

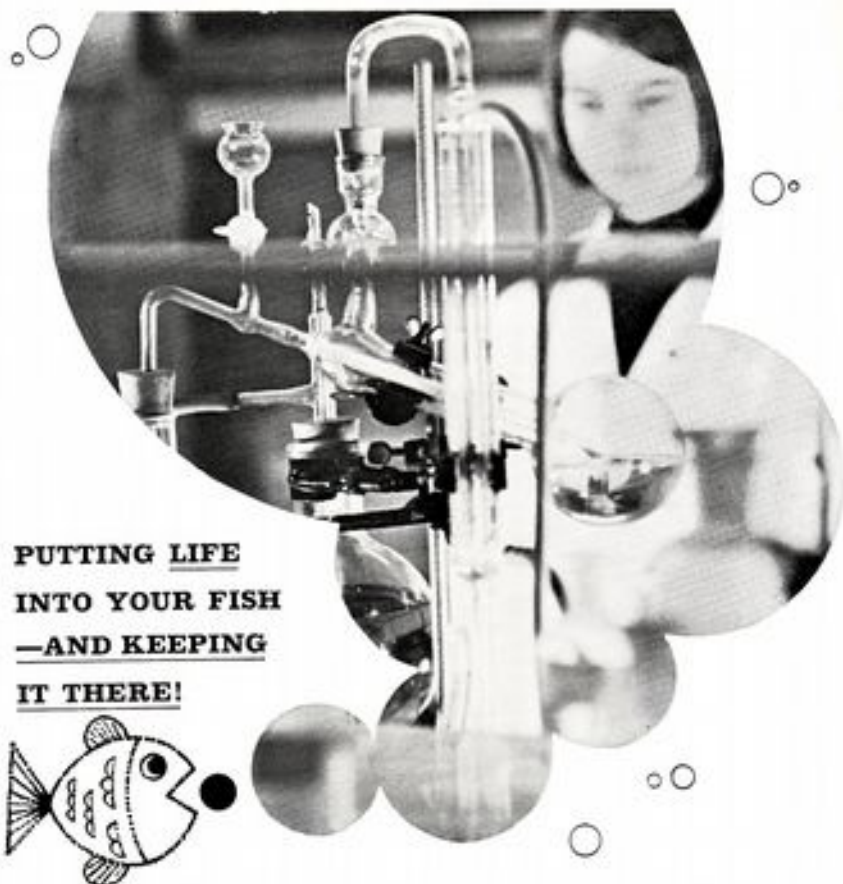
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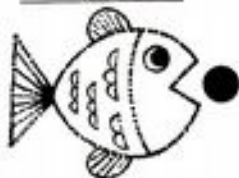
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Comments and Quotes

- Difficulties in sexing ● Cutting the Electricity bills ● National Crab Derby
- Priority for two l's

One Fish, Two Sexes

FOR the breeder it sometimes seems that the most perverse act ever performed by Nature was to so arrange things that the males and females of some fishes can be distinguished only by one another. Why should their sexes be so carefully concealed, and, although it probably wouldn't help the breeder to know this, how do the boy fish know which is the girl fish and vice versa?

For one fish at any rate the whole business is a simple one for the fish and for its would-be breeder. *Rivulus marmoratus* from Florida seems to occur naturally in just one form—male and female are combined and reproduction occurs by self-fertilisation. However, apparently this state of hermaphroditism can be upset by environmental changes such as water temperature.

Dr R. W. Harrington in the U.S.A. has discovered that although the normal self-fertilised eggs produced hermaphroditic fish when kept and hatched at 77°F (25°C), if the eggs were kept at lower temperatures before the hatching time, and the young fish at the same temperatures for several months after hatching, nearly three-quarters of these fish developed as males and not hermaphrodites. The cooling in some way retards the development of the female side of the hermaphrodite.

For those aquarists wondering whether here is an explanation for the preponderance of males or of females they think they are getting in broods of other fishes, it should be added that so far no evidence for a general effect of temperature on sexing in fish has been found.

Keep the Bills Down

THREATENED increases in electricity charges taking place this autumn will add nearly £50 million a year to the bills of domestic consumers. If you have a collection of aquaria heated by electricity and it is one of those collections that, like Topsy, have 'just grown', it is likely that you can save some of your contribution to this increase by action taken now.

All the experts on heating agree that whatever the means of heating the maximum value for money will not be obtained unless the usual heat losses are considerably reduced. For the fish house this means good wall, roof and floor insulation and double or triple glazing of all glass lights. An article in this issue shows how the savings can be made for the fish house.

The aquarist not owning a fish house need not think that he is without means of making a saving, however. Even a single aquarium kept in a room or hall where the surrounding temperature falls in winter well below normal tank temperature can have its electricity consumption significantly cut by fitting a few insulation panels, an easy job for anyone to do.

Sea Horses for Courses

OUR American friends seem to be much more inventive in the field of sporting events than we Europeans. From what other country does one read news of competitions such as frog-jumping contests and

turtle races? Latest in this line and an item of possible appeal to keepers of marine aquaria was reported in THE TIMES last month.

'Aloha, a Hawaiian sand-fiddler, outscuttled American crabs in the National Crab Derby at Crisfield, Maryland, over the weekend. He shot over the 16 ft. course in just 18 sec., shattering the previous record by 48 sec.

'But it was nearly a case of Aloha, Goodbye!, for the victorious sand-fiddler. Entry regulations stipulate that all starters must be edible. But the judges cut short the culinary controversy and rescued Aloha from the jaws of disaster: they awarded him victory because he had flown so far for the race.'

Priority for Two I's

IN a book review published in PETFISH MONTHLY last year we remarked on the spelling of the word aquarist used by the author, who had it thus: aquarist. Although unusual it seems that this spelling has priority on its side. Whilst in Birmingham for the Midland Show in August, we took the opportunity of turning up an early reference to aquarium keepers in a publication of the old Birmingham Natural History and Microscopical Society

dated 1875.

In this report of a lecture that had been given to the Society in 1874, the lecturer and president of the Society, Mr William R. Hughes, is quoted as saying: 'I venture to suggest the word *Aquarist* as the most convenient, if not the most correct, as applicable to one skilled in the management of the Aquarium.' The word aquarium itself had, of course, been defined in the way we know it some 20 years earlier by P. Gosse. Birmingham aquarists, with a well-marked history of active development and participation in the hobby in this century, may like to know that it was in their own city that the accepted name for an aquarium-keeper was first coined.



Goldfish Standards

WITH reference to the agreement between the F.B.A.S. and the G.S.G.B. on Standards for Goldfish (PETFISH MONTHLY, September). Is not the F.B.A.S. aware of the agreement between themselves, the M.A.A.S., Bristol A.S. and the F.N.A.S. made some ten or more years ago, on the existing standards, and if they are so aware why are they deliberately ignoring their obligations and concluding a contrary commitment with the G.S.G.B.?

Assuming there is a need for a revision of the Standards, would it not be in the true interests of the hobby to contact the various bodies concerned for a general discussion?

I am speaking on behalf of the M.A.S. which, with its 34 affiliated Societies and a very alive and active Judges' Panel, must necessarily have a great deal of influence in the hobby, particularly in the Midlands. I also speak on behalf of the M.A.P.S., which organises the largest representative Show in the country and are careful to advertise that all judging is under F.B.A.S. standards.

What then is the answer? Are we all to go our own particular ways and have different standards according to the localities within which we live (as it was before the above agreement), or do we all get together and thrash the problem out in a truly democratic manner? Goodness knows, the coldwater hobby needs all the encouragement it can get but, surely, this is not the way to activate it.

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

Home-Grown and the Exotic

I HAVE recently acquired a beaded sea anemone (*Actinia equina*) from the seaside for my marine aquarium. I introduced it purely as a conversation piece along with a small hermit crab. I had no idea that my clownfish (*Amphiprion percula*) would take to this anemone, as it is not large like the tropical species and is found thousands of miles from where the clownfish lives.

At first when I introduced the anemone the clownfish cleaned all the tentacles by sucking them and removed all sand particles from the outside of the anemone. I was alarmed to see that when the clownfish seemed to be cleaning round the anemone's mouth the anemone closed around it and for a second I thought it was gone. Then suddenly the clownfish popped out unhurt and continued its cleaning operation. The anemone has accepted the clownfish and when the clownfish is frightened by something or is chased by another fish it swims into the shelter of the anemone. The anemone has a width of 2½ in. at the base and opens up to about 3 in. around the tentacles. The clownfish is not a particularly large specimen and just lies in the anemone's tentacles. I should be very pleased to learn from other readers whether it is usual to find these two living together.

Walsh, Staffs

S. WOLVERSON

Prize Letter

Grisly Gift

ON looking for that 'thanks for looking after my fish' gift, I spied in a well-known chain store a paper weight. This was decorated as an aquarium with coloured plants, shells and a sixpenny-sized common angel fish,

Continued on page 253



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LETTERS

Continued from page 250

all set in clear plastic measuring 2½ in. by 1½ in. by ½ in. Pleased with my find, I purchased it and took it outside for a closer inspection. Shock!

The fish was real, in perfect form; and to think somebody was manufacturing these for gain! I was certainly distressed and so were my fellow society members. Obviously other aquarists must have seen this appalling idea. Can't we as a body of people stop this, I wonder? There was no maker's name or country of origin stamped on it.

Needless to say I never used it as a gift. I shall keep it as an example, not as a 'Petfish'. I can only shiver at the thought of how they are manufactured!

Milton, Cambridge

G. P. RIVETT

A Cover Problem

I FEEL that I must write to thank Dr F. N. Ghadially and you for printing his article in the January issue of PETFISH MONTHLY, that describes his Monaco-type aquarium. This was the first time I had heard of such an aquarium, and in March I had one made to fit in the wall of my lounge. The effect is really impressive, and I have been able for the first time ever completely to hide away the heaters and filter in the angled ends of the tank. The only difficulty I have found is in providing a really satisfactory cover for it. I have compromised with a conventional cover and triangular piece of glass for the ends, but I wonder whether any of your readers have a better solution to this problem?

Woolwich, London

R. PETERSEN

Cover Modifications Wanted

I WAS interested to read Arpee's description of Mr Knight's aquarium cover (PETFISH MONTHLY, September). I have often wondered why manufacturers do not incorporate flanges on the inside of their metal covers

Prize Letters

TO the writer of the letter judged by the Editor to be specially worthy among readers' letters published in each month's issue, PETFISH MONTHLY will award a prize of an item of aquarium equipment.

Next month's prize:
An under-gravel filter.

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

so that a sheet of glass can be inserted by the aquarist. This modification would seem an easy one for them to make.

Carlisle

J. BRUNT

A FEATURE of the cover described in Personal Comment (PETFISH MONTHLY, September) that I liked is the fitting of the light socket at the front of the cover. The effect of frontal top lighting on fish colours is infinitely better than lighting from the back, and yet all the manufactured covers seem to put the lampholders either at the back or in the ends. There is a problem of concealing the wiring for front sockets but not an insurmountable one I think.

Grimby, Lincs.

T. WITHERS

ON the subject of exploding light bulbs raised by Arpee (PETFISH MONTHLY, September), another aspect is the corrosion of lampholders inside the covers. American covers use screw-threaded holders for screw-in bulbs and these seem to be much safer and are moisture-resistant. Both the bulbs and the screw-in fittings seem to be difficult to obtain in this country.

Norwich

D. CHESTERTON

Dates for Your Diary

20th September. KINGSTON & D. A.S. Open Show. St. Luke's Social Centre, Elm Road, Kingston-on-Thames. Details from Mr H. Towell, 11 Belmont Terrace, Chiswick, W.4. Phone CH1 2325.

1st October. HEYWOOD & D. A.S. Open Show. Labour Club, Bridge Street (opposite the Seven Stars), Heywood, Lancs. Extra class for marines.

7th October. MID-HERTS A.S. Open Show. The Faulkner Hall, Victoria Street,

St. Albans, Herts. Further information from Mr D. R. Liffitt, 19 Prospect Road, St. Albans.

14th and 15th October. CAMBRIDGE & D. A.S. Area Invitation show. St. Matthews Hall, Norfolk Street, Cambridge.

21st October. GOLDFISH SOCIETY OF GREAT BRITAIN Convention. Chelsea Community Centre, 385 Kings Road, Chelsea, London.

18th-20th October. BRITISH AQUARISTS FESTIVAL. Organized by the Federation of Northern Aquarists Societies, Belle Vue Zoological Gardens, Manchester.

20th October. SOUTH LONDON FANCY GUPPY ASSOCIATION annual Show. Bunching 1-3.30 p.m. at Ladogoon House, Havelock Square (off Surrey Dock). Non-members' class included.

12th November. GOLDFISH SOCIETY OF GREAT BRITAIN quarterly assembly.

11th November. HENDON & D.A.S. Congress. Whitfield Secondary Modern School, Clarendon Road, Hendon, London, N.W.4. Starts at 6.0 p.m. Speaker Colonel Jürgen Scheel.

10th November. ASSOCIATION OF MANCHESTER & DISTRICT AQUARIST SOCIETIES Open Show.

10th November. DEWSBURY & D. A.S. annual Open Show. Further Education Centre, Park Road, Batley. (17 classes, 4 judges).

10th November. LEEDS & D.A.S. Open Day Show. (Change of date).

2nd December. FEDERATION OF BRITISH AQUATIC SOCIETIES Assembly.



By **BERT HUGHES**
(Hughes Pet Stores, Manchester)

Photographs by **DAVID J. OWENS**

A Spawning from Pike Cichlids *(Crenicichla saxatilis)*

HAVING for many years kept and exhibited pike cichlids in the north of England with success, and always having had a soft spot for these beautiful creatures, I selected one male and two female *Crenicichla saxatilis* from a batch purchased some two and a half years ago. These grew very well, the male to 5½ in. and the females to 4½ in., and I decided to try and breed them.

I selected what I considered the better of the two females and then followed the usual procedure of cleaning, disinfecting and boiling gravel, which was placed in a 5 ft. tank divided by a glass partition. The pike cichlid pair was then introduced to the tank, one each

side of the partition and when they reached what I considered to be breeding condition the glass partition was removed. The pike seemed to get on very well together, and I awaited results.

The female appeared really ripe and full pink on the belly, and I had high hopes of a good spawning, but no result was forthcoming. After many insertions and removals of the glass partition, the usual 'jaw-gripping' was observed, much to my delight, and I thought I had succeeded, as both fish were busy shifting gravel. Then one morning with great expectations I looked in the tank, to find that they had spawned, but the female was badly torn to pieces and there was obvious evidence



In the photographs on this page are shown the pair of pike cichlids whose breeding is described in this article. The female fish is in the picture at the top of the page, the lower picture shows the male



The eggs adhered to small smooth sandstone rocks (above)

A promising batch of pike cichlid youngsters (right)



that the male had tried to eat her as well as the eggs. That was the end of this series of attempts.

The other female was then tried, but would not have anything to do with the male, so I gave this up for the time being and separated them by a glass partition. These fish were still growing, the male now being about 8 in. and the female 7 in. In early April I had need for the 5 ft. by 15 in. by 15 in. tank they occupied, so I removed them to a 42 in. tank, still with a glass partition. They both commenced to shift the gravel, banking up the front of the tank, and after levelling this I removed the glass partition (but with much apprehension).

As you can understand, very strict observation was kept, with visions of another mutilated female. Much to my amazement they got on very well, so I returned them to the scene of the previous massacre, this being the original tank left exactly as it was. I did no cleaning or disinfecting, but used fierce filtration by biological filters. Illumination was provided by one 80 in. daylight fluorescent tube for approximately 8 hours daily. Two air stones provided strong aeration, and the water was pH 6.8. The hardness of the water was 8-136.8 (D.H.), which is quite soft.

My idea was to try and give strong movement of water to simulate a natural river current. No plants were used, but some smallish smooth sandstone rocks were placed at the end of the tank to which the pike seemed to have taken a fancy. The temperature was 83°F (28°C) when the tank was topped up with about 8 gallons of Manchester tap water at the correct temperature. The gravel used was Dorset pea pebbles ($\frac{3}{8}$ to $\frac{1}{2}$ in. grading). The parents had been conditioned on small goldfish, tadpoles and maggots.

