in such delightful surroundings. This home and its grounds are private to all except privileged friends, while for those who have picked their way through the Alpine garden, crossed the little tinkling stream with its rocks from the Pennine Chain, then stepped into the foyer of the plant house, there is much to tell them that here is a highly regarded and well-planned industry.

The brick-built structure is 100 ft. long. A small annexe holds the oil-fed boiler with its duplicate systems of pumps, gauges and switches, each part carefully labelled and all ready to hand in an orderly fashion. Within the warm-room proper the two long walls each support tiers of specially designed, rot-proof and rust-proof tanks, each tier resting upon square-angled pipes which serve the double purpose of supports and heating system. The wall to the right holds four tiers of tanks, that on the left has three—an arrangement occasioned by the differing heights of the walls, which factor also provides the slope of the roof. The bottom row of tanks on the eastern wall are 5 ft.-square containers, unglazed and 18 inches deep, exactly similar to the two rows of containers which run down the middle of the house and which are supported partly on low brick walls and partly

Aquarist

species of plants in the tanks lying in association across the narrow width of the house, but in practice this has not proved suitable and therefore species are generally placed in groups of tanks running lengthways along each row. Experimentation as well as temporary expediency have therefore interfered with the original planning.

Plants have long been a special study for Tom Horeman and while his contacts in tropical climes keep him well supplied with both common and unusual species, nevertheless his visits to Madagascar, British Guiana, Ceylon and elsewhere are seldom completed without personal forays into the wilds to collect specimens firsthand. These are brought back carefully to England where they can be tended, tested, cultivated and finally introduced into the tanks of the hobbyist. One can normally expect to find 50 or more species of tropical aquatic or semi-aquatic plants in these tanks—here a strand or two of some exotic and as yet un-named species, there a dense mass ready for thinning out, some

Mr Tom Horeman points out some specially interesting plants to a botanist visitor in his plant and fish house, the exterior of which is seen in a view across his water garden in the photograph above left

by the square-angled heating pipes. An exact control of the heat supply to the tanks is gained by means of stop-cocks at the end of each row.

All tiers of tanks are separately bracketed to the walls, so that each line is individually supported, and this uncluttered yet very economical layout, which dispenses with accessory supporting frames for the upper tanks, gives an airy appearance to the room and at the same time affords a maximum amount of space for the examination of individual tanks and for maintenance work. The light and airy atmosphere is heightened by the use of fibre-glass roofing, an excellent feature that was decided upon only after considerable research both in England and abroad, and which has proved eminently practical in use for it permits the maximum entry of those light-rays essential to good plant growth while inhibiting the passage of heat rays which might have caused trouble during summer months.

Each tank contains specially selected gravel, quite inert in water, which serves as the planting medium—but the local water supply is not quite what would have been preferred and although this does not cause too much trouble the visitor can note that two large tanks are situated alongside the plant house, where soft rainwater is being collected.

It was originally planned to have separate groups and flowering, some reaching aerial leaves above the water, a few requiring attention to rid them of one or other of the two species of algae which are to be found in the house.

Visitors conducted round the installation by Tom will have their especial attention called to this group or that, and will also be diverted by the recounting of some incident that occurred during the collection of the original plants. The specialist visitor will naturally find one or two species that are clearly far from happy in their surroundings, but the vast majority of the plants always appear to be in excellent condition. Those which seem to be on the verge of failure are not a cause for over-much concern since it is realised that during periods of experimentation such disappointments must occasionally occur. Indeed it is still a question of finding out what the establishment will do, for even seven years of

planning and expectation, which included innumerable discussions with acknowledged experts in various fields throughout the world, must still produce minor failures and occasional disappointments. At the same time it is evident that if a new species cannot become acclimatised to aquarium conditions in this house it is certainly not yet ready for introduction to the hobbyist market.

Although aquatic plants are the most important features of the house one soon notices the occasional brilliant flashes of the several species of unusual tropical fishes inhabiting the tanks. Here can be found little-known varieties, either bred there or perhaps newly introduced into the country, but they clearly take second place to the plants. However, the sight of a twin-tailed goldfish will, to those who have known Tom for a number of years, recall his interest in these varieties, an interest which perhaps reached its peak when he introduced bubble-eyes, pearl scales, pom-poms, orandas and lionheads into England, from the Far East, in 1953.

Tom's interest in animals began some 30 years ago. His first concern was with British birds, and after more general studies his biological interest led to an appointment in 1945 as a College senior technologist in Biology. Some three years later he began inventing and manufacturing accessories for the aquatic hobby, taking out patents on these from an office in Bride Lane.

Since 1952, when he took over the Tachbrook Tropicals establishment close by Victoria Station (it was then only a general 'pet shop'), the story has been one of continuous change and development in the shop, all directed towards the creation of a modern aquaria store with 'departments' for all aspects of the hobby. This aim is at present growing towards the final stage of its fulfilment.

It has involved drastic structural changes, improving the size of the shop and modernising its front, with provision of office space in the building and installation of a centrally situated spiral staircase allowing access for customers to the first floor. Improvement and development of internal fittings has been a continuing process too, such as the installation of all chromium plated tanks for display of tropical plants and fishes in the cleverly illuminated main sales area on the ground floor. On the second floor at present is the main display of aquaria and stands in a room forming a coldwater section. In due course from this room it will be possible to enter a special aquatic plant section, now under construction.

Tanks in the fish house are all made of corrosion-resistant materials, such as the moulded fibre-glass aquaria pictured above

Tachbrook's dedicated staff attend to the needs of the customers but if Tom can spare the time he enjoys lending a hand. For the casual hobbyist, on meeting him for the first time, there is little to indicate the enthusiasm and drive bound up in his personality, for on brief contact one gains mainly an impression of gentleness and, indeed, shyness. On closer acquaintance one realises that he is not unduly shy or modest. His interest in the welfare of fishes is always uppermost in his mind—sometimes goods are not forthcoming until the seller is assured that the kind supplied are exactly what the customer needs, which may not necessarily be what were asked for in the first place. Advice is proferred to those who appear to need it, and if advice is particularly sought it is most carefully given and often only after specialists have been consulted by telephone there and then.

Even those who have known Tom Horeman for more years than they care to remember are sometimes surprised at the way in which he will turn so readily from business to friendly chat, and this occurs more especially if he thinks he is about to learn something new to add to his personal knowledge of biology.

Is It New To You?

AT least two tropicals that are in the less-common and even new category were to be seen in the tanks of dealers at the Midland Show in Birmingham. The first was an algae-eater, the stone-lapper (*Garra taeniata*), being offered by Wolverhampton Aquatics. Not unlike the familiar algae-eating or sucking loach (*Gyrinocheilus aymonieri*) in its general form, *Garra taeniata* has habits of browsing and attaching to plants and glass that are similar, too, but it is more colourful than the sucking loach with its reddish brown back and slightly red fins. It seems to be quite suitable for community tanks although someone told us that, unexpectedly for its type, this fish is a jumper and its tank must be well covered.

On the stand of Tropicana were some beautifully colourful specimens that are decidedly for the specialist, not only because of their large size (and large price) but because they would be out of place in an ordinary community tank. These were the Siamese fire eels, the name being derived from the spectacular red markings present on the elongated body of the fish.

Although not yet specifically identified the fire eels are currently being listed by Keith Barraclough of Bradford as *Mastacembelus*, that is, members of the spiny eel family.

by ARPEE

WHEN you go into a shop to buy a carpet or a pair of socks you are allowed to select the exact articles you want. When you go to a nursery or florist you drive away with the very specimens you have selected. Why, then, is it so very different when you buy aquarium fish? It would appear that if you are at a certain restaurant you can pick your trout or lobster—alive, and have it served up to you, quite quickly, and cooked to a turn. However, when it comes to the live commodity the dealer seems most reluctant to give you the free choice which in my view you are entitled to.

I can have little personal resentment on this particular score, as when my particular dealer sees that I am interested in something, he lobs me the net and lets me get on with it, but this is far from being the norm. May I put it to the dealers amongst PFM readers to think this one over and see what you can do to bend your attitudes somewhat on this matter. Of course, one can always insist, but how much better for good relations if the dealer makes the offer first!

A particularly bad habit I have noticed in some quarters is the handling of fish between net and container. This is right across all the rules, and I can think of no justification for it, apart from convenience and speed on the part of the vendor. What sort of shock this must be to the nervous systems of some of the tiny fish subjected to this treatment, I shudder to imagine. Another rather nasty habit at some establishments is that of having nets common to a number of tanks (or all of them!). In the interests of hygiene, one net per tank, please—and both should be tagged and numbered, to rule out any confusion if the net for a particular tank is temporarily misplaced.

