

MAY 1975

25p

Pet Fish

PRACTICAL FISHKEEPING MONTHLY



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A New Barb Variety
Coldwater Scene
To Plant or Not To Plant?
Development of the Medaka

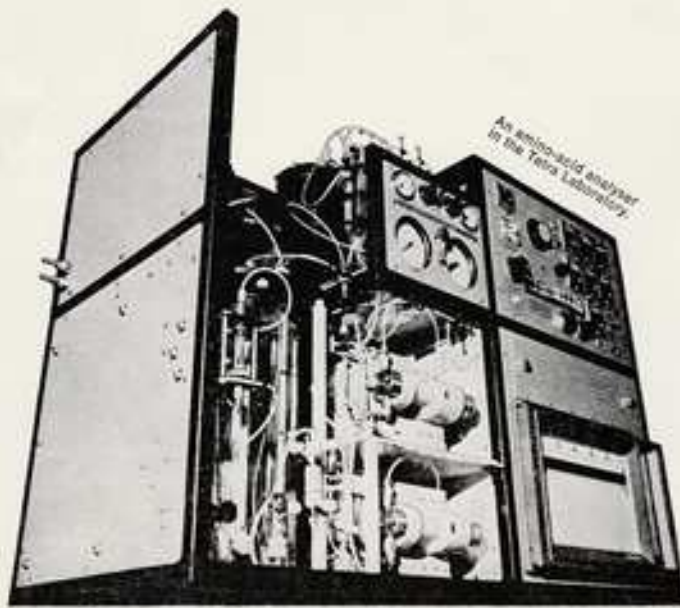
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PetFish

PetFish Monthly 25p
Vol. 10 No. 1
May 1975

Subscription rates: £4.00
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\$10.00 for 12 issues)

Editor: Anthony Evans
Advertisements:
G. Belleger

In This Issue

	Page
Comments and Quotes	1
Letters	2
Beautiful Barb from Odessa	10
Growth to Hatching Time	13
Cichlid Fishes of Lake Victoria	16
Meetings and Changes of Officers	17
Marinist's Notebook	18
A Versatile Aquarium Plant	19
Coldwater Scene	21
All-Glass Compact Aquarium	24
What's New?	26
To Plant or Not to Plant?	27
Personal Comment	29
Which Air-Pump to Choose?	30
Readers' Queries	
Answered	32
Convention Reports	32
Club News	34
In Brief	36
Dates for Your Diary	37
Index to Volume 9	

(i)-(iv)

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Comments and Quotes

- *When fishes are crowded*
- *Mystery at Canoe Lake*
- *Salmon in the Thames*

Crowding Dangers

AMONG the disadvantages of overcrowding fishes well known to the fishbreeder are a number of unpleasant effects resulting from the harmful substances called 'crowding factors', released into the water by overcrowded fishes of a number of species. It is known that these substances, whose chemical identity is not yet verified, can stop spawning, slow growth of young fish and increase deaths in adult fish.

One of the difficulties of studying these substances has been the time-consuming procedures involved in their recognition and assessment in water samples. An observation made on the effects of 'crowding factors' in slowing the rate of heart beating in zebra fish embryos has now been utilised by biologists at the Oak Ridge National Laboratory, Tennessee to develop a laboratory procedure for quantifying 'crowding factors'. This 'bioassay' for the factors, described by A. A. Francis, Frances Smith and P. Pfuderer in THE PROGRESSIVE FISH-CULTURIST (U.S.A.), involves recording the heart rate in

newly hatched goldfish fry (by means of an ECG apparatus used medically for diagnosis of human cardiac defects). The extent to which the beat rate is slowed when extracts of 'crowding factors' are added to the water the fry are in gives an accurate indication of the amount of biologically active factors present.

Perhaps of more immediate significance for the practical fishkeeper is the note that these harmful factors are removed from water by passing it through activated charcoal, an indication that absorptive carbons of this kind can be a valuable component of filter medium in filters serving fry-rearing tanks especially.

Mystery Fish

A FISHY tale of mystery blew up in the local Portsmouth press last month when an angler retrieved from Southsea beach a 2 lb 3 oz fish corpse that he could not identify. Earlier, the story went, it had been found floating dead in Canoe Lake by two boys, who later deposited it on the beach. The Portsmouth angling fraternity were nonplussed. "Strangest

THIS magazine has remained unchanged in price since September 1972. Unfortunately the costs of production and despatch have not remained un-

changed and after nearly 3 years the point has been reached at which regretfully we are compelled to ask for our readers' understanding in this matter. The new price is 25p per copy.

features of the fish" it was reported, "are that it has nearly human teeth set in a very human gum . . . and is practically devoid of any fishy smell". From a session with fish identification books the nearest identification was . . . "some form of black piranha". Could it be?

Yes, in fact, it could! Mr J. Stillwell of the Portsmouth Aquarist Society and well-known FBAS judge not only identified the piranha but recognised it as one he had sold some months ago. In his possession the piranha had grown from half an inch to more than 12 inches long over seven years. The fish had proved too much for its

new owners and investigation revealed that it had been released alive into Canoe Lake by schoolboys, and it was discovered dead a day later. Asked about his reaction to learning that his fish had been placed in a cold beating lake Mr Stillwell said "I was furious!"

Thames Salmon

THE River Thames could be the first major river of Europe and America to recover from the Industrial Revolution's polluting influence, and have adult

salmon in it in 1977, it was suggested by a fishery officer of the Thames Water Authority. This was on the occasion of the release into the river at Twickenham of about 5000 alevin salmon, reported in THE TIMES. "In ideal conditions about 25 might be expected to reach maturity out of the 5000, which are the spawn of quite a small hen salmon." For one or two to make it under existing not-yet-ideal conditions, it is thought, "will be almost a miracle". When one thinks of the state of the river just a few years back it is almost a miracle that there can be even a remote possibility that salmon can survive in it today.



Your comments and views on all topics of interest to aquarists are welcomed. Address letters to PFM Letters, 554 Garratt Lane, London SW17 0NY

Taking Up Killies

UNFORTUNATELY I did not get PFM for January so I am unable to comment on Mr Brian Tate's letter. However, as a member of the British Killifish Association I find the remarks of 'A Keen Amateur' (PFM, March) offensive and 'gutless' — the latter because he (or she?) hasn't enough to put name to print, yet refers to the BKA as a closed shop. For Mr No-name's information the BKA is not a commercial business but a worldwide club of people who wish to keep killies — whose members, I might add, often have difficulty in obtaining fish because of lack of availability. So, of course, in that respect we are a 'closed' shop.

However, Mr No-name can purchase gouramis, barbs, catfish etc. from his local dealer. Why not killies? Surely they should be available to the general public through this normal channel, or is it that they require a special knowledge to keep them successfully? I would suggest that it is for this very reason that they are not available from this source.

On 2nd March of this year, the West

London Group of the BKA organised a Bring and Buy sale and very successful it was, too. Eggs and fish of the easier species were available to those who attended. Only a few of them were BKA members — most were local aquarists, club members and the public who had seen our advertisements. So let us have less of this 'closed shop' nonsense from persons with no name.

JOHN A. WHITE (BKA 196)
Hayes, Middx, UB3 3AD

I AM writing to say a few words in support of, not on behalf of, the BKA. I don't know how other fishkeepers started with 'killies' but I kept *playfairi* and American flags before I knew that they were of this sacred sect. When I was enlightened to the fact that I was a 'killie-keeper' and that there was an Association for their fanciers it was then that the thought of joining the Association came up. At this point fish were sold to me as

Continued on page 9

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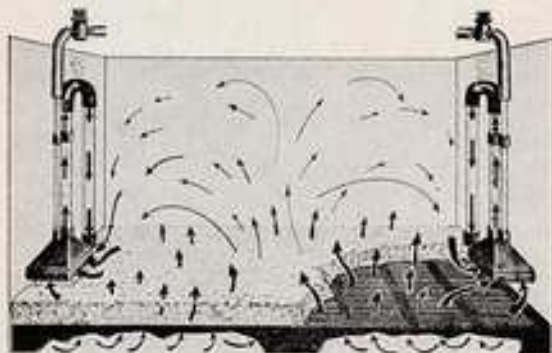
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LETTERS

continued from page 472

encouragement to join, not as a condition to do so. I am glad that I did join as the £3 that it cost me has proved well worth it.

In the BKA Newsletter of February, 1974 there was a request from the chairman to pass on spare fish to dealers and other non-BKA members — not, you will agree, the action of a 'closed shop'. I am no scribe but feel that I could write pages on this subject; but knowing that the Editor cannot give too much valuable space, can I just say to 'Keen Amateur' — drop me a line or give me a ring on 98-29337 and I will do my best to encourage you into our fold — after you have had some eggs — On The House! Good fish-keeping!

D. A. BROOKS

15 Cambridge Road,
Walton-on-Thames, Surrey

British Trophy for the States

THE Michiana Aquarium Society offers something new this year with the presentation of the Renton Trophy at our annual show (April). The trophy is approximately 20 inches high and is made of hand-carved wood. The design incorporates leaves, chromium shields and a mermaid riding a fish on a red silk background. It is meant to be hung as a wall plaque.

This distinctive item was observed by

the undersigned in a recent issue of *Fish*, and you kindly forwarded my enquiry immediately to Mr Renton. This resulted in a lightning response from Mr Douglas Renton, who is chairman of the Newcastle Guppy and Livebearer Society. He offered to carve one on extremely short notice for our Show. This trophy is the third one that he has carved. The first was presented to the Tyne-Tees Area Association and it was allotted to a different society each year to be awarded at their Open Show. Mr Renton carved the second one when he was asked to judge at The Aquarium Show 1974 and it will be awarded annually to the best livebearer exhibit. Currently, he is making engravings of fish on clear perspex for another type of show trophy. His Society corresponds with livebearer associations all over the world. We can be grateful that Mr Renton was kind enough to prepare his distinctive trophy upon very short notice.

The board members of the Michiana Aquarium Society are pleased to be associated in this way with our British cousins and fellow aquarists. Additionally, we believe that the Renton Trophy will add a considerable amount of character to our Show, especially in view of the prosaic and standardised form of most U.S. trophies, which need only a new screw-on emblem to be appropriate for any activity. We have decided to award the trophy for high point; a sum total of points won in each species class with 5 points for first, four for second, etc. The trophy has already engendered some ferocious competition, with one club member planning on winning it with 45 entries!

WM. E. FACKERT,

Michiana Aquarium Society

Elkhart, Indiana, U.S.A.

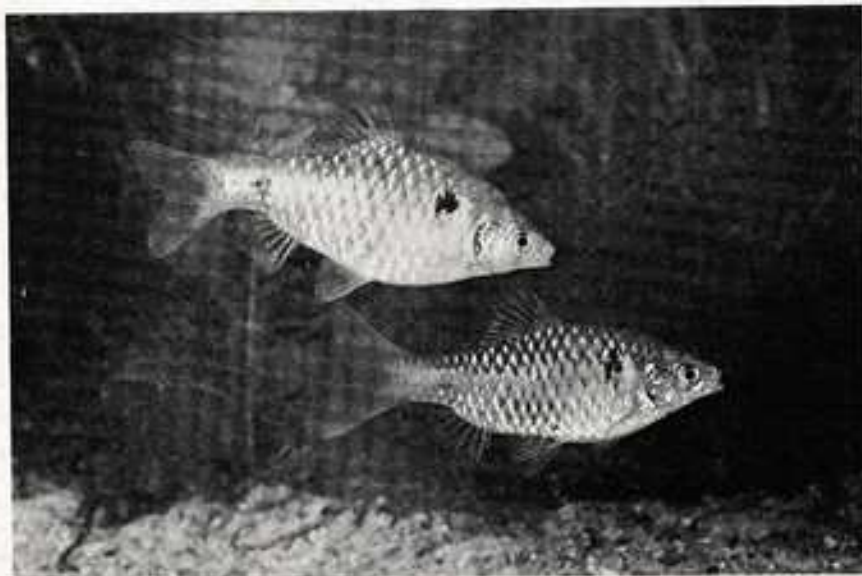
Mr S. Jacobs

In recent years the pet trade has been assailed on many sides by a variety of problems, ranging from the sale of pet foods by the supermarket chains to the recent agitation against the importation of threatened species. It has been a great strength to it to have had as National Organiser of The Pet Trade Association Ltd a cham-

panion such as Mr Sam Jacobs, and it is with great regret that we learnt of his death at the end of February. Mr Jacobs was a loyal and devoted advocate of the rights of the pet trader against the varied contingencies that have challenged the very existence of some aspects of pet trading. Mr Jacobs was one of the earliest members of the Aquatic Traders Association, founded in 1948, that was subsequently incorporated into the

Pet Trade Association Ltd in 1969. From then until his appointment as National Organiser in 1967 Mr Jacobs acted as unpaid part secretary and chairman of the ever-growing membership. In 1957 he represented the trade on the London Aquarium Show Exploratory Committee. He was forced by ill-health to retire in 1973 and his work was taken over by his wife Vera, who has the condolences of the trade in her loss.

Beautiful Barb from Odessa



New Barbus variety

IN 1974 a new, beautifully coloured barb was distributed among aquarists in East Germany, Czechoslovakia and Hungary. Colleagues in East Germany gave it the name 'Odessa barb' because it came to them from the Soviet Union. The fish were propagated a few times and then finally came to us.

It is hard to believe, but no-one can find the slightest information as to where these fish came from. The adult barb resembles barbs of the *Barbus* species *conchonus*, *cumingi*, *ticto* and *stoliczkanus* and one would suppose that the home of the new fish would not be too far from that of the barbs mentioned, that is Ceylon, N. India, Assam and so on, but this is merely my own supposition. (Dr H. Axelrod, in an article on his visit to Moscow in *TFH*, October 1974, says that the barb had been brought to Odessa by a sailor from North Vietnam.—**ERROR**.) In any case, the new barb is just as undemanding as its relations and they are very skilful swimmers. The male is moving the whole day. They eat anything and do not require specific water conditions. A temperature of 68-72F° (20-22°C) is suitable for them.

