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Comments and Quotes

- Awards to Professional Aquarists
- Trouble from the shrimps
- Aquarist author retires

Diploma-winning Aquarists

RESULTS were announced last month of the first-ever examinations for the award of a Diploma in Pet Shop Management. The scheme was devised by the British Veterinary Association and the Pet Trade Association, and 27 pet traders from all parts of Britain were successful and received their Diplomas in London. Names in the list that will be particularly well known to aquarists are those of Mr George Boyce (South Western Aquarists), Mr A. W. Cheetham (Worthing), Mr Ron Johnson (Johnson's Aquarium), Mr Roy Skipper (House of Fishes) and Mr Bill Wingate (Wingates of Winchester). FPM offers sincere congratulations to all the award winners, and the pioneering spirit of all traders who supported the venture is something that must be admirably acknowledged by everyone. As one trader put it—there are few types of shops in the High Street, other than chemists, whose owners can qualify or obtain by examination a Diploma from a professional body. This can only lead ultimately to a (generally agreed) much-needed elevation of pet-shop standards.

Retiring Aquarist

NEWS of the retirement of Derek McInerney, author of well-known books on tropical fishkeeping, from his business, McInerney's Aquarium, will we know make many aquarists want to join with FPM in wishing him long life and happiness. He is going to live abroad in a warmer climate, but we cannot imagine that he will cease to be a fishkeeper.

Lethal Brine Shrimps

'TT was Professor Larry Slobodkin, of the Department of Biology at Stony Brook (New York University), who told me why Scottish fish-farming experiments came to grief. By closing off the end of a loch, seeding it with fish fry and dumping nutrients into the water, the Scots found they were able to grow large numbers of easily-caught fish. The food on which the fish thrived were the larvae of a brine shrimp from San Francisco Bay. These stand up to being transported in a dormant condition and are equivalent to live food. But as the bay was filled in and polluted the supply dried up, and an alternative had to be found. The Great Salt Lake also provides such larvae, but when these were placed in the loch, all the fish died.

'It turned out that the Utah farmers use heavy loads of pesticide, which drain into the lake and get into the brine shrimps. The quantity is not enough to kill them, but when the Scottish trout have eaten a few hundred of them and concentrated the pesticide from all of them in their own tissues, the load has become a lethal one. Thus the desire of the Utah farmers to grow more cereal affects Scottish attempts to produce more protein. That's the kind of world we have now.'—(Gordon Rattray Taylor, author of Doomsday Book) from The Observer.
LETTERS

Spiny Eel

I was with great interest that I read the article 'Keeping the Spiny Eel' (PFM, August, 1970). I have a 7-inch specimen of the species Macropogonthus ancilatus and am in agreement with the author of your article in every detail except one—the fact that he seems to advocate the use of sand as a planting medium in tanks containing *M. ancilatus*. My own eel is in one of my community tanks, which is 3 ft. 6 in. long and 15 in. back to front and 14 in. deep, and the fish is quite happy with the gravel which is used in this tank, as it is forever underground.

I have found my eel to be peaceful with other fishes with the exception of gouramis. He has so far been indirectly responsible for the death of four dwarf, two leeri, two thorn-tail and one opaline gourami. He does not kill in one go but chases the particular fish he has taken a dislike to and 'bangs' it with his long snout until the victim is demoralised and refuses to eat. It may be the ventral 'feelers' that annoy the eel, but whatever it is, gouramis don't last long with him around.

What Jaroslav Elias did not mention was the difficulty in catching a spiny eel. I used to show mine and so kept it in an 18 in. by 10 in. by 10 in. tank for a while (it won three thirds in the a.o.v. class out of three outings), but one day I decided to put it in its present home where it has been eluding capture ever since. I once spent an hour and ten minutes trying to catch it, determined not to give in, but I had eventually to admit defeat.

Great Horton, Bradford 7

J. F. CHORLEY

Accurate Temperatures

We would refer you to the brief article appearing on page 261 of the October edition of your magazine entitled 'How can I be sure of the accuracy of my aquarium thermometers?'.

Whilst the information given in reply to this query is very helpful, we would suggest that a simple answer would be—use ES-ES Dumpy thermometers. The Dumpy is made on a different principle to mercury or alcohol thermometers, and not prone to the faults you mention. In addition the Dumpy is extremely accurate, each thermometer being calibrated against a N.P.L.-tested master thermometer, with a tolerance of plus or minus 1°F only being allowed. Further advantages of the Dumpy include the ease with which the temperature can be read from a distance, its capability of being positioned in any desired position in the aquarium and its compactness. This latter point we consider of vital importance since, having no sharp edges and being fixed to the glass, it is impossible for fish to damage themselves when being chased or nettled. Coupled with all these points is one other which will obviously play an important part in the aquarist's choice of ther-

Your comments and views on all topics of interest to aquarists are welcomed. Address letters to PFM Letters, 554 Garratt Lane, London S.W.17

Evelyn, Cornwall

P. A. ROSS

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Young Marinist Replies

I was interested in Arpee's Personal Comment in PFM (October). I hope, however, that in this letter I can convince him that keeping marines is much easier (and it is) than he appears to believe.

I am 15 and started keeping tropical marines a couple of years ago. Initially I started off with a 2-ft. glass and silicone-sealed aquarium (home-made). I now have a similar 4-ft. tank with several types of damsels, a butterfly fish, surgeon, trigger, etc. All are well.

The main differences with keeping marines and keeping freshwater fishes, apart from the obvious, is that marines must not be left to their own devices. However, I have found that a sea aquarium need never be cleaned out as such, as long as it has a good marine underwater filter (mine are home-made).

The second point is that a marine aquarist must be patient. Start on a modest scale with hardy fishes. Isn't it worth the waiting? I have saved up my money over a long period of time to buy what I have now and I am well pleased. It has taken me time, mainly because I have had to save up for equipment, coral and fish. I am, however, not earning a wage. I believe, for the average working aquarist, if he is prepared to make his filters, tank, etc. (and not necessarily that even), marines are no more difficult or expensive to maintain than freshwater fishes. Here, I repeat, though, marines must not be neglected as many freshwater fishes are. Why not give marines a try? Good luck.

Huw Collingbourne

British Marine Aquarists' Association

Who Speaks for the U.K.?

When it comes to organising authorities Great Britain must come out first in the fishkeeping hobby. From the Federation of Scottish Aquarium Societies in the north, through the F.N.A.S. and M.A.A.S. in the north-west and midlands areas, to the F.B.A.S. in the south, no area of the country is without its over-riding authority. Yet when it comes to a national level we have nobody that can honestly speak for the United Kingdom.

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LETTERS

continued from page 278

each other, but apart from the odd exchange of newsletters and personal correspondence what evidence is there for practical co-operation on a nation-wide scale? When do delegates from each of these groups meet to discuss matters affecting the hobby? That this is needed is evidenced from the judging and show point of view alone. It is too easy to say in theory that such and such a body accepts another’s rules but a different matter for the hard-working judge to put it into practice, especially if he is working outside his own particular aquatic area.

Matters also that could be settled by one authoritative body are the questions of boundaries. Just where does the Northern Federation end and the Midlands commence, or is it just a token and any and all aquarium societies are accepted, as is the case? We need to get together and discuss the problem. Have any other readers any suggestions?

Liverpool

An Explanation

YOUR Comments included in the editorial in the July issue referred to an article on water pollution in which, whilst the author’s name was omitted, his London society’s name was used. The East London Aquarists and Pondkeepers Association request that your readers be advised that the society had no knowledge of the article referred to and that the author was not a member of the Association.

We hope publication of this retraction will save any embarrassment to our members who lecture on water pollution and allied subjects, and stop any conjecture as to the author which could damage our respected members’ standing within the hobby.

Thank you for your understanding and assistance on this matter.

R. DOOKINS

Chairman, East London A. & P.A.

Not to be Recommended

I AM sure most aquarists are, as I am, grateful to the American aquatic trade for innovations that have found their way across the Atlantic to make the pursuit of our hobby easier or more enjoyable. Occasionally they do export some form of atrocity, but I realise that the merit of any product is largely a matter of personal opinion. I have recently read of a new product, which as far as I am aware, is not yet available in Britain. It is made of transparent plastic and resembles a small shopping bag; it is designed to be hung from a pram, cot or playpen. When filled with water and furnished with plants and fish it forms, says the manufacturer, a ‘learning and development aid to baby in his first year’. What it forms for the luckless fishes we are not told.

Such a product will, I hope, be condemned by readers of PET FISH MONTHLY. I urge them not only to refuse to buy it but to complain to and, if necessary, boycott any dealer offering it for sale.

Manama, Bahrain

R. S. HOLMES

Keeping Tubifex

IT is true, as Arpee says (Personal Comment, October), that people all have their own favourite ways of keeping Tubifex fresh, but I really have found that keeping it submerged in water all day long, unless under a dripping tap, is not the best way of dealing with the problem. I am ‘allowed’ to use the kitchen sink from after the evening meal until I leave for work in the morning, so the Tubifex is kept under a dripping tap for this period. When I leave for work I empty out almost all the water from the container, leaving just enough to keep the last ½ in. of worms wet, and put the container into the coolest spot I can find until the evening. I have found that in hot weather the worms keep much better like this.

Sherborne

L. SANDERSON

Oscar Winner

Scandinavian aquarists have an ‘Oscar’ for award annually and the recipient this year (for 1969) was Gerhard Brünnen of Hamburg, the internationally renowned aquarium plant specialist. His photographs and books (the latest is Swedish is AKVARIEVÄXTER) have been widely praised. Presentation of the ‘Oscar’ was last month in Malmo, Sweden.
Transatlantic TOPICS

By JIM KELLY

LETIN, Al Klee puts the American position in a nutshell when he quotes from the original bye-laws of the American Association: 'That elected officials must not be concentrated in one particular geographical area of the country.'

Here in Britain, though admitting that country-wide representation would appear to be the democratic way, we didn't find widely dispersed officials to work well in practice. When spread out all over the place, committee members found it hard to get together for regular meetings. Today's groups favour management based in one local area, formed by members willing and able to meet together regularly.

Perhaps the differences between our two countries lies in yet another bye-law of the American Killifish Association: That all official business must be carried on via the mails. Even with our so-called fast fivepenny postage, I shudder to imagine the consequences of such activity—or lack of it!

Conservationists these days must be feeling a little like the early Christians did when the Roman Emperor Constantine made them legit! Though I hate to add to their many problems I think they should look in to the wholesale squandering of life that is taking place in South America by certain fish-collectors.

Are the powers that protect wild life aware that one member of the ancient herring-like freshwater fishes, the arowana (Osteoglossum bicirrhosum), is collected by chopping the heads off the adult fish?