Cork bark is becoming increasingly and understandably popular as an internal decorative feature in aquaria, but it is extremely difficult to anchor securely on account of its unusual lightness and consequent buoyancy. You will generally find it possible to stuff the semicircular sections with pieces of rock wedged into the back of each piece, but this is rather more successful when placing one section vertically than it is for a horizontal position. In the latter case a more reliable method of anchoring will be found necessary, since the bark often works away from the rocks and shoots rapidly to the surface. For horizontal arrangements, therefore, stuff the rocks into the space at the rear of the bark and lash them to it with nylon fishing line. It is not in the least difficult to slip the line into a large needle and 'sew' the rocks or weights into position, as the bark is penetrated by a needle readily enough, and not many cross threads are needed to retain the 'anchors' in place; obviously, much depends on how many bits of rock you are obliged to use. It is important to draw the line taut against each piece of rock which it touches, otherwise bits may drop out and ruin everything. The line, incidentally, is quite invisible under water.

The longer one has been a member of the hobby, the more one marvels at the ingenuity and originality of other aquarists, and nothing pleases me more than looking at other people's tanks. I must be a little peculiar, perhaps, in this respect, for I even get enjoyment out of others' holiday snaps and family albums. It takes a little time, though, to discriminate over the matter of what fish to put in which tank, and perhaps this is one of the more fascinating aspects of the whole hobby. It would be dull indeed if we sat from year to year with the same fish, the same tank, and the same arrangement, and the aquarist soon learns that variety is a most important thing in his life.

It always seems a great pity to me that the beginner doesn't take a wider look round before stocking that first and very important tank, the contents of which are almost as predictable as the result of our recent struggle with the West Indies. Two features contribute to sameness; one is the almost standard list of 'desirable' fish given in introductory books on the subject, and the other is the reluctance of all too many dealers to market much other than the good old reliable stock items, such as angels, zebras, neons *et al*. Of course, one cannot blame the dealer for keeping a good stock of what he knows from experience will sell quickly or will sell eventually without deteriorating in the meantime. Nevertheless, fish just on the margin either take months to procure or become virtually unobtainable for no reason that is very apparent to me.

I should very much like to see more advertisers announcing for sale some of the less usual fish in their tanks, even if they have only a few of them, for in all probability they have got just what we have been unable to get locally. Why they spend so much advertising on pushing the common varieties, I do not know, since everybody assumes these are stocked, and are highly unlikely to send orders halfway across the country for varieties which they can get around the corner.

It is always good to see some establishments flying in face of all this, and I was heartened a little by Mr Taylor, whom I recently called on at Portsmouth, who had one tank brimming with green-eyed rasboras, and a further one alive with silver-tipped tetras. Some splash tetras also took my eye. Now, I haven't seen one of these locally for at least two years, so I naturally had to bring a few specimens home with me. Mr Taylor observed that all these varieties were bad sellers, so he was taking something of a risk. It is quite incomprehensible to me just how delightful fish like the three varieties mentioned above can come into the bad seller category, since in the right conditions there is colour, grace and endless activity, which isn't overpriced at a few shillings a time. Another bad seller is the glowline rasbora, which I have come to regard as an absolute necessity in any small fish collection. Here we have glowing dignity personified, with none of the problems so often encountered with the more popular recommendations.

Midland Aquarium and Pool Society Stages another Highly Successful Show

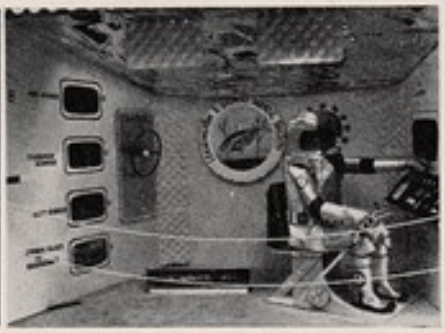
Presentation of awards to Mr W. Hicks by Mrs P. W. Jinks. Show secretary Mr J. Edwards is on the left

ATTENDANCE figures for this year's Midland Open Show were increased over those for 1965; nearly 6000 people came to see the large and full display of fishes and equipment at Bingley Hall, Birmingham. Valuable publicity was given before and during the four-days' show by Press and television reports. All the exhibits were staged at eye-level and the large section for coldwater classes contained what must have been one of the most comprehensive displays of fancy goldfish varieties, mostly excellent specimens, to be shown for a long time. There was even included that rarity, the pom-pom goldfish, a fish only about 3 inches long but with very well developed pom-poms which had emerged unexpectedly from a batch of young orandas imported from Japan. Major winner of coldwater awards was Mr H. T. Jago of Bristol A.S.

Best fish in the show was an *Apistogramma ramirezi*, a fish in high colour and fettle. Tropical entries generally were of variable quality, there being very few outstanding fishes. Included in the show were separate sections for the British Killiefish Association's first international show and the Midland Open Guppy show. The killiefishes formed another comprehensive display that has surely won many new followers for this growing speciality in the hobby. Killiefishes from Denmark (best killiefish was an *Epiplatys chaperi* entered by Mr L. Christensen, who came to the show from Denmark on the opening day) and Canada were shown.

There were some imaginative entries in the societies decorative tableau class, which were placed for awards according to votes given by visitors during the show. First was the North Warks A.S. seabed shipwreck scene, two furnished tanks being inset in the hulk of 'Moonraker'. Second was the astro-(aqua-?)naut's cabin scene by Leamington & D. A.S., with five furnished tanks including one that cleverly constituted the helmet of the figure at the controls, complete with flashing lights and a moving sign saying 'There's always space for an aquarium'. Third award went to the attractive carousel by Smethwick & D. A.S. in which five furnished tanks were ingeniously suspended on single rods and sur-

First prize entry by North Warks A.S.



Astronaut scene by Leamington & D.A.S. (second)

rounded by painted cut-out fish shapes. Walsall A. & P.S. entry was a space rocket with a single furnished tropical tank inset and the South Midlands section of the F.G.B.S. had staged an elaborate boutique front having two glass carboys containing guppies behind the shop's 'glass' window.

During the show . . . Mr A. J. Capener, an old member of M.A.P.S. who had donated the Capener Cup for the best cichlid in the show seventeen years ago, and who was responsible for re-forming the Society in 1947, came to revive some past memories. . . . Dr J. N. Carrington of Inter-Pet Company gave a short talk and demonstration on filter media for visitors at the Midland Association's stand and Mr T. Allsopp, secretary of M.A.P.S., also spoke on aquarium techniques . . . Mr L. Stokes, life member of the Society and steward at the show, unfortunately became a road accident casualty and was detained in hospital. . . . Films were taken for television (screened during the show week) and by a M.A.P.S. member for addition to the Society's film record of its activities.

Detailed results from the Show:

Coldwater Classes (judged by Mr V. Capaldi, Mr E. A. Mason and Mr S. Lloyd). Common goldfish and comets (3 in. body limit): 1, 2 and 3, Mr H. T. Jago; 4, Mr J. D. Fellows. Breeders' four fish (a.v. twintails): 1 and 2, Mr H. T. Jago (Percy Smith Cup for best breeders' entry); 3, Mr L. G. Emery (veiltails); 4, Mr L. G. Emery (orandas). Breeders' six fish (a.v. singletails): 1 and 3, Mr D. S. Paul (shubunkins); 2, Mr H. J. Whiting (shubunkins). Bristol shubunkins (3 in. body limit): 1 and 2, Mr W. Hicks (Taylor Cup for best shubunkin); 3, Mr L. G. Emery; 4, Mr H. J. Whiting. Calico veiltails: 1, Mr L. G. Emery; 2 and 4, Mr D. S. Paul; 3, Mr C. H. Barrett. Bristol shubunkins (bred 1966): 1, 2 and 4, Mr H. J. Whiting (Rowatt Cup and Cadby Cup); 3, Mr A. E. Roberts. Scaled veiltails: 1 and 2, Mr A. E. Roberts; 3, Mr D. S. Paul; 4, Mr H. Stock. Twintails (other than calico veiltails): 1 and 4, Mr R. W. Savage; 2, Mr H. T. Jago; 3, C. H. Barrett. Bristol shubunkins (bred 1966, M.A.P.S. only): 1 and 2, Mr H. T. Jago; 3, Mr H. J. Whiting; 4, Mr A. E. Roberts. Calico veiltails (bred 1966): 1, Mr H. T. Jago (Graham-Keys Cup and Keeling Cup); 2, 3 and 4, Mr C. H. Barrett. Bristol shubunkins (3 in. body limit, matched pairs): 1, Mr H. T. Jago; 2, Mr W. Hicks; 3, Mr W. G. Bryant. Orandas, telescopes, lionheads, celestials, bubble-eyes etc. (30 entries): 1 and 2, Mr H. Stock (pom-pom and Stothard, Evenden Cup for best coldwater entry); 3, Mr A. E. Roberts; 4, Mr L. G. Emery. Moors: 1, Mr A. E. Roberts (Butler Cup for best moor); 2 and 3, Mr T. L. Dodge; 4, Mr C. H. Barrett. Bristol shubunkins (3 in. body limit): 1 and 4, Mr W. Hicks; 2, Mr T. L. Dodge; 3, Mr H. J. Whiting. Calico fantails and calico nymphs: 1, Mr R. Berry (nymph); 2, Mr H. T. Jago (fantail); 3, Mr C. H. Barrett (fantail). Scaled fantails: 1, Mr E. A. Mason; 2 and 3, Mr T. L. Dodge. A.V. Pond and river fish (7 in. body limit): 1, Mr I. Ford (golden orfe); 2, Mr A. R. Haddon (rainbfish); 3, Miss R. Roberts (bowfin). Furnished coldwater aquaria. Individual: 1, Mr F. K. Handford (marine tank). Inter-society: 1, Burton & D.A.S. (Society Shield); 2, Smethwick & D.A.S. Bristol shubunkins (novices; 3 in. body limit): 1, Mr I. Ford (Webb Cup); 2, Mr G. Brown.

