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Comments and Quotes

- Mediterranean fauna threatened!
- ‘Dangerous’ aquarium pets
- Long-lived catfish
- On the up and up

Danger—Men at Work

MAN’S awareness of the devastation caused to other species by his activities has long been growing although his efforts to control effects of his interference in advance are of fairly recent origin. Fortunately few prospects are now carried out without some thought being given to the subsequent effects on the ecology of the area. The latest example occurs with the proposals for the building of a sea-level canal connecting the Atlantic and Pacific Oceans. Until recently this has been considered by the Atlantic–Pacific Canal Study Commission with only engineering problems in mind. Now the U.S. Academy of Sciences is to take up the study of the inter-ocean migration that can be expected when the canal is built. Marine life on either side of the central American isthmus is quite distinct; each group has developed independently over some millions of years and inter-ocean migrations that will undoubtedly result from the building of this canal may cause this extinction of many species by invading competitors.

Recent experiences in two other parts of the world lend authority to these fears. A report by Angela Croome in the DAILY TELEGRAPH refers to the invasion of the American Great Lakes by alewives (P. pseudoharengus) after the opening of the St Lawrence Seaway connecting the lake system to the Atlantic. Sea lampreys invaded and killed off all the lake trout and burbot; alewives filled the resulting gap in the fish population. No large lake predators were left to control the alewife population explosion that resulted and in 1966 fish were being washed up on the shore of Lake Michigan by the thousand.

Similarly, a Red Sea marine invasion of the Mediterranean via the Suez Canal migration route is now building up and some people think that this could upset the population pattern of the eastern Mediterranean. Although this Canal was 100 years old last year, the movement of Red Sea life northwards has until recent times largely been prevented from using this convenient connection by the great salinity of the Bitter Lakes at the south end of the Canal. Today the original differences in salinity have almost disappeared, the creation of the Aswan Dam on the Nile lately playing a part in this. Now that free migration of species can occur, there is a danger that, in the words of Dr Gunnar Thorsen of the Marine Biological Laboratory, Eilshore, quoted by the DAILY TELEGRAPH, ‘one single alien predator might stage a successful take-over’.

As the July and August 1969 numbers of PFM were published as a combined issue this current number is no. 12 of and completes volume 4 (12 issues). Volume 5 commences with the May issue. Subscription prices for PFM will be £2 2s for 12 months and £1 1s for 6 months as from 1 April 1970. Subscriptions from U.S.A. and Canada are now $5.50 for 12 months. Binders to take 12 issues of PFM are available from the Editorial Office, price £1 each post free.
Focus on the Nasties

THE growth of marine aquarium-keeping in this country with expanding importation of some of the more exotic inhabitants of the tropic seas is beginning to give rise to increased public awareness of the more unpleasant attributes of some fishes, such as stone fish, scorpions and poisonous puffers, as well as of the beauty of the majority of tropical marines. Viewers of Harlech T.V. recently were able to see a special feature in the daily news programme 'Report' on the increasing numbers of 'dangerous fish' becoming available to the hobbyist. Mr Michael Lloyd-Williams, reporter from the Harlech T.V. Newsroom, tells us that in the film along with the 'stars', which included puffers, piranhas, scorpion and stone fish, were the secretary of the Bridgend A.S., Mr Clive Barber, who is a large-fish specialist, and the staff of Cardiff Tropical Fish Centre, dealers and importers.

To what extent is there a risk that something nasty could be imported without it being recognised? It was pointed out in the programme's discussion that dealers do not always know with certainty the identity of a newly arrived species and that with the boom in the marine hobby the newcomer more than ever needs expert guidance. What was clear, however, was that everyone wanted to avoid a British equivalent of the U.S. licence system, bans, court cases and the misguided destruction of harmless species such as has sometimes resulted from the over-realistic concern for the 'public good' in America.

Long-lived Catfish

HOW long fish can live in aquaria with good care and attention is a matter difficult to determine. Only by the collection of records of reliably observed life-spans can information on this be accumulated. Some species are well known to make 'old bones' regularly. Others still yield surprises. A reliable observation of longevity in a South American catfish (Corydoras melanistius) was reported to us last month by Johnson's Aquarium of London: a customer who is now a schoolteacher purchased this fish in June, 1973 when he was a schoolboy, and it is still alive in the 24 inch tank it has inhabited since its acquisition. Do you keep records of purchase dates? It's a procedure to be commended—and don't forget to let us know about interesting records. Such information is valuable.

On the Up and Up

ALTHOUGH Claris batrachus sometimes 'walks' a quarter of a mile or more, the primary factor in the spread of this species will be man's profiteering. Publicity has created an unprecedented demand for the fish, and in some areas its price has risen in a little more than 2 years from 39 cents to almost 10 dollars—the Progressive Fish Culturist (U.S.A.)

GUPPY WORLD

AFTER reading Mr L. W. Beale's letter (p95, February) I was left with the same smug feeling that the ancient Egyptians must have experienced when they lodged the last stone on top of the Pyramid of Cheops! My reaction to his statement that he, too, had been bitten by the Guppy Bug as I predicted was not 'I told you so' but rather 'welcome to our group'.

Guppy breeding has often been likened to a disease. If that is so then it is a complaint for which we have no apparent cure—and I for one wouldn't have it otherwise, the symptoms are so enjoyable! The rest of Mr Beale's letter on how he could dispose of surplus stock has already been solved by the specialist group the Fancy Guppy Association. They elect a Stock Control Officer to help in the distribution of member's surplus guppies and, via a process involving file cards and questionnaire, the present holder, George Goodall from Radlett, Herts, sees to it that Association members do not face the same problem as Mr Beale. Dare I suggest that the answer to our Bermondsey reader's dilemma is for him to join the specialists?

By PETER UNWIN

Music, cricket and the production of coloured guppies, do have something in common—they all include slow movements. With the Poecilia the reason we do not see certain colours is not always that our breeders are slow in producing them, but that they cannot.

Take the colour yellow: The first description ever of the guppy, by Peters, read 'greenish-yellow with a blackish network', and though yellow can appear in patches the genes responsible for this pigmentation are probably the most explored of all the so-called 'lethal' genes. An all-yellow guppy has never put in an appearance because so much pigment would bring about sterility or death of the fish. One of the reasons that good green guppies are so rare arises from the fact that this colour requires the presence of both blue and yellow pigmentation.

The all-black, dream of so many breeders, comes under much the same dilemma. Though most geneticists claim that the black colour is a sex-linked factor, they cannot explain why we have never produced a guppy with a truly black gene. Many breeders have bred fish with the pigmentation in the body as far as the pectoral fins, but no further.

The Budgerigar Information Bureau are at present offering a reward of £500 for the first all-pink bird, but despite such a generous offer the budgie breeder, like the yellow and black guppy seekers, are slow to claim. But then, after witnessing the progress made during the last 20 years, we live in hopes.
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LETTERS

Coldwater or Tropical?

WITH reference to the article by Mr Stillwell (PFM, March) how many show secretaries would be prepared to make a class for my sticklebacks if fish had to be grouped by genus or family?

Enell, Surrey

POT-HUNTER FROM THE DITCHES

Is the difficulty of deciding which is coldwater and which is tropical as great as Mr Stillwell makes out (PFM, March)? There can hardly be more than a dozen types of fishes with ranges of temperature tolerance that could cause confusion and I would have thought that the F.B.A.S. could easily make a ruling on each species concerned. Show conditions and rules are completely man-decided matters so it doesn’t really matter whether a fish is called a coldwater fish or a tropical fish as long as everyone agrees to accept a ruling. New species coming on to the bench would be subject to local show rulings until the matter could be considered by the F.B.A.S.

Chatham, Kent

Concerning Fuses

AS a brief footnote to the practical article by Mr Steve Foster in PFM (February) on electrical matters, I wonder if many readers know of the new official attitude to fuses in fused plugs? Only two ratings are now suggested for these: 3 amps and 13 amps. All aquarium equipment will need only the 3 amp fuse and it is necessary to be aware that when purchased, fused plugs are fitted with the 13 amp fuses, which should be replaced by one of lower rating for aquarium heating, lighting and aerator circuits.

Kidderminster, Worcs.

Regional Meetings

WITH reference to the meeting of F.B.A.S. delegates in London, surely this is most unfair for many remote societies in places such as Devon, Cornwall, Somerset, South Wales and many more areas. Surely it is time that the F.B.A.S. re-organised itself into regions, or alternatively sent delegates to meet societies in the provinces, such as Portsmouth, Salisbury, Torbay, Bristol, Cardiff, Birmingham, and bring the F.B.A.S. to the Societies who support them. The Societies in these towns could supply a meeting place to receive club delegates from its area. Personal contact is better than all the correspondence.