I also succeeded in photographing this fish spawning.

By RUDOLPH ZUKAL

Photographs by the author

Translated by F. MARSH



The male (left) initiates the breeding sequence by swimming around and beneath the female and butting her from the rear with his head

The female fish is insignificantly coloured and decorated with two large dark flecks on the sides of the body. The male, however, carries a broad, blood-red, horizontal stripe from the gill-covers to the caudal fin. The male's dorsal, also, is decorated with small, black lines. In a word, these are barbs that are very soon going to occupy an important place in our tanks,

perhaps at the expense of their relations, *B.conchonus* and others.

For the first 4 months, the young fish do not differ from each other sexually and only the two large flecks on the sides decorate their delicate, narrow bodies. Breeding this new barb presents little difficulty and in this it closely resembles



During spawning the pair of fish press flank to flank and eggs are released into the plants. The female appears to select the spawning site



In this photograph of the Odessa barbs the pair are separating after spawning. The markings on the male's dorsal fin (fish nearest camera) are clearly visible in this picture and an impression of the beauty of the body pattern can be gained.

all the common barbs, particularly the best known, the rosy barb.

For breeding, a small-sized (3-4 gallon, 15 litres) all-glass tank can be used. No bottom substrate is required but the tank should contain clumps of fine-leaved plants that can be weighted down with flat stones. Tap water that has been standing may be used or water taken from a maintenance tank topped up with fresh water; a temperature of 75-79°F (24-26°C) is required. A pair put in the tank in the evening will usually spawn willingly the following morning. If the fish are in a community tank you can often notice the stormy hunt before the spawning. In the spawning site chosen by the female, the fish press together, the male swings his caudal fin over the female's back and with

a lightning shiver the fish spawn. Some of the eggs stick to the plants, some fall to the bottom. After this hectic spawning, which lasts about three hours, the fish must be removed, for they will devour their eggs. In spite of the size of the parents, 200-300 eggs are produced. Breeding can be repeated several times a year and they do not breed only at certain seasons but throughout the year. Hatching, free-swimming stage and rearing follow exactly the same pattern as that of the barbs I have already mentioned.

I hope that soon many more aquarists will be in possession of this wonderful barb and will also have the pleasure of breeding this fish. (This barb is already being bred in England and doubtless will soon be offered for sale here.—EDITOR.)

DEVELOPMENT OF A FISH—2

Growth to Hatching Time

By IAN SELLICK

Illustrations by the author

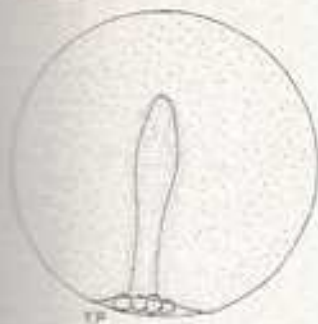
In last month's article the development of the egg of the medaka (*Oryzias latipes*) was described up to the stage called gastrulation.

Towards the end of gastrulation, nearly all the yolk is covered with cells, there being a small hole, the blastopore, through which the part of the yolk containing the oil droplets may bulge. Viewed from the side, the embryonic keel which will form the central nervous system is clearly visible, together with the embryonic shield as a slightly opaque margin to the keel. The keel itself is thicker at the (future) anterior end, the end away from the dorsal side of the blastopore, due to a slight build-up of cells which will go on to form the optic vesicles.

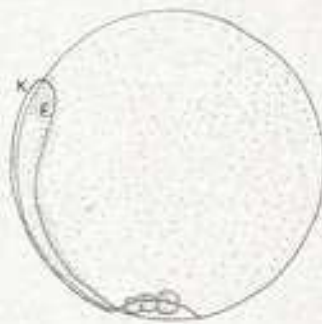
The closure of the blastopore is complete at about 28 hours, and at this stage the embryonic axis is very clear; the optic vesicles have been formed as two bulges, one either side of the keel in the anterior region. In the early stages, these vesicles are not closed off from the keel of the nervous system itself, but after a short time, about 2 hours, they are visible as discrete structures.

As the optic vesicles are forming, the main divisions of the brain become visible as bulges on the dorsal surface of the keel, best seen in side view with the keel on the horizon of the egg. These divisions are the forebrain between the optic vesicles, the midbrain and the hindbrain.

The keel can be seen to be indenting



At the blastopore comes to cover all the egg there is a small area of the vegetal pole left uncovered, the blastopore, through which the yolk plug (Y.P.) protrudes (25 hours). The cells at the future anterior end becomes slightly thicker to form eventually the optic vesicles and the brain.



The 25 hour stage from the side, showing how the embryo sticks out from the yolk, the 'embryonic keel' (K). The lateral condensations of tissue that will go on to form the optic vesicles, and the eyes from these, can be seen (E).

into the yolk sac, and there is a slight condensation of cells about midway along the keel, which will eventually form the somites, the forerunners of the muscles. This condensation of tissue is best seen when the egg is viewed with the embryo at top or bottom, the cells that will form the somites giving a ruffled, slightly more opaque quality. By this time the optic vesicles are completely separate from the forebrain, the division being easily visible as a dark groove.

However, before any somites are formed, a small vesicle, not unlike a small oil droplet in appearance, is produced in the posterior region connected to the embryo about seven-eighths of the way along its length. This vesicle, called Kupifer's vesicle, persists until about the fourth day of development, when the circulation of blood on the yolk sac commences. This would suggest that it has a storage function for some excretory product; it is possibly the site where metabolic waste is stored during the first phases of development. However, it is difficult to accept (this as there is no transport system, so how does waste accumulate at this particular spot?

Beyond the head of the embryo there develops a large swelling bounded by a membrane, which is possibly the forerunner of the heart sac (pericardium). This cavity must thus expand towards the embryo and eventually come to lie beneath



it. This lifts the head of the embryo off the yolk, and the cavity stretches sideways to the midbrain and forebrain. Fine strands on the surface of the yolk at this stage mark the beginning of formation of the 'blood islands'. The divisions of the brain are better defined, and start to fold into the shapes present in the adult fish.

By 48 hours, a heart rudiment, below and in front of the head, appears in the pericardial cavity, extending forward and gradually joining up with some of the blood islands in this region. Slight contractions of this embryonic heart can first be seen soon after it is formed.



Pictures on this page show under the microscope views of developing eggs. Top of page: The optic vesicles have become separated off, the keel in the head region is becoming bumpy owing to the formation of the divisions of the brain, and cells are accumulating alongside the keel, which will later form the somites (body segments) ($\times 50$). Left: nine somites can be seen as bands across the body. The eyes are well developed, and the notochord that marks the future site of the backbone is present. The pericardium that contains the heart rudiment is still spread over the anterior portion of the egg (P) ($\times 65$)

The optic cup formed from the optic vesicles is well defined, and the eye lens appears at this stage. Immediately behind the optic lobes can be seen the formation of the cavities (ventricles) of the midbrain, with expansion into the forebrain occurring at the same time. The otic vesicles can be seen behind the hindbrain, these becoming larger and more distinct in the next few hours, eventually to form the internal 'ears' of the fish.

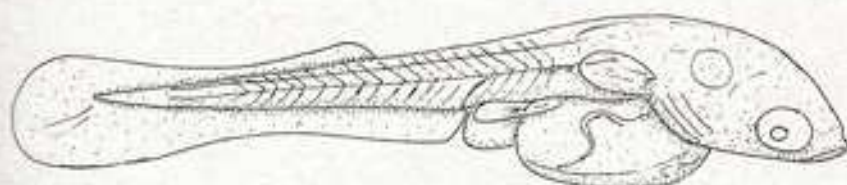
A slight condensation of tissue along the margin of the embryo immediately posterior to the site of induction of the otic vesicles marks the beginning of formation of the pectoral fin buds. The embryo has elongated substantially to cover about half the circumference of the egg. Kupffer's vesicle is still present, but becoming somewhat indistinct, buried in the yolk.

On the third day, the heart has elongated

The rate of heartbeat increases and the ventricle of the heart becomes a definite chamber formed by a bend in the tubular heart slightly to one side of the midline, below the midbrain and the optic cup. Blood corpuscles can be clearly seen in large numbers in the capillaries and in the heart, and the blood has a faint pink colour because of this.

The lens can be seen in the eye, and a small amount of pigment deposition occurs, although not enough to obscure the view of the heart below at this stage. The divisions of the brain become even more pronounced. The otic vesicles become more visible, possibly due to the deposition of the otoliths. The rod known as the notochord can be seen beneath the hind brain and the nerve cord, and it is eventually displaced and covered by the calcified structure of the backbone vertebrae.

Development is now into the fourth day,



Newly hatched rice fish, about 2 days after hatching. The yolk sac is clearly visible, as are the as yet unseparated caudal, anal and dorsal fins. The head is bent down over the yolk sac as in the egg, but will soon flex upwards to make the body linear. The gills can be seen through the nearly transparent walls of the operculum.

and circulation commences in the capillaries on the yolk sac formed by the linking of the blood islands into a network. The head is completely lifted off the yolk by the pericardium beneath and in front of it. The part of the heart visible from above is the sinus venosus, which although not distinct from the rest of the heart, being a straight tube, may be distinguished by the direction of beat. The presumptive ventricle and atrium are hidden below the forebrain, but can be seen by focussing down through the nearly transparent embryo. The emerging anterior vitelline arteries appear just in front of the cells accumulating to form the pectoral fins.

The tail of the embryo lifts off the yolk, and Kupffer's vesicle disappears with the onset of the circulation. Once the tail is free of the yolk, the first contractions of the somites occur, principally in the ones more to the head end, causing the embryo to flex. Later, contractions of the posterior somites occur, causing the tail to twitch.

and nearly all the major organ structures have been formed. Although they cannot be easily seen by direct observation, there are rudimentary kidneys, a liver, and all the other internal organs present. During the next 4-5 days, up to hatching, these organs develop and expand to take up the position and form found in the adult fish. Exceptions are the fins and the sex organs (gonads), the latter maturing as the fish matures after hatching as they will not be 'needed' for several months. The fins develop in the following order.

As already mentioned, the pectoral fin buds are present by the fourth day, and these develop completely before hatching. However, the only other fin to develop is a joint caudal - dorsal - anal fin, starting at the extreme tail end and growing forwards until just after hatching it occupies the position shown.

As the larvae develop over the next couple of weeks, these fins become divided off into their definitive structures as in the

adult. The pelvic fins develop slightly after the pectorals, but are difficult to observe in the egg, sandwiched between the body and the yolk, and it is only on hatching that they are really seen.

The yolk disappears rapidly in the last 2 days before hatching and the embryo often spins violently inside its egg shell. Hatching occurs by the release of an enzyme which dissolves and weakens the shell until the fish is able to break it by the action of its tail.

After hatching, the remains of the yolk sac persist for about 5 days, but the fry begin feeding actively even before this and may be fed on newly hatched brine shrimp,

powdered baby food, and then, after about 2 weeks, ground white worm, very fine *Daphnia* and other foods may be given. Growth is rapid at 25°C, as in most killifish.

Acknowledgements

To Dr J. W. Dodson of the University of Bristol for the use of his personal laboratory and superb Zeiss microscope, without which this report would not have been possible. No less thanks is due to my two technicians, Albert Greagsby and Jim Hann, who put up with my persistent demands for the most obscure pieces of equipment.

BOOK REVIEW

Cichlid Fishes of Lake Victoria

THE CICHLID FISHES OF LAKE VICTORIA, EAST AFRICA: THE BIOLOGY AND EVOLUTION OF A SPECIES FLOCK by P. H. Greenwood.

Bulletin of the British Museum (Natural History): Zoology, Supplement 6, 1974. 134 pages, 77 line illustrations, 1 colour plate. £3.75.

RIFT Valley cichlids have become available to the aquarist only in recent years and as aquarium fishes much still remains to be learnt about their breeding. For a much longer time, 60 years or so, the fishes of the African Great Lakes have enjoyed the attention of zoologists for reasons other than their often very attractive appearance, their behaviour and breeding habits of special interest. Cichlids preponderate in the Lakes and these fishes in particular illustrate the point of evolutionary interest that has made them the object of scientific study: despite the apparent variety of species, with all kinds of anatomical differences and variation of habit, all have developed from just a few original forms trapped in the waters of the Lakes when they were formed millions of years ago, to give what is termed a 'species flock'.

Lake Victoria, whose fishes have been subjected to detailed study by Dr Greenwood in this book, is relatively a young Lake (a mere 750,000 years) and in it

there are at least 170 species of cichlids, nearly all of which occur only in the Lake and not in the rivers feeding it. The genus *Haplochromis* is the major one (about 150 species plus) with the other genera closely related to and derived from *Haplochromis*. As well as making analyses to trace the course of the diversification of the Victoria species Dr Greenwood has attempted to answer the question why cichlids in particular have undergone this process of speciation so readily and successfully when other fish families have shown so little evolutionary change.

Study of the history of the Lake reveals that it was originally several smaller lakes, which have become the single large, relatively shallow body of water seen today. This background provides the Lake with a variety of differing 'environmental niches' and its status of an 'amalgam of several lakes' has been one reason for the great range of fishes developed from the ancestral cichlids trapped there. The fact that these original fishes were not so far specialised in habits, structure and bodily function also meant that there was scope for development of several differing lines of specialisation. Why did not inter-specific hybridisation, i.e. crossing of differently developing lines, occur and so negate the whole process? The answer to this, it is suggested in the book, lies in the elaborate breeding behaviour shown by

the fishes and which in itself constitutes a barrier to crossing. Thus female recognition of and response to a definite male coloration, as in the *Haplochromis* species, would cause rejection of males not conforming to the required coloration.

Specialities in feeding habits of the various Lake cichlid species are discussed, in particular detail for the *Haplochromis* fishes, by Dr Greenwood, since this is another factor with a bearing on the separation of distinct species. Altogether there is a great deal in this book deserving the attention of the serious aquarist with a special interest in the cichlids, and it is noteworthy that at several points the author mentions evidence from aquarium observations of these fishes. For the aquarist who wonders what the work of an ichthyologist involves this book provides a very good sample.