(Above) Pom-pom goldfish (oranda type)

(Left) Third prize-winning society display

Tropical Classes (judged by Mr R. Cook, Mr D. Emery, Mr G. Herrera, Mr D. H. Johnstone, Mr A. T. Smith, Mr H. Williams). Barbs (*titteya*, *oligolepis* and *cumingi*, true pairs): 1, A. W. Skinner (*titteya*); 2, Mr B. Woodward (*cumingi*); 3, Mr A. W. Spencer (*oligolepis*). Barbs (*tetrazona*, *nigrofasciatus*, *ticto* and *conchonius*, true pairs): 1, Mr A. W. Skinner (*tetrazona*, Dodge Cup); 2, Mr D. A. Thomson (*tetrazona*); 3 and 4, Mr. L. W. Mole (*nigrofasciatus*). A.o. barbs: 1, Mr A. Palmerfield (rosy); 2, Mr A. W. Skinner (*schuberti*).

Danios, Brachydanios and White Cloud minnows (true pairs): 1, Mr K. N. Wells (giant danio); 2, Mr D. A. Thomson (W.C. minnow); 3, Mr T. A. Mear (W.C. minnow); 4, Mr A. R. Haddon (zebra). Rasboras: 1, Mr G. Brown (*R. elegans*); 2, Mr D. Bennett (scissortail); 3, Mr J. Brough (*R. pauciperforata*); 4, Mr T. Payne (scissortail). Characins (*Hyphessobrycon*, *Hemigrammus* and cardinals): 1, Mr R. Woodward (*rubrostigma*, W. V. Jones Cup); 2, Mr K. G. Pearce (cardinals); 3, Mr T. Payne (*rubrostigma*); 4, Mr G. Rothin (black neon). A.o. characins: 1, 2 and 4, Mr G. Rothin (*emperor* tetra, blind cave, *C. guttata*); 3, Mr B. Taylor (*M. oligolepis*). Male fighters: 1, 2 and 3, Mr A. W. Spencer; 4, Mr E. G. Leadley. A.o. male labyrinth: 1, Mr H. Willems (paradise, Mrs Gilbert Cup); 2, Mr T. Payne (*loce gouramy*); 3, Mr B. Taylor (*B. signata*); 4, Mr F. E. Woodall (*C. fasciata*).

Cichlids (3 in. body limit, single fish): 1, Mr D. A. Thomson (*A. ramirezi*, Gilbert Cup for best tropical entry, Capener Cup for best cichlid); 2, Mr E. Leggett (*H. Burtoni*); 3, Mr T. Payne (*P. bribensis*); 4, Mr S. R. Wood (*A. ramirezi*). Cichlids (3 in. or over, single fish): 1, Mr B. Woodward (pike cichlid); 2, Mr B. Evetts (blue acara); 3 and 4, Mr K. G. Pearce (*C. severum*). Cichlids: single angel fish: 1, Mr P. Tranter; 2, Mr B. Evetts; 3, Mr A. W. Skinner; 4, Mr D. A. Thomson.

A.v. guppy (male): 1 and 2, Mr D. Bennett (Coleman Cup); 3, Mr T. A. Nason; 4, Mr F. E. Woodall. A.v. mollies (true pairs): 1, Mr D. Bennett; 2, Mr G. Rothin; 3 Mr H. Stock; 4, Mr K. Hallam. A.v. platy (true pairs): 1, Mr D. T. Delves (festival). A.v. swordtails (true pairs): 1, Mr D. A. Thomson (red-eyed red); 2, Mr K. N. Wells (tuxedo); 3, Mr D. T. Delves (red-eyed red); 4, Mr T. A. Nason (green). A.o.v. tropical (single fish): 1, Mr J. Brough (*L. bicolor*); 2, Mr J. Vickery (reed fish); 3, J. Vickery (weather fish); 4, Mr D. T. Delves (elephant nose). Breeders' egglayers (six fish bred 1966): 1, Mr A. W. Skinner (blind cave tetra, Fanday Cup); 2, Mr T. Payne (*P. interruptus*); 3, Mr J. B. Colwell (neon); 4, Mr K. J. Harvey (*L. australe*). Breeders' livebearers (six fish bred 1966): 1, Mr D. T. Delves (red-eyed red swordtail); 2, Mr D. A. Thomson (black swordtail); 3, Mr A. Palmerfield (red wagtails); 4, K. G. Pearce (fantail guppy).

A.v. Corydoras: 1, Mr G. Rothin (*aeneus*); 2, Mr A. Palmerfield (bronze); 3, Mr S. R. Wood (*paleatus*); 4, Mr B. Taylor (*julii*). A.o.v. catfish: 1, Mr E. Leggett (albino Clarias); 2, Mr J. Vickery (*P. gracilis*); 3, Mr B. Woodward (*P. gracilis*); 4, Mr E. G. Leadley (armoured). Egglaying toothcarps (true pairs): 1, Mr A. Robbins (*A. finnatus*, Carrington Memorial Trophy); 2, Mr D. A. Thomson (*A. calliurum*); 3, Mr A. Robbins (*A. nigrovenum*); 4, Mr T. Payne (*A. wingei*).

Plants (a.v. up to 15 in.): 1, Mr S. R. Wood (F. W. Jinks Trophy); 2, Mr K. G. Pearce (*C. affinis*); 3 and 4, Mr P. Stokes.

Novices: Any characin (novices): 1, Mr J. P. Webster (bleeding-heart tetra); 2, Mr J. Brough (gold lace tetra); 3, Mr K. J. Harvey (*schreitmulleri*); 4, Mr G. Withers (flame). Any Danio etc. (novices):

Left to right: at the Midland show Mr K. Payne and Mr T. Payne were presented with the F.B.A.S. Diploma for their success with Cynolebias whitei exhibited this year at the Catford show. Some of the British Killiefish Association trophies on display at the Midland show. Judging of the guppy entries in progress at the Midland show

1, Mr A. J. Davies (White Cloud minnow); 2, Mr A. Robbins (White Cloud minnow). Any barbs (novices): 1, Mr K. J. Harvey (tinfoil); 2, Mr G. Withers (golden); 3, Mr J. D. Fellows (cherry); 4, Mr L. Spittle (tiger). Any livebearers (true pairs, novices): 1, Mr D. Hallam; 2, 3 and 4 Mr A. J. Davies. Any male anabantid (single fish, novices): 1, Mr G. Withers (opaline, Tankard trophy); 2, Mr K. J. Harvey (thick-lip); 3, Mr L. W. Spencer (fighter); 4, Mr J. D. Fellows (three-spot).

Furnished aquaria. Individual: 1, Mr A. G. Ings (Water Life trophy); 2 and 4, Mr G. F. Elvis; 3, Mr K. G. Pearce. Inter-Society: 1, The Haden A.S. (Society Shield); 2, Tipton A.S.; 3, Coventry P.A.S.; 4, Wednesbury A.S.

British Killiefish Association results: *Aplyosemion*: 1, Mr C. Bill; 2, Mr H. Williams; 3, Mr K. Harvey; 4, Mr R. Beynon. *Aplyosemion* a.o.v.: 1 and 3 Mr T. Payne; 2, Mr L. Christensen; 4, Mr H. Williams. *Aplyosemion* a.v. single fish: 1, Mr W. Kemp; 2, Mr K. Lowe; 3, Mr W. Taaffe; 4, Mr M. Packwood. *Aplocheilus* a.v.: 1 and 2, Mr P. Stokes; 3 and 4, Mr T. Payne. *Aphanius* a.v.: 1, Mr R. Johnston; 2, Mr P. Stokes; 3, Mr R. J. Moorfield. *Epiplatys* a.v.: 1, Mr L. Christensen (*E. chaperi*, best fish in the show); 2, Mr J. Collett; 3, Mr J. Nissen; 4, Mr P. Stokes. *Fundulus* a.v., 1 and 2, Mr D. W. Ellis; 3, Mr R. Thomas 4, Mr J. Open. *Jordanella* and *Oryzias* a.v.: 1, Mr W. Taaffe; 2, Mr J. Open; 3, Mr T. Payne. *Micropanchax*: 1, Mr D. Craven. *Rivulus* a.v. (true pairs): 1 and 3, Mr T. Payne; 2, Mr J. Collett; 4, Mr K. Lowe. *Rivulus* a.v.: 1, Mr M. Challenger; 2, Mr P. Stokes; 3 and 4, Mr L. Christensen. *Nothobranchius* a.v.: 1, Mr R. J. Moorfield; 2, Mr J. Collett; 3 and 4, Mr H. Williams. *Pterolebias* a.v.: 1, Mr P. Stokes; 2, Mr M. Packwood; 3, Mr J. Open; 4, Mr T. Payne. *Cynolebias* a.v.: 1, Mr P. Stokes; 2, Mr K. J. Harvey; 3, Mr H. Williams; 4, Mr T. Payne. *Austrofundulus* a.v.: 1, 2 and 3, Mr P. Stokes. *Cynopoecilus* and *Rachovia* a.v.: 1 and 2, Mr T. Payne; 3, Mr P. Stokes; 4, Mr H. Williams; A.o.v. killiefish: 1, 2 and 4, Mr H. Williams; 3, Mr P. Stokes. *Breeders* guppies: 1, 2 and 4, Mr A. Robbins; 3, Mr T. Payne. *Breeders* divers: 1, Mr P. Stokes; 2 and 4, Mr M. Packwood; 3, Mr T. Payne.