Yeovil, Somerset

Surplus Stock

IN answer to the recent letters on disposing of surplus stock, I would suggest that societies auction fish and plants at meetings. We do this at Hastings & Bexhill A.S. So far, this has been a great success. This has two advantages: it means that club members can get cheap plants and fish, and breeders and plants growers can obtain more for their stock. We also hold one or two major auctions annually where spare equipment is sold; 5% of the proceeds goes into club funds.

Hastings, Sussex

Organised Groups

WHAT is there about society fishkeepers that automatically makes all attempts to organise anything on a national level doomed to failure? Organised groups appear to be fearful of the consequences of allowing any other groups to represent them even when they’ve got a say in the running of the national body. The latest example is the arguments between the Goldfish Society of Great Britain and the Bristol and Midland groups on the one side and the sadly misnamed Federation of British Aquatic Societies on the other side, revealed by recent letters in PFM. Is the G.S.G.B. what its name indicates or isn’t it? If it is, then surely a G.S.G.B. standard must be a national standard? If the G.S.G.B. is not giving sufficient recognition or satisfaction to other groups what’s wrong with its organisation to promote such a state of affairs?

London, S.E.15

Proper Credit

I MUST write and correct the stated source of the notes concerning the pink kissing gourami and algae, published in the March issue of PFM, for which credit is given to me either intentionally or inadvertently. In fact this was only part of a somewhat longer article covering three aspects of the hobby, submitted to me by Mr A.M. Hargreaves, to whom I feel full and just credit should be given, and I would be grateful if you could see your way clear to correct this in your next issue.

Meanwhile may I thank you for the interest shown in our publication ‘Lateral Lines’ and I look forward to many more issues of PETFISH MONTHLY.

G.B. ROWSEY

York & D. A.S.
Built-in Aquarium in the Hall

By P. Jackson

On moving house recently, the problem of where to place the aquarium arose. Previously a single tank only had been kept to gain experience in fishkeeping. This was used mainly as a mixed community tank, but some breeding of livebearers had been attempted. Before very long it was realised that to do any serious breeding a number of tanks were required and, ideally, these should be kept in a fish house, or room, devoted solely to this purpose. The single tank was set up permanently as a decorative aquarium and further attempts at breeding were shelved until extra room and money became available.

Efforts were then made to improve the appearance of the aquarium by removing from sight all the apparatus essential to its running. This was done by the construction of a hood with the form and function of a radio chassis (as I described in PetFish Monthly, June, 1957). The object was to achieve, superficially at least, a three-dimensional picture of underwater life composed of fishes, plants and rocks, and to hide the visually irrelevant mechanics of the aquarium. This worked out quite well, but it was hoped to build a more impressive aquarium at a later date.

After settling in the new house, it was apparent that the extra space, if not the extra money, was available and a more ambitious display was now possible. The usual metal floor stand was considered and rejected on aesthetic grounds and because of difficulty of moving it for decoration and furniture re-arrangement. The ideal arrangement, prompted by a visit to the public aquarium, was to set the tank flush in a wall. This, however, was impracticable and would entail a vast amount of work.

The solution occurred while modifications to the front porch were being made to provide a hall cupboard. As shown in the plan (Fig. 1a), the original front door is in a glass and wood partition set back in a brick arch. The later addition of wider double glass doors

Fig. 1a. Plan view of the front porch as it was before the modifications made by the author

Fig. 1b. In this plan view the alterations to the porch to give a support for the aquarium (left) and a cupboard (right) are shown. At points X and Y the 2 in. by 2 in. timber staging was supported by four vertical posts (see text)
Originally the glass partition between hall and porch to the left of the inner door appeared as shown in the photograph above. The square area containing leaded glass is shown on the right with the aquarium in position in the arch forms a small porch with a distance of 24 in. between the inner and outer doors. The right-hand side of this has been closed off with a plaster board wall and the glass wood partition replaced by a door opening into the coat cupboard so formed. While considering an extra cupboard on the left-hand side it was realised that here was an excellent position for the aquarium, where it would give the impression of being built into the wall and provide a point of interest in the hall.

Easy access for maintenance and cleaning could be obtained from between the two doors. The first photograph shows the original appearance of the glass partition and the almost square area behind which the aquarium was to be placed.

Two problems were now encountered; firstly, the inside dimensions of the square frame were 34 in. high by 213 in. wide. An impossible ratio for the front window of an aquarium, although having possibilities for a combined aquarium/terrarium. Secondly, the difference between the width available at the front of the aquarium and that available at the back of the aquarium area, a problem arising from the extra width of the double external doors. One possible solution to the first problem was the addition of a horizontal rail across the area to divide it into two, giving a better aspect ratio to the lower area and the front of the aquarium, the narrower top half to be filled later with a wrought iron screen, picture etc.

The second problem called for either a smaller tank, with only the width of the back wall, the resulting gap at the front being filled by a control panel for the aquarium, or a specially made tank. This would have a full width front, tapering at one side to the narrower back. In spite of the extra cost of a specially shaped tank it was decided to adopt this solution to employ the full front width available for the primary objective of displaying fish. Special shapes and sizes of tank can be ordered from many aquarist suppliers, and some offer nylon coating of the metal frame as an extra.

Work was commenced by removal of the wooden strips nailed into the rebate holding the leaded light panel. The glass and old putty were removed and the rebate was cleaned up and painted.

A staging was now built of 2 in. by 2 in. softwood with the joints half-lapped and screwed. The complete frame was screwed to the wall, using Rawlplugs, and to the wooden partition, using steel angle-brackets. The height was adjusted so that a loose shelf of 3/4 in. plywood laid on top of the frame would come level with the front frame edge. The external limits of the tank were now laid out in pencil lines on the 3/4 in. plywood and the dimensions shown in Fig. 2 decided on. Use was made of the golden section to determine the vertical dimension of the tank, and this gives a generally pleasing ratio for the aquarium front window of 29 in. by 18 in.

A rough calculation gave the volume of the tank as 4.5 cu. ft. and the weight, when filled completely with water, 280 lb. The
Fig. 2. Dimensions and form of the specially made aquarium used by the author to fit the porch area.

The staging was re-examined with this in mind and four vertical 2 in. by 2 in. posts were added at the points marked X and Y in Fig. 1b. The posts marked Y were rebated before fitting for the later addition of a door, forming a useful store cupboard below the aquarium. These posts were cut accurately to length and wedged and screwed into place to form legs. This now left no doubt about the strength of the structure: no sagging could be tolerated when the tank was filled, for this would possibly distort the metal frame, with attendant breakage of glass.

To save some unwelcome carpentry it was decided not to make a horizontal wooden divider across the frame, but to fill the whole aperture with one sheet of 32 oz. glass. This was masked on the back face with Sellotape and, with black paint, a 1½ in. wide strip was painted all round the glass edges. A 3 in. wide band was similarly painted across the glass at such a height that the lower area of clear glass would be the same size as the aquarium front window. The 3 in. wide strip of paint was to hide the angle-iron top edge of the tank and the 1½ in. high tank hood. The Sellotape was stripped off after the paint had set but before drying completely, leaving a clean edge.

Two layers of foam rubber draught-excluder strip (self-adhesive) were placed into the existing rebate and the new glass was pressed against this resilient bed with strips of hardwood previously fitted to fit the aperture accurately. The bottom strip was pressed against the glass to compress the rubber strip and fixed by 1 in. 16 g. steel panel pins. These were punched below the surface and the holes filled with snipper; the side strips were similarly fixed. The top strip was held in place with three 1 in. no. 8 countersunk wood screws. This method was used, in preference to bedding in putty, for ease of replacement in ease of glass breakage or for any future changes in design.

A power point and distribution box were now fitted in the porch.

Fig. 3. Sectional end view of the aquarium and space above it with detail shown for the extra frontal glazing.

Fig. 4. Circuit arrangement for the author’s aquarium heating, lighting and aeration equipment which plug into the sockets of a distribution board.
The distribution box is to allow for easier servicing or replacement of the heater, thermostat and light, should this become necessary. These units are connected by plug and socket to the box as shown in the wiring diagram (Fig. 4). A small neon pilot lamp, to show heater operation, and a switch for the light, were set flush into the bottom rail of the wooden frame and leads for these taken to a terminal strip in the box. A diaphragm pump, used to operate a biological filter made up from Perspex sheet, was fitted in the position shown in Fig. 13. It was unnecessary to provide a switch for this as it is working continuously. No fuse is shown in Fig. 4 as this is contained in the 13-amp mains supply plug.

Figs. 3 and 4 show how the hood, thermostat and heater may be unplugged from the distribution box and removed easily for maintenance and replacement. The hood is divided into two halves, the rear section being removable to allow access to the tank for cleaning etc.