A.E.

AQUARIA: by Jim Kelly. 90 pages, 36 photographs (34 in colour), numerous line drawings. Knight Books, Leicester. 75p.

For anyone who is contemplating setting up an aquarium for the first time, this book would be an excellent investment. Its usefulness, however, does not end there, for the beginner will find encouragement for an extension of interest to reproduction and breeding of the var-

ious species. The author, an aquarist of high standing, assumes nothing. Like Mrs Beeton, who, in her recipe for rabbit pie, said "First catch your rabbit," he starts at the beginning and guides the reader's first faltering steps along a path which, by dint of a painstaking regard to detail, becomes increasingly firmer and wider.

Sixty pages and nine chapters are devoted to laying the foundation and only then is the ultimate mentioned — the stocking of the aquarium with fish. Nothing is forgotten, size of tank, quality of frame, thickness of glass, siting, heating, lighting, servicing, planting, all described intelligibly, with a sprinkling of analogous comment for further clarification. The various fish families are described in detail with suggestions from which the would-be aquarist can decide on the stocking. A careful study of the wealth of colour photographs available should ensure a picture both peaceful and pleasing to the eye.

The two final chapters on breeding and diseases make this a truly comprehensive little volume which not only the beginner, but the experienced aquarist, would do well to keep at hand. A notable feature is that, in addition to a complete index at the end, there are marginal references throughout which make it easy to turn up any aspect of fishkeeping instantly.

F.C.

Meetings and Changes of Officers

BRIMSDON AS. Chairman, Mr A. Wilson; show secretary, Mr D. Higgin; treasurer, Mr D. Tovey; librarian, Mr J. Collins; secretary (acting), Mr D. S. Sundeil (23 Welford Gardens, Birmingham, Oxon, OX14 2BN). Meetings: Every other Thursday (1st, 15th, 29th) 8pm. The Barley Mow, Abingdon. All enquiries welcome.

WIMBORHAM & DAS. Chairman, Mrs R. Thompson; secretary, Mrs P. Hunt (Orchard End, Park Grove, Charlton St Giles, Bucks); show secretary, Mr D. Barker; treasurer, Mr J. Serridge; P.O., Mr K. North (Gibberian, 40 St. Daniels). Meetings: 1st & 3rd Wednesday of month, 8.00 p.m., Wimborham Community Centre.

BRACKNELL AS. New venue. Club Room, Red Lion Public House, High Street, Bracknell. Meetings: 2nd & 4th Sunday in month. New members welcome.

BRIMPTON & SOUTHERN AS. Chairman, Mr S. Rice; vice-chairman, Mr J. Burns; secretary, Mr M. Rooney; show secretary, Mr S. Severe (11 Seaward Station, Southampton, SO4 4AS). phone: Brighton 593851; treasurer,

Miss F. Comber; P.O., Mr J. Smith. Meetings: 1st Monday of month.

BRITISH Koi-KEEPERS SOCIETY, YORKSHIRE SECTION. Chairman, Mr F. J. Ayres; secretary/treasurer, Mr J. W. Mawson (78 Gledhow Wood Avenue, Roundhay, Leeds 8, Yorkshire).

CHESTER & DAS. Chairman, Mr C. Bowyer; secretary, Mr J. Nycock (14 New Park Road, Queensferry, Desford, Chwyd, CH5 1XD); treasurer, Mr A. Dodd. Meetings: 3rd Thursday of month, 7.30 p.m., Watergate Inn, Chester.

FANCY GUPPY ASSOCIATION, MANCHESTER SECTION. Chairman, Mr D. Glen; secretary, Mr F. Campbell (37 Candian Drive, Bury, Lancs); treasurer, Mr A. Charlton; show secretary, Mr J. Heiketh; assistant, Mr H. Baldwin; P.R.O., Mr D. Green. Meetings: Longlight Hotel, Belle Vue, Manchester, first Sunday of month.

FANCY GUPPY ASSOCIATION, NORTH WEST LANC'S SECTION. Chairman, Mr J. Hutchings; secretary, Mr F. Lowe (39 Howarth Avenue, Rawtenstall, Rossendale, Lancs); treas-

urer, Mr K. Jackson; show secretary, Mr D. Overod; assistant, Mr D. Matthews; P.R.O., Mr R. Miller. Meetings: 3rd Sunday of month, St Margaret's Church Hall, Tag Lane, Ince, Preston.

FANCY GUPPY ASSOCIATION, SOUTH LONDON SECTION. Chairman, Mr H. Vinnit; vice-chairman, Mr P. Emswott; secretary, Mr H. Brock (20 Bainsford Crescent, West End, Woking, GU24 9NK); treasurer, Mrs G. Brock; show secretary, Mr A. Willis; assistant, Mr K. Haynes; P.R.O., Mr A. Willis. Meetings: Beds Centre, Abbeyfield Road, London, S.E.16.

GOLDFISH SOCIETY OF GREAT BRITAIN. Vice-chairman, Mr W. Leach; treasurer, Mr A. Law; show secretary, Mr G. Herring; Exhibitions manager, Mr H. Berger; assistant secretary, Mrs M. Dudley.

LITTLEHAMPTON & SOGNOR AS. New secretary, Mr A. E. Kirk (Cowley House, 47 Beach Road, Littlehampton, Sussex, BN17 5JG).

NEWBURY & DAS. Chairman, Mr S. Barratt (38 Digby Road, Newbury, Berks, RG13 1TS (phone Newbury 10835) 41385).

PORTSMOUTH AS. Secretary, Mrs E. Sweeney (3 Orchard Road, Locks Heath, Southampton, SO3 6PD); P.R.O., Mr J. Wyatt (23 Maple Crescent, Clanfield, nr. Portsmouth, Hants).

MARINIST'S Notebook

By ROY PINKS

THE main allure of tropical marines lies in their outstanding and often bizarre colouring and patterning, and if a species falls far short of this common expectation it may be quite undeservedly overlooked as a regular aquarium inhabitant. The cloudy damsel comes very much into this category, and on first acquaintance its two-tone chocolate coloration with a patch of cream below the dorsal scarcely recommends it: it seems rather ordinary by comparison with a domino, even, whose jet black and brilliant white put it in a class of its own. But if you look more closely at the cloudy damsel you will find that there are some violet tones about it, especially in the lighter area before the base of the tail, the tail itself, and sometimes the pectoral fins. This very slight mistiness, which can seem to shift to other parts of the body under certain lighting conditions, no doubt accounts for the quite apt name of the species.

I often regret that so many of these seem to take their time to move away from dealers' tanks after the arrival of new consignments, as they have a great deal to contribute to the beginner's enjoyment of tropical marines. They are ideal 'first fish', as they seem to eat almost anything and are considerably livelier than, say, clownfish, which sometimes take quite a long time to emerge from their hiding places before they take up their everyday routine.

The cloudy damsel is often shipped at a very tender age and there are some really tiny specimens to be had, yet if there are plenty of coral hiding places they make themselves scarce if anything worrying turns up, and just as readily reappear to defy the next intruder. It is almost as though they were playing hide and seek with some of the larger and more aggressive fish, and indeed their antics are tolerated by some to an extent which would be unbelievable in the case of other species.

Even when there is no danger the cloudy damsel will ride a few inches above its coral nook and jig up and down as though it were string-manipulated from above. When you see whole groups of these little fish doing this simultaneously, the overall effect is extremely amusing.

Though I have not managed to keep these fish any longer than the average, I feel that they are rather tougher than some of the so-called starter fish. I have some now which have undergone some rather tiresome tank conditions, and apart from one short period when they went off feed they have reacted to extremes most creditably. Temperamentally they have proved wonderfully tolerant and have not shown signs of aggression, and their speed and manoeuvrability have enabled them to keep out of most of the trouble they sometimes invite, so that the odd torn fin, which quickly heals, is the sole outcome.

This is another damsel which, if obtained as small specimens, will grow at a sufficiently slow pace to cause minimum embarrassment, and I have yet to experience the behaviour of a specimen much over the 2 inch mark. I could not underwrite the good behaviour of larger specimens, but I would consider them to be a far better bet as community fish than such terrors as the Beau Gregory and the blue damsel, which are more often than not the fish we first experiment with.

Such good-natured creatures deserve congenial company, and it is well worth trying them with smaller specimens of chromis species. These are also fish which like to hide amongst coral fingers, and which are as adept as the cloudy damsel in putting on the disappearing act when danger threatens. The green and the blue chromis are suitable species and are not so overpoweringly self-coloured as to draw all attention away from their suggested companions. The rather lozenge-shaped cloudy also tends to contrast well

with the more sinuous chromis, and since their food demands are comparable, few problems should arise in associating them as I have suggested.

The painstaking aquarist will soon realise that some ingenuity in the arrangement of overhead lighting will enable him to derive even more pleasure from these

fish, as there are subtleties which take some time to extract from their performance. Once these have been experienced and appreciated there will be many an old hand who will have to confess that there was more in them than first met the eye, and who will, like me, not want to be long without their charming company.



A Versatile Aquarium Plant

By W. A. TOMEY

Photographs by the author

Graceful and decorative, *Hydrocotyle leucocephala* provides contrast in form and colour in the well-planted tank.

As the information available to us about water plants grows, more and more keen hobbyists will find increasing interest in them. Indeed, an aquarium without plants is like a living room without furniture, even apart from their very real and important biological and aesthetic value.

By the end of 1964 a most useful aquarium plant was imported into Europe for the first time, with the scientific name of *Hydrocotyle aquatica* — a rather expensive plant because of the long-distance air transport required to bring it to Europe.

In leaf shape the plant looked a little like *Hydrocotyle vulgaris* but its growth

was more like the Chinese ivy or *Cardamine lyrata*. The plant and its flowers were studied at the University of Leyden and it was established with certainty that the plant was the tropical *Hydrocotyle leucocephala* from Brazil, where it is found in creeks and rivers as well as in inundated areas — mostly in clear water.

The leaves are a bright green, roundish and finely ribbed. In contrast to the small *Hydrocotyle vulgaris* this plant sends out strong branches. The plant will continue to grow throughout the winter if it receives sufficient light and a temperature between 20 and 24°C (68-75°F). Small

bunches of white-coloured roots grow from the underside of the leaf nodes. The plant does not require rich compost, coarse river sand being suitable for instance.

Hydrocotyle leucocephala will also grow as a floating plant at the surface, and then it will produce special floating leaves. It is also possible to grow it out of water, provided there is sufficient moisture present, and then a most beautiful florescence may appear. So we have here a plant with many possibilities. With its particularly beautiful shape and colour, *Hydrocotyle leucocephala* is one of our most useful aquarium plants.

Finally, a word of explanation about the name: *hydro*, water or moisture; *cotyle*, cup; *leuco*, white; *cephala*, head or crown. So it might be called the 'white-crown water plant'.

Right: the plant forms small bunches of white roots at the junctions of leaf stalks and stem

Below: an enlarged view of the flower produced by *Hydrocotyle leucocephala* when growing floating or above water



Is it New to You?

IN last month's issue under 'Is it New to You?' the fish *Leptobarbus hoeveni* was featured, and since publication of this, further details have been given to us by an importer. It is not South American, as stated, but comes from Thailand, where it is now being bred commercially. Full body length is 15-18 inches and because the fish keeps its colour well even at this site, it is then a magnificent aquarium specimen. Given the popular name 'red-tailed silver shark', this fish is in fact a peaceful one, taking a mixed diet, and is quite as attractive as the better-known silver shark.

COLDWATER SCENE



By FRANK W. ORME

Plea for a Breeders'

Directory renewed • Culling

• Pond marginal plants

It seems that the amateur fish breeders of the British Isles are either shy or dislike publicity, for despite a reader's letter, and a suggestion made in these columns some time ago, not one person has welcomed the idea of a 'Breeders' Directory' or offered support! The reason that I make that comment results from a recent letter written by a young lady of 13 years of age who lives in Barnsley, Yorkshire.

Her letter stated that she was interested in keeping Bristol shubunkins and fantails, which her local pet shop was unable to supply. Could we give her the names of local breeders in her area, she enquired, together with the address of a local society? The latter question presented no difficulties. However, her main question was not so easy. There must be people within her area who are breeding the varieties that she is interested in — unfortunately I am not aware of them.

How simple it would have been if only she could have found a list of breeders in the back pages of PFM. In the event I had to suggest Bristol, London and the Midlands as the most likely sources of supply. How many potential goldfish hobbyists encounter the same difficulty of being unable to obtain their chosen variety, I wonder, and then decide to keep the more easily available tropical fish.

From my own experience I know that the more persistent will go to some trouble to obtain fish: I get enquiries from as far afield as Cornwall and Scotland. I am sure that many would be only too pleased to save themselves the expense of transport costs if they could obtain their requirements from a breeder nearer to their home. Again I make the suggestion that if you also feel that a directory of cold/tropical fish breeders would be a worthwhile feature of PFM, and would be prepared to give your support, write to the Editor so that he can judge, from the

response, whether it would be feasible to incorporate a Directory of Fish Breeders in this magazine.



If you have had the good fortune to spawn your fish it is essential that you practise regular culling as they grow — this cannot be stressed too much. Only by continuous sorting will the best fry be given the best chance to develop fully. The culling of the young will remove poor and deformed specimens and by their removal both extra space and food will be made available to those that are kept. Crowded tanks and lack of food will produce stunted weakly fish!

The simplest method of sorting the fry is to place clean water, at the same temperature as that in which the fry are living, into a white bowl. Use a large plastic flour sieve to catch a few fish at a time and gently place them into the bowl for inspection. It will be found that they show up quite clearly there, so that any twisted, or otherwise deformed, fry can be removed. Having done this, you can place the retained fry in another bowl for safe keeping, whilst the remainder of the young fish are sorted. The tank can now be cleaned out and the water replaced, making sure to equalise the temperature so that the selected fish are not given a chill. If the fry, which you are culling, are from single-tail parents they can be returned to their clean quarters. However, if they are of the twintail variety a further inspection should be made.