Paradoxical it may seem, but true. The arowana is a mouthbreeder from northern South America and at the first sight of danger the young fish flee for the safety of their parent's mouth. Those collecting this species for the world's markets know this, hence The Lord High Executioner bit to capture the youngsters trapped in the mouths of their parent.

Unlike the Gilbert and Sullivan character, the collector's actions aren't amusing and if allowed to go unchecked could result in yet another creature being added to that long list of endangered species.

The article on the spiny eel in the August issue of PFM mentioned that the breeding of Mastacembelus species has been observed. Spawnings of these fish in captivity have been reported from the States: the eggs (up to one hundred at a time), were laid in amongst the plants floating at the surface of the aquaria; the eggs hatched out in approximately 3 days. Here are the details for those buffs who want to try their hand at breeding these eels: temperature, 80°F (27°C); pH 6.8 to 7.2; hardness 150-180 p.p.m.

The successful fancy guppy breeder amongst our readership will need no urging to follow the advice that a regular, partial change of aquarium water is beneficial to the fish. But now we have confirmation from no less a person than Mr Schneller, professional aquarist from Paramount Aquarium, New York and Florida, previously employed by the Aquarium Hamburg.

Chatting about his past experiences in breeding tropicals, he said in an interview that he used to raise angelfish to commercially salable size in just one month. One of the major contributing factors to this rapid growth was that one-third of the water in each aquarium was changed weekly.

Come on now, you doubters, make a change for the betterment of your fish. It costs nothing to try out.

Gerry Currier, executive editor of ANCHOR, San Francisco, has this tip to pass on to those readers breeding Brachydanio species. Because their fry prefer to feed at the surface of the water, food, preferably liquid, should be introduced either by letting it run slowly down the inside glass or alternatively down the blade of a knife held at an angle to the water. Introduced this way, the food will float at the surface where the young fry can get at it.

Many of our T.T. readers have written to me asking if I can publish a list of fish prices for both America and Canada. This is an almost impossible task because, as in Europe, the price of fish varies from country to country, city to city, shop to shop. On top of that, wages vary: the New World worker receives much higher remuneration for his services with a higher cost of living index.

As a compromise I could quote a few prices taken from a recent wholesaler's list, a catalogue of fishes that would make any livebearer-lover's mouth water because it listed no less than 11 types of swordtails, from 'brick tuxedo' to 'velvet hi-fin', and some 14 different varieties of platies. Average price is about 11 cents; dearest was the albino sword at 55 cents. Guppies are listed from 5 cents to 1 dollar.

On the new angel fish bred by Carl Naja (see T.T. PFM April, 1970 issue), the following prices were quoted (wholesale, remember): solid gold breeder, 100 dollars; harlequin angels, 100 dollars and young 'butterballs', 25 dollars. Do you still want to Go West?

Florida has now come up with a rival yellow angel produced by Robert Wingate. It will be interesting to see how the newcomers affect prices. After all, there is nothing like a little competition to do just that, is there?

Though the organised hobby in both the New and Old Worlds has much in common, there seems to be a difference of opinion when it comes to the election of officials to run our various groups, especially the specialist societies.

Writing in the BUNTBARSCHEN BUI-
CRYPTOCORYNENES and sword plants in luxuriant profusion, bushes of Ludwigia and blue-flowering giant hygrophiles, clumps of Alternanthera and Bacopa and many other aquatic plants admired by aquarists all growing abundantly. A sight to be imagined — but what has to be added is that few of these plants were being grown under water in the way that is familiar to us. This was one of the eye-openers for me when I enjoyed a tour of Mr. R. Forder's fish and plant houses, on my visit to his Hillingdon, Middlesex, home during the summer.

Ron Forder's experience in fishkeeping goes back over 20 years, and it was in his early days that he helped to establish the Usbridge & D. A.S. At that time he was breeding angelfish and tetras in quantity, and as time went on he devoted more and more of his efforts to studying and growing aquatic plants. Eventually, about 3 years ago, he decided that fish would have to take second place and so set about adapting and expanding his outbuildings.

These now consist of two plant houses, each about 10 ft. by 6 ft. and prominently featuring a large pond, and his main 12 ft. by 10 ft. fish house, which incorporates numerous ponds and tanks at various levels. The heating for all these buildings comes from the house gas-fired central heating system and is controlled by a separate thermostat, which operates a bank of radiators in the main fish house and coils of stainless-steel tubing in each of the ponds.

In addition to the normal angle-iron aquaria, numerous fibreglass water storage tanks (the type used nowadays in lofts) are also being used to provide the growing space demanded by some of his larger plants. The roofs of the buildings are mainly glass, and this has to be shaded during the summer months to keep temperatures to a bearable level; experience has shown that the translucent fibreglass panels often used by professional growers in their greenhouses are generally unsuitable for the propagation of submerged aquatic plants. Outside Mr. Forder's houses are a collection of ponds, joined together by a shallow stream running half the length of the garden: a concealed pump circulates the water from the pond at the lowest level back into that at the highest.

On first meeting Mr Forder a visitor might be forgiven for misjudging this quiet, unassuming man: his knowledge and expertise, which must rank him with some of the best-known names in this specialised side of the hobby, are quickly revealed, however, as he describes in detail the requirements of a particular plant, its leaf structure or its colour variations. This is in part due to his astonishing memory for facts that others might dismiss as trivia, but more important is the depth in which he pursues his studies. His most valued possession must be a reference book on climatology, and this appears to be the key to his success: he can ascertain temperatures, rainfall, seasons and a host of other factors for any region in the world, factors of which the majority of aquarists are apparently woefully unaware. It seems that most of us buy plants without any real knowledge of their requirements, and the result is that, by trial and error, some species come to be known as 'difficult' while others are 'easy'. However, some drastic rethinking is demanded on just how these so-called 'difficult' plants manage to thrive in the wild, and Ron Forder can often much to correct many of the false notions about raising them.

Firstly the cryptocorynes. The only time these plants are normally submerged in their natural state is when the rains come; when that happens they disappear under perhaps 5 or 10 feet of muddy water, and for about 2 months or so they 'rest' until the floods slowly subside
and they are returned to their usual damp and humid environment for the remainder of the year. It is, we are told, unnatural to expect them to thrive in conditions they usually encounter only during their rest period—and perhaps this is why they are generally regarded as a slow growing species. Ron Forder follows Nature to his best ability by immersing his crypts in water during late May; in August he slowly drains the water, over a period of 10–14 days, to below the level of the plants, which are then ready to be replaced in his warm, humid plant house.

Most of his plants are kept in flowerpots or similar containers to facilitate their being moved around, and they are grown in clean, sieved earth with a thin layer of gravel on top to prevent any clouding of the water. Crypts, like other so-called bog plants, prefer to be kept well-moistened though not actually running with water. In addition to their tendency to show a reddish tinge when submerged, crypts also develop quite different leaf shapes in the two growing situations: this can lead to immense difficulty in identification. For that reason Mr Forder has made informal approaches to the F.B.A.S. on the subject of appointing a number of specialist plant judges (classes for plants at shows currently are handled by regular class 'A' judges).

Three further tips Mr Forder has for us: where possible, keep cryptocorynes in soft water, otherwise the leaves will acquire a white lime covering on their surface when they are slowly taken out of the water. Point two, a sudden change from hard water to soft will most certainly cause all their leaves to rot away. Lastly, crypts do not need acid water; this fallacy probably originated from the fact that, in Nature, as the flood waters subside the decaying vegetation remaining does tend to acidify the soil. Incidentally, there are a few varieties of cryptocoryne to which these points do not apply, but these are ones not frequently available to aquarists.

Another plant genus with which Mr Forder excels is the anacostias. These plants 'rest' either out of the water altogether or in an unheated aquarium for several months. After the plants flower, in mid-summer, a slowing in growth will be noted. Mr Forder places the plants normal way up in a box of damp sand, with the tops about ½ in. below the surface, and leaves them for 2 or 3 months, when new shoots start to appear. The plants are then planted in fresh earth, a sprinkling of gravel is

Above: a view of some of the fibreglass water storage lost tanks used by Mr Forder for cultivating some of the larger tropical water plants

Right: lilies in flower in an attractive formal pond built in Mr For- der's plant house. House plants grow in the background
In his garden Mr. Forder has landscaped these attractive informal pools and a stream via which water is pumped from the lower to the higher pool.

added and they are ready to be returned to their tank. With this treatment the leaves will grow with amazing speed and within a fairly short space of time you will have a perfect centrepiece for any aquarium. However, this 'resting' should only be allowed for mature plants with fully-developed corns—the seedlings so often offered for sale will not survive this treatment. Most aponogetons produce flowers and subsequently seeds (A. stachyosporus being an exception) and to ensure this optimum conditions are an even temperature throughout the water, diffused lighting, moderately soft water and high humidity for flower and seed development; incidentally, most of the seeds will float for an hour or two after leaving the parent plant, thereby giving sufficient time for their collection before they are lost in the gravel.

Many other plants, including those mentioned in the opening paragraph of this article, should really be grown in marshy conditions, says Mr. Forder, and this almost certainly accounts for the slow growth of aconitum rushes, hair grass, four-leaf clover, heteranthera and others in a normal aquarium. Many echinodorus varieties also prefer being kept in damp and humid conditions for much of the year, and Mr. Forder has some excellent specimens on view; he recommends that care should be taken with this plant to establish whether it is from the northern or southern hemisphere, since this will influence its growth period.

Other species grown by Mr. Forder include tropical lilies, water hyacinths, some of the most beautiful amubla and cabomba to be seen, bushy and feather-like as it should be, and numerous fine floating plants such as annina and riccia. Perhaps even more noteworthy is the absence of algae—a very minimum of which was observed in his tanks and ponds, surely a reflection of how well he adjusts the environment to the needs of each individual plant.

Mr. Forder keeps very few fishes, limiting himself in the main to more common livebearers, the smaller barbs and zebras—these being no danger to the more delicately leafed plants. Yet, as of old, he still manages to win top prizes with them, and incorporates them into the furnished aquaria he exhibits with such success at shows around the country. His Society, Uxbridge & D. A.S., of which he is joint vice-president and show secretary, entered a particularly impressive 'Moon Rocket' tableau at The Aquarium Show 1969, and Mr. Forder's own efforts undoubtedly contributed greatly to the Society's 'first' award in the furnished aquaria section last year.