With fingers crossed I awaited results. 'Jaw-gripping' followed and then, after much observation without success, the eggs were there and the female was in perfect show condition, without even a split fin (1st June: 500-600 eggs estimated).

The eggs were adhesive, white in colour and oval in shape. They had been laid on three small smooth sandstone rocks. The female took full control (contrary to information given in well-known aquatic books) and was continually fanning and mouthing every egg. The

eggs remained white throughout the full period of 4 days before hatching, the eye spot being visible after 60 hours.

On the evening they commenced to hatch, the female was mouthing every egg as it was hatching, working along the eggs row by row. She removed each fry carefully and mouth-washed it before she spat it on to the banked-up gravel, which the male had been moving during the incubation period. This task continued from 5 p.m. until well after midnight, until every fry had been removed individually.

The fry were all lying on their backs with a very substantial oval egg sac. On close inspection it was found that they were attaching themselves to the coarse gravel, by what I could only describe as a 'cock's comb', which proved to be an adhesive gland. This was situated on the head slightly behind the eyes. The female then commenced to remove one or more of the fry at a time, mouth-washing them before depositing them further up the tank.

This ritual continued at the rate of three complete moves of all the fry every 24 hours, and the fry were growing continually. The male was not allowed near the fry by the female and it appears that his task was to bank up the gravel in readiness for her to deposit the fry. Seventy-two hours after hatching the fry were still attached to the gravel in an inverted position, with the egg sac still visible as a pyramid on the abdomen.

The female had now spread the fry over a much larger area, and for a number of hours they remained well spread. The next move was to gather them together and pile them in a corner, evidently in anticipation of them becoming free-swimming. In fact the fry became free-swimming after 96 hours. The 'cock's comb' was now easily seen and the lateral line was very distinct. The fry were darting up and down the glass to a height of about two inches and were now about $\frac{1}{2}$ in. long. There appeared to be about 400-500 fry and the problem seemed to be to rear them in this quantity.

Taking into consideration the book's reference to the male eating any wanderers, I separated about 400, leaving the remainder with the parents. I commenced to feed the fry with micro worm, brine shrimp and

sifted *Daphnia*. On the eighth day the fry left with the parents were still being mouth-washed by the female and both batches were growing very well. The 'cock's comb' was now disappearing.

(Day 12). On occasions the fry left with the parents were seen to peck at the body of the mother as if feeding from her. The batch separated were, on the whole, making much better progress, and were all feeding on *Tubifex* and white worm.

(Day 19). The male had now commenced to shift gravel again and assisted the female in mousing the young. It was quite amusing to watch both parents suck in two fry who had been fighting over a white worm. They rolled them over in their mouths and released the fry (minus the white worm!).

(Day 21). During the last few days I had observed the larger of the fry attacking the small ones, gripping them by the caudal fin and shaking them vigorously and then dropping them on the gravel. Both parents were seen to pick up the dead bodies and mouth them several times before discarding them. This fact did not confirm that the male would eat the young.

Having noticed the female beginning to colour up, and suspicious that they may breed again, I decided to move the fry to a 72 in. tank immediately. While moving them I counted the young fry and was rather astonished to find that I had 499 young pike in various lengths from $\frac{1}{2}$ in. to 1 in. This job took about 12 hours in all, as the fry dived into the spaces between the gravel and would hide for long periods. During this time the parents were guarding the young very well and attacking the nets.

I replaced the rocks to form a series of hides, and levelled the gravel, leaving the parents to their own resources. I then fed the parents with two small goldfish, and was amazed that they did not take any notice of them. After a couple of hours the male started to show fantastic colours, his silver blotches turning fluorescent green and copper and his caudal and dorsal fins displaying a rich wine colour. He then swam to the female and began to make a fuss of her by nosing her round the tank. Eventually he cornered her and commenced to grip her by the jaws.

She began to colour up, the portion above her lateral line being vividly coloured. Her blotches were fluorescent green, her dorsal edged with a brilliant yellow, her ocellus a fluorescent copper, the background yellow-green. Lemon gill plates and yellow-pink belly completed her vivid colouring. The male then sucked her head into his mouth, and I was amazed to see her eyes and then half her gill plates disappear into his mouth! During this time they both began to stiffen and quiver and this continued over a period of about half an hour. On releasing her he began nosing her around the tank until he cornered her again. He appeared to be showing her who was 'boss'!

(Day 22). Both fish appear to be very much subdued and were examining the rocks very carefully. The fry in the 6 ft. tank were now swimming up and down the tank in one large shoal and looked somewhat like cherry bars.

(Day 25). The fry were 1 to 1½ in. long and eating very well. Two odd fry were observed in the tank with the parents, who had not made any attempt to eat them.

Scientific Names of Fishes

By H. J. VOSPER

EVERY known living or extinct organism has a name, but many animals and plants either have no common name or have several such names and, in the latter case especially, this naturally leads to confusion. One has but to call to mind the several names of the paradise fishes or try to recollect how many fishes have been termed 'rainbow' or 'millions' to appreciate the difficulties that can arise.

In the past several attempts have been made to avoid such perplexing difficulties by, for example, producing fairly exact definitions or descriptions consisting of a number of Latin words (since Latin was the language of science and is but recently releasing its hold), but it was not until the Englishman John Ray 'invented' the 'species' in the latter half of the 16th century that the foundation was laid for precision in the matter.

Upon Ray's foundation Carl Linné's 'assistant' Peter Artedi laid the corner-stone, for he grasped the fact that: 'Long, tedious descriptions of habits and characteristics serve no purpose in natural history, since the true and natural method of distinguishing creatures by their genus and species is of necessity the sole task of urgency confronting natural historians.'

At the time this was certainly quite true, and now

Linné (whose name is generally latinised to Linnaeus) could exploit the system of 'binary nomenclature', which he did first in his *Species Plantarum* of 1753 and eventually used in the later editions of his *Systema Naturae*, since when all scientific names have been based upon this binominal system.

Thus the name of any fish, whether of binominal form or not, which existed before the 10th Edition of *Systema Naturae* (1758) is not acceptable and only those published then or since, and according to a particular set of rules (of which the Law of Priority is the most important) are valid.

Yet it is true to say that many fishes possess numerous scientific names, even though all but one can be considered out-dated, but the important difference between the many common and scientific names lies in the fact that, properly used, the latter can tell a story of considerable exactitude. It is to stress this point, and perhaps to stimulate a greater interest, that this series is designed.

In it will be examined the scientific names themselves and several conventions most likely to be encountered in general and specialist aquatic literature.

Generic Names

A genus is a collection of species (see Trivial Names, below) having either (1) certain conspicuous features in common or (2) a common ancestry—the former being a morphological definition and is of particular application in the study of fossil remains, since the second or genetic definition is generally impossible to establish as far as fossils are concerned.

A generic name is always a single word, usually Latin or latinised, and it must always bear a capital initial letter. Further, when written or typed it must be underlined, whilst when printed it must appear in a style which distinguishes it from the remaining text. For instance, when a work is set in roman print the names of genera are usually set in italics.

A typical example of a generic name is thus *Platy-pocilus* sp. (note the abbreviation for the word 'species', of which further mention will be made in due course).

Trivial Names

Sometimes also called the 'specific' name, this is the name of the species, distinguishing it from the other species in a genus. In my opinion it would be best if the use of the term 'specific name' were entirely abandoned for it implies that the name relates to a specific or particular organism; that this is not so may be shown very readily and by reference to but a single example—*maculatus*, which appears in the genera *Curimatopsis*, *Dormitator*, *Etroplus*, *Gasteropelecus*, *Homodiaetus*, *Metynnus* and very many more.

A species is not too readily defined even in modern organisms, in which the test of interbreeding can be made, so there are generally two definitions to be applied—that a species is a group of organisms which are either (1) capable of interbreeding and producing fertile offspring (genetic definition) or (2) are so alike that it is convenient to designate them by a single name (morphological definition).

A trivial name is always a single word (or may be hyphenated), usually Latin or latinised, and it is considered best if it is an adjective descriptive of some feature of the species concerned or indicative of the 'type' locality (as with *ornatus* in the first instance and *siamensis* in the second). The meaning of 'types' will be discussed on a later occasion. Such adjectives must always be in grammatical (Latin) agreement with the generic name and when changes occur in this latter the trivial name must alter accordingly.

Instead of an adjective another noun may be used in some relevant manner, keeping its own gender (as *Danio regina*), or it may be a noun in the genitive case such as a proper name (*nattereri*).

Like the generic name, the trivial must be underlined when written or typed; set in a different style from the remaining text when in a printed work—yet unlike generic names all trivials should bear small initial letters. At one time any trivial name based upon a personal

Aqua-tip

I was very interested in Mr Kelly's remarks in last month's PETFISH MONTHLY (Transatlantic Topics) about the earthing of aquaria. The safety-conscious aquarist who possesses little electrical knowledge is often puzzled when reference is made to the 'earthing' of an aquarium. Not long ago an article was published which included a method of earthing the water in a tank—impossible!

With a wooden floor and no earthed objects (i.e. radiators, water taps, radio and television aerial and earth systems) within reach, any attempt at earthing a fish tank will increase the danger of an electric shock. Provided that the heater and thermostat are of the glass-tubed type and the wiring is in good condition, very little danger normally exists. Cable joints should be sound and thoroughly insulated—ordinary black insulation tape is still one of the best materials for this purpose.

Fish houses usually are built with concrete floors which could ground and probably kill anyone unfortunate enough to come into contact with the live electricity supply. A tank with faulty wiring, or a leaking thermostat or heater, will provide the live mains and your body will conduct the current to earth (the concrete floor).

To comply with electricity regulations, metal tanks, hoods, staging and any metal-clad or -bodied pieces of electrical equipment must be bonded together electrically and earthed—quite a task. Unless this earthing is carried out or supervised by a competent electrician it is safer to ignore earthing completely! Methods of wiring are peculiar to each individual situation and no written instructions could hope to cover every possible fish house layout.

Even with a properly earthed aquarium the water could become live as a result of a broken heater or thermostat—water, although only a fair conductor of electricity, can conduct sufficient current to shock or electrocute the unwary. An isolated mains supply costing ££s, however, would overcome this problem.

To be really safe there is only one answer—SWITCH OFF at the mains before handling an aquarium, and make periodic checks on the electrical equipment. Small beads of moisture in a heater or 'stat invariably indicate a leaking bung or a cracked glass. Three years is a good life for the hard-worked heater and at 7s 6d-11s 6d per time it is a small price to pay for reliability and safety.

The now-a-days rather rare metal-clad heater should in all circumstances be earthed.

A. E. J. SIMONS

York & D. A.S.

Continued overpage

Coloured Plants for the Aquarium

By C. D. ROE

Cryptocoryne thwaitesi Schott

ONE of the most distinctive members of the genus, this is a small plant, not exceeding 6 inches high, with leaves varying from ovate with pointed tip and cordate base to narrow lanceolate with slowly tapering base. The edge of the leaf is coarsely serrated and the surface very rough and leathery and of extremely tough texture. The colour is from olive green to warm reddish brown, with very pretty mottling on the upper surface in the mature plant.

The inflorescence is small and dark brown. This plant is not very often imported as it appears difficult to collect and is one which is extremely slow in establishing itself. Plants should never be put straight into newly set-up aquariums; the water for them should not be excessively hard.

This plant is best grown above water in rich peaty loam in a very warm shady situation in a covered aquarium. Propagation is extremely slow and our experience at Shirley Aquatics shows that it takes almost 2 years to raise a small plant to useful size. Side shoots are produced freely but they tend to remain small parts of a group rather than become robust individuals.

Scientific Names of Fishes

Continued from page 257

name was treated as an exception to this rule (and modern botanists tend to continue this erroneous custom) but it is now taken to be incorrect and for a highly pertinent reason.

It is not to be forgotten that scientific names and conventions are used throughout all biology and allied disciplines and thus such a universal system must take

into account all the numerous possibilities. In palaeontology, the study of fossils, confusion of a most important kind might be occasioned if both *Murchisonia* and *murchisoni* commenced with capitals, while of more immediate interest are such closely appearing words as *rachoti*, *rachoriana* and *Rachoria*; *Eigenmannia* and *eigenmanni*. Differentiation between generic and trivial names, by this means, is of value in indexing.

Now the trivial name can be added to our generic example given above: *Platycephalus maculatus*.

It will have been observed that the example is now out-of-date, but it was selected for a particular purpose— it will be seen in the next section.

(To be continued)

How to Cut the Cost of

Running a Fish House

By P. J. LEE

(Guildford & District Aquarists Society)

THERE is no doubt that in cold weather the fuel bill for heating the normal-sized amateur fish house can constitute a severe financial strain. Prices of fishes, plants and equipment these days are all high and therefore any reduction in running costs would always be welcome. It is likely that the majority of fish houses are inadequately insulated and, consequently, the addition of insulating material in places where it can do the most good could result in quite dramatic reductions in heating requirements.

In this article several methods of improving the insulation will be discussed and a comparison drawn between weekly expenditure and the capital cost of reducing this. It would naturally have been desirable to avoid the introduction of such controversial issues as the amount (if any) of natural top-light that should be provided in a fish house, or whether the floor should be bare concrete or be boarded over, but unfortunately some assumptions must be made, although they may not meet with complete agreement.

To simplify calculation it will be assumed that electrical heating is used. Although paraffin heating is quite commonly employed, the open type of appliance necessitates some form of ventilation and unless this is very carefully controlled, the heat loss is liable to be excessive. Moreover a large quantity of water vapour is produced with this form of heating and, unless precautions are taken, the moisture content of

the insulation will be excessive and its effectiveness reduced.

With any method of heating, but more especially with paraffin, a vapour barrier on the internal surface of the insulation is desirable. This may be partially achieved by the application of a few coats of a good quality paint after any sizeable gaps have been filled. It should be noted that if the vapour barrier were on the external surface of the wall it would be cold, and water vapour from within would condense upon its underside and eventually saturate the insulation.

A Typical Fish House

To estimate the heat loss from an average amateur fish house it will

be assumed that the basic structure has a concrete floor, is some 12 ft. long, 8 ft. wide, with a shallow-pitch ridged transparent roof, a wall height to the eaves of 6 ft. and is free-standing in a somewhat sheltered position. This may perhaps be considered the minimum reasonable size in which serious work can be done. No doubt the dimensions and construction of many houses will differ considerably from this, but the same general principles for efficient insulation may be applied.

Some attention will no doubt already have been paid to the prevention of heat loss and therefore the wall construction may be assumed to be of $\frac{1}{2}$ in. boarding upon a 2 in. by 2 in. framing with



A garden fish house entrance showing features mentioned in the article (multiple glazing, draught strip etc.). Check meters are seen to the right of the doorway

an internal lining of $\frac{1}{2}$ in. insulation board. The external cladding will probably not be completely draught-proof and so the heat transfer across the cavity will not be the minimum obtainable. The roof is likely to be double-glazed, but infiltration losses due to draughts blowing around the door might be excessive.

The heat loss through a material may be assessed with reference to the corresponding U value, which is defined as the number of British Thermal Units (B.Th.U.) transmitted per square foot per hour for 1°F temperature difference between internal and external air temperatures (3,410 B.Th.U. = 1 kWh = 1 unit of electricity).

On this basis, an estimate of the weekly running cost of such a fish house is shown in the Table. Of course, the values quoted are for guidance only, since the variation of practical factors for any specific structure may contribute to appreciable errors. To simplify calculation, the stated constant air temperature difference has been taken, but in practice this may be assumed to be an average value.