Again place a few at a time into the white bowl and very carefully look at the tails; the tail of twintail fry appears spear-shaped or triangular, depending upon size, and any obvious single tails can be easily seen and removed. Now look closely at the tails of the remaining fry and it should be possible to discern those which have

split tails and those which have not (a good magnifying lens is a great help for this inspection). Remove those with joined tails and return them to their tank for growing on.

As the selected fish grow, so the sorting becomes easier — the points to look for will be given in a future article, but do not be tempted to keep anything but the best. Very few will heed the advice, for the culling will, without doubt, drastically reduce the original numbers of fry, but it should be remembered that a poor specimen will not improve whereas the better fish will suffer if overcrowded. Why waste food and space on fry that will never be of any use when both could be used to the advantage of a few good fish? Too much space cannot be given to the growing fish but too little all too often is! In raising fish make your slogan 'Plenty of space and plenty of food equals healthy well-grown fish' and you will not go wrong.

★ ★ ★

Speaking to a young Japanese lady recently, I learnt that her home was in Osaka, and this brought the conversation to the subject of koi and goldfish. She told me that many Japanese have pools, in which they keep fish, and it was explained that the most popular fish was the koi, which 'is very beautiful to look at and also good to eat'. It seems that many Japanese fishkeepers look upon their fish as both pet and food, but, as the young



"What with the price of things, and anyway you said you would have to thin out that brood . . ."

lady explained, it is no different from the Englishman who keeps rabbits for show and table. Although she did not think we would enjoy eating koi — because 'English people do not understand how to prepare and cook this fish' — she considered it made an excellent meal.

In order to drive the point home, I was told that it was quite commonplace to find the goldfish listed in a restaurant menu, and that they were delicious to eat. Well, a fish is a fish, and both koi and goldfish are members of the carp family, but I can hardly see myself tossing any of my lionheads or veiltails into the pan just to give my family a meal of fried goldfish and chips!

★ ★ ★

The winter that wasn't! Despite all the forecasts, last winter never really arrived, and my fish remained fairly active most of the time. Although they would have taken food it was, nevertheless, withheld from the end of November until early February. On the 15th February it was decided to catch up two pairs of lionheads for conditioning. As is my usual practice, they were given a precautionary disinfectant treatment. Sterazin was used, as I have found this to be very effective and simple to use. They were then placed in separate tanks and fed on good nourishing food. Within a short time both males were showing tubercles and the females looked distinctly plump.

Spawning tanks were prepared on Saturday, 22nd February, and the males placed into their respective quarters during the evening; the following evening the females joined them. Monday was a bright sunny day, the water temperature rising to 60°F (15°C), and the males were showing interest in the females by lazily giving chase from time to time. Tuesday the 23rd started with a cold misty morning; although the mist later cleared it remained quite cold, and water temperatures had fallen to just below 60°F (15°C).

Undeterred by the fall in temperature, both pairs of lionheads were spawning and quite a large number of eggs were shed. The fact that the fish had not been fed for around 10 weeks had obviously not had any effect upon them, even though they had not become dormant at any time. Of course, they had been prepared for winter conditions and had lived off the

body fats which they had been encouraged to build up, just as they would have done had the promised severe conditions of cold weather materialised.

★ ★ ★

A question I am often asked is whether yearling goldfish can be bred. The answer is that the age of the fish is not really important, provided that the fish is sufficiently well grown. Most fish having a body length of 2 inches are capable of spawning if properly conditioned and I very often run a yearling male with an old fish. Young males, as a rule, are more vigorous than older specimens. In fact, one of the spawnings quoted above was from a yearling male and 3 year old female, the other being a yearling female crossed with a 2 year old male. In both instances the yield of eggs was quite large with a good rate of fertility. Some breeders prefer 3 year old fish but, if the fish are large enough, and ready to spawn, why not use them? In my experience I have never found that the age of the parent fish has any detrimental effect upon the young that are produced.

★ ★ ★

Last month the popular water lily was discussed. This month as the pond planting season is now with us, we will talk about some of the more easily obtained marginal plants. Normally, planting instructions will be found in the nurseryman's catalogue. As the name 'marginal' suggests they should be grown in the shallower parts of a pool, usually at a water depth of around 3 inches, although some are quite happy in soil that is kept wet and not allowed to dry out.

The following plants will be found suitable for most positions and, when established, they will require little attention other than thinning out from time to time.

Aceris colmanii (sweet flag) grows to a height of 3 feet with sword-like leaves. It bears small yellow flowers during the summer and is common in Norfolk. Plant in heavy loam in pond shallows or very wet ground. Can be a rather rampant grower, that will overpower weaker plants growing nearby, unless kept in check.

Aponogeton distachyus (water hawthorn) is a most attractive plant with floating leaves. It bears white sweet-

smelling flowers over an extended period, held just above the water surface. It will grow in water depths of between 6 inches and 18 inches.

Butomus umbellatus (flowering rush) is an attractive bog plant found in most parts of Europe and this country. Growing between 2 and 3 feet tall, with sword-like leaves, it bears umbels of rosy-pink flowers in the summer. It will be quite at home in anything from wet conditions up to 6 inches of water.

Caltha palustris (marsh marigold). Up to a foot tall, this is our native kingcup or water cowslip. The leaves are heart-shaped, the butter-yellow flowers appearing during April and May. Best planted during the autumn, the root stock should never be allowed to dry out.

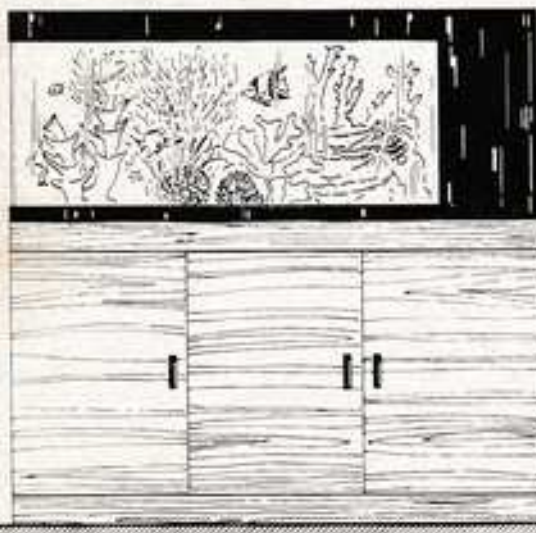
Mimulus (monkey or musk flower). A marsh plant from North America, and temperate zones, 1-2 feet in height. It is ideal for a damp position near water. Many varieties are available with the colour of flowers ranging from yellow to scarlet — depending upon the variety. Summer flowering.

Pontederia cordata (pickerel weed) is an American native growing to a height of about 2 feet. The arrowhead-shaped leaves are carried on long stems from a thick root stock. This is one of the very few water plants that have blue flowers, which appear as flowering spikes during late summer and autumn. Happy in 6-12 inches of water.

Sagittaria sagittifolia (arrowhead). As the name implies, it has arrow-shaped leaves that stand well out of the water, up to 3 feet in height. Small white flowers. Water depth of 6 inches suits it best but it can be a rampant grower. The variety *japonica* is a better plant, being slower growing and more suited to the average size pool.

This short list by no means exhausts the plants available, such as the various iris varieties, but provides a basis from which suitable plants may be chosen to form the frame to the pool and provide points of interest other than the flat water surface. Finally a word of caution. Having purchased your plants, give them a thorough inspection to remove any undesirables before planting. A few unnoticed snail eggs could lead to a plague of common pond snails, and these can develop quite an appetite for submerged aquatic plants!

All-Glass Compact Aquarium



By
D. TERVER

*Translated from Revue
française d'Aquariologie*

Frontal view of the complete unit showing cupboard doors giving access to shelves made within the aquarium table.

WHEN an exhibition of equipment was held on the occasion of the Second Congress of the French Federation of Aquarium and Terrarium Keepers last year we conceived the idea of showing an aquarium that would embody the results of our continual efforts to combine the technical requirements of the aquarium with practical and aesthetic considerations.

The compact aquarium described here is an all-glass tank constructed with silicone sealant and it incorporates into one unit the four sections that normally go to make up an aquarium set-up. Numbers in parentheses refer to key figures in the diagrams.

1. The 'water tank' itself (1) for use with fresh or sea water — with decor and tank inhabitants chosen accordingly.

2. Filter chamber (2). This receives water drawn from the tank, and from it

clean water is returned; it has been integrated with the actual water tank. The filter material in the chamber consists of two blocks of polyester foam. These divide the chamber into a central compartment and two side sections, each of the latter linked to the main tank via an opening (inlet) made at the base of the wall separating the filter chamber from the aquarium. A water circulating pump (the model we used has an output of 1000 litres/hour), or an airlift set-up, placed in the central compartment (5) looks after the flow of water across the filter.

3. Lighting compartment (3). This is also incorporated into the aquarium unit. Use is made of the space above water level, which is divided off from the water by a sheet of transparent PVC resting on a double internal brace (7). The three fluorescent tubes (6) are protected by themselves being placed inside glass tubes;

These are closed at the ends by silicone putty (a small hole being made in the bung at one end to take the wire connecting the light to the ballast; this hole is made watertight with silicone mastic). The protected tubes rest on cross-supports and can be moved easily when access to the interior of the tank is required. These supports are covered with silicone mastic to protect the glass tubes.

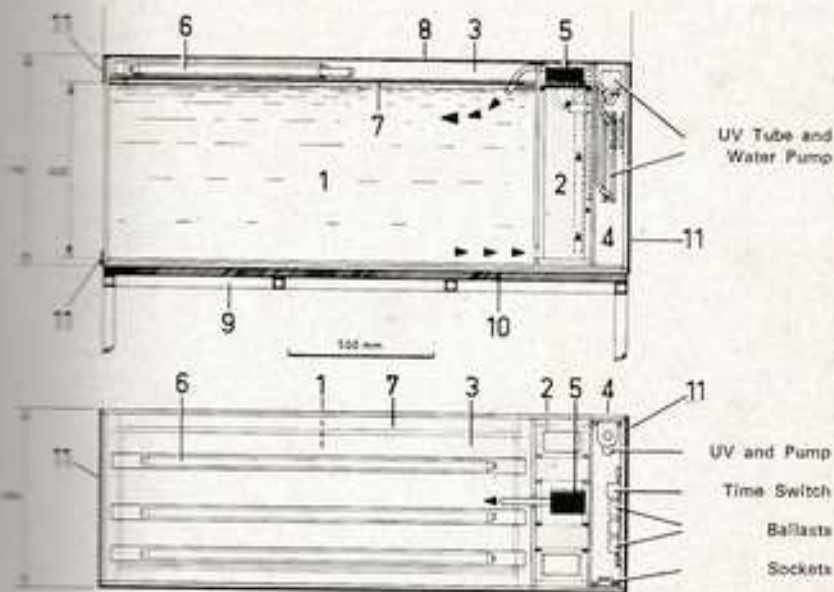
4. Accessories compartment. A second opaque partition forms the accessories compartment (4), which has also been made an integrated part of the unit. All the items in it are fixed to panels that are slotted into grooves formed by pieces of glass stuck on to the panels of the main unit; with this system, access is gained to the different items of equipment very simply when an emergency arises.

The first panel carries an electrical distribution board with a series of fused sockets. From these are operated the various pieces of electrical apparatus used throughout the unit.

An 8 watt ultraviolet light tube and a small water pump (200 litres/hour) are fixed to a second panel. Water drawn from the filter chamber's central compartment is partly sterilised by contact with the ultraviolet lamp before it is returned to an end compartment.

A third panel holds the ballasts for the fluorescent tubes and a time-switch to control the length of time during which the tubes are illuminated. Diaphragm air pumps to feed the diffusers or the air-lifts can quite well be lodged in this accessories compartment or, if you want to keep them above water level, can be placed at the top of the filter chamber on a sheet of PVC resting on small glass supports glued to the partition wall to keep them clear of the filter medium and water.

Heating is achieved by combined heater-thermostats placed in the central compartment of the filter chamber. A cover (8) punched to give a number of air holes goes over the filter and accessories compartment to prevent condensation.



Sectional views of the all-glass aquarium: above, vertical view; below, plan view. Reference numbers are described in the text. Small figures for dimensions denote millimetres. Arrowheads show the direction of water flow.

The whole basic unit can be covered by opaque panelling (11) fixed so as to hide the filter and accessories compartments, the light fittings and the gravel covering bottom of the tank. For this, panels of black opaline, 6 mm. thick, or other decorative materials such as lattice, anodised aluminium etc., can be attached by silicone mastic adhesive. The internal surfaces of the aquarium (back and ends) can also be treated with a coat of fine sand or ground quartzite sprinkled over a layer of adhesive (spread a thin coat of

adhesive with a spatula, sprinkle it with sand and allow it to dry). This procedure, not without its aesthetic value, also presents a better surface for algal growth on the inner surfaces.

The whole unit must, of course, be placed on a perfectly flat surface (9), preferably with an intermediary strip of expanded polystyrene. A metal table (10) made from welded square-section tubes can be constructed to carry the unit and then can be finished off as a cupboard or according to requirements.

What's New?

Water Quality Control

WHEREAS it was once difficult for the non-technical aquarist to make any useful assessment of the chemical condition of his aquarium or pond water, facilities have increasingly been made available for him to tackle this with easy-to-do tests. At first pH (water reaction) and hardness (dissolved salts) were the only objects of testing but refinements and additions have extended the scope. Now a most comprehensive range, the **TetraTest Aquarium Water Quality Control Kits**, has been made available by TetraWerke for the measurement of freshwater hardness (general hardness, carbonate hardness and total or complete hardness), fresh- or sea-water reaction (pH, low range, high range and complete range) and fresh or sea-water nitrite content.

All the TetraTests give their results by colour changes or colour development in the water sample when the appro-

appropriate test solution is added to it. Any guesswork or indecision about assessment of colour is done away with in the pH and nitrite test kits by the provision of a colorimeter, with which it is a simple matter to match test colour obtained against the range of colours on the rotatable appropriate test colour wheel and at once read off the result (as pH value, or milligrams of nitrate per litre).