Club News

THERE was a well-attended meeting of the LIVERPOOL section of the **FANCY GUPPY ASSOCIATION** held at the Norris Green Boys Club. Mr Jim Kelly, chairman of the F.G.A., paid a welcome return visit and his lecture, entitled 'As it was in the beginning' evoked a great deal of interest. One new member remarked that he had learned more from this one lecture than in more than 15 years of breeding tropical fish, and it is true that Mr Kelly, acclaimed the world's no. 1 guppy expert by many, imparts his knowledge to the audience in such a way that no one can fail to be interested in guppy breeding by the end. The table show that followed was a great success, the entry being up by 50% on the previous show. Two Manchester visitors, Mr Beresford and Mr Jefferies, were awarded the best fish in show with their entry, one of the best guppies ever seen on the show bench. Several new members were enrolled during the meeting and the committee feel very gratified to see their labours bearing fruit in this way. A cordial welcome awaits anyone interested in guppies wishing to join this go-ahead section of the F.G.A. Further particulars can be obtained from Mr Bill Armitage, P.R.O., 12 Orrell Lane, Liverpool, 9.

FROM small beginnings (of four original members), **STONE A.S.** reports every-increasing membership, and the club is now busily preparing for its second Open Table Show to be held at the Walton Community Centre, Stone, on Sunday, 16th October. There will be 25 classes, with plaques awarded for the first in each class, and a trophy for the best fish in the show.

At the annual closed-to-club show, members' placings were: Livebearers: Mr K. J. Harvey (hi-fin sword); danio and rasbora: Mr T. Payne (scissortail): toothcarps; Mr K. J. Harvey (*C. whitei*); anabantids: Mr K. J. Harvey (thicklip gourami): barbs: Mr T. Payne (tiger barb); cichlids: Mr I. Brough (festive); characin: Mr T. Payne (bleeding-heart tetra); catfish and loach: Mr K. J. Harvey (*Otocinclus*); a.o.v.: Mr I. Brough (red-tailed black shark). Judging was carried out by Mr Bill Walker and Mr Jim Lee of the North Staffs A.S.

A change from the usual topics occurred when Mr D. Lucas of Leamington & D. A.S. gave a lecture on reptiles and amphibia. This dealt mainly with those animals that can be easily kept by the average aquarist, such as frogs, toads, terrapins, lizards, snakes and alligators, and members were able to handle the Indian python, boa constrictor and a king snake that Mr Lucas took along to illustrate his talk.

ILFORD & DISTRICT AQUARISTS' & PONDKEEPERS' SOCIETY members were entertained recently by slides and tape recordings showing entries in their annual

pond competition. Some very good colour film was shown by Mr H. Berger, the show secretary, illustrating a wide selection of ponds and water gardens with comments indicating how an informal or formal pool could be constructed and what the judges looked for when awarding points in the competition. The results of the 1966 pond competition were 1, Mr Cook; 2, Mr Dixon; 3, Mr Nott, 4, Mr Hartley.

At this meeting the table show was for coldwater plants, tropical plants and cichlids and results were: Coldwater plants: 1, Mr Dixon (*Egeria densa*); 2, Mr Dixon (water milfoil); 3, Mr Dixon (*Sagittaria*); 4, Mr Berger (*Myriophyllum*). Tropical plants: 1, Mr Brill (water lettuce); 2, Mr Dixon (water wisteria); 3, Mr Hattam (*Cabomba*); 4, Mr Hattam (*Cryptocoryne*). Cichlids: 1, Mr Ruth (brown acara); 2, Mr Hattam (angel fish); 3, Mr Hattam (black lace angel); 4, Mr Robinson (angel fish).

A raffle for two books on fishes and reptiles presented by Mr and Mrs Ruth was won by Mr Hattam

At the annual general meeting of the society, reports from the secretary, treasurer and show secretary indicated that the year had been very successful, with a slight increase in membership. Highlights of the year were the awards gained by members and by the society in open shows and the participation in the Exhibition held at Selfridges, Ilford, put on by the Arts and Crafts Section of the Redbridge Arts Council. Officers elected to serve for 1966–67 were: president, Mr V. Price; vice presidents: Mr L. Jarvis, Mr J. Nott; Chairman, Mr A. Stebbing; vice chairman; Mr J. Sanders; secretary, Mr R. Ruth; assistant secretary: Mr V. Price; treasurer: Mr M. Brill; assistant treasurer: Mr L. Smith; show secretary: Mr H. Berger; press and social secretary: Mr L. Smith; librarian: Mr K. Ellis; committee members: Mrs Ruth, Mr Hattam, Mr Sampson: auditors: Mr Dixon, Mr Hartley.

Anyone interested in fishkeeping will be very welcome at meetings and should get in touch with the secretary, Mr R. Ruth, 13 Dunkeld Road, Dagenham, Essex.

MIXENDEN T.F.S. held their first open show in August, very successfully with 212 entries. The secretary of the society, Mr Stewart Leedham, apologises to all the visitors from distant clubs both for the late start and for the terrible weather that greeted them. Both sets of circumstances, however, were quite beyond control!

Details of the awards are:

Guppies: 1, Mr B. Wolstencroft (Heywood, 78 pts); 2, Mr B. Wolstencroft (Heywood, 77 pts); 3, Mr Hallett (Clitheroe, 72 pts). Swordtails: 1, Mr J. Brown (Mixenden, 77 pts); 2, Mr K. Smales (Swillington, 76 pts); 3, Mr P. Clarke (Garforth, 75 pts). Platys: 1, Mr Rich (Stockport, 78½ pts); 2, Sheila Smith (Blackpool, 74 pts); 3, Mr Joyce (Aireborough, 73 pts). Mollies: 1, Mr G. Howard (Blackpool, 77 pts); 2, Mr L. McCourt (Gorton & Openshaw, 75 pts); 3, Mr G. Mather (Stockport, 72 pts). Barbs: 1, Mr J. Smith (Blackpool, 76 pts); 2, Mr F. Gregory (Ouram, 74 pts); 3, Mr F. Gregory (Ouram, 74 pts). Small characins: 1, Mr F. Gregory (Ouram, 81 pts); 2, Mr M. Mathews (Lytham, 79 pts); 3, Mr S. Collings (T.A.B., 74 pts). Medium characins: 1, Mr E. Price (Gorton & Openshaw, 77 pts); Mr Cross (Blackpool, 76 pts); Mr B. Winters (Mixenden, 74 pts). Large characins: 1, Mr R. Williinson (Halifax, 79 pts); 2, Mr F. Mulla (Merseyside, 76 pts); 3, Mr P. Reynolds (Swillington, 67 pts). Cichlids, dwarf: 1, Mr J. B. Wike (Huddersfield, 78 pts); 2, Mr E. Price (Gorton & Openshaw, 77 pts); 3, Mr L. McCourt (Gorton & Openshaw, 76 pts). Cichlids, a.o.v.: 1, Mr F. Mulla (Merseyside, 82 pts); 2, Mr Bone (Huddersfield, 73 pts); 3, Mr L. Kaye (Huddersfield, 73 pts). Toothcarps: 1, Mr J. Smith (Blackpool, 81 pts); 2, Mr K. Smales (Swillington, 79 pts); 3, Mr Hallett (Clitheroe, 78 pts). Fighters: 1, Mr A. Beasly (Heywood, 75 pts); 2, Mr Hallett (Clitheroe, 74 pts); 3, Mr P. Reynolds (Swillington, 69 pts). Anabantids, a.o.v.: 1, Mr S. Smith (Blackpool, 84 pts); 2, Mr J. Smith (Blackpool, 81 pts); 3, Mr Moorcroft (Merseyside, 74 pts). Sharks and flying foxes: 1, Mr M. Seray (Mixenden, 77 pts); 2, Mr P. Reynolds (Swillington, 75 pts); 3, Mr Moorcroft (Merseyside, 74 pts). Danios, minnows, rasboras: 1, Mr F. Gregory (Ouram, 77 pts); 2, Mr A. Beasly (Heywood, 76 pts); 3, Mr Moorcroft (Merseyside, 73 pts). Catfish and loaches: 1, Mr W. Booth (T.A.B., 79 pts); 2, Mr E. Price (Gorton & Openshaw, 78 pts); 3, Mr K. Smales (Swillington, 74 pts). Breeders egglayers: 1, Mr J. Smith (Blackpool, 75 pts). Breeders livebearers: 1, Mr R. Wilkinson (Halifax, 78 pts); 2, Mr L. Kaye (Huddersfield, 77 pts); 3, Mr R. Wilkinson (Halifax, 76 pts). Egglayers pairs: 1, Mr B. Parkin (T.A.B., 71 pts); 2, Mr E. Price (Gorton & Openshaw, 70½ pts); 3, Mr F. Mulla (Merseyside, 70 pts). Livebearers pairs: 1, Mr A. Gawthorne (Swillington, 68 pts); 2, Mr K. Glover (Swillington, 67½ pts); 3, Mr A. Beasly (Heywood, 67 pts). A.o.v. tropicals: 1, Mr D. P. Johnson (Stockport, 76 pts); 2, Mr B. Wolstencroft (Heywood, 74 pts); 3, Mr B. Joyce (Aireborough, 70 pts). Junior, tropical or coldwater: 1, Master D. Hallett (Clitheroe, 75 pts); 2, Miss B. Johnson (Stockport, 74 pts); 3, Miss B. Johnson (Stockport, 72 pts). A.o.v. coldwater: 1, Mr L. Booth (Bradford, 78 pts); 2, Mr L. Booth (Bradford, 76 pts); 3, Mr Bone (Huddersfield, 73 pts). Best fish in show: Mr J. Smith (Blackpool, 84 pts) who was also awarded the A.Y.A.S. Premier Award diploma.