House with Improved Insulation

The Table also shows how the heat loss from a more thoroughly insulated house would be distributed between floor, walls and roof, and shows the estimated weekly running



Garden fish house owned by Mr T. Payne, in a sheltered position to decrease heat losses

cost and the cost of providing the additional insulation. It has been assumed that the 2 in. wall cavity is now packed with an insulating material that could fairly simply be added to an existing house by removing a few external boards in convenient positions. There are many insulants that could be successfully used, and the calculated corresponding U value for the walls shown in the Table is an average one and would therefore require

only slight adjustment. The cost of £10 shown is for mineral wool used at a density of 5 lb. per cu. ft.

In a new house it is advisable to make sure that the external wall cladding is dry before fixing to minimise subsequent shrinkage, and if there is any suspicion that the joints between the boards are not air-tight, to caulk the joints internally with a sealant such as Ferrotex before filling the cavity and applying the internal boarding.

Fish House Electric Heating Costs

	For a 'typical' fish house			For the same fish house with improved insulation			Approx. cost of providing additional insulation
	U value	Heat lost (B.Th.U./hr.)		U value	Heat lost (B.Th.U./hr.)		
		For 40°F temperature difference	For 50°F temperature difference		For 40°F temperature difference	For 50°F temperature difference	
Walls (240 sq. ft.)	0.25	2400	3000	0.1	960	1200	£10 00
Floor (96 sq. ft.)	0.25	960	1200	0.16	514	768	£4 160
Roof (108 sq. ft.)	0.6	2592	3240	0.3	1296	1620	£1 120
Infiltration loss	—	400	500	—	100	125	—
Totals (B.Th.U./hr.)		6352	7940		2970	3713	£16 80
Equivalent in kWh		1.865	2.33		0.872	1.09	
Weekly running cost at 1.7d per unit		44s 5d	55s 6d		20s 9d	25s 11d	
Weekly saving					23s 8d	29s 7d	

The U value 0.3 quoted for the roof assumes quadruple glazing, which is most easily provided by three polythene sheets beneath the external glass or plastic, with a spacing of at least 1 in. It may be felt that quadruple glazing represents an unreasonably high standard of roof insulation, but as the Table shows, the greatest heat loss is through the roof and this is halved compared with double glazing, at very modest expense. Of course, the effect of the intensity and character of the resultant illumination must be considered, but plant growth in the author's fish house appears to be satisfactory.

Ideally, the insulation provided for the door should be of the same order as for the walls. However, since this may be rather bulky, a layer of

insulation board on the internal surface would be adequate. In any case, the area of the door is small compared with the area of the other surfaces. Effective sealing around the edge of the door is, however, essential and may conveniently be provided by one, or perhaps a combination, of the many draught-excluding strips on the market.

A wooden or hardboard floor laid over an insulation board covering to the oversite concrete would provide an improvement. The insulation board could be kept dry either by a membrane of polythene sheeting laid directly on to the concrete, or probably equally effectively by a coat of bituminous paint. However, the heat loss through the floor is relatively small and it is questionable whether the expense of £4 16s for

insulation is economically worthwhile.

The weekly running expenses for a typical fish house shown in the Table have been calculated for temperature differences of 40°F and 50°F—that is, 80°F (27°C) inside temperature and 40°F (4°C) and 30°F (-1°C) outside temperatures—and are 44s 5d and 55s 6d respectively. With the proposed improvement in insulation, this expenditure would become 20s 9d and 25s 11d respectively. Thus the average saving in winter when the external temperature is only just above freezing would be about 26s 0d per week. The expenditure of £16 8s for the additional insulation could therefore be recovered in about 3 months, if the temperature were to remain low enough.

Fish House with Under-Floor Heating

By ANTHONY EVANS

PETFISH MONTHLY

visits

Robert and Paul Clarke



WHEN I heard that there was a private fish house near Leeds in which an entirely out of the ordinary method of heating was used I at once arranged to see it on behalf of PETFISH MONTHLY's readers. The fish house is in the garden of the bungalow home at Garforth of its owners, Mr Robert Clarke and

his son Paul, who, together with Mrs Clarke, made me feel a very welcome visitor.

Mr Clarke's fish house came into being nearly 3 years ago to take the growing collection of tanks that was developing indoors. From the first inception of this plan it was decided to use the most economical method



The lowest of the tanks shown above is the wooden aquarium made by Mr Clarke and referred to in the text

Paul Clarke (below) makes an adjustment to the filter by the tank housing his *Clarias* catfish

Bottom right: a corner of the fish house. Fluorescent lighting overhead is used after daylight hours



of heating that could be found. To this end, Mr Clarke sought the advice of the Electricity Board. Fish-house heating was a new sphere for the Board's experts, but after hearing of Mr Clarke's requirements they came up with the plan that was adopted.

This was to install under-floor heating by electric cables buried in the concrete base of the fish house and operated by current at 'off-peak' rates. It was emphasised that for the full benefits of this method to be gained the fish house should be insulated against heat losses as fully as possible. Basically, the fish house was a wooden shed 10 ft. by 8 ft. by 8 ft. high fitted with a special double-glazed roof-light, and this building was assembled on a 6-inch thick concrete base. The concrete base was laid on top of a layer of insulation board and the cables (2½ kilowatt) were placed during the laying, 2 inches below the surface. Heat insulation was completed by lining the roof and walls with insulation board (I.C.I. Partbord). The walls were then covered with adhesive plastic sheet (Fablon).

Mr Clarke showed me the controls for the heating. There is one thermostat on the wall, adjustable to keep an ambient temperature of 75-80°F (24-27°C) and another thermostat in the concrete floor by which the floor heating can be controlled up to 100°F (38°C). Even in the worst winter weather the temperature in the fish house was never lower than 72°F (22°C). With high summer temperatures the door of the fish house has been left open to avoid overheating.

Mr Clarke pointed out some of the advantages gained by heating the fish house rather than individual tanks: there is never any problem about keeping ancillary water containers at the right temperature, so that brine shrimp hatchers and jars for isolated fighters etc. can be left anywhere in the fish house; the cost of individual heaters and thermostats is saved; in breeding labyrinth fishes there is no risk of harm to fry from low air temperatures.



Fluorescent lighting is used in the fish house when daylight is inadequate but during the summer the amount of natural light from the roof fully supports the growth of plants. One very fine aquarium (54 in. by 22 in. by 20 in.) in their total collection of 32 tanks is made of wood (according to the directions given in the article in the August 1966 issue of *PETFISH MONTHLY*), and Mr Clarke and Paul are both enthusiastic about this method of tank-making.

At the present time, they are in the process of switching from a period of specialist fishkeeping to more general fishkeeping, or to put it more correctly they are returning to the latter activity.

Their speciality has been the guppy for some time (father and son are both F.G.A. and F.G.B.S. members and Paul is the holder of a silver guppy pin). Before their interest in the guppy they had developed a fine strain of red-eyed red swordtails, which was their first specialisation after their initial experiences with a number of different species.

Most fish houses seem to have a fish 'character' that is not in accord with its owner's immediate interests and is kept because to part with it has become unthinkable. In the Clarke's fish house the character fish is a large albino *Clarias*, hogging a tank to himself (he has formed a useful disposal unit for guppies that were

discarded from the breeding programme, I was told).

Mr Clarke and son were founder members of the Garforth and District Aquarist Society and Mr Clarke is currently chairman and Paul is secretary. When I asked why they were turning away from the guppy they gave the reason that in their locality there was not a great following for this section of the hobby. Among many cups and show cards as evidence of successes in the competitive field, Paul is particularly proud of being a winner of the Leeds A.S. plaque.

Both feel very strongly that there should be properly organised examinations for judges in the aquarium show world and that only the services of properly qualified judges should be used at shows. Mr Clarke admitted that he is a man of strongly held opinions and recalled with enjoyment verbal battles and late-night discussion sessions at meetings with fellow aquarists. Paul, too, I suspect, enjoys a battle of wits for he is a very keen and skilled chess-player.

As we talked about the various species that had been residents of the fish house, Paul mentioned ruefully that his one significant failure was with discus fish. He had obtained six small specimens but the one that survived longest lived only 9 months. I gained the impression that it will not be too long before he returns to that challenge.



by ARPEE

By the time this appears in print most readers will have decided what treatment their fish deserved whilst they, themselves, were sunning themselves on some distant beach. Judging by correspondence in *PFM* for July there is rather widespread support for the notion that our charges do rather well for an enforced fast at just the time we have planned our vacations! I also note with some merriment that the Editor, in supporting the contra-Arpee view by awarding Mr Bushell the monthly letter prize, is proving that a good magazine can be democratic as well as instructive, though I doubt very much whether he expected me to let the matter pass just like that.

Of course, Mr Bushell is perfectly right in his statement that our tanks can be left for a week or so without attention, but I ask whether he really thinks this is the correct thing to do. Fishkeeping, like any other hobby connected with live things, demands a discipline geared to the principle that Nature doesn't recognise weekends, Saints' Days or Parliamentary recesses, and neither the creatures nor the plants we associate together will give of their best if our personal contribution falls below the highest possible standards. It may indeed be difficult to make arrangements for a neighbour to look after your

fish, but there are lots and lots of young people about who are every bit as competent as their elders, given the necessary briefing.

It so happened, as fate would have it, that our neighbours' holiday clashed with ours this year due to some atrocious domestic non-planning, and we enlisted the help of Martin and Brian, aged 13 and 9 respectively. They did a week's 'dummy run' under my supervision (20 minutes an evening), and did a spanking good job, including helping along a batch of angel and pooni fry, each only in their fifth week. They coped with feeding earthworms to the breeding angels, right down to micro worm to the fry, and did it in a most intelligent manner. They got some extra pocket money, of course, and went away with greater insight into the hobby than would have been possible after any number of ordinary visits to our home, and I came back to a thriving community with several fishes ready to breed from. Of course, all this took time and trouble, but that's what a hobby is all about; it cannot and should not be picked up and put down like a book, because living things are involved, and I know of no creature other than the human which it can be proved genuinely benefits from an enforced fast of a fortnight.

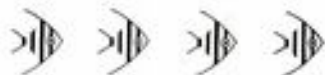
It is quite different, in my view, for the garden pond, where things rapidly get into balance and remain so, usually, from one year's end to another, and where artificial feeding is more likely to bring disaster than benefit. If there is anything in the notion of dieting, then this must mean that we are normally overfeeding our fish or giving them the wrong sort of sustenance. I cannot really believe that we are all so grossly at fault in this respect that periodic famines are necessary to restore the balance.

There is one final point on which I think Mr Bushell has miscalculated. Schneider and Whitney, in their book

The *Complete Guide to Tropical Fishes*, draw attention to the differences between dry and live foods, with particular reference to their relative water content. They observe that a considerably greater quantity of live food must be fed to a fish as compared with dried food to supply the equivalent amount of nutrition; this is because of the preponderance of water in the former. Now, even assuming that a pre-holiday oogy of *Daphnia* is good for your fish, which I very much doubt, the compensatory quantities to be fed would be quite colossal and quite beyond the means of the average aquarist. You will, of course, make your own mind up how to play this one. I see no reason why tanks should not be left for 2 or 3 days, but after that I get uneasy. Dogs don't usually die if they are left in cars all day, and there were survivors from Belsen, but these ways are not for me.



It is quite infuriating, when reading some magazines, to find that the very article you are interested in in the advertisements section bears no price. This is particularly the case when the item is highly priced, and the only conclusion you can draw from the absence of a quotation is that the vendor is ashamed of it. It was therefore refreshing to see Keith Barracough's advertisement for luxury aquaria in *PETFISH MONTHLY* for March, which not only included clear photographs of four highly desirable aquarium units, but showed the prices in large print. To me it seems bad business to conceal the price of your product anyway—it's an open invitation to your competitor to take an order from under your nose. Whilst on the subject of luxury aquaria and their beautifully designed stands, I do wish that some designer would incorporate a gadgets compartment somewhere in the framework. It ought to be a simple matter to substitute this for one of the book compartments. There should be no need for this to clash with the beauty of the rest of the stand, as the door could be suitably ornamented en suite with the remaining décor.



Both Mr Armitage and Mr Eserin have been a bit disparaging in *PFSM* about pet shops, suggesting that you would hardly go there to buy a good strain of guppies. The implication is that only the big, specialist, establishments are likely to be of any help in this respect. Whilst I am quite sure that many of the big firms are able and interested in meeting this need, the generalisation about pet shops is about as valid as most generalisations; it might as well not have been said. There are, as we all know, some absolutely shocking pet shops up and down the country, but they are by nature usually short-lived.

The reputable, solidly-based pet shops which have been in business for years and years are the grass roots of the hobby and have the edge over many a big supplier in possessing the local knowledge necessary for the acquisition of fish of a good strain or unusual variety,

because they are in regular touch with specialist breeders, often amateurs, who are capable of releasing really good stuff now and again. The bigger chap, the importer who only thinks in terms of thousands of this or that and never buys from the amateur on principle, is at a distinct disadvantage.

I must confess to a very soft spot for pet shops, as I have spent a lot of my leisure time in them during the last 30 years, so I naturally spring to their defence. Sentiment alone does not account for this. Their owners have almost invariably been courteous, helpful and knowledgeable and have, in one way or another, taught me what I know about the hobby. They are shrewd enough, too, to know how to make a living out of some of the most risky of raw materials, so they get my respect, too. So, just because a chap does sell a rabbit or two and has some kittens in the window, don't assume he knows nothing about fishes: go in and have a talk with him and you may learn, as I did recently, how to breed the rice fish.



I had thought that this column would look better if in future the final paragraph took the form of jottings from my fishkeeping diary. In the event the task becomes quite formidable, since I never keep a diary and I doubt very much whether I could decipher the entries even if I did so. The compromise is a Tailpiece, which is anatomically apposite, if little else. If the reader suspects that the underlying motivation may be the notion that disasters shared are the lighter to bear, he may well have latched on to something. Here goes, anyway!

This time of the year, with autumn very near, is always something of an 'off-season' with aquarists. Some complain of fish dying off unaccountably, of a general sort of malaise over things, and of little sense of purpose. I have recently been assessing the breeding programme for the winter months and deciding what varieties to breed and what their food requirements will be. To this end, some peat water has been put down to brew and I am building up my stocks of earthworm for winter feeding and conditioning of brood fish. This year I am making several frostproof caches in various parts of the garden in addition to the large sweet bottle which houses the ready-use store of worms.

All wiring needs a check over before the season starts in earnest, and I have been giving serious thought to redecorating our sitting room, in which many of my fish tanks are (immovably) housed. I am trying to devise a way of carrying this off without harm or disturbance to the fishes, and hope that the use of emulsion paints in preference to those containing oil will be possible on all existing surfaces. This is because the fumes from oil paints can have a disastrous effect on fishes and need to be completely isolated if fatalities are to be avoided. I will give details next month, by which time I hope I shall have got the job launched, if not actually finished. Since my approach to home decorating may be summarised as 'one room, one day', the true craftsman will scoff and turn to another more erudite article, but I nevertheless have a sort of feeling that I am not altogether alone!

For the Community Aquarium

The Dwarf Gourami



IT is a long time since the dwarf gourami was introduced into Europe from Assam and northern India—at least 60 years—and it has been a great favourite with fishkeepers ever since. It is really no wonder that it should have maintained its popularity. Beautiful, and peaceful to the point of timidity, *Coleo lalia* grows to only 2 in. in length, can be readily obtained, makes no unusual demands as regards tank water or feeding and is easy to breed. It is an ideal community-tank inhabitant.

For most buyers it is the colouring of the adult male fish that makes it, once seen, a 'must'. The deep, compressed body is striped with rows of crimson dots interspersed with bands of brilliant blue. The anal fin, which runs along nearly two-thirds of the fish's body, and the caudal fin are widely banded and dotted with red. The equally long dorsal is blue and dotted towards the tail with red. The ventrals, shaped like long 'scissors', are orange-red, merging as they join the body into the vivid blue of the head, throat and gill plates. However the tank is lit these fish look beautiful, but seen in bright daylight or in a tank where the light shines from the

front, their iridescent colouring is remarkable. As is so often the case in the fish world, the female is no colour match for her mate—her silvery sides are relieved only by faint blue stripes.