Despite the enormous potential of his set-up and collection if it were to be turned into a commercial venture, Mr. Forder's plans for expansion are made purely on the basis of his own interest in the hobby; he finds it a particularly relaxing pursuit after the pressures of running his own business. The many novel features he has incorporated into the design of his fish and plant houses...
In his garden Mr Forder has landscaped these attractive informal pools and a stream via which water is pumped from the lower to the higher pool.

...added and they are ready to be returned to their tank. With this treatment the leaves will grow with amazing speed and within a fairly short space of time you will have a perfect centrepiece for any aquarium. However, this 'resting' should only be allowed for mature plants with fully-developed corms—the seedlings so often offered for sale will not survive this treatment. Most aponogetons produce flowers and subsequently seeds (A. starchymporos being an exception), and to ensure this optimum conditions are an even temperature throughout the water, diffused lighting, moderately soft water and high humidity for flower and seed development; incidentally, most of the seeds will float for an hour or two after leaving the parent plant, thereby giving sufficient time for their collection before they are lost in the gravel.

Many other plants, including those mentioned in the opening paragraph of this article, should really be grown in marshy conditions, says Mr Forder, and this almost certainly accounts for the slow growth of acorus rushes, hair grass, four leaf clover, heteranthera and others in a normal aquarium. Many echinodorus varieties also prefer being kept in damp and humid conditions for much of the year, and Mr Forder has some excellent specimens on view; he recommends that care should be taken with this plant to establish whether it is from the northern or southern hemisphere, since this will influence its growth period.

Other species grown by Mr Forder include tropical lilies, water hyacinths, some of the most beautiful ambulia and cabomba to be seen, bushy and feather-like as it should be, and numerous fine floating plants such as anolla and riccia. Perhaps even more noteworthy is the absence of algae—a very minimum of which was observed in his tanks and ponds, surely a reflection of how well he adjusts the environment to the needs of each individual plant.

Mr Forder keeps very few fishes, limiting himself in the main to more common livebearers, the smaller barbs and zebras—these being no danger to the more delicately leaved plants. Yet, as of old, he still manages to win top prizes with them, and incorporates them into the furnished aquaria he exhibits with such success at shows around the country. His Society, Uxbridge & D. A.S., of which he is joint vice-president and show secretary, entered a particularly impressive 'Moon Rocket' tableau at The Aquarium Show 1969, and Mr Forder's own efforts undoubtedly contributed greatly to the Society's 'first' award in the furnished aquaria section last year.

Despite the enormous potential of his set-up and collection if it were to be turned into a commercial venture, Mr Forder's plans for expansion are made purely on the basis of his own interest in the hobby; he finds it a particularly relaxing pursuit after the pressures of running his own business. The many novel features he has incorporated into the design of his fish and plant houses.

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**Ron Forder's Own Plant Food Formula**

Take a handful of clean clay obtained from a source that is uncontaminated, especially by pesticides, and add to it a half-teaspoon of Bio Liquid Plant Food. Mix well, and it is ready to be placed lavishly around the roots of lilies etc. in their planting crates. For greater convenience the wet mixture can be shaped into small pellets and dried out slowly; these pellets are then pressed into the gravel near the plants needing nourishment, and will provide this with a minimum of disturbance to the aquarium. Mr Forder does not find that bonemeal or other additives are necessary as effects of them are often unpredictable. He does advise the use in aquaria of gravel no finer than \( \frac{1}{2} \) in. grade, to prevent the choking of plant roots.

Continued on page 288
Personal COMMENT

by

ARPEE

Several years ago when I was first intrigued by the mysteries of breeding angels I got a little heady over the success of a batch or so, and it was tempting to think of an unbroken and profitable ‘production line’ stretching away into the future. This easy illusion was interrupted at times by the intrusion of such unpleasant thoughts as to what would happen if my breeding pairs went off the idea. As it turned out, I was quite pleased to settle for something like an unbroken year, during which I raised a lot of fish and found out some interesting things about them. Then came a long period of nothingness, followed by a short period in which a few odd spawnings produced a few very good fry, and then, for all of the past year, 12 months of barreness.

I had long since ceased to worry about the consequences on my fishkeeping of this sort of circumstance—there are, after all, plenty of other diversions—but I felt it was a challenge to have to accept such a state of affairs. Nothing very much seemed to improve the situation. I made copious water changes and played around with the temperature now and again. The fish got extra rations of earthworms, and tempting clumps of bamboo leaves were put in the tank from time to time to remind them of their responsibilities, but they remained uninterested. Now I am a great believer in psychology when it comes to animals and it occurred to me that it might pay off to introduce some proven compatible fish of other species to the angel tank, just to break the monotony.

For obvious reasons I decided that it would be the festive cichlid for this experiment. It had long since caught my eye and I was much attracted to its unique body shape and to its bold black bars at such a restful angle, quite an effective foil to the markings of the angel itself. It was an obvious fish for the role because the two species swim together in their native waters, and their association could have meant a happier performance from either or both.

The festive is not the most impressive of fish when viewed in the shops, as it suggests weak coffee and cream. Its sedate means of progression also gives the impression that it is a little stodgy and uninteresting. Its head reminds me irresistibly of that of a sheep, and if that is the way it strikes you, it will not attract many points for latent intelligence, a characteristic often attributed to members of the cichlid family. All in all, this is the fish the other chaps buy, but not you. It is said to grow to about 4 inches, to be rather timid but peaceful, and to have no unpleasant habits like tearing up the plants. This makes it much more of a proposition, particularly when it is also omnivorous and won’t throw a tantrum if earthworms are missed off the menu from time to time.

The end came, so far as my resistance was concerned, when I saw an illustration of a pair in breeding trim: although this was probably exaggerated by the inaccuracies of colour photography and reproduction there was no doubt at all that here were hidden depths, so I decided to plunge them.

I managed to secure a couple of nice fish about 2 inches long, and I consigned them to an 18 inch quarantine tank immediately below that occupied by the five large

Mr R. Forder at Home

continued from page 287

are indicative of his thoroughness and attention to detail. Despite the considerable work that the care of his plants demands, he is a keen photographer and has built up a fine collection of colour slides of his charges. As a result he has been increasingly in demand for lectures to societies in many parts of the country, a duty added to those already incurred in the Uxbridge Society and as a member of R.A.S.S.

For those (such as myself) who have for too long ignored all but fishes in the hobby, Ron Forder’s activities are a welcome revelation. Let us hope that a little of his knowledge might rub off on us all and make our aquaria into creations of even greater beauty and satisfaction.

Mr Forder has kindly offered to answer plant-growing queries from readers of PFM in our columns. Please address queries to Mr R. Forder, c/o PFM, 554 Garratt Lane, London, S.W.17—EDITOR.
Angel fish pairs, after a long period of regular and satisfactory spawnings, will often stop breeding for a time. This is discouraging to the breeder but there is no known surefire method of starting a pair breeding again.

angels. There were several rocks in this in case they wished to shelter, but otherwise they were unaccompanied by anything other than gravel and water. For about a week they got on very well and fed delicately but adequately on anything offered, and they were certainly not in the least bit timid. Then the larger of the two began to bully the other, which spent much of the day covering under a rock overhang. The disputes rarely ended in physical combat, and there were no torn fins, but both fish took on enhanced colours, mostly slatey greys and blacks with the familiar bar completely disappearing on these occasions.

I was in no great hurry to put them with the angels, which are about twice their length, so I allowed them to grow on a bit in their separate quarters. If you will try now have guessed that the angels then spawned for the first time in a year, you will have guessed correctly, as that is just what they did. Furthermore, the parents guarded the eggs for several days before I removed the female. The male remained and saw the first fry begin to swim, but then the temptation became too much for him and he made away with them.

To me this is a first-class example of how very careful you have to be when writing or advising about fish. If I had put the festsies into the angel tank before that spawning there would have been a lot of temptation to believe that they had something to do with it. As it is, I could state that angels can be encouraged into spawning by placing some festive cichlids into a tank beneath them, but I won't! But this is the sort of coincidence that gets people thinking and talking—perhaps, indeed, fish have their own bush telegraph.

Readers' Queries Answered

Imperfect Finnage

My first attempt at spawning ray bars resulted in about 250 fry. However, several of them have only rudimentary caudal fins or half a caudal. It seems a pity to throw so many out after a first success—is there any cure for this ailment and can you suggest the cause? They were spawned in a bare tank on nylon nets and raised on Liquify, brine shrimps and powdered food. Some are now in planted tanks and some in a bare 6 in. tank with sponge filters. I also notice that I have one or two young molly mollies with the same trouble in a different tank.

Malformation of finnage can be an inherited condition and a whole brood may be malformed, but this is more likely to take the form of a complete absence of a particular fin; as the mollies in another aquarium are also displaying these symptoms it would seem that disease or mismanagement is the more likely cause. Günther Sterba in Aquaristum once specifically mentions barbs in connection with the prevalence of this condition and suggests that it can occur throughout several generations of fish if the water in the rearing tank is not changed sufficiently often. Unhealthy tank conditions give rise to the growth of bacteria, including those that cause tail- and fin-rot. Fin-rot can be successfully treated with the drug phenoxetol, which can be obtained in proprietary forms from your aquatic shop.

More answers on page 293.
So You Want to Make Some Money?

By D. W. GODFREY

It has been often alleged that there can be gold in fish breeding but attempts at realisation can put the process on a par with rainbow chasing. Here is a breeder who chose discus...

That they manage to breed discus fairly easily in Singapore and America, yet aquarists are all too seldom able to emulate them here in Britain.

Eventually we decided we'd have a bash, and although it might cost a bob or two to get started, we reasoned that the speculation would be justified if we succeeded, and if we didn't—we didn't think about that too much! Having already a shed in the garden we bought a 5 ft. angle-iron tank, coated it with polyurethane and placed it under the window where we hoped it would receive some sunlight. We made a lid from perspex rather than glass; not only is this lighter but also it wouldn't shatter and we could cut it more easily when making access for filter tubes etc. Unfortunately the perspex we had was only 3/16 in. thick, and subsequently distorted with the heat.

We filled the tank with a mixture of distilled water and rainwater, giving us a hardness of less than 1 D.H. We bought a power filter reputed to have a turnover of about 750 gallons/hour, and by using Irish peat moss we brought the pH to approximately 7.8. No gravel was used on the bottom and no aquatic plants were present. We placed in the tank two large flowerpots, into each of which we inserted a plastic Amazon sword plant held in place with some lime-free gravel. After stabilising the temperature around 82°F, we were now ready for the fish.

This was the crucial part. Obviously we had to have a pair if we were going to succeed, but where to go for a truly compatible pair? Knowing the difficulty involved, most dealers won't guarantee two fish as being male and female, let alone say they're a breeding twosome. We gave a lot of thought to this problem and eventually purchased a pair of brown discus from a gentleman who needs no introduction where these fish are concerned (he was, after all, the first to breed discus in this country); he was prepared to guarantee the fish as a breeding pair.