The thermostat used is a Sunvic T.S.1 stem thermostat with the stem enclosed in a Pyrex glass tube sealed at one end (resembling a long narrow test tube). A 24 in. 20 watt Grolex fluorescent tube provides pleasant lighting for the tank, intensifying fish coloration and giving excellent plant growth.

The cement rendering of the porch was clad with foam-polyacrylate ceiling tiles for decoration and insulation. With the tank in position it became obvious that it would be difficult to clean the outside of the glass of the aquarium and the rear of the frame glass. To prevent these surfaces becoming dirty in the first place, two layers of self-adhesive foam rubber strip were fixed on the front face of the aquarium glass. Both glasses were then cleaned thoroughly, and the aquarium was eased forward against the frame glass until the rubber was compressed to about half its thickness. The aquarium was then filled carefully. All appeared well and the setting up of the aquarium was completed.

The suggestion by a fellow aquarist that the top of the hood could be used for displaying house plants nearly solved the question of how to fill the smaller top area in the masked off glass window. The conditions of higher temperature and humidity here are, of course, ideal for this purpose. The addition of a further Grolex lamp over this section, as shown in Fig. 3, increases the decorative effect and its use for promoting difficult varieties of plants.

This extra lamp required some small modifications to the distribution box and a second switch in the bottom rail of the wooden frame. These modifications are included in Fig. 4. The completed decorative community aquarium can be seen in the photograph.

The problem of space for breeding tanks remains, but plans are under way to build a rear extension to the garage in the near future. This will be half brick and half glass and will be used as fish house, greenhouse and workshop. With double glazing and wall insulation heating requirements should be modest even in winter, when, it is hoped, some breeding experiments with livebearers, at least, will be possible.

---

**A Method of Earthing Aquarium Equipment**

There appears to be some uncertainty regarding the earthing of aquaria. In my set-up heater and thermostat are provided with three core cables. The earth wire in the thermostat lead connects to the angle-iron aquarium frame, which is drilled and provided with a screw and wing nut. This wire is also looped across to earth the hood. This state of affairs is extremely dangerous when cleaning the aquarium, when the hands will be wet, and particularly if the glass heater tube cracks or a leak develops around the rubber sealing bung.

With one hand in the water, electrically connected to the heater element, it is natural to support oneself with the other hand on the earthed metal top edge of the tank, with obvious results. To dispense with an earth altogether reduces the danger of electric shock but does not remove it completely, depending as this does on conditions around the tank (damp concrete floor, presence of earthed pipes etc.). In any case, I felt that all metal frames and covers should be earthed or fully insulated. Apart from freedom from corrosion, this is a point in favour of tanks with nylon-coated frames.

If an earthing strip is taken into the heater tube this will be the preferred earth path in case of leakage or breakage, owing to the shorter distance. Most heaters can be modified by removing the bung and replacing the two-core by three-core cable. The earthing strip is made from a short length of thin-wall metal tube, the external diameter of which is slightly smaller than the inside diameter of the glass heater tube. The metal tube is split along its length and sprung out to grip the inside of the glass. The earth connection is soldered to the metal tube and the heater re-assembled.

It is essential in making this modification to ensure that the heater winding is clear of the metal tube. This may be taken care of by heaters wound on mica or ceramic formers with extensions to locate the former centrally within the metal tube. Otherwise a glass or other insulating sleeve, capable of withstanding the heat, should be inserted between the heater winding and the earth tube. In heaters with hollow formers it is simpler to use a length of thick copper wire inserted into the central hole in the former, and insulated with a loose fitting glass tube sleeve.

P. JACKSON
Transatlantic TOPICS

By JIM KELLY

Those brine breeders who have tackled the production of the hi-fin swordtails must have found the experience as nourishing as a bag of stale popcorn. One of the problems is that the gonopodium of the male, that organ so necessary in reproduction, grows so long as to be virtually useless as a functioning organ.

Two alternatives face the breeder: either he can cross his hi-fin females with an ordinary swordtail and work from there or he can cut the male’s gonopodium back to a viable length (the gonopodium often grows to its original length in just a few weeks).

Now Ray Shoemaker, U.S.A. aquarist, has solved the problem by the use of artificial insemination—an action made difficult in the past by lack of a simple and suitable anaesthetic. Ray uses a solution of one part of quinaldine to nine parts of acetone. A portion (0.25 ml.) of this mixture is added to 1 gallon of aquarium water. This is sufficient for swordtails (for larger fish you can add up to 0.5 ml. of the solution). The fish is immersed in the water until it stops swimming.

* * *

As if to prove that all angels aren’t made in Heaven, Carl Naja, worked long and hard in an attempt to breed a new variety of Pterophyllum, the species beloved of T.V. interludes, club notepaper, and a great favourite with the beginner. After 4 years, during which time his breeding programme had to overcome blindness and sterility in the strain, he has finally produced sufficient golden angels for them to be available in quantity to the aquarist.

Christened ‘Bubbly’ by Carl, they have the same body markings and colour, when young, as the familiar black lace—but it’s only when they reach maturity that they change to a beautiful all-over golden colour.

* * *

Trying to find out any facts about the British aquatic trade is just about as easy as giving a bath to a bobcat! Unlike our American cousins we regard questionnaires or polls with suspicion. What a difference we see in the States, where members of the trade appear to be only too happy to give information. In a survey carried out by P.A.M., the U.S. trade journal, it was found that 89% of the pet retailers contacted stocked tropical fishes. Top-selling species revealed by the census had the swordtail at the top of the popular varieties with angelfish and neon tetras following in that order.

* * *

In reply to L.G. (Accrington) who enquired about who has the rights to brine shrimp egg collection in Frisco Bay: in April, 1970, the Metaframe Corporation acquired the right to harvest brine shrimp in San Francisco Bay from the Leslie Salt Company. In December of the same year, the shareholders of Metaframe were asked to approve the merger bid of 12 million dollars made by Mattel Inc., of Hawthorne, California.

Red Oscars in London

Red oscars are a new variety for the large fish enthusiast and two outstanding specimens of the first ones to be imported (by Tachbrook Tropicals Ltd) are those fish owned by Mr. W. M. Waterman. The fish are about 9 inches long and rapidly increasing in size. Their owner is planning to make a 16 mm colour movie of his red oscars and hopes that this might be of interest to societies. Mr. Waterman kindly offered to show his fish to enthusiasts during business hours at his School of Hairdressing in London (85 Charlotte Street, W.1) phone first (for appointment, 01-636 7453).
THE COLDWATER SCENE

Goldfish Breeding Demands Consideration of Several Factors

For most goldfish-keepers the breeding of them is more of an art than a science. With such an approach success is spasmodic and unpredictable, but in the main all very good fun. For those whose accommodation is limited to a pond or just an aquarium or two, all the fun of a raffle can be had with the prospect of a prize reasonably assured. To those who just want a few hundred nondescript fish, Nature is very indulgent and there is nothing particularly difficult in getting half-a-dozen 2-year-olds to drive and reproduce themselves.

However, for those who want to establish a line or strain, something more than the prospect of an early warm spring is necessary. Certain fish chosen for essential characteristics must be induced to spawn, where otherwise they have no inducement to do so. There is also a certain time of the year when the spawning will make better progress than at other times, apart from personal conveniences and inconveniences.

The following notes are therefore intended for those who wish to gain control over factors which are too often left to chance, leading to frustration and disappointment.

The more observant of fishkeepers will have noticed that their fish are subject to certain rhythms and cycles, the most obvious of which are the seasons. Spring is the natural breeding time for goldfish, although older fish may often delay until the summer. The availability of natural foods is also a cycle affecting them, which has a bearing on spawning, not to mention the growth of the fry. Resting, growing and developing are also natural cycles which must be taken into account if maximum efficiency is to be obtained.

Unfortunately in Britain the seasonal cycle lacks precision. Winters can be long, cold and hard, with parent fish being forced to take prolonged rests which leave them weak and debilitated. Or winters can fluctuate wildly between cold and mild in which the fish are unable to hibernate properly and remain active, using up all the reserves of fat to the detriment of their health.

However, Britain has one big advantage over more mellow climates and that is we have winters that are cold and ambient temperature can be expected to fall to as low as 34°F (1°C). From this basis, control is reasonable in that water temperatures are more easily raised than lowered.

Since the intensity of the light from the sun is related to temperature, the effect of the amount of light on the breeding cycle must also be considered. Here again springtime in Britain can be a time of mild, sunny days or cold, cloudy days: either of these conditions is not conducive to the spawning act. As a control factor, light is probably the easiest to adjust.

Not much is known about what it is that starts up a spawning. Goldfish will spawn in temperatures between 55°F (13°C) and 70°F (21°C), so that temperature alone is not the dominant factor. It is agreed that the male appears able to fertilise at any material time, so that the actual time for spawning depends on the readiness of the female.