Mixenden T.F.S. meets every other Thursday at 8.0 p.m. and new members can be sure of a warm welcome. Readers in the Halifax district are invited to get in touch with the secretary at 16 Hambleton Drive, Mixenden, Halifax, Yorks. for further details.

RUGBY & D. A.S. *members are likely to have a memorable day on their trip to the Zoological Gardens, Amsterdam to see some of the finest tropical, freshwater and marine setups in Europe. Starting from a local airport, they will be met at Amsterdam for a conducted coach tour of the city. Then, after lunch, the afternoon will be spent at the Zoological Gardens.*

THE meeting of the **NEWPORT A.S.** in August took the form of an extraordinary general meeting, caused by the resignation from the committee of Mr Paul Williams, due to business commitments. On the proposal of Mr Terry Wall, seconded by Mrs Molly Burgwin, Mr Colin Lewis was duly elected to fill the vacancy.

The speaker for the evening was Mr John Burgwin, on holiday from university, who gave a very interesting lecture on fish foods and feeding. A table show for two classes was held and results were: Swordtails: 1, Mr Terry Wall; 2 and 3, Mr Leo Bannerman. Breeders' egglayers or livebearers: 1, Mr F. Glyn James; 2, Mr Leo Bannerman; 3, Mr Bryn Main.

The Society's membership is one of continual expansion and it meets on the first Tuesday of each month at the R.A.O.B. Club, Havelock Street, Stow Hill, Newport. Further details of all the club's activities, which are many and varied, are obtainable from the secretary, Mrs E. A. Salmon, Helvellyn, 33 Glanmor Park Avenue, Newport, Mon (phone 73588).

CORBY A.S. (Northants) received some first-class publicity recently with the printing of a two-page spread in the local CORBY LEADER. Some excellent photographs should have excited the interest of many local inhabitants. This ten-year old club welcomes new members and details can be obtained from the secretary, Mr David Cole, 20 Rosedale Avenue, Corby.

WHISPER has it that one northern aquarium society member is achieving wonderful results with seats by feeding them with sea-weed taken from the wooden piling at an estuary.

Portsmouth's 6-day Show

Part of the Portsmouth A.S. stand at the show

FISHES on view at the **PORTSMOUTH A.S.** open show held on 6–13 August were of an extremely high standard. The Portsmouth show is supported by most of the clubs in the south of England, as could be seen by the number of entries—over two dozen furnished aquaria and a total of 45 classes in all. The coldwater entries were judged by Mr R. Essen, the tropical classes by Mr C. A. T. Brown and Mr A. G. Jessopp, of the F.B.A.S.

Notable among the individual tropical entries were several species not usually to be found on the show bench. There was also a 'novices' class, which could be entered by any one previously unsuccessful in winning a first prize at an open show. The coldwater classes were no exception to the general pattern of good quality fishes entered. The general public were also well catered for with descriptive charts and photographs and the clear labelling of all classes.

Trophy winners were: P.A.S. diploma (best fish in show): Master M. Warren. P.A.S. Award of Merit (best coldwater fish in show): Mr J. Stillwell. Taylor challenge cup (best club tropical aquaria): Reigate & Redhill A.S. Richmond cup (best club coldwater aquaria): Reigate & Redhill A.S. Louise Wilson cup (best individual tropical aquaria): Mr C. Bass. E. Knight cup (best individual coldwater aquaria): Mrs J. Stillwell. C. & A. Smith cup (juvenile tropical aquaria): Master T. Smith. C. & A. Smith cup (juvenile coldwater aquaria): Master T. Leach. Nunn Senior trophy (best labyrinth): Mr G. Greenhalf. Sunegrow cup (highest pointed rostlie): Mr H. Rundle. Stoodley cup (highest pointed barb): Mr J. Hopper. J. & M. Mason shield (highest pointed cichlid): Mr L. Jordan. J. & M. Mason shield (highest pointed characin): Master M. Warren. Taylor trophy (highest total coldwater points): Mr R. Whittington. Taylor trophy (highest total tropical points): Mr G. Bass. Taylor trophy (best coldwater breeder): Mr R. Whittington. Taylor trophy (best tropical eggleyer breeder): Mr H. Armitage. D. Forse cup (best tropical livebearer breeder): Mr G. Greenhalf. D. Forse cup (Highest pointed a.o.s. tropical): Mr E. Warren. F.B.A.S. trophy (highest pointed coldwater a.o.s. Cyprinidae): Mr J. Howard. Scott Morgan cup (highest pointed Siamese fighter): Mr Stewart. McDowall trophy (highest pointed guppy): Mr G. Bass. The J.D. trophy (highest pointed tropical catfish): Mr H. Armitage. The Stockdale cup (highest pointed rasbora): Mr R. Biggs. Howard cup (highest pointed egglaying toothcarp): Mr H. Armitage. Wm. Taylor & Son trophy (highest pointed tropical fish, club member): Master M. Warren. Henry Luff trophy (highest pointed coldwater fish, club member): Mr E. Binstead. King cup (best shubunkin, club member): Mr G. Eastwood. Emma Barbury cup (highest pointed plant, club member): Mr M. Mason.

Inter-club furnished tropical aquaria: 1, Reigate & Redhill A.S.; 2, Southampton A.S.; 3, Portsmouth A.S. Inter-club furnished coldwater aquaria: 1, Reigate & Redhill A.S.; 2, Carnsmus Club; 3, Portsmouth A.S. Individual furnished tropical aquaria: 1, Mr C. Bass; 2, Mr A. Burley. Individual furnished coldwater aquaria: 1, Mrs J. Stillwell; 2, Mr W. Leach; 3, Mrs P. Whittington. Individual furnished marine aquaria: 1, Mrs J. Stillwell; 2, Mr J. Howard. Individual furnished junior tropical aquaria: 1, Master T. Smith. Individual furnished junior coldwater aquaria: 1, Master T. Leach; 2, Master J. Sprague.

Common goldfish: 1, Mr W. Leach; 2, Mr R. Bockett; 3, Mrs P. Whittington. Bristol shubunkin: 1, 2 and 3, Mr R. Whittington. London shubunkin: 1, Mr G. Eastwood; 2, Mrs P. Whittington; 3, Mr W. Leach. Fantail: 1, Mr E. Binstead; 2, Mr J. Stillwell. Moor: 1, Mr R. Whittington; 2, Mr H. Hancock. A.o.v. fancy goldfish: 1, Mr W. Leach; 2, Mr V. Hunt; 3, Mr F. W. Ryder. Golden carp, rudd, tench and orfe: 1, The Misses G. & P. Sprake; 2, Mr J. Howard; 3, Mr H. Hancock. A.o.s. Cyprinidae: 1, Mr J. Howard; 2, Mr J. Howard; 3, Mr D. Hancock. A.o.s. coldwater fish: 1, Mr J. Stillwell; 2, Mr V. Hunt; 3, Mr R. Whittington. Novice coldwater: 1, Mr E. Binstead; 2, Mr T. Leach.