Once in our tank, they quickly settled down and their colours were strikingly beautiful as they swam regally in the amber-tinged water inspecting their new home. For my part, I was impatient for them to start breeding. Only then could I begin to recoup some of my outlay, and be on my way to the fortune the dealer had spoken of.

We tried them on a variety of food, most of which they rejected, and we ended up with them accepting only two: ox heart and daphnia. Now ox-heart I can manage all the
year round but, as this was mid-winter, the daphnia was a real problem. The dealers wanted 15. for about six daphnids in a bag, but as I was supposed to be making my fortune, not theirs, this was out of the question, and so my discus had daphnia but rarely.

Three weeks after we bought them the discus spawned. I saw the eggs and couldn’t believe my eyes. But there they were on the flowerpot, and both parents were keeping a very close watch over them. I rushed like a maniac indoors to tell my wife, and together we glowed over them. So we can’t do it, eh, we said, repeating what we had heard so often from others to whom we had confided our intentions. Can’t do it—we’ll show ‘em! We went to bed that night feeling 17 ft. tall and overjoyed at our success.

Next morning all the eggs had gone. Disappeared completely, and the parents swimming quite unconcernedly up and down the tank. Now how do you tell a pair of discus that they’ve eaten your profits? I thought of withholding their food, but realised they might then eat any subsequent spawnings through real hunger. My wife brought me back to sanity. ‘Of course they’ll spawn again, and very soon according to all accounts,’ she said, ‘so let’s use the time trying to find just why they ate the eggs, and then take precautions to prevent it happening again.’ So we began by making a chart listing all relevant data regarding the fish: their behaviour pattern, if discernible, and our action to date.

After a lot of investigation there still wasn’t much for us to go on, so eventually we decided to remove the strip light above their tank, thus making it much dimmer within, and we also changed half of their water for distilled. Eleven days later the fish spawned again, this time on the other flowerpot, and for me the hypertension started all over again. Next morning, joyously, the eggs were still there, and things were looking good, but my joy turned to sorrow as, within 24 hours, the eggs once again had irretrievably vanished. Swallowing our sorrow, we brought the chart up to date and tried again to find a common denominator, realising all the while that it was still rather early in the proceedings for a pattern to show itself.

In all, the discus spawned ten times in a space of 8 weeks, and although we gradually became less excited as each successive spawning was eaten, still we religiously kept our chart up to date, and by a process of elimination, we slowly brought conditions in the tank nearer to those we thought necessary for a successful spawning. Gradually we knew we were winning, as the eggs lasted longer and longer before disappearing, and we felt sure it was only a matter of time before we achieved a hatching.

By now, of course, the tank was looking very different from when we started, with all lighting removed and only the slightest amount of sunlight filtering through the gloom of their tank. We had removed one of the flowerpots and had replaced it with an amphora which we had split down the middle, and one of these halves placed in the water made an excellent cave, into which the fish immediately disappeared. From then on it became their permanent home. As they looked so happy and contented now, we had high hopes for the future, although after so many spawnings we were afraid that the female must be producing less eggs than when she started the series, and therefore we wondered whether we should rest them before trying again. But since we thought that we were so near to success we decided to give them one last opportunity to bring it off, before giving them a well-earned rest.

On 4th June this year they spawned once again, and we proceeded to follow a plan we had formulated based on our findings from the chart we kept. The details must of necessity remain vague, since we cannot be sure that they would apply to discus in general; they were based on the behaviour pattern of one isolated pair, but basically the principles we followed are the following:

The water must be very soft (although whether it needs to be less than 1 D.H. as is generally advocated is questionable; certainly the water in our tank was 2 D.H. at the time of spawning and, later, because of the large unglazed flowerpots and amphora, the hardness increased to almost 3 D.H.). But the water must be salt-free. The pH
was kept at around 5.8 by using continuous pest filtration, which also presumably keeps down the bacteria, although again we did make use of ozone, which may have helped. The temperature fluctuated between 83° and 85°F. We used no form of artificial lighting and no aerator, but the filter return pipe was connected to a long perforated tube which ran above the middle of the aquarium, and the filtered water was returned to the tank in a way similar to rain, which had the effect of aerating the water.

Well, by following this fair standard procedure we managed to achieve the hatching we so badly needed. We were absolutely delighted, of course, and watched thrilled as the parents swam sedately around, the fry staying in a swarm on their flanks, all the while nibbling and tugging at the ever-present food supply. What a moment this was for us: this sight made all our efforts worthwhile. All our disappointments were forgotten as we watched the parents proudly parade their young before our delighted eyes—a great moment!

The fry quickly grew on, and as we didn't want to foul the tank with salt because we hoped for further spawnings later, and since we were not convinced that brine shrimp was the best food we could provide, we decided against feeding the fry with it, and instead, when they were about 3 weeks free-swimming, we started them on scraped ox heart. They ate this with relish, and interspersed with sifted daphnia and cyclops this diet complemented the natural food they were still taking from the parents’ skin.

After 3 weeks of free-swimming we moved them to a separate tank of their own, and on counting them as they were transferred we found that we had 71 baby brown discus. Within 3 days of the fry's removal the parents spawned yet again, and this time a far larger quantity of eggs was deposited on the flowerpot. By using the same technique as before, we watched the eggs hatch, saw the alevis wriggling and, at the time of writing, this brood is now free-swimming and we are hoping to rear them successfully.

In all honesty I must confess we have not yet made our fortune, nor even covered our expenses, yet my wife and I have derived an immense amount of pleasure from this venture, and not least from the fact that we succeeded against local opinion in rearing discus to a saleable size, and as the discus happens to be the very first fish we have ever spawned—well, we couldn't complain, could we?

Standing in our local aquarists' the other day, someone was heard to remark: 'Now if you wanna make some real money, how about red-tailed sharks...?'

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**Readers' Queries Answered**

**Stranger in the Butt**

Can you please help me identify a strange creature that has appeared in small numbers among mosquito larvae and bloodworms in my water butt. It is about ½ in. long in the body, sna up the top, has grey upper parts and pale under parts with a thin tail the same length as the body. It moves through the water concertina fashion like a caterpillar. Is it a safe live food if it gets mixed in with the mosquito larvae and bloodworms when feeding my fish?

Your grub-like creature is the 'rat-tailed maggot'. It is the larva of a hover fly (Eristalis) and you will find that the long breathing tube (tail) is capable of very great enlargement indeed—to several times the length of its body. In our experience few fishes appear to relish this animal as food, it does no harm if present with live food but it would be advisable not to add great numbers to an aquarium since deaths of the unconsumed creatures might produce a pollution problem.

**Scientific Names**

I am interested in the meanings of the Latin names of fish and have not been able to find another book, besides EXOTIC AQUARIUM FISHES, by W. T. Irons, that explain them. The meanings of some of the names are fascinating and I should like to take the study further. Can you suggest any other publications that will help?

It is in fact inaccurate to speak of 'Latin names' since zoological and botanical nomenclature also employs Greek forms in the construction of 'scientific names'. Your interest in this subject would probably be quite well served by one of the dictionaries of Latin and Greek roots commonly used in scientific names for all kinds of animals and plants (many of the word roots turn up over and over again in all these names). Your local library should be able to help here. For British fishes a useful book is KEY TO THE NAMES OF BRITISH FISHES, MAMMALS, AMPHIBIANS AND REPTILES by R. D. Macleod (Pitman).

**Treatment Risks**

I have recently lost a pair of discus cichlids with gill blisters—or rather the male died with gill blisters but I suspect I killed the female trying to cure her. I haven't had one fish that has survived my treatment! I seem to overdo it, and I am feeling very despondent about it.

One sometimes suspects that as many fishes are killed by over-anxious aquarists as are killed by disease. Never be too anxious to diagnose disease too rapidly. Rely first of all on good aquarium management—keeping tanks clean and free of detritus, quarantining new fish and cleansing new plants and being careful with live foods. If you are certain of the disease involved, take advice from your local shop, buy the correct drug and follow the instructions given with it. Do not mix drugs—if one doesn't appear to work do not pour another one into the tank immediately. You do not give full details of the treatment you have applied, but if the fish do die in spite of your care, do not despair. Knowledge of fish pathology is still in its early stages. Many diseases now have specific cures but there is still a great deal to be learnt and, of course, it may be that the fish you are trying to cure have already gone beyond the stage at which the drugs available can be helpful.
GUPPY
World

RED guppies and plants of the potato family don’t have anything in common but in some fish houses they come together in an interesting way.

Capsicum is a tropical shrubby genus of the potato family, yielding cayenne pepper (the Hungarian version is named paprika). If mixed with the guppy’s food this pepper can temporarily enhance the red coloration of the fish and could be responsible for some extra points for colour. Points that could be the difference on the show bench between a red or a green card—even any card at all!

Looking through dozens of judging sheets to check my theory, examining results spread over many years and just as many judges, I was surprised to note that the average difference between a first and a third award was but 5 points. Little enough when spread over the spectrum of 100 possible points.

Meanwhile, back in the fish room, addicts of paprika have found that feeding with it had no bad effects on their guppies; according to some you cannot give too much of it (this I would tend to treat with suspicion).

Though the heightened coloration is temporary, it can be quite startling. It can only happen if there is already some red pigmentation present. Even this ‘hot’ stuff cannot enhance what isn’t there already.

Whilst on the subject of dietary additives, how do you regard the matter of artificial flavourings in fish foods? The guppy does not go off its food very often, rather the contrary, but the odd case of anorexia does occur and it is as well, like the Boy Scout, to ‘be prepared’ for when it does.

Fishermen, those followers of Izaak Walton, who prefer to catch their fish the hard way, have known for some time that fish are often tempted by the odour rather than the visual attractiveness of their lures. Making use of this fact has resulted in better catches.

Some of the common additives used that could also be tried by the aquarist are oil of anise, oil of peppermint.

By PETER UNWIN

Continued on page 298

Guppy Types

This guppy, with a tail half-way between the long narrow caudal fin of the scarlet and that of the broad delta, has been the subject of controversy ever since it put in an appearance. It has been in and out (of the Standard Handbooks) more often than my grandfather’s suit. Main opposition came from a number of breeders who said this guppy was not true-breeding but merely a sport or throw-out from other strains.

It was first named by the late Dr W. T. Innes in 1959. In his magazine THE AQUARIUM he wrote that he had just received some guppies from the Aquarium Stock Company, New York, bred originally by a local cabinet maker, Paul Hahnel. Though Paul had referred to them as his “aquas strain”, Dr Innes thought the word flagtail more appropriate because of their beautiful red, white and blue coloration.