In their natural waters, dwarf gouramis are found where there is thick plant growth, and in a tank they need to have well-planted clumps into which they can retire during their 'settling-in' period. This is because they are very nervous and shy fish as newcomers. However, they do settle down and will then show every willingness to swim in the open tank areas. Feeding constitutes no problems as they are omnivorous and will eat dried food as a staple diet. For peak conditioning, however, they should be given live foods such as *Daphnia*, mosquito larvae, glass worms or white worms at least once a week if possible.

Water hardness and pH are not critical for these fish and, in fact, it is often suggested (rather unfairly for the fish) that they are very suitable for purchase by beginners since they are able to live in a degree of pollution that would seriously affect another species.

It is true that they can thus survive many of the tank tragedies caused by the inexperience of the fishkeeper.

This high degree of resistance to pollution is due to their being members of the labyrinth group of fishes (family Anabantidae); the possession of a labyrinthine accessory breathing organ, that lies on both sides of the gill chambers and enables them to make use of atmospheric oxygen from the water surface, permits survival in waters that are low in oxygen. (This is not pure gain for the labyrinths, however, since the efficiency of the usual method of respiration through the gills has lessened and the 'auxiliary' breathing apparatus must be used by the fish to prevent asphyxiation.)

Another interesting structural modification in the dwarf gourami also plays a part in helping the fish to survive in unpromising conditions. Like those of a number of anabantids, the ventral fins of the dwarf gourami have been modified into long 'feelers', which are used as an accessory sensory organ and could be particularly useful in murky water conditions.

The spawning habits of these fish, like those of all the bubble-nest builders, if not seen before are well worth watching, and obligingly the dwarf gourami

presents few problems in setting up a breeding pair, although breeding will not take place in the community aquarium. There is no difficulty in identifying the sexes for even were the male fish's coloration not sufficient identification, its dorsal and ventral fins are longer than those of the female and taper to points at the ends.

The fragile-looking nests, made up of thousands of tiny bubbles blown out at the water surface by the male fish, are not nearly so ephemeral as they look, as the bubbles are coated with mucus; and the dwarf gourami further strengthens his nest by incorporating small pieces of plant and detritus into it. After the courtship, the male encircles the female to fertilise the eggs that she dispels and, as the eggs of the dwarf gourami are lighter than water, they float upwards to the nest above.

Once the eggs are laid the female can be removed, and then the male when the fry are free-swimming. The greatest problem with the spawning of *Colisa lala* comes with the rearing of the fry, as they are very tiny and must be kept well fed with very fine food such as the infusorians called rotifers and the finest of prepared fry foods.

About MARINES

ONE only has to look at the range of goods now available in this country to see that, contrary to the opinion of many pessimistic aquarists who have for so long said that coral fishes cannot be kept successfully, marine fishkeeping is here to stay. There are bound to be the obvious conflicts of opinion—this is an integral part of any hobby and fishkeeping is by no means an exception—but it is seldom recognised that differences of opinion foster ideas and possibly improvements to the *status quo*. I hope that new ideas will be the basic theme of this column, as and when they occur; whether or not they are to be agreed with is left solely to the discretion of the reader.

● EVER since the introduction to the British market of the Halvin range of filterfast filters, I and several colleagues who also keep marine aquaria have been using these in preference to the larger, more expensive, power filters. Apart from the obvious facts, such as rate of flow and return of water away from the inlet, they have one other great advantage in that when the time comes to clean out the filter bed,

By GERALD JENNINGS

(International Marine Study Society)

there is no time-consuming unscrewing and replacement of gaskets as with other filter units available. We have also found that the ion-exchange type resins, marketed under the names SE and SER, can be used in this type of filter quite successfully, although these do somewhat reduce the rate of flow stated by the distributors.

● MARINE fish diseases one finds are rarely touched upon even by the most knowledgeable marinists, as indeed not much is known about the majority of ailments encountered; and it will probably be quite a while before recognised effective remedies become commercially available for some of these. One exception to the above is a copper sulphate solution, together with instructions for its use on marine white spot. This is obtainable from Shirley Aquatics Ltd under the trade name Antio.

Whilst on the subject of marine ailments, I was browsing through

one of the more recent popular publications when I noticed the author stating that an excess of light over the tank could lead to partial temporary, or if not rectified—permanent, blindness of the fish. This I have not experienced, even when both daylight and strong artificial lights were used to illuminate a tank for several months, and I cannot help being left with the feeling of extreme scepticism over this sentence.

● A point arising out of the above, which may be of interest, is that in the tropical marine tank exposed to this excess of illumination, although the fishes seemed none the worse for this treatment, the algae growth had definitely improved, and upon further encouragement to growth by the removal of the ion-exchange resins (which, I am informed, extract nitrates and ammonium radicals useful in plant growth) the algae could be seen in profusion. This little experiment, however, was terminated abruptly when an unwanted algal form made its presence felt—that causing green water, which is a bane to all aquarists, marine ones included.

BREEDER'S NOTEBOOK

By J. LEE

MEMBERS of the glassfish family come from, or I should say range over, quite a large area, inhabiting different types of water from fresh to salt, from Africa to India and the Malay archipelago. The characteristics of this species is the compressed and somewhat squat body. The backbone and the internal organs can indeed be very clearly seen. The dorsal fin is deeply divided and held erect, extending to the tail. *Chanda lala*, *C. baruensis* and *C. nama* are the best known of the species, and of these *C. lala* is the smallest.

The colour of this little gem is difficult to describe. The male is seen at his best when in breeding condition, and as these fish move in any depth of the tank and are not shy it is possible to detect many colours as they

amount of light from above and, as they like sunlight, they also had a fair share of that.

These fish are not easy to breed. In fact I found out they were quite difficult after about eight attempts to spawn them over a period of 4 to 6 weeks. I kept separating the pair at different intervals. When I finally got them to spawn, the water used was nearly all old tap water with a little fresh. It seemed to suit them best if the water was on the alkaline side, so the tank was filled to a depth of 5 in. to 7 in. of water, to which was added one teaspoonful of rock salt per gallon. The temperature ranged between 75° to 80°F (24-27°C), although when spawning did eventually take place the temperature was 82°F (28°C). The plants used for spawning medium

The Glass Fish

(Chanda lala)

turn in different ways, blending from amber and blue tints to a changing colour of light yellow and even dark greenish yellow—a touch of lavender to a shimmering light blue. The eye is black with a gold line round the outside. The underpart of the belly is silver white, the dorsal fins and anal fins are edged with blue, and there are short dark stripes on the sides of the fish near the head.

This species can be difficult to sex. The male is perhaps slightly deeper in body colour, and since the inside of the fish can be seen, the abdominal organs of the female are, in my opinion, the larger of the two; but in my fish it was a little easier to tell the two apart as the female was in wonderful condition and ripe with eggs. Four fish were conditioned for a few weeks on a good supply of live foods such as *Daphnia*, *Tubifex* worms, white worms, Grindal worms, small *Cyclops* and ghost larvae, and as there was a pair of guppies in the tank at the time there was also a good supply of young fry that they were feeding on amongst the carpet of floating *Riccia* at the top of the tank. It was not long before I noticed that the fish were in good colour and ready to spawn.

So came my job of preparing a spawning site. At first I used a small tank 18 in. by 10 in. by 10 in., but made a bad mistake, which I will explain later on in these notes. So the tank selected was 22 in. by 12 in. by 10 in. (rather an awkward size but I just happened to have it standing empty at the time). I gave the tank a good scrub out and then filled it to the top with cold water and disinfected it with some crystals of potassium permanganate, making a really strong solution turning the water deep purple. I let this stand for an hour. After rinsing the tank thoroughly and satisfying myself that it was sparkling clean inside I selected a place in the fish house for it that would suit the fish—with a fair

were small Indian ferns, floating on the surface with the roots trailing on the sandy bottom, small clusters of *Myriophyllum* spread throughout the tank and a small clump of *Festucalis* in the centre.

The pair were put in at night and the next day they spawned as the sun caught the top of the tank. They are egg-scatterers and spray in the manner of goldfish or barbs. Although I did not see many eggs at all this was a big spawning and there were easily 400 to 500 fry.

It was a most amazing sight. At first glance, I thought the tank was full of Infusoria, but as I used a magnifying glass to look through I could see they were fry. In my experience of breeding over the years these were indeed one of the smallest fry I had ever seen and indeed still are; they are really 'dust-tiny' as it were. Coming back to my earlier reference to the attempt with an 18 in. tank, when I used this smaller tank the surface area, in my opinion, was not large enough for so great a number of fry and after 2 weeks they had nearly all disappeared.

Now came my headache. What food would be small enough for such tiny fry? I tried a few drops of Liquifry (red label) and watched through a strong magnifying glass but not at any time did I see any fry eat or open their mouths at all, although it was difficult to say this with complete certainty as they were so small. The next day I was out collecting *Daphnia* and I decided to visit a few pools in that area after ghost larvae for my discus. I came across a pool with some nice fine *Cyclops* in so I filled a tin with them. On returning home I found there was a rich culture of *Cyclops* nauplii. These I fed to the glass fish fry and again looked through the

magnifying glass. Then I saw a fascinating sight. The tiny fry seemed to jerk forward, at the same time opening their mouths just as though they were hinged. They looked like something that had devoured an object five times bigger than themselves, until they unfolded to a fish-like shape again. This was the food they required; and on this diet they began to show progress. Then they came gradually on to beine shrimp and micro worms, then Grindal worms and sifted fine *Daphnia*.

This is really the secret of breeding these fish. They require *Cyclops* nauplii. I tried Infusoria, egg powder and Liquifry, but the fry all died. Glass fish can spawn over a day or two and when the parents are taken out the fry hatch in about 12 to 14 hours and are free-swimming in about 48 hours at a temperature of just over 80°F. I did not rear all the fry, but on the final

count I finished with 280 good fish (after I had weeded runs out, of course). After the young were transferred to a larger tank it was a wonderful sight to see them in a shoal as replicas of their parents swimming about. I was, believe me, very proud of this achievement.

I never once saw my fish take dry foods until the adult stage was reached. They also accepted small morsels of liver, grated meat and dog food, but only after a lot of perseverance. Once you get these fish on to a staple diet it is very difficult to get them to change (I found this also with discus).

I believe in some parts of the world these fish are caught in nets and used as fertiliser on the land in much the same way as the harlequin fish is. What a crime, when in this country they are nearly always in such demand in the pet shops!

Readers' Queries Answered



Plant Growth

Is it true that aquarium plants 'die down' in the autumn? Mine don't seem to grow much during the winter and I am wondering how this affects the 'balance' of the tank.

The growth rate of some aquarium plants does slow down naturally during the autumn. The *Aponogeton* species are notable for this; but a more usual factor affecting plant growth, that is not always taken fully into account, is the fact that the intensity of the natural light is decreasing so rapidly at this time of year. Not only is there less daylight, but the light available is not so strong. Unless a tank is sited in a very dark corner some degree of natural light will have been reaching the plants during the summer months and allowance must be made for this by increased hours and even increased wattage of artificial light during the winter.

If plant growth is seriously affected during the winter months then the 'balance' of the tank would be affected. There would be less oxygen production, more decomposition of decaying matter, more accumulation of carbon dioxide and nitrogenous material. But re-

assessment of the artificial lighting required and a supply of the quicker-growing plant varieties such as *Elodea* and *Vallisneria* should prevent any serious trouble.

Aquarium Botias

I am writing to ask if some small botia fish that I have seen at my dealer's shop are suitable for a community tank and if they are scavenging fish?

Many of the botias become quite large and fairly pugnacious so that these are not suitable for the community tank. Varieties that are suitable include the cream botia (*Botia horae*), the striped botia (*Botia strigata*), the dwarf loach (*Botia sidhimoshi*) and, in a tank of medium-sized fish, the *Botia macracantha* or clown loach. These botias are peaceful and do not grow out of proportion to the other inhabitants in a general community tank. Botias appreciate a hiding place in the tank, such as a structure built up with small rocks, a broken flower pot or half a coconut shell. They will also eat up left-over food from the bottom of the tank, but do not be misled by

the term 'scavenging' fish. Scavengers might eat small bits of food left on the tank bottom but they require a portion of live food for themselves and they will certainly not survive if it is assumed that they will live on accumulating bottom matter alone.

Ready for Winter

My pond fish appear to have had a very good summer and I would like to make certain that none are lost this winter through any lack of preparation on my part.

There are quite a few preparations that can be made, but it must be said that if your pond does not contain an area that is deeper than 18-24 in. then fish may well be lost in a hard winter. If the pond is shallower than this overall, valuable fish, very young fish and fancy goldfish should be moved into protected aquaria before the onset of the cold weather. Fish remaining in the pond will benefit from a little extra feeding from now on. Not only will the supply of water insects, larvae etc. be coming to an end soon, but extra foods such as brown bread, biscuit crumbs and stiff porridge given with caution during September and October will help to add to the fishes' store of fat deposits. Lastly, keep the pond free

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GUPPY

World

PETER UNWIN'S Notebook

THE year 1967 will long be remembered in aquatic circles. Although we usually associate 'togetherness' with the spring, togetherness has been evident all year. With over half a dozen collective bodies representing over three-quarters of the organised hobby in these shores, it has often been said that nothing but good could come from better relations, one group with another.

The specialist guppy groups started the ball rolling, and now have set an example with their plans for a unified standard for *Poecilia reticulata*; in the September issue of P.F.M. we read of the agreement between the Federation of British Aquatic Societies and the Goldfish Society of Great Britain.

With all this display of co-operation, perhaps it is time to look at a few more discrepancies that exist, particularly on the show bench. One is concerned with the insistence by some authorities that the date of birth be printed on exhibits in the breeder's classes.

Entrants in this class are usually quite honest about the date, but in the main the date is just a shrewd guess. Even those breeders who keep meticulous records are often tempted when they see just how rapidly that particular team of fish have matured.

In guppies, it is even more so; one doesn't breed these fish for very long before the irregular development of the fry becomes apparent. Some in the early stages grow very slowly, maturing later at a very rapid rate, others progress gradually—and what brood doesn't boast its odd

'giants'? And all these fish within the same brood!

Traditions die hard in a country steeped in it, yet I feel that the majority of exhibitors in our fish shows would like to see this date of birth abolished. I know for a fact that some judges, though professing different action, often ignore the date printed on the exhibit and use their own good sense, experience and judgement when deciding size for age.

FOR years the female guppy remained the same monotonous shape and colour. Right through the years of active male development, the female of the species stayed the same. Now she is finally coming into her own, not only in the many and varied finnage shapes now being bred but in colour, too.

Appearing first as a faint trace of red in the caudal fin, breeders have worked with these fish until they now produce them in almost all of the colours of the rainbow.

Perhaps this female emancipation comes a little later than that of their human counterparts, but nevertheless they make a welcome addition to the tanks and show benches.

THOUGH cannibalism is bad enough no matter what type of fish you breed, it is even a bigger menace when breeding fancy guppies, when the fish that is lost might just be the one you require.

Feeding the parents well with varied diets containing protein helps, to say nothing of breeding traps, both manufactured and home-made.

A breeder of long standing used to say that only frightened females

ate their young and proved his point by showing me tanks full of young fry swimming merrily about with their parents. His 'secret' was to cover the fronts of the nursery tanks (he used 18 in. by 10 in. by 10 in. placed end on) with sheets of hardboard, these covers being held in place by two strategically placed wire hooks that fastened over the top frame of the aquaria. With these in place, he claimed he could move around servicing the rest of his tanks without disturbing the pregnant females.

It's worth a try, and even if it doesn't work for you, it costs very little to put into operation. If sheets of expanded polystyrene are substituted for the hardboard one gets some measure of heat insulation as well.

FEEDING newly hatched shrimp to Fancy Guppies is akin to playing snap with a man that stutters—you can't lose! Yet, despite the acknowledgement of so many top breeders that this is the finest food available so many aquarists waste the majority of their eggs in the hatching.