Although unable to produce proof, I am convinced that the female releases a fluid some hours before the

by L. C. Betts

Photo

W. J. Howes
eggs are ready for fertilisation, thus triggering off the male. My shubunkin breeding pairs share a common water-purification system with my veiltails. The start of a spawning among the shubunkins generally starts off a spawning among the veiltails.

Another coincidence repeated too often to be ignored is the timing of spawnings during the week before the full moon. As the week before the full moon is usually noteworthy for high barometric pressures, this factor must also be considered as an influence on the drive.

Obviously, the most important factor of all is the development of the egg within the egg sac of the female. Formed in clutches in the autumn, the eggs undergo various stages of maturation until finally they are ready for fertilisation the following spring. A release prematurely means infertility. Retention beyond the prescribed development period can mean the eggs will be absorbed or, worse still, the female will be seriously affected until the eggs are absorbed or she dies from egg-binding. Sometimes the egg vent membrane fractures under the pressure and the eggs release themselves.

The actual development of the eggs depends very much on the richness of feeding by the female in the autumn and late autumn, for goldfish seems to have a conditioning appetite about this time. The loss of appetite during the hibernation period appears to be part of the development process—and so much so that the deeper the ‘winter sleep’ the better the spawning the following spring. Fish that are active during the winter are never as ready to spawn as those that rest, whether they are fed or not.

A deep rest before the drive seems to me to be essential. This remark can also apply to imported fish. Breeding fish purchased from abroad can only be helped by a rest of a week or so before putting into the spawning tank, once they have been acclimatised and brought on to a forcing diet. This deep rest is induced by excluding all light and holding down the temperature to a minimum.

Home-produced fish should also have the tank blanked out completely and only sufficient heat given to prevent water temperatures falling below 55°F (13°C). Six weeks under these conditions is long enough to complete hibernation, after which the water temperature can be raised 2°C or 3°C a week to simulate the coming of spring. By the time 50°F (10°C) is reached the covering over the tank can be gradually lifted, letting in the light progressively over several days; at the same time feeding can be started. This should consist entirely of protein matter; the common earthworm is as good a food as any, preferably chopped to avoid digestive disturbances.

By the time the tank is finally uncovered, to take full advantage of any part played by the moon cycle, it would be of advantage to be in the early stages of the new moon. By now the fish will be on full feeding, still avoiding starchy foods, and the artificial lamps should be ready to switch on. With a week to go water temperatures can be raised to 60°F (16°C) and a minimum of one 200 watt lamp switched on. This may be sufficient to bring on the drive. If it is not, increase the lighting to two 200 watt lamps.

Ideally, the lamps are better connected to a time-switch which would coincide with the rising and setting of the sun. Most spawnings start with the first light, and any artificial stimulation of the natural cycle is better than leaving the light on continuously. If a spawning has now failed to materialise, it is better to switch off the artificial lighting as the possibility of one coming off on a waxing moon is unlikely.

It may be that readers are cynical at accepting seriously the possibility of artificial long-distance goldfish. Certain it is that the 4-weekly cycle induces the 12 foot tidal lift of water at London Bridge. My records show that the best spawnings are obtained in accordance with this fact.

Viewed dispassionately, our goldfish breeding methods are not unlike those used for the battery hen. If heat, light and food in a controlled form are necessary to maximum egg production with fowls, it is not unreasonable to assume similar principles apply to the goldfish. By studying the laws and cycles of Nature we stand a better chance of success by working with them than by ignoring them.

Of course, the matter goes deeper than the generalisations I have given but this must be a matter for later discussion. In the meantime a few notes made by breeders at the time of spawning would in due time prove or disprove my assumptions. Certain it is, the breeder who fails to get into the rhythm of life can never be said to be in control.
Personal COMMENT by ARPEE

THERE are times when it is easier (figuratively) to strangle your dealer than at others. It's never really his fault, of course, but relationships can get a little strained when, for example, you get the Tropheus home, only to discover that each worm consists of three morphbound segments in separate pieces. Or when you buy half a dozen of a new dwarf community tetra, only to find Sterba classifying it as a fin-nipping monster when it reaches its mature size of 6 in. or more.

It is bad enough when you are talked into buying such as these, but I get absolutely livid when I am talked out of buying anything quite as special as the fire rasbora (Rasbora euglossa). This almost happened to me recently when I spotted some of this all-too-scarce species in a tank at Hurrians of Gloucester. This firm, well known locally as a garden centre, opened an aquarium department in March, 1960, and, under the imaginative guidance of Ted Whatley, has made quite an impact on fishkeepers in the area. There are often some nice surprises for collectors of smaller species and, for those with enough room, I have seen some giants which would be welcome anywhere. I am always impressed with establishments that practice rigorous quarantine as a matter of course and which believe that the hard sell is not always the way to win customers. That is rather why I found it not too easy to buy my fire rasboras.

I was told that these are rather delicate to keep and that they had had difficulty in keeping them long in good enough condition to sell. It was suggested that a change of water tended to set them back.

Now, there were a couple of dozen of this species in the tank and I came away with what seemed to be a pair: one was really a pulsating brick-red, and the other was verging on grey-brown. And those enormous black eyes with glowing red rims were especially appealing, to the extent that I now cannot imagine how I managed to overcome the temptation to leave the place with a whole bagful. These little fish have been on my shopping list for a very long time, partly because they promised to look well under Geo-Lux lighting, and partly because they seemed potentially good shoal fish in a small collection, with particular emphasis on providing something of a visual spectacle as they moved around.

The first thing, apparently, was to get them through my own quarantine, and then to examine them under aquarium conditions. With the terrible warning about their likes and dislikes well in mind, and observing that the rasboras tend to prefer soft, acid water conditions, I gave them half rainwater and half tapwater. As they were nicely set up little fish (despite their slightness they had plenty of plumpness in the right places) I had few doubts that they would prosper if once I could get them feeding.

I dropped a few spawning nops into the tank in which they could shelter if they wished and treated them to some white worms. The male gave the female a dreadful time within an hour or so and I was glad that I had provided the hiding places. There was no likelihood that they would spawn because they were too small, but
perhaps the privacy and the food and the environment may have given them ideas for later on. Certainly they came through the a week's quarantine perfectly well and showed no signs whatever of disease or discomfort. Equally, they had, rather disappointingly, shown no special talents as regards colouring, but they were under tungsten lighting and not fluorescent conditions during this time.

I was somewhat anxious about their transfer to the terracollection in view of the water change, so I bought one of those pH testers in the form of a long strip of sensitive paper wound on to a spool. Frustratingly, everything I tested came to the same result. According to the key supplied everything I had was suitable for idyllic fishkeeping, so I forthwith released these creatures into their new quarters and hoped for the best. They were a little unerved at first by the size of some of their new companions but quickly joined in with the rest at feeding times, and it soon became evident that they were averagely adaptable.

Several weeks have now gone by and the female is looking plumper and the male is asserting his rights as a member of the community. This is where I am disappointed that I did not buy half a dozen of these fish, because their appearance under Gro-Lux is quite distinguished, and a group would look very fine. There is nothing garish about them, just a warm and interesting very moving glow which suggests luxury and good living.

The rasbora addict will recognise the fire rasboras as something of a stranger. It has nothing of the long, erect look of the rest of the genus though it does seem akin to the ever popular R. heteromorpha or harlequin on which most of us have been reared. R. catterflied has a hit of a humped back and you may be deceived into thinking that you are buying deformed specimens, so consult the book before you shop. The overall effect is one which I think many aquarists will appreciate, though I would qualify this by pleading for the right sort of lighting.

There seem to be no particular preferences as regards food, and most offerings are taken willingly. They responded as though basking this morning to a scattering of micro worm, and showed their pleasure by brightening their colour, so it seems that I am on to a good thing. I got a bit annoyed with that pH paper, though. Since nothing seemed to make it give anything but an optimistic reading I tried it on my tongue and it went a horrible colour. I forthwith retired to bed with 'flu or something like it; on this matter the colour code had nothing helpful to say.
Why I Prefer Unfurnished Tanks

RECENTLY, after some gentle persuasion from my fellow club members, I was tempted to try again to keep my fishes in furnished aquaria after some 3 years of experimentation with bare, unplanted tanks.

In a comparatively short time, however, I came to realise that I was experiencing results which did not compare very favourably with those I had obtained previously with bare tanks. My only reluctance in arriving at this conclusion stemmed from the thought of having to remove from my tanks countless pounds of newly purchased and painstakingly washed gravel. My original gravel had, of course, long since been given away, flushed away, or lost wherever it is that one loses gravel.