A.v. male guppy: 1, Mr G. Bass; 2, Mr and Mrs C. Bailey; 3, Mr A. Burley. A.v. female guppy: 1, Mr G. Bass. 2, Mr R. Biggs; 3, Mr G. Bass. A.s. swordtail: 1, Mr D. Jones; 2, Mr G. Greenhalf; 3, Mr G. Greenhalf. A.s. platy: 1, Mr G. Bass; 2, Mr Scott-Morgan; 3, Mr R. Wylie. A.s. rostlie: 1 and 2, Mr H. Rundle; 3, Mr Scott-Morgan. A.o.s. livebearer: 1, Mr Scott-Morgan; 2, M. V. West; 3, Mr G. Greenhalf. *Apistogramma*, *Pelmatochromis* and *Nannacara* species: 1, Mr R. Keeping; 2, Mr P. Collins; 3, Mr M. Mason. A.o.s. cichlid: 1, Mr L. Jordan; 2, Mr P. Collins; 3, Mr Scott-Morgan. Barbs: 1, Mr J. Hopper; 2, Mr I. Perman; 3, Mr E. Warren. *Rasbora*: 1, Mr R. Biggs; 2 and 3, Mr G. Greenhalf. *Hyphessobrycon* and *Hemigrammus* species: 1, Mr H. Armitage; 2, Mr M. Mason; 3, Mr I. Perman. A.o.s. characin: 1, Master M. Warren; 2, Mr W. Franklin; 3, Mrs R. Greenhalf. *Corydoras* catfish: 1, Mr H. Armitage; 2 and 3, Mr N. Franklin. A.o.s. catfish: 1, Mr G. Greenhalf; 2, Mr H. G. Rundle; 3, Mr and Mrs C. Bailey. Egglaying toothcarp: 1, Mr H. Armitage; 2, Mr N. Franklin; 3, Mr H. Armitage. Danio, carp and minnows: 1, Mr J. Collyer; 2, Mr G. Bass; 3, Master M. Warren. Siamese fighter: 1, Mr T. Stewart; 2, Mr R. Keeping; 3, Mr A. Burley. A.o.s. labyrinth: 1, Mr G. Greenhalf; 2 and 3, Mr G. Bass. A.o.s. eggleyer: 1, Mr E. Warren; 2, Mr H. Armitage; 3, Mr G. Bass. Novices tropical: 1, Mrs M. Armitage; 2, Mr N. Packman; 3, Mr J. Hopper.

Coldwater breeders: 1 and 2, Mr R. Whittington; 3, Mrs P. Whittington. Livebearer breeders: 1, Mr G. Greenhalf; 2, Mr and Mrs C. Bailey; 3, Mr D. Jones. Egglayers breeders: 1, Mr H. Armitage; 2, Mr R. Keeping; 3, Mr R. Keeping. Gioppino breeders: 1 and 2, Mr A. Smith; 3, Mr D. Jones.

Rooted plant: 1, Mr M. Mason; 2, Mr Scott-Morgan; 3, Mr G. Greenhalf. Plant cuttings: 1, Mr and Mrs C. Bailey; 2 and 3, Mr J. Howard. Floating plant: 1, Mr W. Leach; 2, Mr J. Howard.

DOES your society produce a bulletin or news sheet? **AIREBOROUGH & D. A.S.** *would like to exchange theirs with those of other societies and interested clubs should contact the secretary and editor, Mr R. E. Hampson, The Headlands, Scotland Lane, Horsforth, nr Leeds.*

CALLING all secretaries of established clubs! Knowing your spare time is at a premium, we yet dare to wonder if anyone is able to help **AMERSHAM & D. TROPICAL FISH CLUB** with ideas for making club meetings interesting and running a society efficiently. They are a new (and very enthusiastic) group, already with a membership nearing the 50 mark and with plans to hold their first fish show on Saturday, 1st October. But they are anxious to make certain that all this enthusiasm is not dissipated and would welcome contact with other clubs and the exchange of ideas. Letters to the secretary, Mr M. S. Vincent, 45 New Road, Amersham, Bucks, please.

PREPARATIONS were in full swing for a bumper **British Aquarists' Festival** on 29th and 30th October at Belle Vue, Manchester, Mr George Cooke (BAF show secretary) told PETFISH MONTHLY when he visited our stand at the national Show in Nottingham. Unfortunately our application to buy stand space for PFM at the Festival has been turned down, but we still hope to be meeting old friends there on our visit.

Transatlantic TOPICS

By JIM KELLY

WHAT did you have for lunch to-day? It was a dead cert that you didn't have sea snake yet these members of the order Serpentes are considered a delicacy by folk living in the Philippines and form a major part in the food industry there.

The State of Texas is noted for big things so it is no surprise that Fort Worth Zoo there has just added a sea snake 4 foot long to their collection. Proper name *Laticauda colobrina*, it hails from the coastal waters of Japan and being an aquatic creature warrants the name sea serpent.

Those aquarists looking for the unusual for the A.O.V. class can give some thought to this creature as it can grow to 6 feet in length; a warning though, its venom is considered to be fifty times more potent than that of its land relative the king cobra.

If any of you are fancying a skin-diving holiday in this part of the world . . . you have been warned.

* * *

'Nothing is dearer than a dead fish!' Words of wisdom to the fishkeeper which bring forth the suggestion that prevention is better than cure. From the Mid-West Aquarists of Chicago comes a list of life-spans of various fishes so familiar to us. The list is quite comprehensive; here are just a few: angels 9–10 years; barbs 5–7; fighters 2½; catfish 4–10; zebras 3; mollies 3–5; guppies 2½. That should make some of us think!

* * *

The history of the British is full of invasions. Everybody seems to have tried to take us over at some time or another. Latest comes from America, where manufacturers are realising the potentialities of the British Pet Market and the aquatics branch in particular. The increasing variety of Canadian and U.S. goods appearing over here bears witness to this fact. But the fly in the proverbial ointment, according to one U.S. wholesale organisation, seems to be that some manufacturers are competing rather than co-operating in this venture, preferring to fulfil direct orders first rather than those received from distributors. To help in this matter this U.S. organisation has started a plan to form a pet supply wholesaler's organisation in England! Invasion? This is a take-over!

* * *

Magazines devoted to this fine hobby of ours are as numerous as fleas on a hedgehog in America. Some hundred odd reach my desk each month from friends over there. Because of this you might think that the fact that one ceases to publish shouldn't cause many eyebrows to be raised, but you would be wrong. Having enjoyed the professionalism of GUPPY NEWS, mouthpiece of the Guppy Associates, for so long I was sorry to read that it had been 'put to bed' for the last time. These amateur efforts help to fill the gap of localised news and views, not permitted because of reasons of space in the professional journals. To ex-editor Stan Mruk we send not a wreath but a bouquet. Despite the remaining ninety and nine I shall miss this one.

* * *

Britain's claim to be 'the' pet-loving nation is in jeopardy. Recently an American Congressman wrote that he and his colleagues are receiving more mail about pets than they are on the situation in Viet-Nam!

* * *

Living in a country that doesn't experience many violences of Mother Nature, though the weather forms a large part of our conversations, it is difficult to comprehend violences such as earthquakes, tornados and the like. A recent tornado that crossed Miami caused anxiety in the aquatic trade because this part of the States houses many large fish distributors and breeders. Though several folk lost their lives and many homes were damaged in this storm it appears that no aquatic establishment suffered. Guppy Gardens had their roof damaged but The Everglades Aquatic Nurseries reported through Albert Greenberg that all was well.

* * *

On my recent tour of America I became used to large fish set-ups but one that fairly makes folk goggle is that of Marvin Jones and James Stanley in Oakland, California. These two bundles of energy started with one 10 gallon tank in 1958 and to-day regularly stock a quarter of a million fish in a building covering 38,000 square feet.

The secret of their growth? In Marvin's own words: 'We still don't know everything about tropical fish but we spend plenty of time passing on what we do know to the customers, looking up what we don't know for them. Service we both agree is what built this business for us.'

To that, from personal experience I can say 'Ahmen'.

* * *

When you think of Niagara Falls what comes into your mind? No doubt water and honeymoons in that order, but not all the water passes over the Falls; quite a large amount finds its way to Marine Wonderland. This exhibition in Ontario has just added a 4,000 seat aqua-theatre; the arena is 120 feet in diameter and 30 feet high, and the complete pool is capped by a 25 foot spire.

* * *

For years we have been aerating our tanks by introducing air into the water, so it had to come that progress would reverse the role! A new aquarium where the water flows outside the tank into a surrounding pool will shortly be on the market in the U.S. Previews of this set-up have used such phrases as the world's most magnificent aquarium. One thing that puzzles me is how do they stop the finny occupants from 'taking a ride'?

A 4 ft. community tank has now been set up at the headquarters of the **GOSPORT & D. A.S.** and should provide added interest at club meetings. Recent activities have included a talk by Mr Hunt of Portsmouth on the life than exists in our ponds and streams and great interest was aroused by the many live specimens that the speaker took with him to illustrate their classification as food or enemies of the fish population. One of the club members, Mr Budden, gave a short film show in colour of an aquarium and it is hoped that he will find the time to produce many more of similar first-rate quality.