So many excellent formulae exist, that it would take up too much space to print them all, but no matter what you choose, spend a few bob and buy yourself a hydrometer with a range of 1.01 to 1.03 (that one you have for the car battery won't do). Mix your saline in the normal fashion until a reading of 1.025 is obtained. With this mix and all other things being correct you will find an appreciable difference in your hatchings. If sea water is available then use this, there is nothing finer.

BILL ARMITAGE'S Comment

OVERFEEDING is a fault nearly all aquarists succumb to. Feeding a measured diet, especially to guppies, is well nigh an impossibility. With the total number of fish per tank continually changing through breeding activities, deaths etc., coupled with the quick growth of fry, it is easy to realise the impossibility of measuring the right amount of food per meal. Bearing this fact in mind the beginner should appreciate that it is also almost as impossible to underfeed

unless the fish are literally starved.

The beginner can often learn to feed the approximate amount by watching a more experienced breeder feeding his fish and also by observing his own at feeding time. About five minutes should be the allotted time for a meal and any food left over after this time can be considered waste, and if left in the tank will soon rot and give off noxious gases. This must not be allowed to occur as cleanliness is a key word to successful guppy breeding.

THE committee of the Liverpool section of the F.G.A. met recently to discuss plans for future shows. The chairman in his opening remarks referred to the huge success both from the propaganda and exhibition angle of the open guppy show held in conjunction with the Liverpool Agricultural Show. It was agreed that shows of this type should be included in next season's programme, and the P.R.O. was instructed to make the necessary arrangements for next season's shows.

Other guppy organisations may consider it a little farsighted on the part of the Liverpool section to plan so far ahead, but as a P.R.O. I can assure interested guppy clubs it is a very necessary precaution. Most agricultural shows, flower shows and similar promotions no sooner

finish one show than they are making plans for the next year's show. It therefore fosters good relations if everybody concerned plans accordingly.

Throughout the summer thousands of people attend these shows, many of whom are seeing guppies for the first time. This is a golden opportunity for guppy breeders to show their guppies in ideal surroundings with every possibility of interesting quite a few members of the public who may not have become interested otherwise.

AT the combined F.G.B.S. and F.G.A. show held recently in Birmingham the difference in show rules and show procedure by both the clubs was very apparent. A notable example was the use of smaller sized show jars favoured by the F.G.B.S. Although some of the F.G.A. members did not agree with me, it was my opinion that the smaller jar is more convenient in more ways than one.

For instance, it is far lighter to carry and fits into a smaller, neater case. It also, I think, shows the fish to far better advantage on the show bench. On the other hand, the F.G.A. show stand is a great advance on the rather higgledy-piggledy benching of the F.G.B.S. It is my view that if the F.G.B.S. were to adopt the F.G.A. stand, and the

F.G.A. the smaller jar, our guppies would catch the public eye far more than they do at present.

It was my impression that the F.G.A. are far ahead with their benching methods, while the F.G.B.S. are similarly ahead with their method of debenching. As this show was the first of its kind ever to be held, and as these columns offer the best means of joint open discussion between members of the two organisations, it would be most interesting to hear the views of readers who may have been present at the show.

BEGINNERS should not become discouraged if the caudal fins of some of their older male guppies become frayed. This is a fault that develops with age. Some males keep good caudal outlines throughout their lives, while others tend to fray their fins as they grow older. A few years ago this fault was rectified by trimming the rough edges with a razor blade, but this form of torture is not looked upon with favour by present day guppy breeders—they are agreed it is a cruel and useless operation, and no guppy judge worth his salt will be deceived by it. The novice will find that good males with tattered fins are much more useful in the breeding tank than in a show jar with trimmed fins.

TOBACCO and the GUPPY

By ERIK JUHL-SRENØSEN (Copenhagen)

HAS any reader ever seen a guppy smoking a cigarette? Of course not, you will reply. Nevertheless thousands of guppies have been killed by nicotine poisoning. Can the non-smoking guppy really die of nicotine poisoning? The answer is most assuredly 'yes'. The guppy cannot know of the damage caused to its system by tobacco smoke but we do and we must exercise care in our smoking habits when near our

fishes (even if, ironically enough, knowing how it affects our own system we still choose to continue to smoke).

The question of whether or not tobacco smoke or gases, containing harmful ingredients can exert dangerous influences upon aquarium fishes has been well investigated by scientists (whose attention was first drawn to the problem by fishkeepers) and it has been found that high

upon the list of things harmful to fishes comes smoke from cigarettes, cigars and pipes. Besides nicotine in tobacco smoke we find resins, resinous acids, carbon monoxide, sulphuric acid, prussic acid, ammonia and other materials. Our lungs can withstand these in moder-

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When People Flocked to see the Goldfish

By Mrs HARPER



AQUARISTS may not at first realise the connection between this London wall plaque and their goldfish.

Bagnigge House was once the summer residence of Nell Gwynn. It stood in King's Cross Road near what is now the station. A plaque on a wall marks the site but gives no clue to the interesting story behind it.

After Nell's death, eventually Bagnigge House became known as Bagnigge Wells, a place of entertainment with pleasure gardens built round the Spa. Two wells provided chalybeate and purging water. An old advertisement warned that 'three half-pints are sufficient for most people'!

In the centre of the gardens was 'a small round fish-pond with a curious fountain representing Cupid

bestride a swan which spouts water through its beak to a great height'.

In the pond were goldfish, at that time a great novelty in Britain. In fact people flocked to see these fish, which even inspired doggerel verse.

'We'll go to Bagnigge Wells, Miss, and there we'll have some tea;

It's there you'll see the fishes— more curious they than whales,

They're made of gold and silver, Miss, and wagg their little tails'

In the nineteenth century more sophisticated pleasure forced the Bagnigge Wells gardens to be closed and finally demolished in 1842.

The Pinder a Wakefeilde mentioned in the plaque was a tavern at the north end of Grey's Inn Road. It, too, has vanished but the plaque reminds those who care to read it and discover its story, that where nowadays travellers hurry along, once pretty, witty Nell entertained the Merry Monarch and once, too, goldfish drew Society to see them.

Transatlantic TOPICS

THINGS will never be the same in the community tank again, not if the compilers of T.V. Commercials get their own way. The American T.V. Guide reported that Ira Kamen, a New York communications expert, has devised a system whereby the jingo-ism of television advertising will appeal directly to our pets!

The first move in this war of nerves aimed at the pet owner synthesizes and electronically reproduces the harmonics of a dog whistle; even if the human viewer remains unaffected by this 'silent' persuasion, he will be driven to distraction by the action's of man's best friend.

One wonders how long after that it will be before they develop the

idea to include other pets including members of the Class Pisces?

Already experiments carried out by fish research experts have proved that the dolphins and many species

By JIM KELLY

of fishes emit high-pitched sounds; fishermen are now using electronic aids to attract the shoals to their nets.

Though British audiences haven't yet experienced advertising in the aquarist business, this type of persuasion has been in operation in Canada and the U.S. for some time. I shudder to think what my guppies are going to think about all this.

Statistics aren't everyone's cup of tea. As reading matter they will never make a best seller and remain to the uninitiated as boring as a ride down the M1, yet some recent facts and figures issued by the Tank Manufacturer's Association of America emphasise the size of the fishkeeping hobby over there, although to regular readers of this column that fact is already well known.

Last year between them the manufacturers produced 32,500,000 aquaria for the Pet Trade. If that figure doesn't impress, it means that every week 625,000 tanks rolled out of the factories!

The report states that the aquarium business is booming; with

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A Look at This Year's Midland Aquarium Show



The Show Committee of M.A.P.S. at the close of this year's successful show

Winning competitive society display by Birmingham Telephones A.S. (below)



THE MIDLAND OPEN SHOW has always been one of the pleasantest occasions in the fishkeeping-enthusiasts' calendar and, once again, with the twenty-fourth show, officers and members of the MIDLAND AQUARIUM AND POOL SOCIETY are to be congratulated on its success. The fact that one society can put on a show of this size is a tribute to the hard work of every member involved. The presence of Mr Jim Edwards was sadly missed but he would surely have been proud of the efforts of his successor, Mr J. Witts, and his colleagues this year.

There were some fine specimens among the 3,000 fishes on show and, as was to be expected from M.A.P.S., the coldwater section was particularly noteworthy. Mr A. E. Roberts was awarded the Eversden Cup for the best coldwater entry for his oranda, a magnificent fish. To Mr K. J. Harvey of Stone A.S. went the Gilbert Cup for the best tropical fish in the show, a pike cichlid which was also awarded the Capener Cup for the best cichlid.

The BRITISH KILLIFISH ASSOCIATION staged its second International Show at the same time, and the South Midland section of THE FEDERATION OF GUPPY BREEDERS a show for breeders teams only.

The trade stands, of which there were more than ever this year,



Show secretary Mr J. Witts seen talking to his show stewards

themselves featured several eye-catching fishes, including a large oscar and a breeding pair of cichlids that were being offered for sale at £50. Young discus on one stand vied for interest with a magnificent display tank of marine tropicals set up by another trader. Terrapins, axolotls, an alligator and several varieties of snakes were also displayed. Quite the largest exhibit, however, was Hercules, a 23 ft.-long reticulated python 'borrowed' from Sandown Zoo for the occasion. Hercules had travelled over on the ferry to Portsmouth free, classed by British Railways as a 'suitcase' for want of a better definition.

The entries in the inter-society competitive display were very ingenious. Smethwick & D. A.S. displayed a beautifully executed willow pattern scene, complete with Chinese figures and a bridge over a goldfish pool. Leamington & D. A.S. mounted a real 'Heath-Robinson' underwater vessel, the H.M.S. Mermaid, in which the propeller of the ship and a variety of swimming figures could be controlled by switches manipulated by the viewer. A teapot diving bell and a pink-lampshade crow's nest (?) were two of the amusing items used to make up the exhibit. North Warwickshire A.S. transformed their corner into the most unusual fried-fish shop in Birmingham. Into a realistic fish-fryer were incorporated furnished tanks containing the wares being offered for sale, such as filleted mountain minnow, hot battered plaice, cichlids and chips. 'Dial a Fish' was the theme of the Birmingham Telephones A.S. and this received the first award. Into a 14 ft.-high scale model of the Newhall Street Post Office tower and the G.P.O. regional headquarters in Birmingham had been incorporated a number of tanks. Visitors could dial a tank on the telephone provided and see their choice illuminated.

Show results were:

Coldwater section. Judges: Mr. V. E. Cassell, Mr. F. R. Close, Mr. W. Hicks and Mr. A. E. Roberts. Common goldfish and minnow, 2 in. body limit: 1, 3 and 4, Mr. H. T. Jago (Raven Cup for the best common goldfish in the show); 2, Mr. J. D. Bewford. Breeder's class (four fish) a.v. fancy goldfish (maximum) bred 1967: 1, 2, 3 and 4, Mr. A. E. Roberts (moose), P. Smith Cup for best breeder's entry in the show; Breeder's class (six fish) a.v. fancy goldfish (single tails) bred 1967: 1 and 2, Mr. S. Lloyd (shubunkin); 3, Mr. C. H. Barrett (shubunkin); 4, Mr. W. G. Bryant (shubunkin). Bred shubunkin, 2 in. body limit: 1, Mr. A. E. Roberts (Taylor Cup for best shubunkin in the show); 2, Mr. T. L. Dodge; 3, Mr. W. G. Bryant; 4, Mr. H. T. Jago. Calico veiltails: 1 and 2, Mr. C. H. Barrett (Graham-Kelly Cup for best veiltail in the show); 3 and 4, Mr. H. T. Jago. Bred shubunkin, bred 1967 by exhibitor (maximum 4 entries): 1, 2 and 3, Mr. S. Lloyd (Brewer Cup for best shubunkin bred in 1967 by exhibitor); 4, Mr. C. H.



Barrett. Scaled veiltails: Mr A. E. Roberts (sole entry). Twintails (other than calico veiltails) bred 1967 by exhibitor: 1, 2, 3 and 4, Mr A. E. Roberts (moose); Bristol shubunkin, bred 1967 by exhibitor (maximum 2 entries, M.A.F.S. members only): 1 and 4, Mr J. Wisting (Cuddy Cup for best shubunkin, 2 in. body limit); 2 and 3, Mr H. T. Jago. Calico veiltails, bred 1967 by exhibitor: 1 and 2, Mr C. H. Barrett (Noel Cup for best veiltail bred in 1967 by exhibitor); 3, Mr H. T. Jago. Bristol shubunkin, 2 in. body limit (unatched pairs): 1, Mr H. T. Jago; 2, Mr E. A. Mason; 3, Mr C. H. Barrett. Orandas: 1 and 2, Mr A. E. Roberts (Eversden Cup for best coldwater entry).

Above: the 'fish and chip shop' entry of North Warwickshire A.S. gained second award in the competitive society display

Below: Leamington & D.A.S. incorporated great mechanical ingenuity into their 'H.M.S. Mermaid' entry





Above: Smethwick & D.A.S. willow pattern entry in the competitive societies display (third award)

Right: the first award of the Jim Edwards Memorial Trophy, a meritorious award at the Midland Show, was to Mr Bill Edden, seen here with Mrs Edden



Characins (*Rhyphodrycon*, *Hemigrammus* and cardinals): 1, Mr B. Woodward (blood cave characin); 2, Mr P. W. Jinks; 3, Mr K. N. Wells (bleeding-heart); 4, Mr R. Delday (orange). Any other characins: 1, Mr K. J. Harvey (piranha, W. V. Jones Cup); 2 and 3, Mr D. Emery (*M. akrobrycon* and *P. nigrofasciatus*); 4, Mr J. D. Fellows (bloodfin).

Male fighters (*Betta splendens*) single fish: 1, Mr K. N. Wells; 2, 3 and 4, Mr D. Emery. A.v.v. male anabantid, single fish: 1, Mr P. W. Jinks (pearl gourami, Mrs Gilbert Cup); 2 and 3, Mr T. Young (living gourami); 4, Mr P. Massey (moonlight gourami).

Cichlids (up to 3 in. body limit, single fish): 1, Mr T. G. Jones (*A. ramwani*); 2, Mr D. Emery (*P. archaean*); 3, Mr D. E. Rudge (*E. manulani*); 4, Mr S. Wood (*P. archaean*). Cichlids, 3 in. or over: 1, Mr K. J. Harvey (pike cichlid, Capener Cup for best cichlid in the show and Gilbert Cup for best tropical entry in the show); 2, Mr M. J. King (orange); 3, Mr D. A. Thomson (diamond); 4, Mr F. E. Woodall (blue scar). Cichlids, single fish, single fish: 1, Mr P. Massey; 2, Mr A. J. Buggs; 3, Miss M. Jones; 4, Mr I. Ford.

A.v. male guppy, single fish, judged to F.B.A.S. standards: 1, Mr T. A. Nason (T. G. Suttons Cup for best guppy entry by M.A.P.S. member); 2, Mr R. Delday; 3, Mr K. G. Pearce. A.v. mollies, true pairs: 1, Miss V. Powell (green); 2, Mr E. Woodward (berry); 3, Mr J. A. Davies (berry); 4, Mr M. Boulton (black). A.v. platys, true pairs: 1, Mr E. Woodward (red); 2, Mr L. G. Wilkes; 3, Mr F. E. Woodall (red); 4, Mr D. Emery. A.v. swordtails, true pairs: 1, Mr A. J. Buggs (black, Coleman Cup for best swordtail pair); 2, Mr L. G. Wilkes; 3, Mr D. A. Thomson (red-eyed red). A.v.v. tropical fish, single fish: 1, Mr C. West (red-tailed shark); 2, Mr M. Ralph (red-finned shark); 3, Mr G. C. Wase (*C. colabrisus*); 4, Mr D. Emery (red-tailed shark).