No. 5: The Dovetail

The outline at the head of the article depicts the dovetail standard (by courtesy of the F.G.A.)

A year later, at the Aquarium Show held at Olympia in London, George Phillips introduced them to these shores. At the show they soon attracted the attention of the visitors and when asked during an interview with a newspaper reporter what he called them, Mr Phillips admitted that they were so new that they were nameless. The enterprising reporter, smelling a good story, noticed that some of the male guppies displayed a ‘Stars and Stripes’ pattern in their tails. In his paper, next day, he referred to them as flagtails. The name stuck—even if the pattern didn’t!

In 1969, a similar guppy brought over from Europe was substituted for the flagtail under the German name of Fischer. Because the translation of this was ‘fan’, a fish we already had a standard for, the specialists changed it to dovetail.

In the early days broods from this variety were small but the males coloured up very early on in their lives. The long flowing tail fin didn’t develop until they were some 3 to 4 months old. It is too early to make similar predictions about the brand new dovetail.

The Deutscher Guppy-Gesellschaft, the German guppy association, and the F.G.B.S. displayed a very similar fish in their standards under the title of ‘fan-tail’. J.K.
Photographing Aquarium Fishes

By CHARLIE WITHERS
Mid-Herts AS.

Frontal view of the photography aquarium with the camera and
flash (F) on its extension lead (E) in position.
The flash head is about
3 ft. away, 45° up and 45°
to either side of the tank.

When I became actively involved as a committee member of my Society one of the first things that struck me was the very short supply of visual aids for the aquarium hobby. There was a fair amount of slides and film available on fishing, water pollution and undersea excursions, but although this was of academic interest to the aquarist it did not really fill the need. I decided I would try and produce something myself. Let me say right from the start, I am not a professional photographer, but merely an aquarist who likes to take pictures, and as such, will probably be 'shot to pieces' by the experts.

There are four main requirements for making good pictures of aquarium fish, the first two being time and infinite patience. One you can make, and the other you are born with or without. The other two requirements must be bought. One is a single-lens reflex camera (SLR) and the other is a light source. I consider an SLR camera to be essential, as unless you can see straight through the lens it is almost impossible to compose your picture and focus the subject. I have used two: the first was a Russian Zenit and the other a Pentax S.V. Both were excellent 35 mm. cameras. As a lightsource, I always use electronic flash, because it is cheaper in the long run, and saves a lot of fiddling around changing bulbs.

Many photographers engaged in the kind of work we are discussing seem to favour Kodachrome II film, but I find the end product is too red. That is, any pink or reddish tones on the subject are accentuated, and as many of our fishes have red in them somewhere I find this gives an unnatural result. For this reason I prefer to use Ektachrome X or High-Speed Ektachrome, which in my opinion have much better colour, Ektachrome also has the advantage of being a much faster film. This enables the lens to be 'stepped' down much further, thereby increasing the 'depth of field' and this is important, as we shall see later on.

There are two methods that I have used to photograph fish. One is to use a small tank, and closely confine the subject to the front glass. The other is to take the shot in the tank where the fish usually live. Both have their advantages and disadvantages. With either method one must remember that, unlike most domesticated animals, it is impossible to pose your fish. They are easily frightened and tend either to dash madly about or else they hide behind any plants or rocks that are in the tank; both can be very frustrating. This is where the patience comes in.

For fish up to about 3 in. in length I think the small-tank method is
best. I use a tank 10 in. by 8 in. by 6 in. and have made slots in the top frame so that pieces of glass can be placed in position behind and to each side of the fish, thereby keeping it more or less where you want it. Do not confine the fish too closely, however, as they then tend to fold their fins and skulk in a corner, which is useless. If you wish to use any plants or rocks to complete the picture, these can be placed behind the back glass where the fish cannot hide behind them. When the shot is made these will be slightly out of focus, but that is not important.

For this method I use the normal camera lens with a number 1 extension tube. These tubes are sold, usually in sets of three; they are of varying lengths and may be used singly or in any combination, depending on how close you want to get. With the number 1 tube in position and with a 50 mm. lens the area you can cover is about 4½ in. by 2½ in. with a film to subject distance of about 10½ in. However, all these data come with the tubes, and the subject area-size can be increased by moving the camera back. Having set the camera up in the right position we must now think about the light-position and exposure time.

I find that the best position for the flash is 3 ft. from the subject and about 45° up and 45° to one side; for this position you will obviously need an extension lead and these are easily obtained in any length up to about 12 ft. With this sort of set-up the lens aperture should be set to f8.

Now we come to the important subject of 'depth of field'. A lens gives its sharpest image at a single flat plane in space. In front and behind that plane the sharpness falls off. The point in front to the point behind the distance of sharp focus that has acceptable sharpness is called the 'depth of field'. Unfortunately for us the depth of field decreases the closer the camera gets to the subject. With a 50 mm. lens without extension tubes at the distance we require the depth of field is only 1½ in., and with the number 1 extension this is reduced even further to about ½ in. Reducing the lens aperture does increase the depth of field, and that is why the faster film is an advantage. To the fish photographer this means that the subject must always be parallel to the front of the lens—otherwise one end, or both, will be out of focus. If you are photographing more than one fish you will find that you will have only one in real focus, and the others slightly out, unless you are very lucky.

While on the subject of focus I would like to point out that if your camera has an automatic lens, that is, one that stops down to the required setting when you press the trigger, this facility is lost when using some extension tubes. To get round this I put a pencil in the position that the fish will occupy, and focus on that with the lens wide open; then I stop down to the required aperture, and wait for the fish to swim into the right place (more patience required!).

My second method, of photographing the tank in which the fish usually live, I use for bigger fish. This has the advantage that they are not disturbed, but has the disadvantage that they can swim out of the picture area, and usually do. Another disadvantage of this method is that big fish, particularly cichlids, usually keep the bottom stirred up, and if photographed in this condition, the end result would look as if they were swimming in a snowstorm. To prevent this I clean the glass the day before, and have heavy filtration going for about 24 hours before taking the photograph.

I use either a 135 mm. telephoto lens or the 50 mm. without extension tubes. This means that you can go as far back as you like to compose the picture, but there is a limit to how close you can get. With the 50 mm. lens this distance is about 18 in., depending on the make of the lens, and you will photograph an area of about 11 in. by 7½ in. With the 135 mm. lens the corresponding figures are, distance 5 ft. to 6 ft. depending on make and an area of about 17 in. by 12 in. Once again remember that the closer you are, the less the depth of field. On most lenses the actual depth of field can be read off against the scale on the focusing ring.

Having dealt with the basic principles let us now think about some of the finer points.

I said earlier that to get a good picture the fish must always be parallel to the lens surface. This is usually true, but for some subjects a good effect can be achieved by having part of the fish out of focus. A good example of this is photographing the teeth of a piranha; if the head is in sharp focus and the rest out, attention is drawn to the area you want.

The same can be done with a particular fin or scale formation.

Continued overpage
When using the big-tank method I find it advantageous to mark an area on the tank glass slightly larger than the zone to be photographed, either with a Chingraph pencil or tape. Then all you have to do is to wait for the subject to position itself in the marked zone, and press the shutter release. You don’t even need to look through the view finder.

If possible try to make the picture area in the centre of the tank. This way there is less chance of the shot being spoilt by the tank frame being obvious, or the surface of the water.

Try to avoid photographing your subject at the end of the tank as you can sometimes get a mirror image in the end glass that looks peculiar. Many people take shots of fish at shows. This sort of shot is not usually very successful for several reasons. If the fish are in jars the glass is not flat and you get distortion. If they are in tanks it is best to use a piece of cardboard as a background otherwise you will also take the tank behind. It is also very difficult to prevent unwanted reflections of windows and lights, or even people’s faces.

While on the subject of reflections, in any kind of aquarium photography it is a good idea to black over any bright parts on the camera to prevent them reflecting in the tank glass. Hands can also become very apparent if near the camera when the picture is taken. A good way to get round these unwanted reflections is to cut a hole in a piece of black card that will just fit over the lens. When the card is in position on the lens all the shiny bits and hands are effectively covered.

I have not said very much about backgrounds up till now and I feel that this is very much a matter of personal taste. If you use the big-tank method you are usually stuck with what there is, but try to avoid heaters and filters; we know that they are necessary but they do spoil a good picture. For my small-tank method I have obtained about half a dozen pieces of plastic in various colours that just fit the back of the tank, and I ’ring the changes’ with these. However, I find pale blue or green are generally best. Some fish photograph well against a white background but if you use white you will need to experiment to find out how it affects the light-distribution on the subject and also the exposure.

Black for a background I think should be avoided, as it just makes life more difficult. It makes the tank glass into a mirror and aggravates the reflection problem. Because it absorbs some of the light you have to experiment with exposure. With flash this usually means that you have to open the lens a ’stop’ or two and this in turn reduces the depth of field. If you do like your fish against a black background this can usually be achieved by superimposition after the original shot has been processed.

The gravel on the tank bottom is also important. Most of the stuff one sees in aquaria is O.K., but avoid those that are very brightly coloured as they reflect light on to the underside of the fish, causing an unnatural look.

The use of a tripod is again a matter of personal taste, but I usually use one as the distance from lens to subject is easily controlled. However, if the fish is particularly active you sometimes have to ’chase’ it with the camera but the results are usually disappointing.

There is one more piece of equipment that is not essential but which I find very useful: that is a slide copier. This fits on the front of the camera in place of the lens and is provided with a place to fit a completed slide. By adjustment you can obtain enlargements of up to 2½ times of the original that you want. This has very obvious advantages and the loss of definition is quite acceptable if the original slide is good. The light-source is once again your electronic flash. Slide copiers can be obtained from about £15 to £50; some have their own lens and others use the normal camera lens. Strangely enough, those with their own lens are usually the cheapest.

What’s New?

IN the past PET FISH MONTHLY has carried letters from somewhat irate possessors of smaller aquaria who have felt themselves to be the ‘forgotten fringe’ in the discussions about 3, 4 and 5 ft. aquaria. Now they are being specially catered for by Inter-Pet of Church Street, Dorking, Surrey. Especially for the small aquarium a new range of ’mini’ heaters and thermostats has been developed by the firm. And because the heaters are of low wattage they are ideal for providing a fully balanced temperature control to use with aquaria sited in centrally heated homes.