Tanks clear of gravel and plants are nothing new and I certainly take no credit for originating the idea. Several friends, however, have asked the reasons for my continued support of this method. Although I was quite clear on its success in practice I had never analysed the reasons before, and some of my replies must have been somewhat vague and misleading.

Let us consider, then, the virtues as I see them of unplanted tanks. There is, of course, no place for an unfurnished tank in the living room where an aquarium is kept chiefly for its decorative and aesthetic effect. However, within the confines of the fish house, where the more functional and experimental aspects of the hobby are carried on, I believe the bare tank comes in to its own.

The first thing to be said of a plant-free tank is that you can observe the fishes. This may appear to be stating the obvious, but how often one finds oneself, earnestly trying to watch a particular fish, perhaps to diagnose disease, check fin condition before a show, or just pick out a likely breeding pair, only to be frustrated when the fish concerned casually slips into the foliage, to appear again only when you have forgotten what it was you were looking for.

I need hardly say that the netting of fish from a bare tank is accomplished with comparative ease. Before a show, this task, if fish are to be taken from planted tanks, can leave a fish house looking like a battlefield, the fish resembling the vanquished and the air not a little blue.

Having mentioned the showing of fishes, let us consider another aspect. In all competitive shows fishes are shown in bare containers, whether they be jars or tanks. Now ask yourself—which fishes are going to be happier and settle down sooner—those that have been raised in clear tanks, or those that have been accustomed to a planted tank and its associated places of refuge?

By PETER GINGER

It is, I think, an acknowledged fact that the majority of fishes display better colouration and appear more settled when housed in a container that has a black base. This is not because the fish considers a dark base flatters his appearance, nor does he feel obliged to tone his colour to blend in with the bottom. The fish simply feels, instinctively, safer and more secure. This is because in common with most freshwater fishes he has origins in natural waters which have beds of a dark colour. This is not the case with the conventional gravel used in the hobby, which have a tendency to reflect light upwards.

In a bare tank that has the bottom painted black I find the fish are more relaxed, happier and in consequence they feed better and grow healthier.

Rockwork and gravel in a tank, besides utilising valuable space at the expense of the occupants, can also have annoying if not serious effects on the hardness of the water, water which possibly has been prepared with a view to breeding. I have also heard it suggested that perhaps certain fishes have suffered split fins as a result of gravel, although I have no experience that would confirm this.

In a clear tank feeding presents few of the problems that can all too quickly arise in a furnished tank. Small uneaten particles of dry food can lodge very easily in gravel with the well-known disastrous results. Tubifex and other worms are lost to sight under gravel in a very short time, and lost of course to all fishes except those that possess built-in earth-moving equipment.

On the other hand, food in the unfurnished tank is fully visible and obtainable by the fish at all times. Foods like Tubifex and micro worms in particular will remain alive for very many hours, which can be a boon to the working aquarist with a tank of youngsters that require almost constant feeding. Indeed most of our fishes are, by nature, 'little and often' feeders and anything at all that tends towards this concept is surely advantageous. Feedings can also be heavier in a clear tank because any food which is left uneaten can be readily and easily siphoned from the tank and never a trace left behind.

In fairness it must be said that aquaria that are unfurnished do require more frequent changes of water because of the faster build-up of waste products, which would, to some extent, be utilised by the plants in a planted tank. However, refilling the bare tank or just topping up can be done with gusto. No more time-consuming, timid pourings from a spout or whatever, for fear of upsetting the tank furnishings, but a full-bodied cascade from a bucket or hose and the job is done.

Stains can fulfil an extremely useful function in the bare tank by consuming uneaten food before decomposition sets in. They will, of course, in these circumstances, have no opportunity to indulge in the
Meetings and Changes of Officers

ASSOCIATION OF MANCHESTER &
DALESHAM. Secretary, Mr. G. Howard (15 Sandford Avenue, Blackpool; phone 40776).

BRADFORD & D.A.S. Meeting of the Bradford Anglers Association (2) Whitworth Arms, Crossland, on the third Wednesday of each month. Chairman, Mr. R. J. Rhead; secretary, Mrs. M. J. Shelford (22 Bank Foot, Bradford, 435). New members welcome.

CARSHALTON & D.A.S. New Society. Meetings: last Wednesday in each month. Secretary, Mr. J. T. B. Ward (34 Rivelin Road, Carshalton, Surrey).

CHINGFORD & D.A.S. Meetings: second and fourth Wednesday of each month at West Wickham Forest Recreation Centre, 135 Chingford Mount Road, London, E.4 (teaching room no. 2 at 8 p.m.).

CRAWLEY & D.A.S. Secretary, Miss E. M. Sturrock; meetings: first Monday of each month at 7.30 p.m. at the Willowbank Public Hall, Storrington Road, Crawley, West Sussex.

DUCERIES A.S. Chairman, Mr. J. Hutchinson (118 Greenway, Ruislip, Middlesex); meetings: first Wednesday of each month at 8 p.m. at Ruislip Rovers Club, Ruislip.

EALING & D.A.S. Chairman, Mr. A. J. Howells (20 Sunningdale Avenue, Ealing, W.5); meetings: first Monday of each month at 8.30 p.m. at the Ealing Angling Club, Lyons Road, Ealing, W.13.

EAST LONDON & A.P.A. President, Miss E. J. Page; meetings: first Thursday of each month at the Essex Angling Club, Ewell, Surrey. Chairman, Mr. A. J. Howells; meetings: first Friday of each month at the Essex Angling Club, Ewell, Surrey.

FISHERMAN'S & D.A.S. Secretary, Mr. G. C. N. Tilbury, 144 Westgate, Ramsgate, Kent. Meetings: third Thursday of each month at the Angel, Ramsgate.

GREAT WESTERN A.S. Secretary, Mr. G. C. G. Teare, 30 Hatherleigh Road, Reading, Berks. Meetings: third Thursday of each month at the Rose and Crown, Reading.

HARROW & D.A.S. Secretary, Mr. M. J. P. Parfitt, 106 Grove Road, Harrow, Middlesex. Meetings: second and fourth Tuesday of each month at the White Horse, Harrow, Middlesex.

HARINGEY & D.A.S. Secretary, Mr. J. W. Parfitt, 106 Grove Road, Harrow, Middlesex. Meetings: second and fourth Tuesday of each month at the White Horse, Harrow, Middlesex.

HARROW & D.A.S. Secretary, Mr. M. J. P. Parfitt, 106 Grove Road, Harrow, Middlesex. Meetings: second and fourth Tuesday of each month at the White Horse, Harrow, Middlesex.

ILFORD & D.A.S. Secretary, Mr. B. London, 12 Barking Road, Ilford, Essex. Meetings: fourth Tuesday of each month at the White Horse, Harrow, Middlesex.

INDEPENDENT A.S. Chairman, Mr. G. C. Teare, 30 Hatherleigh Road, Reading, Berks. Meetings: third Thursday of each month at the Rose and Crown, Reading.

KIDDERMINSTER & D.A.S. Secretary, Mr. G. C. Teare, 30 Hatherleigh Road, Reading, Berks. Meetings: third Thursday of each month at the Rose and Crown, Reading.

LEAMINGTON & D.A.S. Chairman, Mr. G. C. Teare, 30 Hatherleigh Road, Reading, Berks. Meetings: third Thursday of each month at the Rose and Crown, Reading.

REGATE & REDHILL A.S. Secretary, Mr. G. C. Teare, 30 Hatherleigh Road, Reading, Berks. Meetings: third Thursday of each month at the Rose and Crown, Reading.

RUGBY & D.A.S. Chairman, Mr. D. Rice; secretary, Mr. J. H. Rice, 13 Bridge Road, Rugby, Warwickshire. Meetings: first Saturday of each month at the Royal Oak, Rugby.

SOUTH YORKSHIRE A.S. Secretary, Mr. J. H. Rice, 13 Bridge Road, Rugby, Warwickshire. Meetings: first Saturday of each month at the Royal Oak, Rugby.

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WINTON & D.A.S. Chairman, Mr. J. H. Rice, 13 Bridge Road, Rugby, Warwickshire. Meetings: first Saturday of each month at the Royal Oak, Rugby.
An Asiatic Bristle-head
(Family Amblycipitidae)

The small Asian catfishes known as amblycids (family Amblycipitidae) are among those which because of their lack of spectacular coloration, form or features have not often been imported. On those occasions when they are seen in aquaria, it is just as likely that the small, brushy-faced creatures had the long journey through accident as through design of purpose.

The first of only two specimens which I have kept or seen was sent to me some years ago by my friend, Albert J. Klee of West Chester, Ohio. The little fish was perhaps 2 inches in length on arrival and grew another inch over a period of several years.