Breeders' class—egg-layers: 1, Mr A. W. Skinner (cherry barb, Fandy Cup); 2, Mr D. A. Thomson (*B. tetrazona*); 3, Mr S. Wood (*A. nigrofasciatus*); 4, Mr K. J. Harvey (*R. occidentalis*). Breeders' class—

2, Mr E. A. Mason; 4, Mr H. T. Jago. Telescopes (other than moon), lineheads, celestial, bubble-eyes etc.: 1 and 2, Mr H. W. Johnston; 3, Mr C. H. Barrett. Moors: 1, Mr C. H. Barrett (Butler Cup for best moor in the show); 2, Mr A. E. Roberts; 3 and 4, Mr T. L. Dodge. Bristol shubunkins, 2 in. body limit: 1, Mr A. E. Roberts; 2, Mr H. T. Jago; 3, Mr E. A. Mason; 4, Mr W. G. Bryant. Calico fantails and calico rympha: 1, Mr H. T. Jago; 2 and 3, Mr C. H. Barrett; 4, Mr E. A. Mason. Scaled fantails: 1, Mr E. A. Mason; 2, Mr S. Lloyd; 3, Mr H. T. Jago.

A.v. pond or river fish, 2 in. body limit: 1, 2 and 3, Mr H. W. Johnston; 4, Mr L. Ford. International decorative coldwater aquarium: 1, Barton & D. A.S. (Society Shield for best society decorative aquarium); 2, Coventry P. A.S. Bristol shubunkins (novice), 5 in. body limit: 1, Mr B. L. Bonfield (Webb Cup).

Tropical classes. Judges: Mr R. Cook, Mr W. Davison, Mr G. Gadd, Mr A. Harris, Mr A. Smith, Mr L. Stokes. Barbs (*Atrya*, *alpinis* and *domingii* (true pairs)): 1, Mr J. D. Fellows (*B. atrya*); 2, Mr A. W. Skinner (*B. atrya*). Barbs (*Atrya*, *nigrofasciatus*, *gita* and *conchomus* (true pairs)): 1 and 2, Mr A. W. Skinner (*nigrofasciatus* and *Atrya albino*, Dodge Cup); 3, Mr D. L. Edwards (*conchomus*); 4, Mr D. A. Thomson (*nigrofasciatus*). Any other barbs (true pairs): 1, Mr P. W. Jinks (*nigrofasciatus*); 2, Mr R. Delday (goldfish); 3, Mr K. G. Pearce (rainbow); 4, Mr D. Emery (*domingii*). Danios, brachydanios and minnows (true pairs): 1, Mr K. N. Wells (glant); 2, Mr A. R. Hadden (pearl); 3, Mr P. W. Jinks (minnow); 4, Mr K. G. Pearce (minnow). Any rainbows: 1, Mr I. H. Hunt (*Danio*).

Below: British Killifish Association members with trophies (left to right): Mr K. Harvey, Mr G. Richardson, Mr D. Parsons, Mr B. G. Horsfall, Mr T. Glass, Mr C. A. Bill, Mr B. Nightingdale and Mr H. Towell



livebearers: 1, Mr H. L. Hard (hi-in black sword); 2, Mr D. Emery (platys); 3, Mr K. G. Pearce (vital guppies); 4, Mr T. Young (zeppies). A.o.v. catfish: 1, Mr E. Leggett (I. lewis albino); J. C. Froggatt trophy; 2, Mr S. Wood (Synodontis); 3, Mr D. Emery (S. rubrilam); 4, Mr D. Emery (I. namensis). A.v. Corydoras catfish: 1, Mr K. R. Hepwood (gambus); 2, Mr A. Palmerfeld (brunnei); 3, Mr E. J. Sheehy (annul); 4, Mr R. Green (brunnei).

Engulfing toothcarps, true pairs: 1, Mr J. D. Broadford (P. playfieri, Carrington Memorial Trophy); 2, Mr E. Leggett (K. miles); 3, Mr S. Wood (G. nigricornis); 4, Mr J. D. Fellows (A. calliarum). Any characin (novices): 1, Mrs M. Edwards (cardinalis, tankard for best novice's fish);

2, Mr V. Jacobs (dard and tail light); 3, Mr R. Walker (glowlight tetra); 4, Mr J. D. Fellows (bloodfish). Any danio, brachydanio or minnow, novices: 1, Mr J. D. Fellows (albina); 2, Mr B. Brooks (great danio); 3, Mr E. J. Sheehy (pearl danio). Any barbs (novices): 1, Mr M. J. King (schwanen-feld); 2 and 3, Mr J. D. Fellows (cherry, rosy); 4, Mr G. Furness (swampy).

Any livebearers, true pairs (novices): 1, Mr D. Cope (red sword); 2, Mr A. J. Jones (zeppies); 3, Mr M. Ralph (red sword); 4, Mr V. Jacobs (red-eyed redb). Any male anabantid, single fish (novices): 1, Mr R. Shakespeare (H. signatus); 2, Mr J. D. Fellows (pearl gourami); 3, Mr M. J. King (regaline gourami); 4, Mr S. Green

Individually decorative tropical aquariums: 1, Mr M. J. King; 2 and 4, Mr A. G. Ings; 3, Mr B. Woodward. Inter-society decorative tropical aquariums: 1, North Leics. A.S. (Society shield); 2, Haden A.S.; 3, Coventry F.A.S.; 4, Barton-on-Trent A.S. Inter-society competitive display: 1, Birmingham Telephones A.S.; 2, North Warwickshire A.S.; 3, Smethwick & D. A.S.; 4, Leamington & D. A.S. A.v. aquarium plants, up to 13 in. length: 1, Mr E. G. Landley (Echinodorus, P. W. Jicks trophy); 2, Mr K. G. Pearce (C. affinis); 3 and 4, Mr P. W. Jicks (C. affinis, B. tenax catia). A.v. reptiles or amphibians: 1 and 2, Mr C. J. Cotterill (axolotl); 3, Mr C. Hill (terrapin); 4, Mr A. W. Sutherland (dix snake).

Like No Business I Know!

By JIM KELLY

ONE day someone with time on his hands and a subsidy in his pocket may sit down and compile a scholarly comparative analysis of the Tropical Fish Show. He won't earn a Ph.D. for his efforts but they will earn him the undying gratitude of thousands of show committee members the world over. How does an organiser go about planning a Fish Show?

He paces up and down for hours on end in the space allocated, wishing it were either ten times as big or wondering whether they have bitten off more than they can chew; will the entries fill those apparent acres of space?

His mind fairly boggles at the prospect of some of the ideas suggested by the membership in those vegetative weeks before the event; his brilliant strategical mind turns to more mundane things like emergency exits and fire precautions. What about those ideas he had that the

committee said wouldn't work? More pacing, more agonising; the inspired tread a lonely path.

Putting on a show can arouse in its followers a loathing or devotion of equal intensity. Many of those who, year after show year, retain their allegiance are linked by the transitory nature which is the very essence of the Annual Show. It's all over before you know where you are.

Just as a touch of lemon improves some dishes, so, too, perhaps will my dip into the rag-bag of my show memories help some club. Goethe taught that experience is only half what actually happens, the other half (necessary for completion) being what our minds make of it.

1 Make adequate arrangements for the reception of entries; these can start like some trickle in a summer mountain stream to become a veritable flood of entries when some society or other arrives by coach.

2 Allocate one member of the show staff to only one job; trying to catch a mumbled name and writing it down with one hand whilst the other limb struggles to fasten a sticky label (that is anything but) is a hopeless and soul-destroying experience.

3 If the treasurer is collecting the entrance fees, see he has plenty of small change. An aquarist might be loath to cough up at the club meeting, but when show time comes around he will flash his fivers for a two bob fee like some pop singer whose record has just hit the number one spot. It's not a bit of use waiting until the queue is out of the door

before you find you need some shillings and pence.

4 If a book has been numbered by hand to receive the entries, check the figures to see they run consecutively; after two hundred the memory starts going adrift and many an argument has commenced when it came to allocating the prizes all because the jar number didn't tally with the register.

5 Moving into the hall, check that each class is easily identifiable. It's no joke walking round a crowded room carrying a tank full of water and fish. If tanks are provided for use, the exhibitor will invariably want to use the water he has brought from home, but just in case, see there are facilities for extra water and a means of heating it.

6 Someone is bound to drop a fish

on the floor, so save a life and have a couple of nets and a large piece of thin board available for emergency.

7 By now the hall has become the 'anti-litter' official's nightmare; the floor is strewn with boxes, cases, bags—it will look like a large store after the sales. Provide a place, out of the way, for exhibitors to store their carry cases, stuffing them under the show stands can cause accidents.

8 To remove the populace from the judges' hair it is important to provide suitable refreshments and some form of entertainment. The former is self-explanatory but for the latter, try to select something simple; if a lecturer has been hired, find out what subject he intends to give out on. He may be a wizard at the

Continued overpage

digestive tract of the spiny eel but your audience represents all facets of the hobby and so must the entertainment.

9 If the lecturer is using film or slides, see to his wants well before the show date. He will need a blacked-out room; don't forget in summer you must provide ventilation. Where is the nearest electricity point and has a cable extension been laid on? Small points, but they all contribute to the smooth running of the whole show machinery.

10 Presentation of the prizes is a pleasurable event so often marred by mismanagement. You require four people to do this job properly: one

to present the prizes (that's the easiest job), someone to pass him the prize cards and a third to see the special trophy or prize, if any, accompanies the card; the fourth man shouts out the results and it is his job to check beforehand that the order of cards matches the prizes.

11 Last, but by no means least, when the exhibitors come to de-bench their fish, see that a show official is on hand with all the exhibitors' names and their entry numbers; someone is bound to have forgotten what class he put his entries in and will be going round shouting blue murder that someone has purloined his fish.

12 The show is over, the visitors

depart, and looking round you find you are left with but a handful to commence the mammoth task of mopping up. Don't let all your own club members depart homewards; ask a few to stay just for a few minutes—many hands make light work.

Do all that and I cannot guarantee a successful show, cannot even offer you a record number of entries this year! But the efficiency displayed by all will pay off—just wait until next year!

That's if the experience hasn't been the last straw and you have taken up some easier pursuit like training lions or collecting poisonous insects.

Tobacco and the Guppy

Continued from page 270

ste doses for quite a while. The guppy can't!

For over 100 years now it has been known that the toxicity of nicotine is increased in alkaline water (the type of water guppies are usually kept in). It is decreased in acid waters. The scientists Schuster and Wolden have made especially detailed studies on the effect of nicotine on aquarium fishes. In numerous experiments, they demonstrated that a concentration of 10 mg./l. (milligrams per litre) of nicotine could kill full-grown guppies within 5 minutes. Four-day old fishes died within 2 minutes. A 3-5 mg./l. dose had a deadly effect within 20 to 60 minutes. Along with these findings it was learned that male guppies had somewhat poorer resistance to nicotine than did females. Even mild nicotine poisoning reduces the capacity of guppies to deliver full litters and, in addition, subsequent crippling and birth defects among the young are common. For example, the average number of young born to guppies in water containing a nicotine concentration of 1.5 mg./l. was only 15, in contrast with the 84 of guppies not under the influence of this chemical.

It was also demonstrated that when a tobacco-smoke filled atmosphere was maintained over the

aquarium water surface the first signs of poisoning occurred within 70 minutes. (The smoking lounge is therefore not the proper place for guppies!). When the water was aerated with air saturated with tobacco smoke the fish began to show signs of disturbance within 3 to 5 minutes. They began to make short, wild circular dashes with indication of stiffening pectoral fins. Ultimately, their sense of equilibrium was destroyed, muscles became paralysed and the fish began to sink to the bottom. At intervals, movement was resumed but it became less and less regular and the fish began

to swim backwards. Strange to say, the heart beat continued after breathing had ceased even though the heart beat and breathing are related under normal circumstances.

Fortunately, nicotine is quickly broken down and removed from the water. In spite of this, thick smoke in the vicinity of the aquarium must be avoided if the inhabitants are to be spared acute and/or chronic nicotine poisoning. So then, one cigarette less for your guppies (and other fishes, too, of course). They don't smoke and have never learned of the dangers of nicotine. It is up to us to protect them.



Continued from page 268

of falling leaves by using a string mesh or wire screen covering or by continual skimming the leaves from the pond's surface. If the leaves are allowed to become water-logged and sink to the bottom, they will decompose there during the winter and make the pond less safe for the hibernating fishes.

Blanket Weed

For the last six months my pond has been plagued with blanket weed. I have tried removing it manually with wood and I have also covered the pond for

days at a time. The fish grow and breed quite happily in it.

Short of draining the pond to allow the blanket weed attached to the sides to die off, there really is no alternative method of removing it other than by twisting it on to a stick and removing it by hand. Disappointment often comes in water-gardening because results are expected too soon. Just as it takes time to achieve a well-balanced pool, so it will take time to get rid of the blanket weed, but if it is dealt with regularly and removed often enough it must disappear in the end. Once the pond has been stripped of all the obvious weed the introduction of some more oxygenating plants would serve to retard its renewed growth by depriving it of some of the nourishment it requires.



Visitors to Queensborough House delight to see the huge breeding orandas, which swim into the hands of Mr Rous to be fed and petted

Tropical Fishes and Water Gardens

THE small village of Wraybury, on a narrow road that can be reached from Staines or from the M4 motorway, is known to a good many aquarists because of Queensborough House, the country home of Mr A. Rous, director of Queensborough Fisheries.

In the peaceful setting of the secluded grounds are fish houses and water gardens, and these can be visited on Thursdays and Sundays. Queensborough Fisheries are direct importers of fishes, which first arrive at the Wraybury fish houses, and they are supplied from the Wraybury tanks together with other fishes bred there to the firm's Shepherd's Bush and West End of London retail premises. Water plants are also cultivated, both in tanks and in the well-arranged formal water gardens. Photographs on this page, by *retrusit montally*, show some of the features of this aquatic display that would be the envy of any aquarist or garden lover.



Part of the main fish house in which imported tropical fishes are displayed in thickly planted tanks and where some species are bred

Below is shown part of the formal water garden stocked with carp and goldfish, marginal plants, lilies and submerged aquatics. On the left is a garden pond that receives a waterfall from a massive rocky background



Transatlantic Topics

Continued from page 271

proof like that I would say the boom has reached atomic proportions!

* * *

Ever troubled by the metal airline clamps rusting and becoming difficult to screw in and out? Most of us who use this type of control must have had that problem at one time or another. The answer is simple; rub the threaded portion with petroleum jelly, it is harmless to the fishes and no matter if any falls in the aquarium.

* * *

A question often asked by readers

inquiring about the American way of life concerns the differences between English and American measures when applied to fishkeeping. Those of you who are wise enough to purchase a PETFISH Aquarist's Diary (1968 Diary ready this month) will have no such queries because the information pages provide all the answers. The U.S. gallon is approximately four-fifths of the British Imperial measure (0.83268). Roughly, Uncle Sam's 8 pints contain 75,000 drops and weighs about 8½ lb. compared with the British gallon of 90,000 drops and weight of 10 lb.

* * *

Have you any questions you would like answering about hobbyists in the United States and Canada? Any

subjects appertaining to the hobby over there you would like to know more about? Would you like a pen friend with similar interests?

If you have, then please write me care of PFM, and I will do my best to fulfil your requests.

* * *

The month of June saw the American Society of Ichthyologists and Herpetologists holding their 47th Annual Meeting at the California Academy of Sciences, San Francisco.

This fish 'shin-dig' with a capital letter attracted over 600 scientists from as far afield as Mexico and Canada. Delegates heard one hundred papers on diverse fish subjects and ended off the 6 days conference with field trips to many Bay Area localities.



AT the fifteenth annual open show of PORTSMOUTH A.S. as well as over 400 entries from all over the south there were a large number of interesting reptiles exhibited by Mr and Mrs Howard and waterlife show put on by Mr V. Hunt. The F.B.A.S. championship class for cichlids held at Portsmouth this year was won by Mr L. W. Jordan with a blue acara. The Portsmouth A.S. diploma for the best fish in the show was awarded to Mr J. Stillwell for a pumpkin seed sun fish. Other results were:

Inter-club furnished aquaria (tropical): 1, Portsmouth A.S.; 2, Redhill & Reigate. Inter-club furnished aquaria (coldwater): 1, Redhill & Reigate; 2, Carisson Club, Portsmouth; 3, Portsmouth A.S.