To produce this equipment Inter-Pet have been able to utilise recent developments in element wiring, and a new wire support devised by their own electronics division, with the result that the combined heater-thermostat, the Minimatic, measures only 8½ in. in length and 3 in. in diameter (up to 75 watts), and the Mini Heat and Mini Thermostat measure only 4 in. in length and 3 in. diameter. The Mini Heat is manufactured in a range of wattages from 75 watts down to only 2 watts and the thermostat is capable of handling up to 200 watts. All feature a double-seal rubber end-cap for maximum electrical safety.

H. F. V. Wright
M.M.

IT is with regret that we learn of the death of Mr Fred Wright on Sunday, 26th August 1970 aged 55 years. Mr Wright was well known to pet and aquatic tradesman as secretary to the Aquatic Traders Association from 1951 through to the re-organisation of the A.T.A. as the Pet Trade Association. He was the instigator of the formation of P.T.A. Ltd., as the Association now is, but pressure of work forced him to resign in 1959. Wounds incurred in World War II on D Day left Mr Wright with a disabled arm. He was decorated for ‘displays of courage and initiative against the enemy (which included the rescue of one of our men under fire in the open),’ being awarded the Military Medal. The sympathy of his friends and colleagues will go to his wife on her sad loss.
Congo Dwarf Cichlids

*Nannochromis nudiceps* (Boulenger)

This species is, perhaps, neither one of the most popular of the smaller cichlids nor is it one of the easiest to breed. However, its colouring is most interesting. The gold background hue changes at the sides to a light blue, the belly is emerald green and the gills glitter with bronze. Under the eyes is a little patch of iridescent bright blue and there is a rust-red stripe over the eyes. Diagonal stripes can occasionally be seen. The dorsal is orange-brown with a white border and black spots and the tail fin is longitudinally striped with golden orange and brown. The upper border of the tail fin is white and the lower border is violet. The anal fin is also violet and gleams greenly. The belly fins are dark green with white front edges.

These Congo dwarf cichlids have been available in Europe since 1952 and reach a size of about 2½–3 in. They are related to the genus *Pelmatochromis*. Their body is elongated, flat and slightly depressed at the sides, but very flexible. In fact, if you held one in the hand it could be believed that a small, thick eel was being held. The head is blunt and has a steep forehead. The fish are peaceable enough towards other kinds of fish but have many a dispute amongst themselves, not only between male and male but also with the females, and these fights often end in deadly wounds.

Care and breeding for this species is not easy. They need a temperature of at least 72°F (22°C) normally and 78°F (25°C) for spawning. A medium-sized tank is sufficient and the water should be slightly acid. Spawning behaviour is similar to that shown by *Apistogramma* and *Pelmatochromis* species, and with these Congo cichlids it is the female that takes over the brood care.

Sex differences in the adult fish are easy enough to recognise for the male is slim, with a sunken belly. Compared with him, the female is larger, and although similarly coloured her belly is a more intense emerald green colour and beautifully rounded. What is very interesting is the permanently projecting ovipositer in the female.

The fish are very nervous and live in hiding, so it is necessary to provide them with several potential hiding places in the tank. This is particularly important if there are a number of them in a tank together as otherwise there will be great fights over territory.

By RUDOLF ZUKAL
Photographs by the author
Translated by F. MARSH
One cave of stones or a single flowerpot would always be the object of a fishy war. So each male must be provided with his own hiding place. Peacocking as they are towards other species they will defend their immediate surroundings very earnestly against all other residents without exception.

Congo cichlids will search out the darkest spot in the tank and stir up the compost unceasingly; small heaps of sand and gravel are made all over the tank. The female lays her eggs in a small gap between stones, if no other possibilities exist, or in a flowerpot that has had the bottom knocked out and is placed upside-down in the tank.

I found it very difficult to observe the spawning itself—I have tried for weeks at a time to watch the actual spawning process and photograph it, but up till now in vain. My photographs show the preparations that the fish made, and I managed to obtain these pictures only by exercising the greatest caution and care.

You will see that I laid sharp-cornered stones on both sides of the sheet of slate so that the fish had to use the front surface of the slate. The gravel was carried away by the fish in their mouths most zealously. Often I nearly laughed aloud, since they looked so comical with a large lump of gravel in their mouth. The stones were spat out as if from a catapult and it wasn’t long before the gravel was heaped up in front of the entrance to their hiding place. During this unceasing work, which went on for hours and in which both partners took part, the fish were displaying in courtship. With fins spread wide they would swim round each other, and after lengthy play the male would swim off to the ‘den’ and again entice the female. In between, they would be working together.

One day I noticed that the fish had changed their behaviour. I lifted up the slate slab and saw quite small yellowish eggs. I was surprised how few these were because in spite of the fact that the female was about 2½ in. long and fairly full in the belly I counted only 11 eggs. When I examined the spawning place more carefully, I realised that the crevice in which the eggs had been laid was not more than an inch wide—and consequently narrower than the fish.

The fry grow very slowly and in my opinion and experience it is wise to bring them up without their parents.

Guppy World

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permint, oil of cinnamon, almond and vanilla extracts and allspice.

Don’t forget that most additives can cause food to go off, so only mix (or rather blend) sufficient into your dried food for just a few feeds and keep the residue in glass, screw-top jars. Oil of anise I can particularly recommend.

Do you like answering questions? I don’t mean those impertinent probes that one finds in a Tax return, but the type of column where readers’ questions are answered for all to see and learn from.

I have been attracted to these ever since my father gave me a copy of the book 1001 QUESTIONS ANSWERED ABOUT YOUR AQUARIUM for a pre-war Christmas present. Though the book has long since fallen to pieces I well remember one childhood illness, when with nothing better to do, I counted the questions and found, despite the title, the book contained 1074! Value indeed.

Too many colours these days, and I am not restricting my remarks to just the aquatic Press, tend to answer their readers’ queries with as few words as possible. I realise that space is tight but need some journalists make it so obvious? Like the

Continued on page 300
Breeding
Behaviour
of the CONGO
DWARF CICHLID

The early stages of the breeding of Nannochromis nudesaps involve hole digging and gravel shifting. At the top the male is shown in the cave he has made. Left: the female also moves gravel during the cave-making.

The male is seen making a stimulatory approach to the female in what appears to be a bite but is really quite a gentle manoeuvre.
Guppy World

continued from page 298

'stars and you' column, they tell you very little.

To try and right that wrong and even the score, 'Guppy World' will pick out a letter from the postbag each month and try to answer it in full. Eyes down for our first question...

"Dear Peter"—If the albino guppy is a mutant, why is it that so few have been found amongst wild stock? Surely the chances of such mutations occurring are greater amongst the larger wild populations of guppies?

Anyone who has had gold or albino fry been in his aquarium knows that fry thus coloured stand out when compared with their darker coloured brothers and sisters.

In any wild population, promiscuous means they are easy pickings for any cannibalistic adult guppy or fish predator that happens along—hence their scarcity. And while we are on the subject of albino guppies let us lay to rest once and for all that old wives' tale that the addition of albino to a strain will produce increased vigour. It won't!

The Tank and its Preparation

I HOPE that some of my enthusiasm for marine fishkeeping has rubbed on to readers of my first article in Pet Fish last month and we can now get down to the practical side of setting up a marine tank.

My first step when I started this fascinating hobby as a complete novice was to scour my local library and pet shops and read the many books, largely American, on the subject of marine fishkeeping. By means of a step by step account of the setting up of my own tank I hope I may now be able to help readers to avoid the pitfalls likely to be encountered in "going marine".

Choice of Tank

A large tank proves to be far easier to look after than a small one. I chose a 25 gallon Juvet aquarium, ideal for the job since it does not contain toxic aquarium cement and is completely resistant to the highly corrosive action of salt water. When choosing a tank do not be afraid to seek the advice of a reputable dealer. There are now so many tanks on the market, made from so many diverse materials, that the newcomer can easily be mystified over which tank is suitable. What a tragedy it would be to set up a marine tank, fill it with fine fish and then find that within a week they have succumbed to poisoning from cements or metal.

In recent years stainless steel and all-glass aquaria have appeared and these are ideal for saltwater fishkeeping. I must, however, stress once again that to be on the safe side you must put your trust in your local marine dealer.

However clean your new tank appears to be it must, of course, be washed and sterilized. Remember at all times that clinical cleanliness is the key to successful marine fishkeeping.

Never use soap or other detergents when cleaning out tanks, either new or old; soap even in minute quantities is fatal to marines. Instead use clean tap water and a clean damp cloth dipped in strong rock salt solution, with which you can carefully clean the interior making sure that you get into all the corners. A final few rinses with lukewarm water should ensure a danger-free tank.

Many experts advocate the use of chemicals such as potassium permanganate or methylated spirits but I hardly ever use chemicals of any sort where fish are concerned, except the well-tried remedies for common diseases.

Once you are satisfied your tank is completely sterilised you are ready to set up your mini-ocean. Much has been written about the choice of filters, heaters, thermostats etc. for the successful marine aquarist. I have used exactly the same heater and thermostat as in my freshwater tank, and in my choice of filtration I went against the book, which advocated an under-sand filter. I chose an inexpensive outside filter operated by a good quality air pump (which incidentally operates the undergravel filter in my freshwater tank). Filled with carbon and a good quality filter material this has kept my marine tank crystal clear and odourless and absolutely trouble-free. The only other requirement are good quality air stone operated from the air pump, a non-corrodible hood and lights, a thermometer and a hydrometer to check the salinity of the water in which your marines will live. The range of temperature over which tropical marines will thrive is exactly the same as that for most freshwater tropicals.

Natural or Artificial?

After reading the vast literature on the subject of natural versus artificial salinates when I first started I decided once again to put my trust in the brines and purchased an appro-
Marine Tank Decor

The key to attractive decor for marine tanks lies in the area immediately behind your tank. Although not blessed with any great artistic flair, nevertheless I have been able to create quite a realistic effect by using vivid green fluorescent paper, on to which I stuck some plastic foliage and dried seaweeds. When this was placed on the back of my tank it gave an excellent effect from the front: it looks as though the plants are actually growing in the tank.

For the hobbyist who likes to experiment there are endless ways of setting up false decor in a marine tank. A glass panel can be sealed close inside the back of your tank to make a narrow section into which freshwater can be placed; in this you can grow freshwater plants, and once again when viewed from the front they appear to be an integral part of your aquarium decoration.

After decorating your tank to your satisfaction fill it up with normal tapwater and switch on the heater, filters, etc.; allow these to run for about 12 hours daily for 5 days. If your nose tells you that all is well on the fifth day start to add your salts, a little at a time. Keep your filter and air stone going as you add the salts and check the salinity with your hydrometer until a reading of 1.025 is achieved. Do not worry at all at this stage about pH value, as tamping with this does more harm than good. A further couple of days on 'all systems go' should then see your tank ready to receive its first inhabitants.