Amblyceps mangois, according to Day in *Tropical Fish* or INDIA, is quite variable in form, and although several 'species' of *Amblyceps* have been described it is likely that at least the majority are of this single species. Rather long and worm-like in form, it is somewhat reminiscent of South America's parasitic trichomycterid catfishes in spite of its forked caudal fin or tail. Also present are an adipose fin and a face full of bristly little whiskers.

The surprisingly large mouth is located in the midst of eight stiff-looking barbels, and the little fish is reputed to bite viciously when removed from its mountain stream habitat in India, Burma and South-east Asia. It is also said to live out of water for extended periods after being removed. This is not too unexpected, since many catfishes remain alive for surprisingly long periods out of water.

The almost unbelievably small and beady eyes are subcutaneous or covered with skin, and observations in the aquarium indicated that they were of little use. With an obvious aversion to bright light, *Amblyceps* wastes little time locating a crack or crevice which would seem too narrow for the fish to wedge its body inside, and takes possession of the property. In habit the amblycids seem quite similar to the strange little 'mad tom' catfishes of the North American Ictaluridae, and the literature on them indicates that they perhaps fill a rather parallel ecological niche in Asia.

By BRAZ WALKER

Coloration consists mostly of a somewhat nondescript tan which lightens on the underside. The forked tail is broad and powerful, and the rather worm-like body serves for auxiliary power when necessary, aiding movement with a wriggling eel-like action. The front end of the little fish stops so abruptly that if it were not for the forward-projecting, bristly facial ornamentation it would almost seem as if the creature had been victim of a head-on collision at high speed.

Although certainly less than a show fish, *Amblyceps* is an odd little creature which is not without purpose to the aquarist. The nocturnal nature of the fish in the aquarium causes it to do its prowling at night, and as the wide mouth would seem to indicate, the fish has a larger capacity for food than might be realised from its size. Any food which might have escaped the other fishes is eagerly sought, and scraps can be retrieved from surprisingly tight quarters.

Hardly destined ever to be a 'popular' fish, *Amblyceps mangois* and its similar relatives will nevertheless make interesting additions for the eagle-eyed aquarist lucky enough to spot one.
Cherry Barbs

By RUDOLPH ZUKAL

Photographs by the author

Translation by F. MARSH

This very beautiful, peace-loving and somewhat timid barb deserves to have had more written about it than in fact it has. It is a fish that is quite happy in smaller sized tanks and gives a lot of pleasure because of its beautiful colouring and undemanding nature.

Cherry barbs were brought to Europe for the first time from Ceylon in 1936. They grow to only about 2 in. and have a longish, oval body. From the jaws to the caudal fin there is a dark brownish-black band. The iris of the eye is red-gold, the gills are coloured a beautiful delicate red, and the background colour of the whole body is brownish red. The female’s fins are only very pale red, but the male’s fins, particularly the anal, are more intensely coloured and the sexes can be distinguished fairly easily because of this.

As they are easy to keep and to propagate, they are very popular and well worth recommending to beginners. They prefer a fairly subdued lighting and a temperature of around 73°F (23°C). Normal, semi-hard water is suitable for them. Since they are so peaceful and sociable they are well suited to life in a community tank with other small fishes.

The fish do not require a large tank for breeding. I use one with a capacity of about 1½ gallons, filled with semi-hard water and planted with fine-leaved plants. For breeding cherry barbs water temperature should be raised to 75°—78° (24—26°C). These fish often make spawning attempts in the community tank and it is then possible to see which is the most active male and use him for breeding. A day after he is put in the breeding tank the female
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can join him. Courtship usually begins at once.

The male becomes a blood-red colour, swims round the female and entices her into the plants. During this phase and also during the spawning itself the male prods the female with his jaws to make her dodge away from him. At last the female becomes excited and swims through the tank closely followed by the male. He swims in and out of the plants to encourage her, swims round her in all directions and prods her continually. At last, the point is reached where the female will swim into the plants; the male immediately follows, the fish press against one another and the female is held by the male's caudal fin. There is a mutual jerk, the fish separate and the eggs fall into the plants and to the bottom of the tank. Only a few eggs are expelled at a time, perhaps from three to ten.

The spawning is repeated shortly afterwards and the whole process continues for about 3 hours. The eggs are tiny, yellowish in colour and most of them will stick to the plants. During the mating, the parents are not concerned with the eggs, but once the spawning is finished the parents must be removed.

The fry hatch out in about 30 hours and first stay on the bottom of the tank. Since they are sand-coloured, they are very difficult to see and many an aquarist has cleaned out the breeding tank prematurely and thrown the fry away. The number of young is not specially large—100–200 might be a good yield, and the spawning can be repeated after 14 days. The fry can be fed on Infusoria or finest fry food. They will grow quite slowly, but after about 5 weeks will be developing their parents' colouring.

I wish all tropical fish enthusiasts much joy with this fish and much success with breeding it.
BRISTOL TROPICAL FISH CLUB

had the interest in marine well and truly aroused by a fine talk given by Mr J. Wheeler, Mr R. H. Chapman informs us that Mr Wheeler's description of his recent experiences with these fish did a great deal to dispel some of the 'mythique' surrounding this branch of fishkeeping. The specimen Mr Wheeler took along in normal show jars were further evidence of his confidence in handling the fish, and Mr Chapman suggests that local clubs would be well rewarded if they can persuade Mr Wheeler to repeat the lecture for them.

A LETTER from HENDON & D.A.S. reports: The "Open Show Season" is once again about to blossom and Hendon would like to announce to all readers that their small contribution will be on Saturday, 16th May at their usual venue (see Dates for Your Diary). For those who like to make an afternoon of it, we have decided to bring back the "continuous entertainment bar"—from benching to prize-giving. But this time, with an improvement. We have obtained additional accommodation on the premises for those who seek our support programme.

We are not at liberty to say who (and what) it will be. However, potential patrons can rest assured that it will be worthy of their presence. It has come to pass that tradition ordains that we do something different at our "day"—whether fish-showning-wise or support-wise. We are trying desperately not to disappoint our supporters for this year.

THE INTER-CLUB show held between HORSFORTH A.S. and CASTLEFORD A.S. resulted in a closely fought contest with Castleford winning by 2 points (33 to 31 points). The best in the show award was made to the exhibit belonging to Miss J. Helm.

Junior A.S.: 1, Master G. Ticklebottom; 2, Master J. Doublet; 3, Master J. Shim; 4, Mr and Mrs Grimes; 5, Miss J. Helm; 6, Mr and Mrs Grimes; 7, Miss J. Helm; 8, Mr and Mrs Grimes; 9, Miss J. Helm; 10, Mr and Mrs Grimes; 11, Miss J. Helm; 12, Mr and Mrs Grimes; 13, Mr and Mrs Grimes; 14, Miss J. Helm; 15, Mr and Mrs Grimes; 16, Miss J. Helm; 17, Mr and Mrs Grimes; 18, Miss J. Helm; 19, Mr and Mrs Grimes; 20, Mr and Mrs Grimes; 21, Miss J. Helm; 22, Mr and Mrs Grimes; 23, Mr and Mrs Grimes; 24, Miss J. Helm; 25, Mr and Mrs Grimes; 26, Miss J. Helm; 27, Mr and Mrs Grimes; 28, Miss J. Helm; 29, Mr and Mrs Grimes; 30, Miss J. Helm; 31, Mr and Mrs Grimes; 32, Miss J. Helm; 33, Mr and Mrs Grimes; 34, Miss J. Helm; 35, Mr and Mrs Grimes; 36, Miss J. Helm; 37, Mr and Mrs Grimes; 38, Miss J. Helm; 39, Mr and Mrs Grimes; 40, Miss J. Helm; 41, Mr and Mrs Grimes; 42, Miss J. Helm; 43, Mr and Mrs Grimes; 44, Miss J. Helm; 45, Mr and Mrs Grimes; 46, Miss J. Helm; 47, Mr and Mrs Grimes; 48, Miss J. Helm; 49, Mr and Mrs Grimes; 50, Miss J. Helm; 51, Mr and Mrs Grimes; 52, Miss J. Helm; 53, Mr and Mrs Grimes; 54, Miss J. Helm; 55, Mr and Mrs Grimes; 56, Miss J. Helm; 57, Mr and Mrs Grimes; 58, Miss J. Helm; 59, Mr and Mrs Grimes; 60, Miss J. Helm; 61, Mr and Mrs Grimes; 62, Miss J. Helm; 63, Mr and Mrs Grimes; 64, Miss J. Helm; 65, Mr and Mrs Grimes; 66, Miss J. Helm; 67, Mr and Mrs Grimes; 68, Miss J. Helm; 69, Mr and Mrs Grimes; 70, Miss J. Helm; 71, Mr and Mrs Grimes; 72, Miss J. Helm; 73, Mr and Mrs Grimes; 74, Miss J. Helm; 75, Mr and Mrs Grimes; 76, Miss J. Helm; 77, Mr and Mrs Grimes; 78, Miss J. Helm; 79, Mr and Mrs Grimes; 80, Miss J. Helm; 81, Mr and Mrs Grimes; 82, Miss J. Helm; 83, Mr and Mrs Grimes; 84, Miss J. Helm; 85, Mr and Mrs Grimes; 86, Miss J. Helm; 87, Mr and Mrs Grimes; 88, Miss J. Helm; 89, Mr and Mrs Grimes; 90, Miss J. Helm; 91, Mr and Mrs Grimes; 92, Miss J. Helm; 93, Mr and Mrs Grimes; 94, Miss J. Helm; 95, Mr and Mrs Grimes; 96, Miss J. Helm; 97, Mr and Mrs Grimes; 98, Miss J. Helm; 99, Mr and Mrs Grimes; 100, Miss J. Helm.