Individual furnished aquaria (tropical): 1, Mr G. B. Bass; 2, Mr M. Mason; 3, Mrs J. Stillwell. Individual furnished aquaria (coldwater): 1, Miss P. Whittington; 2, Mr L. Leach. Individual furnished aquaria (marine): 1, Mr J. Howard; 2, Mrs J. Howard.

Individual furnished aquaria (junior tropical): 1, Master I. J. Perman; 2, Master S. Perham. Individual furnished aquaria (junior coldwater): 1 and 2, Master R. M. Saurin.

Common goldfish: 1, Master R. M. Saurin; 2, Mr W. Leach; 3, Mr R. Saurin; 4, Miss P. Whittington. Bristol shubunkins: 1 and 2, Mr W. Leach; 3, Mr R. M. Whittington. London shubunkins: 1 and 2, Mr W. Leach; 3 and 4, Mr G. Eastwood. Comet: 1, Mr W. Leach; 2, Mr V. Hunt; 3, Miss W. T. Ryder; 4, Mr R. M. Saurin. Fantails: 1 and 4, Mr R. M. Saurin; 2, Mr R. M. Whittington; 3, Mr E. Binstead.

Veiltails: 1, Mrs P. Whittington; 2, Mr J. T. Watson. Moors: 1 and 3, Mr R. M. Whittington; 4, Mr W. Leach. A.o.v. fancy goldfish: 1, Mr R. M. Saurin; 2, Mr R. Wylie.

A.o.v. cultivated fish: 1, Mr R. M. Saurin; 2, Mr E. Binstead. A.o.v. Cyprinids: 1, Mr N. Saurin; 2, Mr J. Stillwell; 3, Mr V. Hunt. A.o.v. coldwater: 1, Mr J. Stillwell; 2, Mr V. Hunt; 3, Mr E. Binstead.

Short-tailed guppy: 1, Mr Scott-Morgan. A.o.v. male guppies: 1, Mr T. J. Clough; 2 and 4, Mr R. G. Bass; 3, Mr Scott-Morgan. A.v. guppies: 1, 2 and 4, Mr G. B. Bass; 3, Mr E. Binstead. A.o.v. swordtails: 1, Miss P. J. Greenhall; 2, Mr J. T. Clough. A.v. platys: 1, Mr G. E. Greenhall; 2, Mr T. W. Leach; 3, Mr R. Keeping. A.v. mollies: 1, Mr N. Packman; 2, Mr W.

Jordan; 4, Mr G. E. Greenhall. A.v. loach: 1, Mr M. A. Carter; 2, Mr G. E. Greenhall; 3, Mr G. W. Lawrence; 4, Mr M. Mason. Egglying toothcarps: 1, 2, 3 and 4, Mr H. Armitage. Danios and minnows: 1, Mr R. Biggs; 2, Mr V. Hunt; 3, Mr M. Mason; 4, Mr I. Goddard. Siamese fighters: 1 and 2, Mr Scott-Morgan; 3, Mr J. Stillwell. A.o.v. labyrinth: 1, Mr G. B. Bass; 2, Mr J. Goddard; 3, Mr R. J. Brown; 4, Mr Scott-Morgan. A.o.v. egglayers: 1, Mrs J. Stillwell; 2, Mr N. Packman; 3, Mr R. W. Hooper; 4, Mr K. T. Clough.

Breeders coldwater: 1, Mr R. M. Whittington; 2, Mr G. Eastwood; 3, Mr J. T. Watson. Breeders freshwater: 1, Mr Scott-Morgan; 2, Mr R. Biggs; 3, Mr R. Wylie. Breeders egglayers: 1, Mr G. B. Bass; 2, Mr H. Armitage; 3, Mr D. Armstrong; 4, Mr D. V. Jones. Breeders guppies: 1, 2 and 4, Mr G. B. Bass; 3, Mr D. Armstrong. Breeders mollies: 1, Mr R. Wylie; 2, Mr G. E. Greenhall; 3, Mr D. V. Jones. Plant cuttings: 1, Mr H. Wheeler; 2, Mr W. T. Ryder; 3, Mr J. D. Smith. Floating plant: 1, Mr I. Goddard.

SOUTHEND, LEIGH & D. A.S. were hosts at the second leg of the inter-club competition held with **BASILDON A.S.** and **THURROCK A.S.** Results were:

Labyrinth (other than fighters): 1, Mr A. J. Mason (Southend); 2, Mr B. Young (Basildon); 3, Mr E. Nisell (Thurrock); 4, Mr P. Mahon (Southend). A.o.v.: 1, 2 and 4, Mr R. Young (Basildon); 3, Mr D. Durant (Thurrock). Guppies: 1, Mr Hartley (Thurrock); 2, Mr D. Cheswright (Southend); 3 and 4, Mr D. Durant (Thurrock). Danios, rainbow, minnows: 1, Mr Mitchell (Southend); 2 and 4, Mr N. Tansden (Basildon); 3, Mr R. Passmore (Southend).

Total points for the two shows so far held are therefore: Thurrock 37; Southend 23 and Basildon 20. Secretary Mr M. J. Willis (17)

Continued on page 281

SPEAKER at the Assembly of the FEDERATION OF NORTHERN AQUARIUM SOCIETIES this month (29th October) is Mr Hans Schmidt, director of Tropicaarium Frankfurt. This event forms part of the British Aquarists Festival at Belle Vue Gardens, Manchester.

Lawrence; 3, Mr M. Bowyer; 4, Mr D. V. Jones. A.o.v. livebearers: 1 and 2, Mr N. Packman; 3, Mr G. E. Greenhall; 4, Mr M. Bowyer.

Dwarf cichlids: 1, Mr M. A. Carter; 2 and 4, Mr R. Keeping; 3, Mrs J. E. Wright. A.o.v. cichlids: 1, Mr J. E. Jordan; 2, Mr Scott-Morgan; 3, Mr H. Armitage; 4, Mr E. J. Cummins.

A.v. barbs: 1, Mr R. McMullon; 2 and 4, Mr G. W. Lawrence; 3, Mr I. J. Perman. A.v. rasbora: 1, Mr R. Biggs; 2, Mr R. T. Clough; 3, Mr N. Franklin; 4, Mr I. J. Perman. *Aplocheilichthys* and *Heliogomphus*: 1, Mr H. Armitage; 2 and 3, Mr R. Keeping; 4, Mr R. W. Hooper. A.o.v. characins: 1, Mr D. Stewart; 2, Mr G. E. Greenhall; 3, Mr Scott-Morgan; 4, Mr J. Stillwell. Corydoras catfish: 1, Mr R. Biggs; 2, Mr N. Franklin; 3, Mr W. R. Sherrin; 4, Mr L. W. Jordan. A.o.v. catfish: 1, Mr J. Mercer; 2, Mr I. J. Perman; 3, Mrs N.

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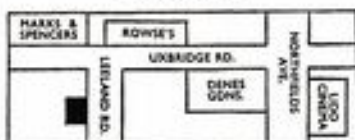
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AQUARIST



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Club News

Continued from page 278

Arundel Gardens, Westcliff-on-Sea, Essex) will be very pleased to supply details of membership or any information about the Society and its aims to prospective new members. Meetings are held every first and third Tuesday in the month at St. Andrews Church Hall, Westborough Road, Westcliff (entrance to the hall is in Electric Avenue).

MEMBERS OF HORSFORTH A.S. enjoyed a really international evening at their August meeting when fishkeepers from America, Australia and Spain described on tape how their societies differed from ours, and spoke about their way of life and about their fishes. In the tape from the U.S.A., one of Horsforth's corresponding members included an account of the recent race riots that took place in the area in which the member lives. From Australia, Mr Barry Tratter spoke about the Barrier Reef and his society, The Queensland Gold & Tropical Fish Society; and from Spain Senor Hans Hals, secretary of the Spanish Aquarium Federation, described Spanish aquarist societies and their activities. These tapes are for hire and enquiries should be addressed to chairman Mr R. Hampson, The Headlands, Scotland Lane, Horsforth, Yorks (phone 3062). Enquiries concerning corresponding membership should be addressed to secretary Mrs B. Helm, 29 Wellington Road, Leeds 12 (phone Leeds 21025). Table show results of the August meeting were: A.O.V. 1, Mrs Hall; 2 and 3, Mr P. Kirby. Junior A.O.V.: 1, Mr P. Kirby; 2 and 3, Mr P. Dickinson. Specified: 1, 2 and 3, Mrs J. Dickinson.

The club are planning an inter-club show on 2nd October with three other societies at which prizes are being provided by aquarist dealers in this country and abroad.

LATEST reports from **UXBRIDGE & D.A.S.** on club activities include details of their annual open show, which attracted over 300 entries. Judges were Mr Brown, Mr Towell, Mr Morrice and Mr Cannon, and Mr R. J. Thorne of Hounslow A.S. received the best fish in show award for a magnificent *C. severus*. Detailed results were:

Furnished aquaria: 1, Mr Stewart; 2, Mr Towell; 3, Mr Watts. A.V. guppy: 1, Mr D. Douart; 2, Mr B. Funnell; 3, Mr P. H. Halliwell. A.V. mollie: 1, Mr H.

Thompson; 2, Mr T. Hennessy; 3, Mr R. Savage. A.V. gills: 1 and 2, Mr C. E. Pike; 3, Mr P. H. Halliwell. A.V. swordtail: 1, Mr L. J. Thorne; 2, Mr A. Chadwick; 3, Mr T. Hennessy. A.V. barb: 1, Mr A. Jamieson; 2 and 3, Mr D. Leffert. A.V. characin: 1, Mr F. Merritt; 2, Mr D. Leffert; 3, Mr A. Chadwick. A.V. labyrinth: 1, Mr T. Summers; 2, Mr S. Mooney; 3, Mr P. H. Halliwell. A.V. fighter: 1, 2 and 3, Mr D. Douart. A.V. catfish and loach: 1, Mr A. Jamieson; 2, Mr V. A. Beavis; 3, Mr E. Nicol. A.V. cichlids: 1, Mr R. J. Thorne; 2, Mr P. Merritt; 3, Mr D. Leffert. Egg-laying tooth-carp: 1, Mr P. Watts; 2, Mr D. Douart; 3, Mr D. Leffert. Danos, rasiloras and minnows: 1, Mr J. Stewart; 2, Mr J. S. Peters; 3, Mr A. L. Chadwick. A.O.V. tropical: 1, Mr S. G. Mooney; 2, Mr A. Jamieson; 3, Mr B. Funnell. Breeders egg-layers: 1, Mr J. S. Peters; 2, Mr D. Douart; 3, Mr J. E. Bosley. Breeders livebearers: 1, Mr A. L. Chadwick; 2, Mr S. G. Mooney; 3, Mr A. Jamieson.

Other club activities have included inter-club competitions

RE. those half-filled show jars at the International Guppy Show at Manchester mentioned in 'Guppy Comment' (PETFISH MONTHLY, August). THE FANCY GUPPY ASSOCIATION point out that the half-filled jars belonged to overseas members from Africa. Air freight being as expensive as it is, overseas members cannot afford to send fish in large amounts of water. No show committee would dare to make up the water with that from Manchester in case the new water was unsuitable. Hence the half-filled jars.

against **HIGH WYCOMBE** and **AMERSHAM**, which Uxbridge won and a table show against **MIDHERTS A.S.**, in which the latter were the winners. In spite of many club enthusiasts being away on holiday, the most recent club table show brought the largest number of entries to date, 41 in 5 classes. Prizes have also been taken at Reading, Basingstoke, Chelsea and Hendon shows.

BURTON & D.A.S. obtained their victory at the inter-club show with **TAMWORTH A.S.** by one fish, when the best fish in show award decided the winners. Results were:

Livebearers: 1, Mr E. Hand (Tamworth, 77); 2, Mr G. Stood (Tamworth, 75); 3, Mr J. Hunt (Burton, 74). Cichlids: 1, Mr F. Wood (Tamworth, 76); 2 and 3, Mr J. Hunt (Burton, 74, 72). Catfish and loaches: 1, Mr S. Dean (Tamworth, 76); 2, Mr H. King (Burton, 75); 3, Mr L. Hand (Tamworth, 74). Coldwater: 1 and 3, Mr B. Forman (Burton, 78, 68); 2, Mr C. Foster (Burton, 70).

Mr and Mrs Eade judged the show and Mr A. Skinner of Birmingham gave a talk on breeding barbs

and angels. The club meets on the second Thursday of the month at the Fox and Goose, Bridge Street, Burton at 7.45 p.m. and new members will be made most welcome.

MIXENDEN TROPICAL FISH SOCIETY have asked us to convey their thanks to all the members of the sixteen societies exhibiting at their open show at the end of August. The 193 entries received from these clubs helped to make the show a great success. The best fish in show award went to Mr J. Whitley (Aireborough A.S.). Other results were:

Livebearers. (Section winners: J. & H. Dornie). Guppies: 1, Mr Marson (Workop); 2 and 3, Mr Hallett (Clitheroe). Swordtails: 1, Mr J. Whitley (Aireborough); 2, Mr Scaife (Keighley); 3, Mr and Mrs Walker (Aireborough). Platy: 1, J. & H. Dornie (Workop); 2, Mr J. Boswell (Huddersfield); 3, Master Kaye (Huddersfield). Mollies: 1, J. & H. Dornie (Workop); 2, Mr J. Whitley (Aireborough); 3, Mr N. Turner (Mixerden).

Barbs. (Section winners: J. & H. Dornie). Barbs up to nigger barb: 1 and 2, J. & H. Dornie (Workop); 3, Mr F. E. Gregory (Ours). Barbs over nigger barbs: 1 and 2, Mr R. Wilkinson (Halifax); 3, Mr and Mrs Walker (Aireborough).

Characins. (Section winner: Mr J. Whitley). Small characins: 1, Mr Marson (Workop); 2, Mr A. B. White (Keighley); 3, Mr F. E. Gregory (Ours). Medium characins: 1, Mr R. Wilkinson (Halifax); 2, Mr A. E. Whitlock (Tadcaster); 3, Mr R. Wisner (Mixerden). Large characins: 1, Mr J. Whitley (Aireborough); 2, J. & H. Dornie (Workop); 3, Miss A. Wilkinson (Halifax).

Cichlids. (Section winners: J. & H. Dornie). Dwarf cichlids: 1, J. & H. Dornie (Workop); 2 and 3, Mr P. Barritt (Bradford). Angels: 1 and 3, Mrs Bone (Huddersfield); 2, Mr J. Longbottom (Mixerden). A.O.V. cichlids: 1, Mr M. Jones (Valley); 2, Mr A. B. White (Keighley); 3, Mr A. White (Halifax).

Toothcarps: 1, Mr Greenhall (Tadcaster); 2 and 3, Mr A. Wood (Barnsley). Fighters: 1, Mr A. E. Whitlock (Tadcaster); 2, J. & H. Dornie (Workop); 3, Mr Marson (Workop). A.O.V. anabantids: 1, J. & H. Dornie (Workop); 2, Mr A. E. Whitlock (Tadcaster); 3, Mr P. Barritt (Bradford). Sharks and flying fishes: 1, Mr D. Carr (Bradford); 2, Mrs E. Wilkinson (Halifax); 3, Mr A. B. White (Keighley). Danos, rasiloras and minnows: 1, Mr P. Barritt (Bradford); 2, Mr A. B. White (Keighley); 3, Mr F. E. Gregory (Ours). Catfish and loaches: 1, J. & H. Dornie (Workop); 2, Mr P. Barritt (Bradford); 3, Mr Marson (Workop).

Breeders egg-layers: 1, J. & H. Dornie (Workop); 2, Mr W. Taylor (Ours); 3, Mr P. Barritt (Bradford). Breeders livebearers: 1, Mr A. B. White (Keighley); 2, J. & H. Dornie (Workop); 3, Mr Barrap (Keighley).

Pairs. (Section winners: J. & H. Dornie). Egg-layers: 1, J. & H. Dornie (Workop); 2, Mr J. H. Brown (Mixerden); 3, Mr W. Whitlock (Tadcaster). Livebearers: 1, J. & H. Dornie (Workop); 2, Mr Marson (Workop); 3, Mr and Mrs Walker (Aireborough).