In my next article I will discuss how and what to buy, methods of introduction, harmonious communities and dangers to look for in the first few weeks.

The speaker at this year's HENDON CONGRESS (14th November) is Hess E. Bulloch of West Germany. The Congress is to be held at Whitefield Secondary Modern School, Clarence Road, Hendon, London, N.W.2. Tickets (60 and 32 children) from Mr. R. Maynard, 90 Cotswold Gardens, London, N.W.2.
Meetings and Changes of Officers

ALFRED & D. A. S: Officers: chairman and treasurer, Mr B. Dooley; secretary, Mr A. B. D. (Basingstoke). Subscription £1 per annum.

HALIUM AMARES A.S: Secretary, Mr R. B. Smith (56 Meadow Close, Eastwood, Notts. Phone Longley 15641). Subscription £1 per annum.

HAMPSTEAD & D. A. S: Secretary, Mrs V. R. R. Somerset, Herts. Phone Shifnal 4452, Mr. B. C. L. (Basingstoke). Subscription £1 per annum.

HAMPSTEAD & D. A. S: Secretary, Mr H. Leachton (c/o Abbey Drive, Hampstead, London, N.18). Subscription £1 per annum.

ROEPINHURST & D. A. S: Secretary, Mr R. Earlham (34 Golf Club Road, Roehampton, London, S.W.4). Subscription £1 per annum.

ROTHERHAM & D. A. S: Secretary, Mr F. Scobie (24 Oldham Road, Powerstock, Rotherham, Yorks). Subscription £1 per annum.

TORRIS & D. A. S: Secretary, Mrs L. May (77 Tavistock Road, Nottingham, Notts). Subscription £1 per annum.

WEDNESDAYS & D. A. S: Officers: president, Mr E. R. Blackman; vice-president, Mr W. J. Hightord; secretary, Mr G. Woolfe; treasurer, Mr A. Smith; assistant secretary, Mr J. Offord; president, Mr A. Wood; show secretary, Mr G. Wilson; show secretary, Mr G. T. Broom (Basingstoke). Subscription £1 per annum.

YORK & D. A. S: Change of venue: Meetings now at Post Office Employees’ Social Club, Margate, Yorks.

THE SIMPLE LIFE—Members of the AQUARIUM SOCIETY OF VICTORIA (Australia) are exhorted to enter more fish in the Society's table shows with the words 'Anyone can enter a table show—all you need is a fish and a bucket to bring it in' showing a delightful vision for those of us already busy checking our polyurethane covers in preparation for the coming winter.
Mrs Miller (50); 2. Mr Brasher (70); 3. Mr D. T. Waring; 3. Mr B. Slade; 4. Mr D. J. Taylor; 5. Mr P. C. Waring; 6. and 7. Mr C. West. All the fish on which the results are based will be awarded prizes.

The first fish exhibition held by the YEOVIL & D. A.S. was an open show at the Park Centre, Burgess Hill. There were over 300 displays on show, and the judges had a difficult task. The competition was open to all comers, and the exhibits were of a high standard. The judges were: Mr E. J. Johnstone (Chairman), Mr J. M. Mooney, and Mr G. H. Hayman.

The results were as follows:

THE newly formed BRITISH MARINE AQUARISTS' ASSOCIATION reports that the Association now has a newsletter which, it is hoped, will contain interesting and informative articles by members. Subscriptions to the Association are 50p yearly and applications for membership should be addressed to the secretary, Mr. D. Horton, 125 Lowlands Avenue, Streatham, Sutton, Surrey. Works. At the same time, news reaches us of the formation of a society in Sheffield devoted to the study of marine fishes. This is the HALLAMSHIRE MARINE A.S. and its secretary, Mr. P. J. Smith (Seafront Gardens Terrace, Sheffield S2a 8BE), tells us that the society is the first of its kind in England, meeting regularly for lectures and discussions.

Bond Challenge Cup for best breders: Mr. A. Blake (Basingstoke), G.S.I.S. trophy for highest entered class: Mr. R. Lane (Salisbury), F.B.A.S. trophy for mollies.

RESULTS of the GLOSSOP A.S. open show are as follows:

Class 1: 1, Mr. R. Tomkinson (Glossop), 2, Mr. S. Simpson & Mr. H. Johnson (Barnstaple), 3, Mr. R. Miller & Mrs. C. Miller (Barnstaple), 4, Mr. and Mrs. Wild (Salisbury). Class 2: 1, Mrs. J. T. Varley (Birmingham), 2, Mr. & Mrs. Wild (Barnstaple), 3, Mr. J. S. Milne (Steventon). Class 3: 1, Mr. D. E. Hobbs (Bucks), 2, Mr. R. Tomkinson (Glossop), 3, Mr. & Mrs. Wild (Barnstaple). Class 4: 1, Mrs. J. T. Varley (Birmingham), 2, Mr. & Mrs. Wild (Barnstaple), 3, Mr. J. S. Milne (Steventon). Class 5: 1, Mr. & Mrs. Wild (Barnstaple), 2, Mr. J. S. Milne (Steventon), 3, Mr. R. Tomkinson (Glossop). Class 6: 1, Mr. & Mrs. Wild (Barnstaple), 2, Mr. J. S. Milne (Steventon), 3, Mr. R. Tomkinson (Glossop). Class 7: 1, Mr. & Mrs. Wild (Barnstaple), 2, Mr. J. S. Milne (Steventon), 3, Mr. R. Tomkinson (Glossop). Class 8: 1, Mr. & Mrs. Wild (Barnstaple), 2, Mr. J. S. Milne (Steventon), 3, Mr. R. Tomkinson (Glossop). Class 9: 1, Mr. & Mrs. Wild (Barnstaple), 2, Mr. J. S. Milne (Steventon), 3, Mr. R. Tomkinson (Glossop). Class 10: 1, Mr. & Mrs. Wild (Barnstaple), 2, Mr. J. S. Milne (Steventon), 3, Mr. R. Tomkinson (Glossop).

As the highly successful open show of Brightton & Southern A.S. the best fish in the show was owned by Mr. G. Greenhal (right, seen with his awards). Below part of the crowd is shown. Full results will be published next month.
(Largest), Cichlids: 1, Mr. J. Turner (Gosport); 2, Mr. W. F. Cardew (Canford); 3, Mr. M. R. Batey (Hove); 4, Mr. A. E. Batey (Canford); 5, Mr. B. Wood (Canford). Goldfish: 1, Mrs. R. Ford (Scunthorpe); 2, Mrs. J. M. Batey (Canford); 3, Mr. M. R. Batey (Canford); 4, Mr. A. E. Batey (Canford); 5, Mr. W. F. Cardew (Canford). Catfish: 1, Mrs. S. B. Batey (Canford); 2, Mr. D. Phipps (Hastings); 3, Mr. P. R. Phipps (Hastings); 4, Mr. P. R. Phipps (Hastings); 5, Mr. P. R. Phipps (Hastings). Egrets: 1, Mr. B. L. Higginson (Fulham); 2, Mr. N. H. Stead (Hastings); 3, Mr. R. D. Day (Fulham).

Employing toothpick: 1, Mr. N. Stead (Fulham); 2, Mr. E. J. Studley (Hastings); 3, Mr. M. J. Studley (Hastings); 4, Mr. M. J. Studley (Hastings); 5, Mr. M. J. Studley (Hastings). Doves: 1, Mr. D. Patel (Fulham); 2, Mr. G. Carter (Fulham); 3, Mr. M. Wood (Fulham); 4, Mr. S. J. Patel (Fulham); 5, Mr. S. J. Patel (Fulham). Eagles: 1, Mr. B. L. Higginson (Fulham); 2, Mr. G. Carter (Fulham); 3, Mr. M. Wood (Fulham); 4, Mr. S. J. Patel (Fulham); 5, Mr. S. J. Patel (Fulham).

(1961) A.A.A. Pigeons: 1, Mr. M. H. Balch (Fulham); 2, Mr. M. H. Balch (Fulham); 3, Mr. M. H. Balch (Fulham); 4, Mr. M. H. Balch (Fulham); 5, Mr. M. H. Balch (Fulham).

(1962) Three new Class B tropical judges have been added to the B.P.A.S. list. These are: Mr. B. Sergeant of Bletchley, Mr. B. Mather of Cheshunt and Mr. J. Yates of Cambridge. It has also been announced that one more speaker has been added to the list, Mr. A. Jeff, whose lectures are on the breeding and showing of tropical fish. The drawing up of a new 20 points system for the purpose of judging ponds is also being undertaken by assistant secretary, Mr. R. E. Evans.

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HORSFORD A.S. held a very successful "Open Night" in early September. There were 155 entries and Master G. Thickbroom entered a large blind cave tetra that was awarded best in the show. Other results were:

(1967) Breeder: 1, Mr. M. M. Megson (Abingdon); 2, Mrs. P. Poli (Hastings); 3, Mr. G. Coons (Cromer); 4, Mr. J. L. Higginson (Fulham); 5, Mr. G. Coons (Cromer). Breeder: 1, Mr. M. M. Megson (Abingdon); 2, Mrs. P. Poli (Hastings); 3, Mr. G. Coons (Cromer); 4, Mr. J. L. Higginson (Fulham); 5, Mr. G. Coons (Cromer).

(1968) Breeder: 1, Mr. M. M. Megson (Abingdon); 2, Mrs. P. Poli (Hastings); 3, Mr. G. Coons (Cromer); 4, Mr. J. L. Higginson (Fulham); 5, Mr. G. Coons (Cromer).

(1969) Best in Show: 1, Mr. M. M. Megson (Abingdon); 2, Mrs. P. Poli (Hastings); 3, Mr. G. Coons (Cromer); 4, Mr. J. L. Higginson (Fulham); 5, Mr. G. Coons (Cromer).

(1970) Best in Show: 1, Mr. M. M. Megson (Abingdon); 2, Mrs. P. Poli (Hastings); 3, Mr. G. Coons (Cromer); 4, Mr. J. L. Higginson (Fulham); 5, Mr. G. Coons (Cromer).

RESULTS of the fifth International Show of the BRITISH KILLIFISH ASSOCIATION are now recorded below.

Aphanius species pairs: 1, Mr. C. Patridge (Cromer); 2, Mr. C. Patridge (Cromer); 3, Mr. C. Patridge (Cromer); 4, Mr. C. Patridge (Cromer); 5, Mr. C. Patridge (Cromer).

(1968) A. sardine (A. sardine): 1, Mr. R. H. Johnson (A. sardine); 2, Mr. R. H. Johnson (A. sardine); 3, Mr. R. H. Johnson (A. sardine); 4, Mr. R. H. Johnson (A. sardine); 5, Mr. R. H. Johnson (A. sardine).