Although marine aquarists are particularly conscious of the need to make nitrite tests as an assessment of the extent to which excretory matter from the fish is accumulating in the tank water, the same risks of

nitrite/ammonia poisoning can exist in freshwater aquaria, particularly those without plants. In the useful leaflet accompanying the TetraTest series Tetra state that harmful effects for some freshwater tropicals occur at nitrite concentrations as low as 0.5 mg per litre; guppies die within a week in water with more than 3 mg of nitrite per litre.

All of the TetraTests and TetraTest Colorimeter are attractively and sensibly packaged and there is also available the TetraTest Laborett, which comprises the entire range of equipment and reagents stowed in one box.



The TetraTest Colorimeter and water-testing reagents. A test colour wheel is shown, which can be inserted into the Colorimeter for use with the appropriate test solution.

BREEDING GUPPYS

To Plant or Not to Plant?

By F. CAMPBELL



Photo: Alan Charlton

This furnished aquarium containing guppies was staged by the Fancy Guppy Association at the Belle Vue show last year, where it gained second prize.

WHEREVER guppy-breeders gather the controversial subject of whether bare tanks or planted tanks bring the best results invariably arises. In discussing the two alternatives it can be assumed that, so far as the hobbyist is concerned, guppies are bred for subsequent exhibition, and this can be a deciding factor in the choice of method used. Logical arguments can be put forward in favour of both systems so the eventual choice must be the one that the individual finds most suitable.

Advocates of bare tanks usually emphasize the necessity for absolute cleanliness in the production of top-class guppies. The reason being that any harmful bacteria may cause damage to fins, or a general debilitation in the condition of the fishes. Harmful bacteria, by breaking down decaying matter such as plant leaves, uneaten food, guppy droppings, or even

unsuspected dead guppies, produces an excess of carbon dioxide and a foul tank. In a bare tank, therefore, there can be no dead leaves, and anything else which might ferment can easily be seen and siphoned off.

All very well, say the planting brigade, but there is no reason why a planted tank should not be as clean as a bare tank provided that the owner exercises suitable vigilance. The provision of sufficient plants to take up the carbon dioxide produced, plus an occasional siphoning and topping up, should result in a tank which remains sweet and clean indefinitely. A healthy guppy is a happy guppy and the fish are much happier swimming in and out among plants, just as a human is happier sitting in the garden than in a concrete backyard. In addition to their contribution to cleanliness and agreeable

conditions for the guppies, plants also have a utilitarian role. If a female guppy feels she wants to get away from it all, plants provide welcome shelter; as guppies are omnivorous they find pleasure in nibbling at the softer leaved varieties; and, of course, plants are also an excellent refuge for newly-born babies.

The bare-tank boys launch another attack. They are visiting shows almost every week and plants make it difficult for them to see the guppies which may bring home the prizes. Even when they have spotted the ones they want, by the time they are safely in the jar many plants are floating on the surface. These have to be replanted, which is not only time-consuming but interferes with the growth of the plants, which cannot give of their best if being constantly disturbed.

Undeterred, the opposition comes back with more than one answer to that problem. Use floating plants. In this way the danger of polluted gravel will be avoided and the plants at the surface will perform the same functions as they would if they were planted. When the time comes for selecting specimens for showing it is a simple matter to lift out the mass of floating plants and replace it when the fish have been caught. Another alternative. If plants are preferred which do not grow readily at the surface they can be rooted in gravel in pots. These, too, can be easily removed when netting and replaced afterwards without any disturbance to the

roots.

Whether preference is for bare tanks or the various ways of using plants, the guppy-breeder is more concerned with the quality of his charges than with the aesthetic value of his tanks. The bare tank man will delight at the kaleidoscope colour scenes which his method creates, whilst the planter will be none the less happy with the contrasting background of greenery, and so long as both are producing good guppies, each to his own.

Perhaps a few suggestions as to the choice of plants is called for. If rooting in bulk gravel the undoubted favourite among the guppy fraternity is Indian fern or watersprite. A soft-leaved plant, it offers no sharp edges on which fins can be damaged; it will not tolerate polluted gravel and at the first sign it will rise to the surface, thus warning the owner that a change is necessary; it propagates quickly, young plants forming on old leaves, which can be used floating until large enough to plant. It can be used exclusively at the surface but is far more functional when planted. Other plants which can be used floating are najas, which forms dense clumps ideal for the sheltering of fry, and chain sword, whose sharp-edged leaves are safer on the surface than when immersed. Of the true floaters, riccia is perhaps the best choice, if considering removal for netting of fish; the humble duckweed, although I use it myself, can be a nuisance in this respect.

The Aquarium Show '75

ROYAL HORTICULTURAL SOCIETY OLD HALL
VINCENT SQUARE, LONDON, SW1

24th - 26th October

Presented by The Federation of British Aquatic Societies

All enquiries: The Show Organiser (Tel. 01-847 2805)

PetFish Monthly
554 Garratt Lane, London, SW17 0NY



by
ARPEE

Personal COMMENT

In our recent discussions of fish colour themes we have dealt with red and blue as the dominant features, but even at this stage it will have become evident that the task of categorising fish into colour blocks is far from being the easy matter which it seems to be. In fact, most fish are made up of combinations of colour which enable them to melt away into their natural aquascape as part of their defensive posture: it is only when they are transported to the artificiality of man-made tanks that they actually take on the decorative aspects which so appeal to us. Even the more startling coloured fish are seldom all-over self colours, because this runs counter to the camouflage principle. Where this does seem to apply, however, as in the case of tench and blind cave tetras, the habit or habitat of the species gives the answer to why, perhaps, Nature chose the type of garb in question.

At this point it is well worth mentioning the extraordinary colour format and range of the African Lake cichlids, which have only comparatively recently entered our lives as desirable aquarium fish. Although there are numerous species with patterning suggestive of the more familiar *Aequidogmaria* species, there are some unusual colourings of ochre and blue which are undeniably eye-catching. The purchaser is well advised to look around for something to suit his taste in this widening range of fish, but before taking the plunge he should read up the subject well as the temperament of some of these newcomers is quite unbecoming in mixed company and it may rule them out if a mixed collection is aimed at.

I will next examine the possibilities of green as the dominant colour, and immediately we hit a snag. As most plants are green, why should we bother with a tank containing just green fish? Many will

avoid the issue and leave the challenge to the more experienced in aquarium management, and still more will see it as a fit subject only for a club evening. I doubt, however, whether it need be as difficult as all that. The green fighting fish stands out as the decorative fish, par excellence, in this group, but I have already noted the shortcomings of a species which cannot be kept in any sort of numbers, and which is not long lived at the best of times.

If in some way you can get round these problems, perhaps by using a series of small tanks or by discreetly compartmenting a large tank, you will have for your entertainment and pleasure one of the finest fish in the whole field of availability. The fin and body structure of the fighter is unbelievably beautiful and the colour range is such that matching with room décor is possible to a degree simply not achievable in wild species. This fish takes a little understanding, but there are numerous books on its culture, so there is no excuse for failure.



From the singleton to the shoal is but a simple step, and the green-eyed rasbora (*Rasbora dorsiocellata*) immediately comes to mind. This is a tiny creature, only just over an inch long, largely olive, but with a brilliantly glowing green streak below the eye slanting obliquely across the body towards the anal fin. The black-tipped dorsal fin has a bold white base, and the overall effect is a fish of very considerable character. It is certainly one of the most charming of all the rasboras, and provided that sound specimens are obtained in the first place, it is likely to live rather longer than some other members of this group. This is a fish for a really large shoal, and one should be thinking in terms of 20-50 rather than the round dozen. It would go splendidly with a smaller group of cardinals, whose ability to turn on the green overtones in certain lighting condi-

Continued on page 31

Which Air-Pump to Choose?

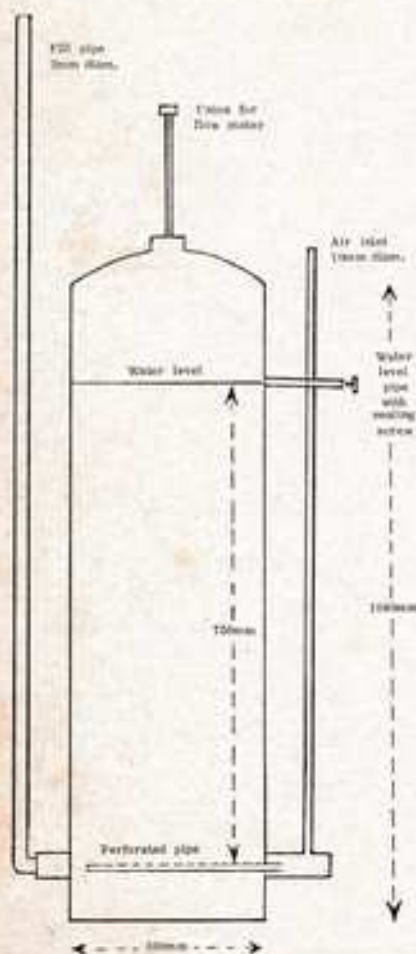
Preliminary Report by the Research

Committee of British Aquarists

Study Society

Chairman: J. A. DAWES

Secretary: D. COOK



Apparatus (sectional view) described in the text, for providing measurements of air-pump performance.

UP until now, when the aquarist has purchased an air-pump it has usually been very much a matter of guesswork and luck. Often he takes the advice of his dealer, who, with the best will in the world, has no real means of assessing the relative merits of a particular pump. He is largely dependent upon reports that he has had from other users, who, at most, have a very limited experience of the many makes and types of air-pumps available.

In an effort to rationalise this situation it was decided to describe air-pumps in terms that would be meaningful and useful to the user, and which would enable a direct comparison of the available models to be effectively made.

It is quite meaningless to say how many filters or air-stones a pump will operate unless (1) the depth of the water is specified, and (2) the resistance to air-flow of the particular appliance is known in measurable terms. What is required is a specification of air-flow against a given pressure of water. Of course, this rate of flow must be maintained over a period of time if the pump is to be of any real value.

Some considerable thought was given to the reasonableness of the parameters of the test required in the light of the fact that the pumps are intended for aquarium use. It was concluded that the depth of the water for the purpose of the test would be set at 750 mm. (29.528in.), few domestic aquaria being deeper than this. No other back pressure was to be introduced into the system apart from the flow-

meter and a standard length of 1 metre of ordinary plastic air-line hose of 4 mm. internal diameter.

The apparatus was constructed (of copper) as shown in the diagram. It will be noted that an adequate space has been provided above the water level to minimize the effects of foam or bubbles at the water surface. As it is possible that the ambient temperature and atmospheric pressure could have some bearing (albeit small) on the results, these parameters are recorded daily throughout the test period and maxima and minima quoted in the final results.

On the question of noise, while it is quite possible to measure noise, the resultant measurement will have little meaning for most people. Furthermore, the noise emitted will vary with the surrounding environment and the method of supporting the pump. Noise is also subjective; what is quiet to one person is noisy to another. In these investigations noise is therefore assessed at the conclusion of the testing period with the pump operating at

maximum capacity while standing on a plain wooden bench, and classified on the following arbitrary scale: (1) very quiet; (2) quiet; (3) acceptable; (4) noisy; (5) very noisy.

At the beginning of a test, the pump is operated light, i.e. with no air-hose attached, for a period of 30 minutes to bed in the valves. It is then connected to the apparatus and the air-flow recorded. A further record of the air-flow is made at intervals of 24 hours for a period of 28 days (or until the pump fails, if earlier).

The results obtained are then presented in the form of a graph of air-flow against time, the average air-flow over the test period, the maximum and minimum air temperatures and pressures, an assessment of noise, value for money and any other comments which may be relevant. It is hoped to publish all results in a report along the lines of those produced by consumer research bodies. In this way, aquarists will have some form of yardstick to help them in the purchase of a pump suited to their individual needs.

Personal Comment

continued from page 29

also additionally qualifies this versatile species under the present heading.

A well-nigh perfect companion for the two species just mentioned is the black one (*Hyphessobrycon herbertaxelrodi*), whose glowing green streak running horizontally along the body preserves the symmetry of plane featured by the others. It is rather chubbier in body shape but no less graceful than the green eye and the cardinal, and as it possesses the 'neon type' glow, it has considerable popular appeal even in the face of competition from such wonders as colour television and similar man-contrived superlatives.

I think we can ignore the green swordtails and green guppies in this review, as the former are bullies and only come into the green category by the merest chance. Green guppies come in a wide range of

shapes and sizes and will certainly appeal to many, but this is such a man-made and ephemeral fish for long-term display purposes that I would tend to exclude it. The green acara (*Aequidens portalegrensis*) is just a possibility, but cannot be mixed with small fish and possesses the unwelcome cichlid habit of plant nibbling, which hardly recommends it in the present context.

How are we to show off our green fish to best advantage? I think it will be found that the majority of conventional aquarium plants are nothing like as deadening as one might assume, but groups of some of the reddish plant species may be considered. At all costs these should not be overdone — just concentrated groupings here and there are enough — and full consideration should be given to open spaces. A black background will help, as will carefully considered overhead lighting. Patches of floating vegetation may be brought into play to regulate the distribution of light, and to create pockets of comparative darkness or light shafts, as desired.

It sounds easy enough, but this is an extending exercise in skill. Ideas from readers will be welcome, as I have only touched on the possibilities.

Readers' Queries Answered



Ravaged Plants

Is it possible I've introduced a 'monster' into my tank? I have bought a silver tetra and since its arrival the plants are beginning to look rather ragged. Could it be the silver tetra? I don't know the Latin name of this fish but I thought as a tetra it would be a safe fish to have.

As you don't give a description of the fish it is difficult to be certain of its identification from the common name, but the name 'silver tetra' is usually given to the *Ctenopoma spilargenteum*, and this fish may well be tackling your plants. *C. spilargenteum* is usually a hearty eater so make certain that it is getting sufficient food — this species will eat dried foods as well as live food — and supply it with some floating green plant or with scalded lettuce.