At one of the August meetings, judging took place of the designs submitted in the competition for a society emblem. The competition was open to all juniors and 33 entries were submitted. Master I. Perman was awarded the prize of 1 guinea and lapel badge replicas will be made from his winning design. At the meeting, Mr A. V. Taylor, one of the founder members of the club who now lives in Yorkshire, paid a short visit and judged the monthly table show, results of which were: Barbs: 1, Master Perman (striped barb); 2, Mr Stevens (ruby barb). Cichlids: 1, Master Perman (angel); 2, Master Perman (angel).

A DAY at the sea-side takes on a new meaning these days when you're joining in a **MARINE STUDY SOCIETY** outing, as did members of Bristol New Forest, Portsmouth and Swindon A.S. recently. The outing was to Hengistbury Head at the end of August and the fine weather and the interest in collecting specimens made it a most enjoyable occasion. Several interesting finds were made and members of Bristol A.S. caught a medium sized starfish. Altogether about forty people attended and all agreed that it would be a good idea to hold another such gathering next year. Once again all aquarists who wish to attend will be invited and details will be published in this magazine nearer the time.

WE all make the same mistakes (though not, we hope, over and over again)! This point came over clearly in an instructive talk given recently to **HAMPSTEAD A.S.** members by Mr Russell-Holland, the well-known F.B.A.S. judge and lecturer. Entitled 'Don'ts', the talk listed some of the mistakes that can be avoided when setting up and caring for a furnished aquarium in the home. Many of the errors seemed a good deal more amusing in retrospect than when they occurred originally, particularly that one common to most of us—trying to siphon two gallons of water into a one-gallon bucket! Members meet every alternate Tuesday evening at 35, Steeles Road, Hampstead, London, N.W.3, which is also the address of the secretary, Mr K. J. A. Pye. All prospective members are cordially invited to attend.

Osram A.S. Show Results

OSRAM A.S. held their seventh annual open show at the end of August. There were over 200 exhibits of tropical and coldwater fish and furnished aquaria in the hall, which was decorated with exotic plants by the well-known horticulturist, Mr J. Penhall of Shaw, and the public attended in large numbers. Judges were Mr C. Walker, F.N.A.S., of Oldham and Mr A. Lindley, F.N.A.S., of Nottingham, who made the following placings:

Furnished aquaria: 1, Mr H. Page (Osram); 2 and 3, Mr H. Penhall (Osram). Anabantids: 1, Mr K. Hill (Heywood); 2, Mr L. Marshall (Oldham); 3, Mr G. Kershaw (Heywood). Fighters: 1, Mr A. Beasley (Heywood); 2, Mr J. Williams (Osram); 3, Mr T. E. Davies (Heywood). Small barbs: 1 and 2, Mr F. Gregory (Osram); 3, Mr B. Preston (Heywood). Large barbs: 1, Mrs P. A. Nicholls (Osram); 2, Mr R. Bottomley (Osram); 3, Mr F. Dalzell (Osram). Labeos and sharks: 1, Mr K. Ashworth (Osram); 2, Mr R. Bottomley (Osram); 3, A. N. Other. Small characins: 1, Mr B. Rennie (Oldham); 2 and 3, Mr A. E. Mackey (Osram). Medium characins: 1, Mr E. Price (Gorton); 2, Mr R. Collins (Osram); 3, Mr J. E. Shore (Osram). Large characins: 1, Mrs P. A. Nicholls (Osram); Mr W. Taylor (Osram); 3, Mr H. W. Hughes (T.A.B.). Rasboras: 1, Mr A. E. Mackey (Osram); 2 and 3, Mr F. Gregory (Osram). Danios: 1, Mr L. Marshall (Oldham); 2, Mr A. Beasley (Heywood); 3, Mr F. Gregory (Osram). Dwarf cichlids: 1, Mr E. Price (Gorton); 2, Mr A. Maltby (Osram); 3, Mr F. Gregory (Osram). Angels: 1, Mr J. Wood (Heywood); 2, Mr H. Stockton (Oldham); 3, Mr K. Ashworth (Osram). A.o.v. cichlid: 1, Miss B. Johnson (Stockport); 2, Mr A. Maltby (Osram); 3, Mr A. B. Wilkie (Stretford). Toothcarps: 1, Mr K. Wilbraham (Osram); 2, Mr A. Beasley (Heywood); 3, Mr F. Partington (Osram).

Goldfish: 1, Mr H. Penhall (Osram); 2, Mr L. Baxter (N.G.P.S.); 3, Mr J. Pogson (Osram). Shubunkins: 1 and 2, Mr W. H. Smith (Stretford); 3, Mr L. Baxter (N.G.P.S.). Veiltails: 1, Mr L. Marshall (Oldham). Oranda and lionheads: 1 and 2, Mr H. Penhall (Osram); 3, Mr K. Birch (Heywood). A.o.v. coldwater: 1, 2 and 3, Mr H. Penhall (Osram).

Loach: 1, Mr W. Taylor (Osram); 2, Mr R. Bottomley (Osram); 3, Mr K. Hill (Heywood). Catfish: 1, Mr H. W. Hughes (T.A.B.); 2, Mr K. Williams (Osram); 3, Mr W. Booth (Ashton). Swordtails: 1, Mr J. Williams (Osram); 2, Mr R. Birch (Heywood); 3, Mr A. B. Wilkie (Stretford). Mollies: 1, Mr L. McCourt (Gorton); 2, Mr A. Beasley (Heywood); 3, Mr B. Preston (Heywood). Platys: 1, Mr A. Beasley (Heywood); 2, Miss B. Johnson (Stockport); 3, Mr A. E. Mackey (Osram). Guppies: 1, Mr H. W. Hughes (T.A.B.); 2 and 3, Mr B. Wolstencroft (Heywood).

Breeders egglayers: 1, Mr A. E. Mackey (Osram); 2, Mr K. Wilbraham (Osram); 3, Mr J. E. Shore (Osram). Breeders livebearers: 1, Mr H. Page (Osram); 2, Mr F. Dalzell (Osram); 3, Mr A. B. Wilkie (Stretford). Breeders guppies: 1, Mr T. Sutton (Osram). A.o.v. tropical: 1, Mr. W. Taylor (Osram); 2, Mr D. P. Johnson (Stockport); 3, Mr L. McCourt (Gorton). Pairs egglayers: 1, Mr E. Price (Gorton); 2, Mr H. W. Hughes (T.A.B.); 3, Mr K. Hill (Heywood). Pairs livebearers: 1 and 2, Mr A. Beasley (Heywood); 3, Mr A. E. Mackey (Osram). Junior members: 1, Miss L. D. Shore (Osram); 2, Mr T. Sutton (Osram); 3, Miss L. Taylor (Osram).

The award for exhibiting the best fish in show went to Mrs P. A. Nicholls who also won the award for the best Osram exhibit with her entry (a *Leporinus fasciatus*). The best coldwater exhibit award went to Mr W. H. Smith of Stretford with his entry of a Bristol shubunkin. The best breeders team award went to Mr A. E. Mackey for his entry of a team of Siamese fighters. The above were also awarded F.N.A.S. diplomas. The Osram achievement trophy and the home furnished aquaria trophy were awarded to Mr F. Gregory. At the presentation the Osram A.S. president, Mr J. E. Shore, paid tribute to the work put in by the Osram members in promoting this show year after year and to the members' wives who gave their time so unstintingly in catering for the visitors to the Show. The presentation of the prizes was made by the Osram chairman, Mr R. Collins, in the absence of Mr P. F. Rix, the Osram Divisional Manager, who was unfortunately not able to attend.

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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.

BOOKS

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.

EQUIPMENT

LARGE AQUARIA FRAMES, SHADES, STANDS. Any size to order, S.A.E. Carriage paid, cash with order. Money back if not satisfied. 36½ × 15 × 12 in., 28s 1½ × 1½ × ¼ in. steel angle: 42 × 15 × 12 in., 36s; 42 × 15 × 15 in., 39s; 48 × 15 × 12 in., 42s; 48 × 15 × 15 in., 45s; 60 × 15 × 12 in., 50s. Aluminium shades: 36½ × 12 in., 28s; 42 × 12 in., 32s; 42 × 15 in., 36s; 48 × 12 in., 40s; 48 × 15 in., 45s; 60 × 12 in., 50s. Stands, 36 in. high to take two tanks 18½ × 10 in., 28s; 18½ × 12 in., 32s; 24½ × 12 in., 38s; 30½ × 12 in., 43s; 37 × 12 in., 48s; 1½ × 1½ × ¼ in. steel angle—42½ × 12 in., 55s; 42½ × 15 in., 58s; 48½ × 12 in., 60s; 48½ × 15 in., 65s; 60½ × 12 in., 70s. HOCKNEY ENGINEERS, Derwent Place, Bath Road, Leeds 11. Phone 25061.

