

FEBRUARY 1973

20p

Pet Fish

monthly

The PRACTICAL FISHKEEPING MAGAZINE



Contents include:

The Clarias Catfish
Filter for Bare Aquaria
Breeding the Flame Fish
Splash Tetra Spawning

Dutch Underwater Gardens
Goldfish Varieties without Dorsals
Giant Vallisneria
Personal Comment etc.

PetFish

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K. Bellenger

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Comments and Quotes

- When explanations are in question
- Goldfish pay bus fares

A is Right, B is Wrong

ON the whole we have the impression that there are now rather less of those contentious unresolved aquarium 'mysteries' that used to keep fishkeepers in such lengthy sessions of verbal battles. There are more answers forthcoming to basic problems and also a more general awareness that for many a problem there is not always just a single solution or explanation that can be applied under all circumstances like an unquestionable deity-given law. There is a greater readiness to challenge the phrasing of statements such as 'water plants must (or must not) be planted in a nutritious compost'.

The poisonous effects of metals dissolved in small amounts in water gives an example of a matter about which a controversy can arise. 'Don't keep fish in galvanised tanks', says A. '—they'll die of zinc poisoning'. 'Rubbish', says B. 'I've used such tanks for years and I've not lost a fish'. 'You're in trouble', says A. 'your water comes from copper piping'. 'Fiddlesticks', says B. 'our fish tanks have always been filled from copper pipes'. To show that no 'mystery' explanation exists for B's apparently successful demonstration that A is wrong requires a lot more details to be given, since A and B are talking about different water, different species of fish or different metal tanks and piping. Even age of the individuals of a species being discussed in such a context will be an important factor.

Work with shellfish at the Fisheries Laboratory at Burnham-on-Crouch, Essex, has shown that the amounts of dissolved mercury, copper or zinc that will kill the larvae of oysters, shrimps, crabs and lobsters are very much smaller than those that affect the adults. Reporting the results in the MARINE POLLUTION BULLETIN, Mr P. M. Connor said that, in the past, concentrations of the metals in industrial wastes reaching the sea have been con-

sidered only in relation to the adult animals, and the much more serious effect on the young has been overlooked. In discussing effects of metals on fishes it would certainly be necessary to be aware that fry and adults can react differently.

The importance of differing sensitivity with age, this time for the American yellow perch (*Perca flavescens*), is also revealed in tests reported in THE PROGRESSIVE PASTICULTURIST (U.S.A.) to elucidate the reason for failures to rear the fry in laboratory tanks. One test sought to discover whether the colour and reflecting properties of the tank bottom influenced the fry's survival: in the opaque black (slate) bottomed tanks survival rate was much higher than in transparent (glass) bottomed tanks with stainless steel beneath. This was not the only finding of the investigation, but in discussions of bases for rearing tanks it could be important. 'Rubbish' says B. 'I've reared thousands of fry in glass-bottomed tanks.' But were they yellow perch, Mr B, and did you ever properly test that with a different base you might have reared thousands more? See what we mean?

Pets are Extra

'SCHOOLBOY Paul Butler was charged 7p extra on the bus—for a goldfish in a water-filled plastic bag. Paul, 10, bought the fish in Wrexham, Denbighshire, and was taking it the two miles to his home. A Crossville Bus Company spokesman said: "Pets must be paid for, but goldfish do not come into this category. It must be a misunderstanding and we will investigate the incident".—DAILY MIRROR.

It's a tribute to *Corasius auratus* that because (presumably) he does not scratch or bite passengers, bark, miaow, hiss, spit, foul seats and floor or cause other annoyance, he is not classed by the Company as a pet. How strange, when to so many the absence of these traits is what makes him such a fine pet. (We'll readily forego, we hasten to add, the penalty of paying any extra fare for his transport, though!)



LETTERS

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

Coldwater Cats

TO add to the information given in the answer to the query on bullheads (PFM, November), Alan Cooper in *FISHS OF THE WORLD* (Hamlyn) states that the brown bullhead (*Ictalurus nebulosus*) has been introduced to European rivers and is now well established, although not found in Britain. Also, mine are feeding avidly at 52°F. I am not trying for a record in low temperatures—I just haven't got a heater for their tank yet, but being north American they should be happy at the normal winter temperatures in my tanks of just over 50°F.

Concerning your editorial 'Placing the Blame', of the same month, a dealer states that 80% of all coldwater fishes sold will die through no fault of the purchaser. In my own experience, buying fish blind and importing pathogens, the figure holds true. Culling fish before dispatch might in my case have made the carriage cost worthwhile, even though culling is a practice that might upset people who enjoy pandering to 'invalids'. The present wave of interest in fishkeeping could result in disease being spread across the country. The water in this area used to be clean, but trout this year seem to be a poor lot. Whether the reason is poor stock, or more virulent disease strains, or both, I am not sure although the latter seems probable. England seems to be the source for infection since pet fish sold locally are clean, and local shops buy from Hamilton in Lanarkshire.