It is a mistake to assume that a 'tetra' is necessarily going to behave like, for instance, the neon or flame tetra. The name 'tetra' comes from that of the sub-family of the Characidae (Tetraodonidae). The tetraodonidae does include the genera *Hemigrammus* and *Hyphessobrycon*, from which many of the attractive little aquarium tetras come, but it also includes other genera such as *Ctenopoma* and *Moenkhausia*, which get large enough to help themselves to their own vegetable requirements (and even some of the *Hemigrammus*, such as the Buenos Aires tetra, *H. caudovittatus*, are going to get quite large and probably become plant-nippers).

Giant Sag.

Can you please tell me if giant sagittaria can be used in

a tropical tank? I have been told that it is all right for warm water but whenever I buy it it just disintegrates in my tank.

Giant sag. (*Sagittaria latifolia*) does well in both tropical and coldwater tanks, requiring a period of adjustment after transfer from one to the other. You are probably buying plants that have been grown in coldwater and they are going to react to being plunged into water at 75°F. Either acclimatise them in a tank where the water temperature can be raised over a 4 or 6 weeks period to the tropical temperature or, if you do plant them in your tropical tank, don't worry about their disintegration but leave the rooted crown where it is and allow new leaves to form, which will happen in due course.

Koi Stocking

I have been told that I can only keep three small koi in my pond, which is at least 6 ft. by 4 ft. I can hardly believe this and I was hoping to keep at least six together. Should I risk the extra fish?

When stocking a pond with koi consideration has to be given to the fact that koi require far heavier feeding than, say, goldfish, and that their waste products are correspondingly greater. Allowance has to be made for this and also for the fact that their 'life-style' is rather expansive. Grown koi can create a great disturbance in a pond, continually unsettling the mulm. Therefore, with koi 1 in. of fish per square foot of water surface is not too great an allowance. This would give you 24 in. of koi to your pond — or six 4 in. fish. This rule is, however, by no means the total guide line to be followed when stocking with koi. As the fish grow they will require a water depth of at least 2 ft. and moderate aeration or water movement in the pond during the summer months.

Convention Reports

WE shall never know for certain whether the alteration in the date of this year's HENDON CONVENTION to mid-March caused the rapid deterioration

in our amazingly early spring weather: enough to say that there was no break to the tradition of 'Hendon weather'. But nor were there any breaks in

AN index to the last complete volume of PFM is included as a Supplement to this issue. It can be removed from the centre of the magazine and placed in your PetFish Monthly binder for Volume 9. The index gives the contents of issues May 1974—April 1975. If you missed seeing any of the issues please write to PFM enclosing 28p (including postage) for one issue, 24p each for two to six issues or £2.55 for all twelve issues.

these far more important Hendon traditions — the quality of the lecturer and the enjoyment experienced by all those attending. And this year a 'house-full' of aquarists from the afield as well as from London and the south greeted Mr W. A. Tomey from Holland.

The first part of Mr Tomey's slide show illustrated the water plants used in their tanks by Dutch aquarists and we were privileged to see more of those amazing Dutch aquaria where the plants grow in controlled confusion and where each plant is set in its allotted place according to size, colour and nutrient requirements. And we were also able to hear more of those equally amazing statistics connected with the achievement of plant growth like this, such as the use of 14 fluorescent tubes each of 65 watts over one tank, albeit a large one, illuminated all day long, and the fact that a plant requiring pruning only once a fortnight can be considered extra useful since it does not need to be attended to weekly! The second half of the programme presented more excellent slides and illuminating comments from Mr Tomey on fish with particular emphasis on the fish and scenes from his recent trip to Sumatra. Many practical hints were given during the talk, on various topics such as how to keep Malawi cichlids in planted aquaria (provide them with cave retreats made in a bank of gravel) and how to stop plant-nibblers from wrecking plant displays (give them adequate vegetable matter as diet).

BRITISH AQUARIST STUDY SOCIETY held its first Spring Meeting at the Zoological Society of London in Regent's Park, when a symposium on the diseases of fishes was held. The speakers were Mr R. H. Richards, Mrs C. Sommerville and Mr Ian H. Macrae of the Unit of Aquatic Pathobiology at Stirling University. The meeting was well attended by about 100 people; the speakers were able to give the audience

the very latest information on diseases and cures. The lectures were accompanied by excellent slides which showed specimens and techniques of examination.

The second Spring Meeting is to be held on Saturday, 24th May, in the meeting room of the Zoological Society of London, Regent's Park. The speaker will be Dr Keith Bannister of the British Museum of Natural History, lecturing on the River Zaire Expedition. Doors will open at 1.45 p.m. for the meeting to start at 2.30 p.m. Tickets to cost £1.25 and to include the cost of tea are available from Mr F. Keens, Highcliffe, Old Hill, Woking, Surrey. All interested persons are very welcome to attend the Society's meeting.

THE Aquarist Convention, although only inaugurated last year, of the **TYNE-TEES AREA ASSOCIATION** of the FBAS, has already become, because of its excellent organisation and the authority of its guest speakers, a major event in the Fish Calendar. Particular praise

must go to the efforts of Mr George Liddle, the Convention Manager, in organising all the many details. This year the lectures covered both specialist subjects and general ichthyological items. Mr R. Esson, chairman of the Judges & Standards Committee of the FBAS, gave an illustrated slide lecture on the coldwater side of the hobby, while Mr A. Charlton of the FGA dealt with the intricacies of guppy genetics. Mr Gordon Howes of the British Museum (Natural History) lectured on the structure and function of fishes; what can be found out about water conditions was covered by Mr W. Pearson. Miss S. Turner of the Hancock Museum, Newcastle, made a welcome return to the Convention as a lecturer.

The fishkeepers in the north-east are particularly fortunate in having the opportunity to hear so many speakers on one programme and it is to be hoped that the many visitors this year will be joined by those from even further afield at future Conventions.

FEDERATION



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Changes to FBAS Judges' List

NEW FBAS 'C' Class judges are: Coldwater, Mr C. Harding, Roath, Cardiff; Tropical, Mr N. Davies (Havant), Mr A. Weaire (Southampton), Mr G. M. Haskins (Bournemouth). The following 'C' Class judges will be upgraded to 'B' Class (having completed their 2 years at 'C' grading) and will be available for Open Shows from the dates given: 1st March, Mr W. A. Cowlan, Mr P. W. Jenkins, Mr T. Mathews and Mr C. Wood; 7th June, Mr S. Porter, Mr K. Appleyard, Mr D. King, Mr L. Jerry and Mr R. E. Cocker; 6th September, Mr W. E. Goodwin, Mr B. R. George, Mr J. Rundie; 6th December, Mr R. O. Ott, Mr C. Corbin, Mr B. H. Risbridger, Mr R. D. Clarke, Mr A. W. Lusby. Resignations have been received from former judges, Mr J. Batts, Mr J. Gallon and Dr R. O. B. List.

Mr M. J. Williams (285 Brockles Mead, Harlow, Essex) has been added to the list of speakers. His subject is 'Aspects of Fishing — Marine & Tropical'.



HORSFORTH & DAS members' show was held at the New Civic Hall, Stanningley Road, Pudsey. There was an entry of 43 in the eight classes and the judge was Mr P. Moorhouse of Huddersfield. Best fish in show award went to the winning junior, Master M. Inwood, for a blue acara. Results were as follows:

Anabantids: 1, Mrs P. Wood; 2, Mr P. Spvin; 3, Miss J. Heald.
 Barbis: 1 & 2, Mr A. Handcastle; 3, Mr B. Runnacles.
 Catfish and loach: 1 & 2, Mr A. Handcastle.
 Characins: 1, Mr J. Dunn; 2, Mr C. Corns; 3, Mr B. Runnacles.
 Characins: 1, Mr J. Dunn; 2, Mr C. Corns; 3, Mr B. Runnacles.
 Cichlids: 1 & 2, Mr J. Dunn.
 Livebearers: 1, Mr S. Newsome; 2, Mr C. Wood; 3, Mr J. Dunn.
 Juv. 1, Mr C. Corns; 2, Mrs P. Wood.
 Juniors: 1, Master M. Inwood; 2 & 3, Master S. Newsome.

MRS S. WINSLADE, press Secretary of **HOUNSLOW & DAS**, reports: "On the 20th February members of Hounslow & DAS competed in a five-way match at Hendon in an attempt to keep the fine trophy which they won at this match last year. Unfortunately, each competing club was only allowed to enter six fish (you will appreciate that it is very difficult selecting the six best fish from a club with many hundreds) and the results were as follows: 1, Bethnal Green AS, 469 points; 2, Hounslow & DAS, 462 points; 3, Hendon AS, 443 points; 4, Runnymede AS, 443 points; 5, Tottenham AS, 422 points. You will see that the Hounslow club was very narrowly beaten into second place by only seven points and the judges confirmed that they had an extremely difficult task in deciding on the winner. The Hounslow DAS also entered nine fish in the over-spill class and here again they were beaten into second place. However, everyone who attended the match had a very enjoyable time, the highlight of which was a lecture on characins given by a speaker from

the British Museum which lasted 2½ hours".

MR D. PARKS from Crowborough delighted members of **HASTINGS & ST. LEONARDS AS** with his talk on native freshwater fishes. Mr Parks has kept a wide range of fishes in his time, abandoning tropicals in 1959 to specialise in native species. At the following meeting, member Mr C. Waddell gave a masterly exposition and demonstration on building all-glass aquaria. Mr Waddell explained that this 'do-it-yourself' worked out at half the price that ready-made tanks cost. Members have also enjoyed an FBAS tape/slide lecture on killifish by Mr C. A. T. Brown, which proved to be a first-class programme. Then the annual auction has also been held; this always proves popular. There were 60 lots to be auctioned which meant quite a useful sum for the club, as it retains 10% for club funds.

SITTINGBOURNE & DAS started the year with a very successful social evening at which members' wives and children were guests. Results of the table shows at various meetings are as follows: **D**, Cichlid trophy, judged by Ann McDonald: 1 & 2, Mr B. Newman; 3, Mr G. Wicks.
Ea, Fighter Cup, judged by Mr P. Floyd: 1 & 3, Mr T. McDonald; 2, Mr A. Sharp.
N, Pairs, judged by Ann McDonald: 1, Mr A. Sharp; 2 & 3, Mr P. Floyd.
X, Breeders, judged

THE FANCY GUPPY ASSOCIATION holds its International Show on Sunday, 25th May at the Glebe Farm Community Centre, Glebe Farm Road, Stechford, Birmingham 33. Benching takes place from 9 a.m. to 12 noon and judging from 12.15 to 3.15 p.m. Debenching takes place at 6.30 p.m. Non-members may enter any class with the exception of Master Breeders. Refreshments are available from 10.00 a.m. Show secretary is Mr D. R. Bencham, 17 Pedmore Close, Woodrow South, Redditch, Worcestershire.

by Mr P. Floyd: 1, Mr A. Sharp; 2, Master A. McDonald; 3, Miss D. McDonald. A further evening was spent looking at slides taken by Mr A. Sharp.

THE following table show trophies were awarded to members of **PORTSMOUTH AS**: Shubunkin shield, Mr E. Binstead; Twin-tail shield, Mr W. Evans; Labyrinth shield, Mr E. Binstead; Plant trophy, Mrs J. Stillwell; Breeders Cup, tropical, Mr E. Binstead; Breeders Cup, coldwater, Mr W. Ryder; aos Coldwater trophy, Mr E. Binstead; Table Show Points trophy, Mr E. Binstead; Junior points, tropical, Mr M. Parsons; Junior Points, coldwater, Mr R. Bryant; Home Furnished, tropical, Mr J. Stillwell; Home Furnished, coldwater, Miss W. Ryder; Home Furnished, junior, Mr K. Curtis. Two forthcoming society events are, first, the inter-club show on the 25th May at the Portsmouth Community Centre, Malins Road, Buckland, Portsmouth. This is followed by the Open Show and Exhibition at the Wesley Central Hall, Fratton Road, Portsmouth; this will be open to the public from Monday 4th August until Saturday 9th August.

BRACKNELL AS have been running an interesting and varied programme, two highlights being talks with slides, one on characins by Henry White & Co. of Hendon, and the other by Mr R. Porder of Uxbridge on plants. Other interesting events have been the quiz and Fish League commencing rounds, between themselves and other clubs in the Three Counties Group. A new venue has now been chosen for club meetings, and from April the Society are to meet on the 2nd and 4th Monday in each month at the Club room, above Red Lion Public House, High Street, Bracknell. Prospective new members and visitors from other clubs are cordially welcomed at all meetings.

PRESENTATION of the 1974 Society trophies took place at the very enjoyable **EALING &**

FBAS (FBAS) annual dinner and dance. Mr Sandfield and Mr Cruikshank won the Home Furnished Aquaria and the Structure Furnished Aquariums trophies respectively. The silver shield for highest total points for the year was won by Mr V. Valley, the Knock-out Cup by Mr E. Tagg, the Bronze Cup by Mr C. Chesney. In the classes, D_b, D_c and F by Mr V. Valley; G, Mr E. Tagg; H, J, R by Mr Valley, Mr P. Gillet and Mrs D. Cruikshank. K by Mr V. Valley and the same class in closed shows by Mr E. Burnett. The Best Fish in Class Show award went to Mr E. Tagg. The club congratulates Mr Valley and Mr Burnett on their enviable achievements in these awards and thanks were given to Mr T. Cruikshank and his committee for organising the year's programme. Mr L. Sandfield has held the Home Furnished Aquaria trophy for 3 years, though certain members have vowed to shall hold it no longer! Recently the club has enjoyed visits and talks from Mr D. Lambourne on catfish and Mr John Parker on filters, equipment and plants, both of which were particularly good.

NEWS from MID SUSSEX AS includes details of a sponsored swim at the local indoor pool to raise funds for the Society. One junior member, it is reported, proved the value of watching the swimming habits of his fish by swimming 100 lengths. It is hoped that the

funds raised will be in the three-figure class. Members have also enjoyed a most interesting talk by Mr J. Burtles on the structure and design of fishes. A table show for sexed pairs was judged by Mr Ian Mathieson who awarded first place in both classes to Mrs A. Holmes, best novice award to Mr R. Todman and best junior award to D. Anscombe and Chris Bottoms. Members have been asked to support more open shows and it is hoped to arrange outings to shows nearer home.