WHAT promises to be the largest collection of fancy guppies Britain has ever gathered together under one roof is being staged at a show in Birmingham on Sunday 30th May. The Civic Farm Community Centre, Civic Farm Road, Sheldon, Birmingham 33 is the home of the Birmingham Section, P.G.A., host to the Society's 1979 INTERNATIONAL SHOW. Already the New World and the Continent have promised to send entries, so the exhibits should provide a fair cross-section of the world's guppies. Show schedules will be available to genuinely interested guppy fanciers and can be obtained from the show secretary, Mr P. W. Jones, 353 Stockfield Road, Yardley, Birmingham 21. Please enclose a large stamped addressed envelope.

by his practical experience, studying livebearing freshwater tetras in a laboratory housing 800 tanks of varying sizes. Mr Teitler's slides showed many varieties of fish, both tropical freshwater and marine. When these were exhausted and the meeting time extended, he asked if we would like to continue with his guppy discussion. Now, as is well known, we do have a fondness for...
RUGBY & D.A.S. would be pleased to hear from local societies with regard to shows. Please contact secretary Mr J. H. Petch, Misterton Fields Farm, Lutterworth, Rugby.

31 entries at the club’s first table show, Mr A. Firth of Bradford, who judged the show, gave a most interesting talk on fish showing, awarded the following: livebearers; 1, Mrs W. Atkinson; 2, Mr D. Foster; 3, Mr P. Stothard. A.O.V.; 1, and 3, Mr M. Allen; 2, Mr J. Hattersley.

A slide show and taped commentary was a new venture that proved popular with members of VAUXHALL MOTORS A.S. The slide show covered the setting up of tanks, with emphasis on show tanks. An inter-club match with Bingley was much enjoyed although the club lost by a narrow margin.

20 MEMBERS and visitors of YATE & D.A.S. enjoyed a full evening at their February meeting. A double slide show on freshwater fish parasites and diseases and on marine tropical fish was followed by a table show for platys and swordtails (novice class, Miss L. Smith; open class, Mr J. B. Powell) and the evening ended with an auction of fish and plants.

Trophies for points received over 6 months in table shows were presented to the following members of BOREHAMWOOD & D.A.S.: senior trophy, Mr R. Woolveridge (for Society trophy, Master D. Housell 3rd).

NEW MEMBERS of NUNEATON A.S. found the talk by Mr Walker and Mr Veasey from Leicester on fish showing extremely helpful. At the second meeting in the month club member Mr Stephen Baxham stepped in when a speaker was unable to attend. The meeting concluded with the members being presented with a plaque inscribed with the names and dates of the winners of the Society’s Boat Race Trophy.

WINNER of the Irvine Challenge trophy for last year at EALING & D.A.S. was Mr Gerry Bungin. Other trophy winners were: Rainbow trophy, breeders class, Mr Jim Heale; Church trophy for Corydoras, Mr and Mrs Crickshank; Milla trophy for plants, Mr C. Rainbow; Tugg trophy for novices, Mrs D. Crickshank; Ankin trophy for aquascapes, Mr John Baris; woodland trophy for best junior’s fish. Jeff Ankin; E.D.A.S. Challenge shield, table show points, Mr Jim Healey; E.D.A.S. home furnished aquarium award, Mr J. Healey.

MR. A. SIMPSON won first and second places in the table show for barbs held by BARNSLEY T.F.S. Meetings are held on the second and fourth Tuesday in the month and new members are very welcome.

AT THE WARRINGTON A.S., social evening, organiser Mr Ron Trench kept the fishy theme throughout with a ghoulish drive. He then gave a practical exhibition on the art of feeding and fish bingo. Fish of the month table show results were: A.O.V. livebearer, Mr A. Addison; Swordtails; 1, Mr L. Crawford; 2, Mr M. Baker; 3, Mr A. Addison. Platys; 1 and trophy, Mr L. Crawford; 2, Mr J. Higham; 3, Mr M. Baker. The club’s H.Q. is the Midlands Hotel and details can be obtained from Mr A. Addison, 5 Hewett Street, Latchford, Warrington, Lancs.

BASINGSTOKE A.S. held an ‘Ideas Market’, when members were able to put forward their own ideas that might assist in any aspect of fishkeeping and breeding. Winners of the table show were: cichlids: Mr A. Clarke; A.O.V. tropical, Mr G. Clewer; A.O.V. ornamental, Mr R. Preston.

A TAPED TALK by Mr Colin Roe heard at the February meeting of the Breeders’ Section of NOTTINGHAM & D.A.S. was followed by a lively discussion. For plant growth Mr Roe advocated lighting of about 40 watts to each cubic foot of water for 6 hours daily; 60 watts are required for tanks of 24-14 in. depth. Mr Bruce Inman reports in the Society’s bulletin on his own experiments on the subject of ‘AnEMONe’ WHICH is now 20 in. high with 32 leaves measuring 14 in. by 45 in. each.

‘AQUATIC PLANTS’ was the theme of the enjoyable lecture given to members of HARLECH A.S. by Mr Gwynn Ellis, Assistant Keeper, National Museum of Wales. The table show for anabantids, judged by Mr Peter Basset was won by Master Gareth Moseley (2, Mr Frank Morris; 3, Mr Alan Ward).

MR. KEN NUTT, F.B.A.S., judge, congratulated the owners of the 42 entries in the inter-club show that CHINGFORD & D.A.S. held with Walthamstow & D.A.S. on the quality and condition of the fishes. Mrs C. Fuller (Chingford) was awarded first place (2, Mr Erwin; 3, Mr P. Harrison).

AT THE AIREBOROUGH & D.A.S. annual dinner and prize-giving, trophies were presented to: Master A. Fisher (Junior table show); Mr R. Tate (novice); Mr and Mrs J. Whiteley (advances); Mr D. Robinson. The A. & P. Iveson trophy for most points in open show was awarded to Mr J. Whiteley.

NEWLY joined members of NEW FOREST A.S. were able to enjoy the second showing of a colour slide lecture on brine shrimp recently. In the table show, Mr C. Kershaw won in the a.v. class, Mr R. Moseley in the b.v. class, Mr A. Williamson in the special class.

AT the February meeting of the newly formed CARSHALTON & D.A.S., Mr Albert Villiers gave members the benefit of 20 years of experience in the trade with his anecdotes on tubifex collecting and feeding. In the table show, Mr Horley won in the swordtail class and Mr Tucker in the danaio class. Although this was only the second meeting of the Society, over 15 people were present at the secretary’s home—the temporary venue until a permanent hall is found. Meetings are held on the last Wednesday of the month.

REPORTS of the officers at the YORK & D.A.S. AGM. showed that the Society had enjoyed a most successful year, not least on the showing side. York’s successes at open and inter-society shows included 35 firsts, 48 seconds, 47 thirds and 9 best in show. The Society awards a Cup annually to the member gaining most points at these shows and for 1979 this was Mr P. Carey (171 points) [2, Mr M. Allison (116)]; 3, Mr S. Allison (88)].

SOUTEND, LEIGH & D.A.S. report that final placings for table show positions in 1979 gave Mr D. Edwards first place with 42 points (2, Mr R. Wallings; 3, Mr. Clark 24). Meetings have always been very enjoyable; Mr Dave Edwards had the meeting in an upsurge of disbeliefing laughter.

THE FANCY GUPPY ASSOCIATION held its annual general meeting on Sunday 1st April at the headquarters of the Manchester Society, The Drill Hall, Stretford Road, Manchester. The meeting will start promptly at 2.45 p.m. A table show will be staged and judging will begin at 2.45 (subject to change without notice).
while describing the Amblyops and Mr Bob Passmore interspersed his lecture on cichlids with some vivid stories such as that female tilapias will roll their eggs around their mouths like ‘animated cement mixers’. The Hard Luck table show for those not receiving a prize card at table shows during the previous 3 months was won by Mr W. Upton (2), Mr R. Copsey (3), Mr H. Dunmore.