A.O.V. tropical: 1, Mr Marson (Workop); 2, Mr J. H. Brown (Mixerden); 3, Mr J. Boswell (Huddersfield). Tropical or coldwater (children): 1, Master G. Brown (Mixerden); 2, Master D. Hallett (Clitheroe); 3, Master C. Longbottom (Mixerden). Fancy goldfish: 1, 2 and 3, Mr Eason (Sheffield). A.O.V. coldwater: 1, Mr Eason (Sheffield); 2 and 3, Mr M. Jones (Valley)

THE third inter-club table show between RAINSWORTH, MANSFIELD and HUCKNALL & BULWELL A.S. was held in the middle of August. About 90 keen fishkeepers from all three societies attended and Mr Inman of Nottingham & D. A.S. judged the show. Results were:

Breeders egg-layers: 1, Mr G. Wardle (Hucknall & Bulwell); 2, Mr Brim (Hucknall & Bulwell); 3, Mr K. Whittaker (Hucknall & Bulwell). Breeders livebearers: 1, Mr Taylor (Rainworth); 2, Mr G. Wardle (Hucknall & Bulwell); 3, Mr Smith (Rainworth). Toothcarps: 1, 2 and 3, Mr R. Stockdale (Mansfield). Catfish and loaches: 1, Mr Allen (Hucknall & Bulwell); 2, Mr W. Adams (Hucknall & Bulwell); 3, Mr W. Sherwin (Hucknall & Bulwell). A.S.V. not in last show: 1, Mr Roggan (Hucknall & Bulwell); 2, Mr A. Webster (Rainworth); 3, Mr Allen (Hucknall & Bulwell). Novices: 1, Mr Warren (Hucknall & Bulwell).

PROVINCIAL secretary of the FEDERATION OF GUPPY BREEDERS SOCIETIES, Mr F. D. Hall, reports peak activities by members with shows at Newport, Bath, Birmingham, Denmark and Berlin. 'One would think that our fish now eat out' says Mr Hall. Commenting first on the joint F.G.B.S. and F.G.A. show at Birmingham, Mr Hall rates it a great success. The venue at Kingstanding really 'buzzed' with guppy-talk and he describes how gratifying it was to see the way in which everyone fused into a cheerful, friendly crowd with a common interest.

At the SOUTH WALES SECTION annual show at Newport, 137 entries were benched (judges: Mr Bowers, Mr Delingpole, Mr Court and Mr Wigg). The best in show award went to the Robson female belonging to Mrs D. Court, best opposite sex award to the triangle male of Mrs Croft. Silver pins were awarded to Mr Walker, Mr Hall, Mrs Croft, Mrs Court (2) and Mr Delingpole. Class winners were:

Cofertails, Mr K. G. Pearce; scarfails, Mr F. D. Hall; coloured veils, Mr F. D. Hall; byretails, Mr J. Couzens; fentail, Mr R. Cheshire; roundtails, Mr K. G. Pearce; black veils, Mr B. Walker; bottomwards, Mr N. Court; doubleword, Mr B. Walker; triangeltail, Mrs J. Croft. Females: wedgetail, Mr D. Reid; grey roundtail, Mr R. Reid; coloured, Mr M. H. Delingpole; metropolitan, Mr R. Wigg; Robson, Mrs D. Court; gold roundtail, Mr F. D. Hall; goldfaced, Mr K. G. Pearce. Breeders males, Mr R. Wigg. Breeders females, Mrs J. Croft.

Show secretary Mrs D. Court would like to thank all exhibitors, members and non-members, at the BRISTOL & BATH SECTION open show for their support. 386 entries were benched at this most attractively laid out show. The best in show award went to Mr F. D. Hall's coloured veil. The best

SOUTHEND, LEIGH & D. A.S. are now able to loan their slide show entitled 'Building a Fish-House'. Interested clubs are invited to write to secretary Mr M. J. Willis, 17 Arundel Gardens, Westcliff-on-Sea, Essex.

opposite sex award went to Mr and Mrs Baynton's grey female; the best breeders to Mrs D. Court's grey females, for which she received her gold pin. Silver pin winners were Mr D. A. Crane, Mr F. D. Hall, Mrs J. Croft, Mr and Mrs Baynton, Mrs D. Court, Mr R. S. Wigg received a gold pin for his triangle-tail. Class winners were:

Cofertails, Mr D. A. Crane; spearail, Mr W. Myers; coloured veils, Mr F. D. Hall; bottomwards, Mrs D. Court; doublewords, Mr and Mrs Baynton; triangle-tails, Mr R. S. Wigg; Robson male, Mr W. Myers; scarfail, Mr M. H. Delingpole; black veils, Mr W. Myers; topwords, Mr S. R. Coombs; fentails, Mrs J. Croft. Females: grey, Mr and Mrs Baynton; Robson, Mrs D. Court; goldfaced, Mr D. A. Crane; metropolitan, Mr M. Reynolds; gold, Mr F. D. Hall; coloured, Mr A. F. Wilkinson; wedgetail, Mr N. Court. Breeders males: Mr R. S. Wigg. Breeders females: Mrs D. Court. Non-members classes: males, Mr C. Phipps; females, Mr F. Brown.

F.G.B.S. members have also been competing with great success further afield, and Mr Hall suggests a special mention should be made, in connection with the Berlin and Danish International shows, of the efforts of Mrs Doris Court, overseas secretary of the F.G.B.S., for the way in which she handled the involved effort required to get the fish away and returned. All the arrangements went perfectly and her efforts were rewarded by some excellent results.

Danish International Show. Diplomas were won by Mr P. W. Jinks (South Midlands) for a first for cofertails and a second for veiltails, Mr R. S. Wigg (South Wales) was awarded a diploma for coloured veiltails.

Berlin International Show. First places were awarded to four F.G.B.S. members in the single entry classes: triangle-tails, Mr J. Couzens (Bristol & Bath); grey flagtails, Mr K. G. Pearce (South Midlands); veiltails, Mr P. W. Jinks (South Midlands); bottomwards, Mr N. Court (Bristol & Bath). Mr B. Walker of Bristol & Bath was the winner of a diploma for his breeders team. Other award winners were:

Mr K. G. Pearce: 3, grey flagtails; 2, grey flagtails; 4, cofers; 2 and 3, bottomwards. Mr J. Couzens: 2 and 3, triangle-tails. Mr P. W. Jinks: 4, triangle-tails; 2, cofertails. Mr N. Court: 4, bottomwards. Mr M. H. Delingpole: 2, veiltails. Mr R. S. Wigg: 3, veiltails.

THE AMOUNT of interest aroused by authoritative information on the keeping of marine tropicals was amply illustrated at the recent meeting of the LOYNE AQUARISTS by the length of the meeting and the number of questions put to Mr Alan Harper of Poynton, who showed a film and gave a lecture on this subject. His talk did much to dispel some of the fears about the difficulties of keeping these fishes.

The club has also recently enjoyed a talk by Mr Eric Smart of Kendal, who also judged the table show. Results of this were: 1, Mrs R. Standen; 2, Mr J. Sallis; 3, Mr D. Cumpsty. Male guppy: 1, Mr D. Cumpsty; 2, Mrs R. Standen; 3, Mr D. James.

ILFORD & D. AQUARISTS' & PONDKEEPERS' SOCIETY have enjoyed a summer of varied and interesting club activities. 'At home' activities have included a talk by Mr George Yallop on cichlids, made doubly interesting because of Mr Yallop's anecdotes and personal experiences in connection with the observation and collection of these fishes in their natural surroundings, particularly in the Singapore area. At the August meeting Mr Michael Brill and Mr and Mrs Ren Ruth presented 'Crisis Cross Quiz' when two teams of members answered, or failed to answer, questions on aquatic subjects.

Recent table show results have been:

A.V. molly: 1, Mr Sheehan (Oxford); 2, Mr Sampson (Buck); 3, Mr Robinson (Oxford); 4, Mr Sampson (Buck). A.V. barb: 1, Mr Robinson (Oxford); 2 and 3, Mr J. Hattam (Iger barb and rosy barb); 4, Mr F. Hattam (row barb). A.V. single-tail pond fish: 1, Mr Cook (shubunkin); 2, Mr Sampson (comet). A.V. cichlid: 1, Mr Robinson (blue acari); 2, Mr F. Hattam (Jack Dempsey); 3, Mr R. Ruth (brown sword); 4, Mr J. Hattam (black lace angelfish). A.V. tropical plants: 1 and 2, Mr J. Hattam; 3, Mr H. Berger.

The society's annual pond competition was held on 23rd July and the winners were: 1, Mr and Mrs Woodley; 2, Mr Brill; 3, Mr Braham.

At the Dagenham Town Show held recently, the Society won first and second places in the furnished aquaria section, and notable among the members who gained individual awards was Miss Rita Berger, whose lionhead goldfish once more was placed first in its class.

The annual all-classes table show will be held at St. Laurence's Church Hall, Barking-side on Monday evening, 16th October and anyone interested will be welcome to attend. Further details are available from secretary, Mr R. Ruth, 13 Dunkeld Road, Dagenham.

In Brief . . .

... NEW secretary of the BRISTOL & BATH SECTION of the FEDERATION OF GUPPY BREEDERS SOCIETIES is Mr B. Walker (128 Church Road, Bishopsworth, Bristol), who will be pleased to hear from any person in that area interested in breeding guppies.

... ALL communications to GORTON & OPENSHAW A.S. should be sent, at present, to chairman Mr E. Price (192 Chapman Street, Gorton, Manchester 18; phone East 3424).

... NO problems about obtaining outside lecturers for HALTON & D.A.S. with father and son members, Mr Dawson senior and Mr B. Dawson, present. Mr R. Dawson gave a most enlightening talk at the July meeting on the evolution and anatomy of fishes followed by an equally excellent lecture by his son on gouramis. Table show results were: catfish and loaches: 1, 2 and 3, Mr F. Senior. Carps and minnows: 1, Mr A. Parry; 2, Mr R. Stringer; 3, Mr F. Senior.

... NOT only did members of COVENTRY P. & A.S. greatly enjoy their July meeting, but all items were their own work. A very active discussion took place on fishkeeping and tank maintenance. Questions put by Mr John Grant provoked much discussion, new members joined in freely and everyone helped to judge the table show by casting their vote for the awards.

... SEVERAL interesting fishes were entered in the August table show of AIREBOROUGH & D.A.S. and included a 6 inch piranha owned by Mr J. Whiteley. The moonlight gourami owned by Mr R. Lister was judged the best fish in the show. Other results were: Anabantids (novice): 1, Mrs A. Iveson; 2, Mr B. Megson; 3, Mrs I. Whiteley. Anabantids (junior): 1, Master K. Lister. Anabantids: 1 and 3, Mr R. Lister; 2, Mr J. Whiteley. A.o.v.: 1, Mr J. Whiteley; 2, Mr R. Lister; 3, Mr J. Whiteley.

... JULY table show results for YORK & D.A.S. were: Open class: 1, Mr M. H. Cooper (giant danios); 2, Mr G. Pygott (leeri gourami); 3 and 4, Mrs H. Simons (white clouds). Novice class: 1 and 4, Mr P. Carey (C. severum, Pimelodella gracilis); 2, Mr B. Ploves (thick-lipped gourami); 3, Mr J. Driscoll (albino catfish). Junior class: 1,

Master Poole (butterfly fish); 2, Master R. Thiel (guppy); 3, Master P. Carey (three-spot gourami); 4, Master P. Johnson (fantail goldfish).

The Society report that they hope to act as hosts next year to members of the Aquarium Society from The Hague, with whom they have forged a strong link as a result of their own visit to Holland earlier this year.

Badge of the Month



Merseyside
Aquarists
Society

... FOUR lectures at one meeting. LONG BEACH A.S. (U.S.A.) manage to do this on their Round-Robin evenings without exhausting members. The audience is divided into four groups and each speaker talks to each group for 15 minutes before passing on to the next group. At the club's July meeting each group heard experts on backgrounds and guppies, goldfish raising, unusual fishes, and a demonstration of grunion hatching.

... AN INTERESTING winter programme has been drawn up for members of GUILDFORD & D. A.S. Some of the meetings planned include a slide and tape show of fish and plants, a water-testing demonstration, a lecture on electricity in the aquarium and short lectures by

REIGATE & REDHILL A.S. would seem to be the first club to put into operation the new F.B.A.S. and G.S.G.B. agreement. All coldwater classes at their first annual open show held at the beginning of September were judged to G.S.G.B. standards by G.S.G.B. judges Captain L. C. Betts and Major G. O'Neill.

four members on tank glazing, plants, fishes and furnishings. There will be table shows and an inter-club show as well, and a Christmas draw. Fishkeepers who would like to join in are invited to contact secretary Mr D. Nightingale, 57A Gt Goodwin Drive, Bushy Hill, Merrow, Surrey.

... 30 ENTRIES in the a.v. tropical table show at the August meeting of ENFIELD & D. A.S. were judged by Mr B. Collins of Walthamstow. Results were: 1, Mr B. Senior (A. australe); 2, Mr J. Whittaker (bleeding-heart tetra); 3, Miss Collins (Tilapia mossambica). Meetings are held on the third Thursday each month and prospective new members should contact Mr C. B. Comley (3 Temple Gardens, Barrow Close, Winchmore Hill, London, N.21), who will be pleased to give further details.

... RESULTS of the table show for anabantids at NOTTINGHAM & D. A.S. were: 1 and 3, Mrs Bullyment (leeri gourami 82 pts, blue gourami 72 pts); 2, Mr Huddleston (thick-lip gourami 75 pts).

... DON'T miss this lecture, say members of EAST LONDON AQUARIST & PONDKEEPERS ASSOCIATION! An unusually large number of them made certain that they were present to hear the lecture on marine fishes presented by Mrs and Mr S. Wade of Wade Aquatics. Coloured films were shown of marine life and the use of equipment for keeping marines was demonstrated. New members are invited to attend meetings on the first or third Friday of the month at 8.0 p.m. at Ripple Road School, Ripple Road, Barking, Essex or contact secretary Mrs Harris (86 Leigh Road, East Ham, London, E.6; phone CLO 1478).

... TWO junior members of RUGBY & D. A.S. have been doing sterling work supporting the club's table shows during the holiday season, with the result that awards for the junior livebearers class read: 1 and 2, Miss C. Boneham; 2 and 4, Master B. Malin. Other table show results have been: catfish: 1 and 2, Mr B. V. Woolterton. Egglayers pairs: 1, Mr A. C. Webb; 2, Mr N. Bowen; 3, Mr D. Green and 4, Mr B. V. Woolterton. Livebearers pairs: 1, Mr B. V. Woolterton; 2 and 3, Master B. Malin; 4, Miss C. Boneham.

... CONSTRUCTION of stainless-steel tanks, breeding chequer barbs, diseases in livebearers—these were just a few of the queries raised at the

'Any Questions' night held by **BRADFORD & D. A.S.** Mr Goodison, Mr Firth and Mr Fletcher were the experts answering the questions. Table show results at this meeting were: catfish and loach: 1, Mr P. Moorhouse; 2 and 3, Mr A. Firth. A.O.V.: 1 and 3, Mr Kennedy; 2,

Mrs Shepherd. WE received news recently from the **LONG BEACH AQUARIUM SOCIETY**, California, of preparations for their annual Hobby Show. These include appeals for Fish Sitters (which does not mean comfortable evenings in a fellow

member's house gazing into the tank while the owner is at the cinema, but a few rigorous hours, standing inside the exhibit railings at the show answering questions about the tanks). We also hear that the use of petrified wood instead of the more usual rock is a very popular tank decoration.

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FISH

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BOOKS

ELECTRICITY IN YOUR AQUARIUM. Originally published at 7s 6d, this 114 pages book with 42 illustrations is now available at 2s 6d post free from PetFish Publications, 554 Garratt Lane, London S.W.17. Trade enquiries invited.

Continued on page 286

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