RESULTS of the NEW FOREST AS Home Furnished Aquaria Competition, judged by Mr C. Knapp, have been announced. Mr B. Higginson won the tropical tank award with 77 points (2, Mr D. Harding, 75; 3, Mr J. Jeffrey, 73). Mr D. Harding won the coldwater tank first award (74 points) and Mr L. Menhennett's tanks came second and third (59, 55 points). Mr Knapp said that the fact that many of the tanks had been set up for several years added credit to their owners and showed what good balance had been achieved, but suggested that more imagination in rock-work arrangement might have been displayed. Tips for showing fish at open shows was the main talk by Mr D. Harding at the March meeting. Prospective new members are welcome to attend meetings on the third Monday of the month at the Community Centre, Lymington, Hants.

AT the BETHNAL GREEN AS annual dinner and dance presentations of the previous year's club trophies were made by Mr Frank Tomkins, chairman of the FBAS. Awards were made as follows: First Year Member's Cup, Miss F. Rogers; 2, Mr K. Waller; 3, Mr A. MacDonald. Points Cup: 1, Miss F. Rogers; 2, Mr J. Connolly; 3, Mr S. Adams. Fish of the Month Cup: Miss F. Rogers; 2, Mr S. Adams; 3, Mrs S. Hedges. The Silver Rosebowl for most points gained by a BGAS member at the Society's open show was won jointly by Mr A. MacDonald and Miss F. Rogers. The Open Show Cup for most points gained at all open shows was won by Mrs S. Hedges.

Other highlights for the Society have included a very interesting and detailed talk with slides by Mr P. Arnould on the less-known family of loaches, and a visit to Hendon AS together with five other clubs, each bringing their six best fish: the Inter-Club rosebowl was won by Bethnal Green and the Best Fish in Show by Mrs S. Hedges. For the Points Cup classes of G and H held during March the first four places were taken by joint members of the Catfish Association of Great Britain. After judging *Corydoras*, Mr C. Brown (FBAS) spent some time discussing the results with members, who were glad of the opportunity to gain increased knowledge of the identification of this complex family of fishes.

THE TYNE-TEES AREA AS ASSOCIATION of the FBAS propose to hold a championship show, sponsored by a local firm, within the year 1976, and annually thereafter. As a general guide, pertinent points and proposals are listed below, and interested club secretaries are asked to write for further details to Mr J. A. Laidler, 19 Elm Avenue, Gosforth (phone 88226) or phone Mr G. Liddle (phone 877156).

The Show shall be called the

'Three Rivers Championship' and any club within a 35-mile radius of Durham City may compete. Classes eligible for the Championship will be designated by the TTAA but will generally be the 30 accepted Open Show classes. The names of the winner of each class, together with the number of points gained, shall be forwarded to the Organisers, at the conclusion of each Open Show. At the end of the season, and about 4 weeks before the Championship Show, the competitors

owning the four highest pointed fish in each class from the entire years' total of Open Shows shall be invited to enter their fish in the Three Rivers Championship. This would result in an Open Show type of Championship with 30 classes each containing four fish only. Judging shall be to FBAS Rules. Each entrant will receive a scroll recording his or her achievement and the Best Fish in Show will be awarded the Three Rivers Championship trophy.

A lengthy and detailed slide talk on the African cichlids by Mr B. Mould and Mr D. Allison of Hendon AS also proved fascinating to the listeners.

In Brief...

... 30 members of **GLOUCESTER AS** enjoyed the lecture from Mr J. Powell on coldwater fishkeeping, with a slant towards nishiki koi. Mr F. Timmins won the table show (av coldwater); (2, Mr F. Timmins; 3, Mrs M. Gray).

... **THE MIDLAND AQUARIST LEAGUE** has decided to stage bigger competitions with more scope for outside participation, the first show of the season being held on Sunday, 11th May, at Bulkington Parish Hall, Bulkington, nr. Nuneaton. The six societies of the League (Coventry Pool & AS, Goodyers End, Bedworth, Nuneaton, Hinckley and Rugby Fishkeepers) have decided to invite three other interested societies to join.

... **WHILST** judging took place at the **BRISTOL AS** March meeting a general discussion was held on pond maintenance, rearing fry, etc. Class winners were: Goldfish, Mr W. Ham; orandas: Mr S. Lloyd; fantails: Mr S. Lloyd; cichlids: Mr E. N. Bowden. The Society have decided to split their 2-day show into two separate shows, each of 1-day's duration. The tropical show will be held on Sunday, 6th July and that for coldwater fishes on Saturday, 13th September.

... **TORBAY AS** committee promised a free special outing to the juniors who helped so much at the last Open Show and now, on 18th May, the trip is being made to an aquatic nurseries and then to the Bristol Zoo. Meetings in May in-

clude a lecture/demonstration by Mr F. Orsman in making an all-glass tank and a slide/tape show by Hendon & DAS on 27th May entitled 'Everyman an Expert'. Meetings are held on alternate Tuesdays at St Andrews Methodist Church School Hall, Torridge Avenue, Shipway, Torquay, 8.00 p.m.

... **THE** new Chairman of **AMERSHAM & DAS** is Mrs W. Thompson, the society's first-ever 'madam chair'. P.R.O. Mr K. W. North reports that the Society's AGM was "its usual exciting if often argumentative meeting" and lectures, film shows, outings and discussion groups have been arranged for the coming year, meetings being held on the first and third Wednesdays of the month at Amersham Community Centre, 8.0 p.m. New members are very welcome.

... **A YORKSHIRE** Section of the **BRITISH KOI KEEPERS ASSOCIATION** is to be set up. The chairman is Mr F. J. Ayres and the secretary-treasurer is Mr J. W. Mawson, 78 Gledhow Wood Avenue, Roundhay, Leeds 8, Yorks (s.a.e. for replies please). The newly-formed section are to construct a Japanese sand garden and pool for exhibition at the Harrogate Spring Flower Show on 24th-26th April in the Valley Gardens of the Spa town. The **NORTHERN SECTION** of the

MID-SUSSEX AS invites other aquarist societies to visit their annual Fish Exhibition at a reduced rate for advanced block bookings. The Exhibition is to be held on Sunday 25th, and Monday, 26th May at the Park Centre, Burgess Hill. There will be canteen facilities available. Opposite is a large park with swings, also indoor and outdoor swimming pools, an ideal place for a family outing. Opening times are: Sunday 10.30 a.m. - 8 p.m. and Monday, 9.30 a.m. - 5 p.m. Please telephone Haywards Heath 53747 (Mr B. Slade) to make reservations.

BKKA is presenting its first koi show on Sunday, 11th May, open to all members of the **BKKS**. The show is to be held at 1 Avon Drive, Bury, Lancs, close to the M62 and non-competitive visitors will be very welcome (entrance fee 50p).

... **A TALK** by Mr D. Easingwood on the construction of a coldwater fish house at a meeting of **COVENTRY POOL & AS** was supplemented by slides and diagrams and proved very interesting to the 40 members and 12 visitors present. The fish house was built for coldwater fishes and incorporates a continuous flow of water through the tanks and a pool.

... **A SHORT** talk on barbs by the president, Mr H. Kuhn, to members of **LINCOLN & DAS** was followed by the table show judged by Mr F. Toyne of Sheaf Valley AS. There were 35 entries and the first award (the Renshaw trophy) went to Mrs Evans (2, Mr McLeod; 3, Mr Pickering). Mr & Mrs C. Sellars were very successful at the Don Valley AS Open Show, winning first and third in the dwarf cichlid section, first and second in the angel class and first and best fish in the show with a Malawi cichlid.

... **MR K. ADAMS** was the member with the highest points for the twelve months in **SOUTHEND & DAS** (2, Mr D. Little; 3, Mr H. Preston), R. Wylie the junior with highest points (2, C. Cheswright; 3, A. Moltino). Mr R. Wallings won the Home Furnished Competition (2, Mr P. Tolmie, 3, Mr D. King).

... **MEMBERS** of **ABINGDON AS** greatly enjoyed a talk by Mr B. R. James on the successful cultivation of plants. For the coming year, the Society will be showing all the **FBAS** Aqua-Talks and hope to have a talk on different topics each meeting by club members. Meetings are held at the Barley Mow, Abingdon, every other Thursday (with meetings on 1st, 15th and 29th May). All aquarists are welcome.

BRISTOL TFC members greatly enjoyed the slide show provided by Mr D. Noble of Sevenside AS in the form of a quiz giving details of colour, size, shape and breeding habits of various fishes. The second part of the quiz will be given at a later meeting and will take the form of questions on the information given in the first slide show.

THE FBAS Championship trophy for Class Ya (tropical marine) is to be awarded at the **SALISBURY & DAS** Open Show on 15th June at the Salisbury City Hall (see 'Dates for Your Diary').

THE **EAST ANGLIAN FEDERATION OF AQUARISTS** held a show at Thetford on Sunday, 23rd March which was well attended and attracted members from Norwich, Yarmouth, Ipswich, Ely and, of course, Thetford. At the AGM, the retiring chairman, Mr W. Card, the founder member of the organisation, was thanked for his efforts.

MR M. STRANGE of Basingstoke gave an interesting talk to members of **SLOUGH AS** on his own methods of fishkeeping. The next meeting of Slough will be on Wednesday, 21st May when there will be a talk on Killifish and a slide show on collecting fish in Ghana. Information from secretary Mrs E. Knight, 32 Aldin Avenue South, Slough.

NEWBURY & DAS were back to Bracknell AS at the intersociety table show match. The home side won by 54 points to 32. During the judging members enjoyed a slide show supplied by Bracknell AS.

THE **BASINGSTOKE AS (FEAS)** meeting at the end of February was a very active one with an interesting talk and slide show by Mr J. Stillwell of Portsmouth AS on coldwater fish. On 14th March 39 members enjoyed a talk and slide

THE **BRITISH CICHLID ASSOCIATION** is holding its Annual Convention in Birmingham on 8th June. Tickets, which include lunch, are priced at £2.00. Details can be obtained from Mr Terence Green, General Secretary, 12 Greenwood Meadow, Chinnor, Oxford OX9 4JG.

show by Mr F. Tomkins of Independent AS on labyrinthis. On 21st March, Mr R. Blight chaired a special meeting to organise the Society's 'Show' to be held during Carnival Week; it was decided to hold a closed show with emphasis on display to provide interest for the public.

... AT the AGM held by **THE GOLDFISH SOCIETY OF GREAT BRITAIN** Mr R. Whittington and Mr W. Leach answered queries with sound advice in a question-and-answer session. The contest for 'the most attractive fish by popular acclaim' (eight entries) was won by a coloured moor entered by Mr W. Cook. For officers elected see Meetings and Changes of Officers. The Society have also enjoyed a talk by chairman Mr J. Bundell on the selection of breeders. He told the 40 members who braved the elements to attend of the importance of keeping records of fish and youngsters produced. Mr Bundell took along six fish which were the result of 3 years experimentation and research.

Dates for Your Diary

- 10th May, **PORT TALBOT AS** Open Show, YMCA Buildings, Port Talbot. Schedules: Mr A. E. S. Fouracre, 3 Cross Street, Valindrie, Port Talbot, Glam. SA13 1AZ.
- 10th May, **SOUTHEND, LEIGH & DAS** Open Show, St Clements Hall, Leigh-on-Sea, Essex. Club and individual furnished aquaria, aquascapes, marinas and junior classes. Details: Mr D. Durrant, 172 Trinity Road, Southend-on-Sea; phone 610576.
- 11th May, **MIDLAND AQUARIST LEAGUE** part Open Show and Inter-Society Show, Bulkington Parish Hall, Bulkington, nr. Nuneaton. Details: Mr F. Underwood, 59 Warwick Road, Kenilworth CV8 1HN.
- 11th May, **BOURNEMOUTH AS** Open Show, Kinson Community Centre, Millham Lane, Kinson, Bournemouth. Details: Mr J. Jeffery, 30 Breamer Avenue, Southbourne, Bournemouth BH6 4JF.
- 11th May, **YEovil & DAS** Open Show, Details: Mr P. C. New, 8 Mayfield Road, Yeovil.
- 11th May, **GLOUCESTER AS** Open Show, The Chequers Bridge Centre, Painswick Road, Gloucester. Schedules: Mr G. Perkins, 243 Bodiam Avenue, Quedgeley Court Estate, Tuffrey, Gloucester.
- 17th May, **SOUTH PARK AQUATIC (STUDY) SOCIETY** 5th Annual Invitation Coldwater Show, The Wimbledon Community Centre, St Georges Road, London, SW19. Details: Mr D. Halman, 83 Cannon Grove, Fatcham, Surrey.
- 17th May, **TROWBRIDGE & DA & PS** Open Show, The Rowing Club, Bradford-on-Avon, Wilts. FBAS Standards. Schedules now available from show secretary, 48 Marsh Road, Hillerton, Trowbridge, Wilts.
- 18th May, **REDCAR AS** Open Show, Cutham Sowl, Redcar, Cleveland.