TONBRIDGE & D.A.S. recently enjoyed a very enlightening talk from Mr S. D. Hill, deputy manager of Sevenoaks & Tonbridge Water Company, who described the properties of the local water and suggested ways of making it more acceptable to aquarium fishes. Mr T. Hines won in the a.s. livebearer class in the table show, Mr I. T. Mathiessen in the a.o.s. livebearer class and Mr L. Glatly in the egg-laying breeders with convict cichlids.

Dates for Your Diary

19th April. HOUGHTON & D. A.S. Open Show. Details from Mr J. Hargreaves, 97 Sunderland Road, Houghton-le-Spring, Co. Durham.

19th April. STROUD & D. A.S. Open Show. A.S.E. Bond Club, Moss Road, Stroud, Gloucestershire. Schedule for Mr C. L. Wilson, 195 Parrs Crescent, Lostock Hall, Preston, Lancashire.

19th April. CAFTRFORD A.S. Open Show. Cafe福田, Bury, Manchester. Schedule for Mr R. E. Coates, 26 Litchfield Lane, Stretford, Manchester.


19th April. READING & D. A.S. Open Show. Black Berries, Oxford Road, Reading. Details from Mr R. Grant, 20 Dover Street, Reading (phone 01-32 62 50).


20th April. GOLDFISH SOCIETY OF GREAT BRITAIN. Quarterly meeting Conway Hall, London, W.C. 2 at 7.30 pm.

20th April. BELLE VUE A.S. Open Show. Openhouse Lodge Club, Ashton Old Road, Openshaw, Manchester 11.

24th April. STOCKTON-ON-TEES A.S. fourth Open Show. St Peter’s School, Durham Road (1723), Stockton-on-Tees. Schedule from Mr R. Crichton, 38 Thames Avenue, Thirsk, Yorkshire.

25th April. WINCHESTER & D. A.S. Open Show. Congregational Church Hall, New Street, Winchester. Schedule from Mr Derek Atkin, 5 St. Mary’s Street, Winchester.

2nd May. TROWBRIDGE D. A.S. Open Show. Nalin’s Hut, St John Ambulance Hall, St John’s Road, Trowbridge, Wiltshire.

2nd May. DERBY REGENT A.S. Open Show. Sherwood Foresters Recreation Centre (Norunton Barracks), Outwood Park Road, Darley Dale, Belper, Derbyshire. Schedule for Mr E. Handley, 29 Trowbridge Crescent, Chaddesden, Derby.


4th May. DUKERIES A.S. second Open Show. Wyldefield Portland, Technical Grammar School, St Peter’s Hill, Woking. Schedule, Mr M. Woodley, 36 Silverdale Drive, Dinton, Sheffield.

5th May. UXBRIDGE & D. A.S. Open Show. Meadow School, Rural Lane, Hillingdon, Uxbridge. Schedule from Mr J. V. Lees, 14 Abridge Road, Edgware, London W.3.


6th May. HYDE A.S. Open Show. The Queens Hotel, Hyde, Cheshire.

6th May. ASSOCIATION OF YORKSHIRE A.S. Open Show. Details to follow.

6th May. CARDIFF A.S. Open Show. St Margaret’s Church Hall, Southgate, Cardiff. Schedule from Mr and Mrs C. Harding, 15 Pearl Street, Cardiff.


6th May. SOUTHEND, LEIGH & D. A.S. Open Show. St Andrew’s Church Hall, Church Avenue, Westcliff-on-Sea, Essex. All enquiries to Mr M. Upton, 12 Merivale Road, Benfleet, Essex (phone 01-594 2841).

17th May. MERSSEYIDE A.S. Open Show. The British Legion Club, Holyoke Road, Liverpool 18.


20th May. F.O.A. 1970 INTER-NATION SHIP SHOW (at the Birmingham Section). The Globe Farm Community Centre, Globe Farm Road, Stockfield, Birmingham 37. Schedule from Mr F. W. Laker, 132 Stockfield Road, Yardley, Birmingham 29.

26th May. HARLECH A.S. second Open Show. Gallesia Junior School, Cadwll Road, Harlech. Booking 14-4-70. Schedule from Mr A. J. Parry, 56 St Benegês Road, Harlech. (phone 05933 3655).

27th May. TOTTENHAM & D. A.S. Open Show.

27th May. BOSTON A.S. second Open Show. Blackberries, Barton, Details from Mr D. Moody, 95 Kingsway, Boston, Lincoln.

27th May. COVENTRY & F. A. Open Show. Finedon Community Centre, Coventry. For show schedules send a.s.e. to Mr R. Waddell, 36 Ridgeway Avenue, Coventry CV4 8P.

27th May. NUNEATON A.S. Open Show. Schedules from Mr R. Boxham, The Barn, Beaumont Road, Nuneaton.

27th May. LINCOLN & D. A.S. Open Show. Details to follow.

27th May. HYDE A.S. Open Show. Queens Hotel, Hyde, Cheshire.


31st May. BOURNEMOUTH A.C. Open Show. Elmsdown Community Centre, Bournemouth.

31st May. LOUGHBOROUGH A.S. third Open Show. Town Hall, Market Place, Loughborough. Details available from Mr J. P. Perry, 6 Pepler Road, Loughborough, Leics.


21st June. AHERSTONE A.S. Open Show (provisional).

A FAIR distribution of awards must surely result from one of the monthly table show’s rules of the LOS ANGELES AQUARIUM SOCIETY (U.S.A.). This reads: ‘A fish or type of fish that has won a first prize or a trophy shall not be eligible for showing again by the same person in the same year.’

IMPORTANT REQUEST TO ALL AQUARIUM SOCIETIES

ANY aquarium society interested in the idea of staging a display at The AQUARIUM SHOW in London this year (Thursday 20th October–Sunday 1st November) is requested to notify Anthony Evans (Show Organiser, 354 Garratt Lane, London S.W.17) as soon as possible. Such notification of interest is not intended to be a commitment to making a display, but the information now requested is essential for an early appraisal of the likely extent of society participation to be made.
**AQUATIC SUPPLIERS**

OVER 120 VARIETIES tropical, marine and pond fish—for personal shoppers only. Kingfisher, 308 Croydon Road, Beckenham, Kent. Phone 01-650 3716. Closed Wednesdays.

Maldon AQUARIA (Mr. G. F. Yule). Varied stock of fish, plants, Turtles. 10-60 extra by Wednesday. 191 High Street, Maldon, Essex.

**PLYMOUTH TROPICALS** for your fish, plants and equipment. North Hill Nurseries, Tavistock Road, Plymouth. Phone 62663.

**OLDBURY’S OF CHESTER.** 100 varieties tropical fish, freshwater and marine. 40 varieties plants. Equipment. Live foods. Evenings after 7 p.m. Weekends 2 to 6 p.m. 36 Pearl Lane, Vicars Cross, Chester 41571.

**WE ARE MAKING GREAT STRIDES IN TROPICAL FISH.** 100 tanks, plenty of quarantined fish, plants and equipment. Water Gardens section now open for all cold-water fish, pools, pumps, liners, etc. Give us a call—open 2-9 p.m. every day except Mondays. Stainers Water Gardens, North Street, Martock, Somerset (phone 3331). Fish Clubs welcome from May onwards—by appointment.

**EQUIPMENT**

**CLASSIFIED ADVERTISEMENTS**

Rates: 5d. per word (minimum charge 8s.); Box no. 2s. extra if required. Remittance with order to be sent to PetFish Monthly 554 Garrett Lane, London, S.W.17

only with frames or stands, Carr. paid. Money back if not satisfied. Any size. List, s.a.e. Hobby, Engineers, Darwen Place, Leeds 11. (Phone Leeds 250063). [Partial advertisement]


**SHOW JARS**. New glass show jars with screw tops, for carrying fish and showing: 4 in. square 6 in. deep, 3s 5d each; 4 in. square 10 in. deep, 4s. Reduction for quantities. Collection only, 2nd offices.

**RUSTPROOF AQUARIA**. Ornamental stands, glazing cement, equipment manufacturers: s.a.e. Westby's, Barton, Ormskirk.

**Post Mortem Examination**

W. HAROLD COTTON, F.R.M.S., Ichthyologist, post mortem examination of tropical and cold-water fishes. Specimen should be wrapped loosely and very wet in grease-proof paper, surrounded by a damp cloth and then re-wrapped in dry grease-proof paper and sent in strong container. A brief history and any relevant details must be given. No preservatives please. Examination fee 5s. 39 Brook Lane, Kings Heath, Birmingham 14. Phone: 201-444 1693.

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