(1969) A. sardine (A. sardine): 1, Mr. R. H. Johnson (A. sardine); 2, Mr. R. H. Johnson (A. sardine); 3, Mr. R. H. Johnson (A. sardine); 4, Mr. R. H. Johnson (A. sardine); 5, Mr. R. H. Johnson (A. sardine).

(1970) A. sardine (A. sardine): 1, Mr. R. H. Johnson (A. sardine); 2, Mr. R. H. Johnson (A. sardine); 3, Mr. R. H. Johnson (A. sardine); 4, Mr. R. H. Johnson (A. sardine); 5, Mr. R. H. Johnson (A. sardine).

(1968) A. belgica (A. belgica): 1, Mr. R. H. Johnson (A. belgica); 2, Mr. R. H. Johnson (A. belgica); 3, Mr. R. H. Johnson (A. belgica); 4, Mr. R. H. Johnson (A. belgica); 5, Mr. R. H. Johnson (A. belgica).

(1969) A. belgica (A. belgica): 1, Mr. R. H. Johnson (A. belgica); 2, Mr. R. H. Johnson (A. belgica); 3, Mr. R. H. Johnson (A. belgica); 4, Mr. R. H. Johnson (A. belgica); 5, Mr. R. H. Johnson (A. belgica).

(1970) A. belgica (A. belgica): 1, Mr. R. H. Johnson (A. belgica); 2, Mr. R. H. Johnson (A. belgica); 3, Mr. R. H. Johnson (A. belgica); 4, Mr. R. H. Johnson (A. belgica); 5, Mr. R. H. Johnson (A. belgica).

(1968) A. belgica (A. belgica): 1, Mr. R. H. Johnson (A. belgica); 2, Mr. R. H. Johnson (A. belgica); 3, Mr. R. H. Johnson (A. belgica); 4, Mr. R. H. Johnson (A. belgica); 5, Mr. R. H. Johnson (A. belgica).

(1969) A. belgica (A. belgica): 1, Mr. R. H. Johnson (A. belgica); 2, Mr. R. H. Johnson (A. belgica); 3, Mr. R. H. Johnson (A. belgica); 4, Mr. R. H. Johnson (A. belgica); 5, Mr. R. H. Johnson (A. belgica).

(1970) A. belgica (A. belgica): 1, Mr. R. H. Johnson (A. belgica); 2, Mr. R. H. Johnson (A. belgica); 3, Mr. R. H. Johnson (A. belgica); 4, Mr. R. H. Johnson (A. belgica); 5, Mr. R. H. Johnson (A. belgica).

The Paul Stokes and Harry Williams Memorial Trophy for the best pair in the show was presented to Mr. D. Highfield and Mr. W.
**In Brief...**

**MEMBERS OF BELLE VUE A.S.** have been on safari! The spoils, however, were of an unusual kind—rocks from Anglesey. Members arrived back with all sorts of prizes ranging from small crabs to large chunks of rock, and it was so enjoyable that further trips are planned. At a subsequent meeting Mr R. E. Legge, superintendent of Belle Vue Zoological Gardens and president of the Society, gave members many ideas on how to use their treasures when he presented a talk and slide show on setting up furnished aquaria.

**AN AUDIENCE OF 40 MEMBERS and visitors to COVENTRY P. & A.S.** listened with immense interest when Mr Bob Fox described, with the aid of slides, his progress from a novice fishkeeper. He is now a very knowledgeable aquarist with a well-known business. Best fish amongst the 35 entries in the table show were a pair of cobra guppies entered by Mr Dave Easingwood.

**HORNSEY & D.A.S.** thoroughly enjoyed a lecture by Mr C. Katsiris on plants recently. Some excellent fish were entered in the table show, judged by Mr Eric Smith. A pair of giant danios entered by Mr D. Cooke were awarded 3rd prize; second came a pair of C. schaerti belonging to Mr D. Firtham (88 points) and a first prize of three-spotted gouramis (Mr G. Butcher) took 814 points.

**MR A. TUFFS** gave a talk to fellow members of HEMEL HEMPSTEAD A.S. after the summer recess on fish houses, which evolved into a very animated discussion so interested were members in the subject.

**WHEN SHEFFIELD & D.A.S.** invited STOCKBRIDGE A.S. to take part in an inter-society quiz the home team were the victors by just one point after an enjoyable and informative meeting. Sheffield are also hosts to Woscope at a fishy bingo and pea and pie supper.

**CARSHALTON & D.A.S.** members were highly appreciative of the lecture given to them by Mr Ian Matheson of Tonbridge. At the table show at the September meeting Mr David Wilshire won in the a.v. cichlid class with a black angel (a), Joan Horsley; 2; Ronald Wilshire). Mr Christopher Lamb won in the livebearers breeders class, and in the plant class outright, and John Dixon in the junior class.
...WHEN F.B.A.S. judge Mr P. Harrison was at the meeting of HAMPSTEAD & D. A.S. in September he gave an informative talk on the fish in the table show for a.v. tropical fish; after he had completed judging. Results were: 1, Mr R. Green (female guppy); 2, Mr E. G. Harvey (cardinal); 3, Mr M. Bradford (male guppy).

...THE EXHIBITION of furnished aquaria staged by LEAMINGTON & D. A.S. at the city’s Pump Rooms Annex of the University Society was a huge success. The aquaria were to a very high standard and it has been estimated that between 4000 and 6000 people visited the show during its 3 days duration, including those visiting from Australia, Eire, N. Ireland, Budapest and the U.S.A. The Spa Entertainments Manager has set aside dates for the Society to stage a similar show in 1971. Although admission could not be charged, the sale of programmes made a nice profit for the Society.

...SHOW SECRETARY Mr Brian Cripps of GUILDFORD & D. A.C. gave a most helpful lecture on electricity to the Society and reminded members to touch only the clothes of anyone being dragged from a ‘live’ situation and not their body. Correct methods for revivers someone who had received an electric shock were demonstrated and the correct way to wire up tanks. Chairman Mr Peter Lee organized a barbecue during the summer which proved very popular. Seats were made from bales of straw, bacon and hot potatoes were the order of the day and music from an electric organ and drums was supplied by secretary Mr John Cole and Mr Tony Henderson.

...LINCOLN & D. A.S. held their annual table show competition, at which the Richard Baines Rose Bowl is awarded. In September, Class A judge Mr Silson and Mr Jackson officiated and awarded first and second places to Mr H. Bunnell for a Ciclasoma severum and a Clabora dentata, Master Clayton was third (oval).

...NEWS of INDEPENDENT A.S. comes from P.R.O. Miss L. M. Applin: ‘After the summer break we are meeting again at our Eden Grove, Holloway, venue. Club president, Mr Frank Tomkins, welcomed members back at the first meeting and gave an extremely interesting talk on breeding fish with the flag-tailed toothcarps which it is hoped will encourage us all to try to breed these particular fishes. New members will be made most welcome, so why not come along and meet us any Monday evening at 8 p.m.?’

...AT a general meeting of NOTTINGHAM & D. A.S. three members of the Society were asked to answer questions on breeding a fish in which they had been consistently successful. Mr Low spoke on neon breeding, Mr Kenyon on angelfish and Mr Ross on tiger barbs and thick-lip gouramis. It proved a most interesting and informative meeting.

...BRADFORD & D. A.S. overcame the problem of decreased attendances during the main holiday month by having lectures and discussions inaugurated by Society members. Mr H. Fletcher, the Society’s vice-president, was particularly helpful, taking part in an ‘Any Questions’ evening and lecturing on ‘Fishkeeping for Beginners’. This was a very helpful lecture in view of the Society’s ever-growing membership.

...TORBAY A.S. members have found time, amidst all the prepara- tion for their own show, to visit shows at Weymouth and Plymouth. At Weymouth, the Torbay members swept the board in the Characina H. & H. class, with first, second and fourth places to Mr J. Haynes, first and second to Mr M. Poole. Another first, second and four places also achieved. At Plymouth, a round in the inter-club competition between Torbay, Ply- mouth, Totnes and Exeter, was held and Torbay were again most successful, coming first with 22 points.

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### Dates for Your Diary

**29th October/1st November**


**1st November**

- ASSOCIATION OF YORKSHIRE AQUARIUMISTS Annual General Meeting, The Victoria Hall, Victoria Park, Keighley, York.

**8th November**

- HEYWOOD & D. A.S. Open Show, Ambulance Road, Barford Road, Heywood. Booking 12 noon, 12.30 noon. Details from Mr A. Evans, Blaxhame Chase, Unsworth, N. Ross, Lancs.

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### 1971

**14th March**

- BELLE VUE A.S. Open Show, Operatives Boys Club, Cowley House, Anton Old Road, Operatives, Newcastle upon Tyne, N. 8.

**21st March 1971**

- TOP TEN A.S. Open Show, Huddersfield Town Hall.

**24th April**


**28th April**

- SHEFFIELD & D. A.S. Open Show, Meersbrook Valley Hall, Meersbrook Park Road, Sheffield 8.

**29th April**


**1st May**

- YORK & D. A.S. Open Show.

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### 1972

**14th November**


**15th November**

- AIRDRIEBOURGH & D. A.S. Open Show, Calderbank Avenue, Govan, Glasgow. Tickets from Mr G. E. Walker, 3a West End Terrace, Cumbernauld, 625 H.A. [4 classes, 2 plaques plus trophies].

**16th December**

- HORSFORTH A.S. Open Show, Greenside Hall, Rawdon, Nr. Leeds, 2,000. Tickets from Miss J. Hall, 20 Wellington Road, Leeds 8 2LD (phone Leeds 22292).

**14th December**

- F.B.A.S. Annual General Meeting, Crewe Hall, Red Lion Square, London, W.C.1, at 2.30 p.m.

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**Show Secretary**, Mr M. Woodley, 97 Silverdale, Disley, Nr. Stockport, Cheshire.

**9th May**

- DERBY RECENT A.S. Open Show, Derbyshire Agricultural Centre (Normanton Gossip), Normanton, Nr. Matlock, 21. Tickets from Mr H. R. T. Bell, 22 Quayne Drove, Leek, Derby.

**14th May**

- MEBERRYDALE A.S. Open Show.

**4th May**

- Mr. Sixth INTERNATIONAL GUARDY SHOW, FANCY GUARDY AQUARIUM SOCIETY, Community Centre, St. Mellins, Bridgend. Open to all A.S. members.

**28th June**

- SWILLINGTON A.S. Open Show.

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**29th-31st October**

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