- Benching 11.30 a.m., Judging 14.00 hours. Details: Mr T. Lawrence, 68 Ings Road, Redcar.
- 24th May, **BASS** 2nd Spring Meeting, Meeting Room, Zoological Society of London, Regent's Park. Speaker: Dr K. Barnister, British Museum Natural History. Doors open 1.45 p.m. for 2.30 p.m. Tickets £1.25 incl. tea from Mr F. Keena, Highcliffe, Old Hill, Woking, Surrey. All interested persons welcome.
- 24th May, **GOLDFISH SOCIETY OF GREAT BRITAIN** Meeting, Conway Hall, Red Lion Square, Holborn, London, WC1, 2.00 p.m.
- 25th May, **BRIDLINGTON & DAS** Open Show, Hilderthorpe Junior School, Shaftebury Road, Bridlington. Schedules: Mr M. Jordan, 86 Matson Road, Bridlington, North Humberside.
- 25th May, **CORBY & DAS** Open Show, Corby Civic Centre, FBAS Rules. Schedules: Mr A. Slow, 176 King Street, Kettering, Northants. (mid-March).
- 25th May, **FGA INTERNATIONAL** Open Show, Glebe Farm Community Centre, Glebe Farm Road, Stockford, Birmingham 33. Details: Mr D. K. Beacham, 17 Pedmore Close, Woodrow South, Redditch, Worcs.
- 25th May, **PORTSMOUTH AS** Interclub Show, Portsmouth Community Centre, Malins Road, Portsmouth. Details: Mr W. Ryder, 202 Kirby Road, Portsmouth, PO2 0GR.
- 25-26th May, **MID-SUSSEX AS** Fish Exhibition, Park Centre, Park Road, Buxton Hill, Sussex.
- 1st June, **ACCRINGTON & DAS** Open Show, Antley Methodist Church Hall, Stockburn Road, Accrington (new, larger premises). Details: Mr E. Walsh, 133 Lambeck Road, Blackburn, Lancs.
- 1st June, **NORTHWICH & DAS** Open Show, Hartford Secondary Boys School, Chester Road, Hartford, Northwich. FNAS Standards. Details: Mr N. R. Thompson, 54 Grassmere Road, Frodsham, via Warrington, Lancs. WAB 71G; phone Frodsham 32745.
- 1st June, **COTSWOLD AS** 1st Open Show, Roshrough House, Youth Centre, Nelson Street, Stroud, Gloucester. Schedules: Mr K. Hodges, 31 Horns Road, Stroud, Gloucester.

1st June. **LOUGHBOROUGH & DAS** Open Show. Burslem Community Centre, Thorpe Hill, Loughborough, Leics. Schedules: Mr L. Futoy, 10 Cleveland Road, Loughborough, Leics. LE11 2SP; phone 01775.

1st June. **NEWCASTLE TROPICAL FISH SOCIETY** Open Show, St John's Church Hall, Westgate Road and Granger Street Junction, Newcastle-upon-Tyne. Schedules shortly: Mr L. R. Lawson, 84 Grosvenor Road, Jesmond, Newcastle-upon-Tyne 2.

1st June. **HAVANT & DAS** Open Show. The Macclinton Hall, Hornsea, Hants. Schedules: Mr K. Taylor, 2 Hollybank Close, Cowplain, Hants; phone Romsey 4140.

8th June. **BRITISH CICHLID ASSOCIATION** Annual Convention, Birmingham. Tickets (including lunch) £2.00. Details: Mr T. Green, 12 Greenwood Meadow, Chinner, Oxford, OX9 4JG.

8th June. **SHERWOOD AS** Open Show. The Thornley Mines Welfare Hall, Edwinstowe, Giltorton, nr Mansfield, Notts. Schedules: Mr J. Igoe, 25 Marple Avenue, Mansfield, Woodhouse, Notts; phone Mansfield 32249.

14th June. **DUNMOW & DAS** Open Show. Details: Mr A. V. Gail, 25 River View, Braintree, Essex, CM7 7HK.

14th June. **LLANTWIT MAJOR AS** (CNAA/FSAS) Open Show. The Town Hall, Llantwit Major. Quality plebes all classes. Schedules (March): Mr J. J. Edwards, Clanton, Mill Park, Llanbathan, Cowbridge, Glam. CF7 7BG.

14th June. **KINGSTON & DAS** Open Show. Sutton Adult School, Benhill Avenue, Sutton, Surrey. Details: Mr D. J. Mackay, 12 Victoria Road, Twickenham, Middx; phone 01-572 0632 daytime till 6.0 p.m.

15th June. **SALISBURY & DAS** Open Show. City Hall, Salisbury. (FSAS) Championship Class (Y). Schedules: Mr R. P. Adams, 24 Emphre Road, Salisbury, Wilts SP2 5DF.

15th June. **FGA NORTH WEST SECTION** Open Show. Schedules: Mr D. Ormerod, 95 Barnes Avenue, Runcorn, Wirral, Leics.

16th June. **SWILLINGTON AS** Open Show. John Swainson School, Barwick Road (off York Road), Leeds 15. Details: Mr D. Mrs R. Hillop, 1 Fir Tree Gardens, Moorstown, Leeds, LS17 7ED.

16th June. **GOSPORT & DAS** Open Show. Details: Mr J. Clarke, 37, Rowner Close, Gosport; phone Fareham 88106.

22nd June. **ALFRETON & DAS** Open Show. Adult Education Centre, Alfreton Hall, Alfreton. Details: Mr S. Hickling, Parkview, 13 Coppice Drive, Eastwood, MB15 3PW; phone 07757 5104.

22nd June. **THE BRITISH Koi-KEEPERS SOCIETY AGM**. The Post House Hotel, Leicester.

22nd June. **SOUTH SHIELDS AS** Open Show. Solingbroke Hall. Details: Mr P. Wright, 11 Boston Crescent, Town End Farm, Sunderland, Tyne/Wear.

28th June. **NAISEA & DAS** Open Show. Schedules: Mr D. Kenwood, 90 Slade Road, Portishead, Bristol; phone Portishead 44943.

28th June. **RUNNYMEDE AS** Open Show. St. Anne's Middle School, Clara Road, Stanwell, Staines, Middx. Details: Mr D. Riley, 529 Kingsmill Avenue, Northolt, Middlesex, UB8 6NW; phone 01-845 4189.

29th June. **DUNLOP AKS** Open Show. Works Canteen, Dunlop Limited, Spoke Hall Road, Spoke, Liverpool 24. 39 classes (FNAS). Schedules: Mr T. Hampton, 7 Madeline Street, Liverpool; 051-709 6600.

29th June. **LINCOLN & DAS** Open Show. The Drill Hall, Broadgate, Lin-

coln. Details: Mr G. S. Hill, c/o 38 Richmond Road, Lincoln LN1 1JG.

5th July. **CARDIFF AS** Open Show. St. Margaret's Church Hall, Roath, Cardiff. Details: Mr B. Oury, 30 Llanerston Road, Rumney, Cardiff.

6th July. **BIRMINGHAM AS** Open Show. Community Centre, Birmingham. 8th July. **BRISTOL AS TROPICAL** Open Show. Schedules: Mr L. N. Bowden, 12 Stoneleigh Walk, Knowle, Bristol BS4 2JL (obscure: 770355).

6th July. **LYTHAM AS** Open Show. Ansdell Institute, Woodlands Road, Ansdell, Lytham-St-Annes, Lancs. Schedules: Mr Peter Ham, 1 Wyndene Grove, Freckleton, Preston, Lancs.; phone Freckleton 623162.

6th July. **THORNE AS** Open Show. Grammar School, St. Nicholas Road, Thorne, nr Doncaster, Yorks. Details: Mr C. Jewison, 94 Heathborne Road, Thorne; phone Thorne 813041.

12-13th July. **ROMFORD & BEACONTRIE AS** Open Show (Dagenham Town Show). Central Park, Dagenham. Enquiries: Mr F. Jacobs, 264 Southend Amersal Road, Hornchurch, Essex, RM11 2SD.

20th July. **SANDROUNDER'S AS** Open Show. Meols Cop School, Meols Cop Road, Southport. Details: Mr G. A. Waterhouse, 29 Moss Lane, Southport, Merseyside, PR9 7DR.

20th July. **AMERBROUGH & DAS** Open Show. Menston Community Centre, Main Street, Menston. Schedules: Mr J. S. Hall, 34 Salisbury Street, Calverley, Pudsey, LS28 5FN; phone Pudsey 74009.

20th July. **BRIGHTON & SOUTHERN AS** Open Show and Exhibition. St. Barnabas Hall, Sackville Road, Hove, Sussex. Details: Mr B. Stevens, 11 Seaview Estate, Southwick, BN4 4AS (phone: Brighton 593851).

26th July. **GOLDFISH SOCIETY OF GREAT BRITAIN** Meeting. Conway Hall, Red Lion Square, Holborn, London, WC1, 2.00 p.m.

3rd August. **TONBRIDGE & DAS** Open Show. Details: Mr S. Feast, 19 Eastley Road, Sevenoaks, Kent, TN13 1XX; phone Sevenoaks 54998.

4th-9th August. **PORTSMOUTH AS** Open Show and Exhibition. Wesley Central Hall, Fratton Road, Portsmouth. Details: Mr S. Feast, 19 Eastley Road, Sevenoaks, Kent, TN13 1XX; phone Sevenoaks 54998.

10th August. **GRIMSBY & CLEETHORPES AS** Open Show. Memorial Hall, Cleethorpes. Schedules: Mr T. P. Walker, 51 Cheshire Walk, Grimsby, 5th Humber-side; phone Healing 7818.

14th-16th August. **MIDLAND AQUATIC FESTIVAL 75**. Singley Hall, Broad Street, Birmingham. Details: Mr J. Wiza, 120 Franklin Road, Kings Norton, Birmingham 30 (phone: 021-458 5656).

17th August. **HUDDERSFIELD TFS** Open Show. Paddock Civic Youth Centre, Beach Street, Paddock, Huddersfield. Details: Mr D. Hough, Flat 5, Sycamore Court, Sycamore Avenue, Golear, Huddersfield; phone Huddersfield 57147.

17th August. **NEWCASTLE GUPPY & LIVEBEARER SOCIETY** Open Show (the only all-livebearer Open Show). Details to follow.

17th August. **OLDHAM & DAS** Open Show. Werneth Park, Oldham. Schedules: Mr A. E. Chadwick, 341 Broadway, Chadderton, Oldham, Lancs O19 8RN.

30th August. **HOUNSLOW & DAS** Open Show. Hounslow Youth Centre, Cecil Road, Hounslow. Schedules: Mr E. Shephard, 9 Moulton Avenue, Hounslow, Middlesex; phone 01-570 6127.

7th September. **BETHNAL GREEN AS** Open Show. Bethnal Green Institute, 229 Bethnal Green Road, London, E2. Schedules: Mrs S. Hodges, Koi Corner, 150 Ashburton Avenue, Seven Kings, Ilford, Essex, IG3 9EL; phone 01-590 3239.

7th September. **BUXTON & DAS** Open Show. Pavilion Gardens, Easton, Buxton. Details: Mrs S. Hodges, Koi Corner, 150 Ashburton Avenue, Seven Kings, Ilford, Essex, IG3 9EL; phone 01-590 3239.

7th September. **KILLINGWORTH AA** Open Show. Communicare, Killingworth Township. Schedules: Mr D. B. Hickman, 14 Cramstone Court, Londesborough, Killingworth, Newcastle, NE12 0JZ.

13th September. **BRISTOL AS** Cold-water Open Show. Schedules: Mr E. N. Bowden, 12 Stoneleigh Walk, Knowle, Bristol BS4 2JL; phone 770355.

14th September. **CLEVELAND AS** Open Show. Church Hall, Whitby Road, Goldborough, Cleveland, Octavia. Mr B. Welford, 50 West Road, Loftus, Barmston, Cleveland.

14th September. **THREE COUNTIES GROUP** Open Show (to be run by Broughstoke AS, Bracknell AS, Didcot AS, High Wycombe AS and Reading AS). Reading University, 52 classes including special 8-class koi section. Details: Mr M. Stratton, 10 London Court, Nayville Class, Eastingstone, RG21 3AJ; phone Basingstoke 67009.

14th September. **TORRBY AS** Open Show. Torquay Town Hall, Details: Mr J. R. Davis, 43 Haddon Road, Torquay, Devon.

21st September. **HUCKNALL & BULWELL AS** Open Show. Details: Mr J. R. Westcott, 9 Joyce Avenue, Westville, Hucknall, Notts.

27th September. **GOLDFISH SOCIETY OF GREAT BRITAIN** Open Show. Sutton Adult School, Benhill Avenue, Sutton, Surrey. Schedules: Mrs M. Dudley, 163 South Park Road, Wimbledon, London, SW19 8RX.

28th September. **NEWBURY & DAS** Open Show. The Piza, Market Place, Newbury, Berks. Schedules: Mr S. Canning, South End, Thatcham, Newbury, Berks.

4th October. **EAST LONDON AQUATIC & PONDKEEPERS** Open Show. Details to follow.

5th October. **EALING & DAS** Open Show. Details to follow.

8th October. **SCUNTHORPE & DAS** Open Show. Details: Mr L. Burt, 6 Saxby Road, Scunthorpe, S. Humber-side.

11th-12th October. **BRITISH AQUARISTS' FESTIVAL**. Balm Vise, Manchester.

26th/28th October. **THE AQUARIUM SHOW '75** at the Royal Horticultural Society's Old Hall, Vincent Square, London SW1. Presented by the Federation of British Aquatic Societies. Aquarium society exhibiting exhibits invited. Details from the organizer, PFM, 554 Gerrard Lane, London SW17 0NY; phone 01-847 2805.

2nd November. **BLACKBURN AQUARIST WATERLIFE SOCIETY** Open Show. Windsor Hall, Blackburn. Details: Mr T. Burton, 21 Henry Street, Rishton, nr Blackburn, BB1 4JJ.

22nd Nov. **GOLDFISH SOCIETY OF GREAT BRITAIN** Meeting. Conway Hall, Red Lion Square, Holborn, London, WC1, 2.00 p.m.

22nd November. **FUR FEATHER & AQUARIA SHOW**. King's Hall, 39 Lower Clapton Road, London, E5. Schedules: Mrs S. Hodges, Koi Corner, 150 Ashburton Avenue, Seven Kings, Ilford, Essex, IG3 9EL; phone 01-590 3239.

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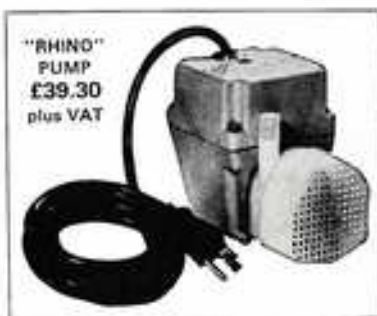
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CLOSED ALL DAY SUNDAY AND MONDAY

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Printed by Ruislip Press Ltd., Ickenham, Uxbridge, Middx.