BLANKET WEED REMOVER. In stainless steel, most effective, removing blanket weed from all plants without damage. Price 3s 9d plus 9d postage. SHREDDERS: Made of stainless steel the Super Combination comprises coarse tooth and fine tooth plates, and top plate with handle. The Shredders, the only instrument capable of reducing earthworm, whiteworm, meat etc. to a size suitable for youngest fry. Use coarse plate for larger fish. Price 26s plus 1s postage. Giant Sagittaria: young plants, 5s, 7s 6d, 8s 6d per dozen; large plants 1s 3d, 1s 6d each. Postage 1s 3d. Shubunkins: Enquiries invited. Visits by appointment only. S.A.E. to E. S. Walker, 143–145 Bure Lane, Christchurch, Hants. Postal trade only. Local buyers see COOKS AQUARIA, Boscombe, Hants.

WATER PLANTS

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

TROPICAL AQUARIUM PLANTS. Over 36 varieties. S.A.E. for lists of special selections by post. K.M.K. Aquatics, Stockton, Rugby.

IT is with regret that we announce the death of Mr Eric Daynes. Mr Daynes was a keen and enthusiastic fishkeeper and has been connected with the Fancy Guppy Association and the Riverside Aquarists Society, of which he was show secretary, for many years. He was show manager of the last two open shows at Riverside, and his dedication to the hobby was acknowledged by all who came into contact with him.

Dates for your Diary

2nd October. **HEYWOOD & D. A.S.** Open Table Show. Heywood Labour Club, Bridge Street, Heywood. Details from show secretary, Mr T. E. Davies, 93 Queen's Park Road, Heywood, Lancs.

2nd October. **BRADFORD & D. A.S.** Open Table Show at The Whist Room, Textile Hall, Westgate, Bradford.

8th October. **THE GOLDFISH SOCIETY OF GREAT BRITAIN** Convention at the Chelsea Community Centre, King's Road, Chelsea, London. Further details from the secretary, Mr W. L. Wilson, 57 Constable Gardens, Edgware, Middlesex.

15th October. **EAST LONDON AQUARISTS & PONDKEEPERS ASSOCIATION** Annual Show, Ripple Road School, Barking, Essex. Details available from show secretary Mrs P. Harris, 86 Leigh Road, East Ham, London, E.6.

16th October. **STONE A.S.** Second Open Table Show, Walton Community Centre, Stone. Further details from show secretary Mr K. J. Harvey, 61 St. Vincent Road, Walton, Stone, Staffs.

20th–22nd October. 39th Annual Open Show of the **SCOTTISH AQUARIUM SOCIETY**, McLellan Galleries, Sauchiehall Street, Glasgow, C.2. Thursday and Friday 2.00–9.00 p.m.; Saturday 10.00 a.m.–9.00 p.m. All details from Mr John Miller, 14 Alloway Avenue, Kilmarnock. Also on the 21st and 22nd the **FANCY GUPPY ASSOCIATION** (SCOTTISH Section) are staging an Open Guppy Show. Entry forms and details from Mr A. Wallace, Canal Road, Johnstone, Renfrewshire.

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.

12th November. **HENDON & D. A.S.** 1966 Convention, Whitefields Secondary School, Claremont Road, London, N.W.2. The guest speaker will be Dr D. Backhaus, curator of the Exotarium, Hamburg Zoo. Further details from the secretary, Mr G. W. Bostock, 50 Whitchurch Avenue, Edgware, Middlesex.

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Heating a Fish House

My new fish house (9 ft. by 6 ft. by 7 ft. high) for tropical fish is made of wood, double lined and insulated. The slanting roof has a glass partition in the middle 6 ft. by 3 ft. and the tanks are in tiers of three. Will there be sufficient light for the plants and will it be cheaper to heat each tank separately or use a 3000 watt electric fan heater controlled by a thermostat?

This allowance of glass in the roof of the fish house is adequate to give good plant growth during the major part of the year. In fact, although this does depend on the aspect of the house, it may have to be painted over during the summer months to prevent the growth of algae in the tanks. Use of an obscuring and easily removable 'paint' such as is sold for greenhouse use is recommended.

As the fish house is double lined and thermally insulated, heating by use of a fan heater controlled by a thermostat will be more economical. It may, however, prove necessary to install individual heaters in the bottom row of tanks for use when outside temperatures are very low. If these are necessary, the need for them will become apparent if the bottom tank temperatures are recorded during the first few months of use.

Control of Water Snails

What can I do to get rid of snails in my tropical tank? When I set up my first tank only a few months ago I bought half a dozen red ramshorns. Now there seem to be hundreds. I take them out from time to time but it seems to be a hopeless battle and the plants are getting full of holes. Is there any preparation I could use?

No, there is no chemical that would restrict snail numbers without also decreasing fish numbers! The most drastic way of dealing with the problem (and the swiftest) is to strip the tank down, clean it, boil the gravel and thoroughly wash the plants; but snail population can be controlled very successfully by regular (daily at first) 'snail sessions'. We recently dealt with an infested tank quite well by making a daily 'target' of twelve snails; it took nearly two weeks of this for the effects to be seen. Either remove a number of the snails completely from the tank at each 'session' or crunch them against the glass inside the tank (to the delight of the fishes, many of which find the crushed bodies a delicious addition to their diet). Empty snail shells can be removed with a sediment remover. Snail numbers can be controlled by a determined effort, but do not then introduce new plants without thoroughly and continued washing before planting.

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 31 October 1966

FOR YOUR CLASSIFIED ADVERTISEMENT

To: Classified Advertisements, PETFISH, 554 Garratt Lane, London, S.W.17

Please insert the following advertisement in PETFISH Classified Advertisements for ..... issues commencing with the issue for the month of ..... I enclose remittance for.....

£.....s.....d (see details of rates below).

Please PRINT IN BLOCK CAPITALS

NAME..... Do you require a Box Number?.....

ADDRESS .....

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.....

.....

Classified Advertisement rates: 6d per word (minimum charge 6s); Box Number 2s extra if required.

How does *YOUR* tank look after 5 years?

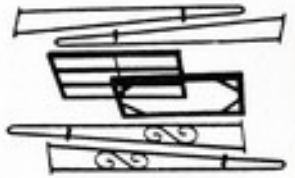
Your

Genuine

METAFRAME

will look as smart

as the day you bought it!



Metaframe tanks are made from top quality stainless steel. Won't rust—resistant to seawater—engineered to prevent leakage. Metaframe prices are little more than angle iron (for instance—the 24" × 12" × 12" tank costs you 80/–). Therefore your long term investment in a superior job is very small.

KNOCK-DOWN STANDS

Made of sturdy welded and flush ground wrought iron, this stand is shipped in a flat, compact carton. Finished in jet black. Assembles rigidly with only four screws. No tools necessary.

METAFRAME AQUARIUMS—

Manufactured in England

in our own factory

INTER-PET - DORKING - SURREY.

Ask your dealer now.

"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

We carry an extensive range of Freshwater and Marine Tropicals

Sixty-four aquariums displaying freshwater tropicals are supported by our fish-houses containing over five hundred aquariums and ponds so that no stock is ever kept in crowded conditions. All stock held in quarantine for a reasonable period and in many cases grown on for a few months before being offered for sale.

Eight sixty-gallon aquariums of Marines on display, supported by twenty stock aquariums, ensure that usually we have a large stock of healthy Marines ranging from small damsels and clowns at 25/- each, to rare and beautiful inhabitants of coral seas. We also carry an interesting range of invertebrates and living stones. Our fascinating living coral reef shows what is possible in an indoor aquarium.

Our plant list is the largest in the world. We list well over 200 different plants suited to indoor aquariums. Many of these plants are extremely rare and therefore not always available.

With such a comprehensive range as we carry, it must be appreciated that stocks fluctuate considerably, and we invite customers travelling a great distance to telephone and enquire whether what they require is available. Stock advertised one month may not be in supply the following month.

We carry a small range of Coldwater aquarium fishes and have particularly good stocks of pond reared young and young adult Bristol Shubunkins.

We are stockists of reliable equipment and accessories and are always pleased to give advice.

Tropical Aquarium Plants

BARGAIN COLLECTIONS

30 PLANTS (our Selection) **10**/-
50 PLANTS (our Selection) **30**/-
30 PLANTS (decorative collection) **40**/-

Special Until Xmas Only

WATER BANANA PLANTS
3/**6** each, 4 for **10**/-

CRYPTOCORYNE BECKETTI
3/**6** each, 4 for **10**/-

MELON SWORD PLANTS
10/- and **15**/-

RUFFLED SWORD PLANTS
20/- each

NEW "TROPIC-MARIN"

The artificial sea-salt sold with guarantee. Made from chemically pure ingredients it is almost indistinguishable from natural tropical sea-water. Even corals and delicate sea animals can thrive in sea-water made from this salt. See the living coral reef on display in our Showroom.

5 gallon size 10/- **20 gallon size 40**/-

Postage as follows:

5 gallons 3/- 20 gallons 3/6 40 gallons 4/6
100 gallons 7/6

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.

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