Greenock, Renfrewshire

W. F. CLARKE

Air Pump Spares

I WAS interested in the remarks made by Arpee in the December issue of PFM about air pumps. This bother over spares is getting ridiculous. I bought a twin-output pump about 6 months ago from a local fish shop. It was a Kihō model R11. I asked if spares could be obtained and was told, yes, they could. A fortnight after I had bought the pump I thought I might as well get some diaphragms in stock so I returned to the shop and was given the usual excuse—they were not in stock but might be coming in later. Of course, they never did. The shop has now gone, owing to the lease running out, so I have been told. Three weeks ago one diaphragm split, so I now have a pump 6 months old that cannot be used.

I should be pleased to know if anyone stocks

spares for this pump—there must be an importer somewhere in the country and I expect he must have spares to fit this pump. I have since noticed that some Japanese pumps are sold with spare diaphragms and valves, which is a good idea and with a bit of luck gives you at least a year or two of use from the pump.

Walsall, Staffs.

L. THORPE

Rate of Discus Growth

IN Mr Ron Dyson's letter (PFM, November) he claims that 2½ in. per year is a good rate of growth for discus fish. I have only been breeding discus this last year and on the 12th November I took six discus to show in the breeders' class. These fish were more than 2½ in. in size and they were born 16th April 1972. At the rate of growth that my discus are making—from both pairs that are breeding—I feel that 4-5 in. will be about the size they will make in the year.

Workeop, Notts.

J. DEBRIE

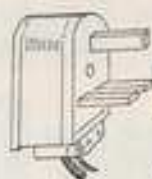
WITH reference to one of the letters in November's PFM, I was staggered to read that Mr Dyson considers 2½ in. to be a good size for a 12-month-old discus. I would suggest that these fish are on the way to being stunted! I have been fortunate to have been a friend of Mr Roy Skipper (the first aquarist in Europe to breed discus) for some time and have seen what discus should really look like.

On 27th July 1970, Mr Skipper had a spawning of brown/blue cross discus, of which he raised over 250 (believed at that time to be a world record). Late October the same year, four of these fish were shown as a breeder's group and were then 2 in. body length. At 10 months old, these fish were 4-5 in. and were actually starting to breed. Mr Skipper is not the only aquarist in this area to grow on young discus at this rate. I have been privileged to see other spawnings which have been grown on with equal success. I suggest that Mr Dyson has a close look at his fish as there appears to be a diet deficiency somewhere along the line.

Hemel Hempstead, Herts.

A. C. TUFER

Continued on page 480



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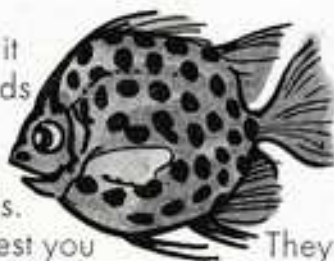
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One of the rarer DWARFS

Apistogramma borelli

By STEVE FORSTER

THIS article discusses a relatively rare member of the genus *Apistogramma*, but before concentrating on the dwarf cichlid *A. borelli* perhaps a discourse on the rest of the genus would be of interest. There are 28 species of *Apistogramma* known to science. I would like to place them in four categories: (A), (B), (C) and (D). These groups are not based on common geographical, scientific or behaviour patterns but are based on their availability to aquarists in the U.K. My categories are defined as follows.

(A) Usually available.

A. ortmanni
A. ornatifinnis
A. rotzigi
A. ramirezi
A. agassizi

(B) Occasionally available or have been available in the past.

A. combrac
A. portense
A. pleurotaenia

(C) Rarely available in commercial quantities but sometimes found as 'odd balls' in shipments of other species.

A. borelli
A. nickleri
A. cacatoides
A. t. trifasciatum

(D) Unknown in quantity. Probably only a few specimens ever found and those used for scientific purposes.

A. ambloplitoides
A. amoenus
A. aquipinnis
A. hugoi
A. steindachneri
A. klausentzsi
A. kleei
A. stuegleri
A. t. baraldschultzei
A. t. maculifera
A. parva
A. taeniatum
A. raudoni
A. ritense
A. gibbicaps
A. scroci

As can be seen from the above only a small

fraction of the species of the genus are really available to us, and if any reader can advise me of the existence in the U.K. of any quantities of the species listed in group (D), not only will I be apologetic and surprised, I will be highly delighted.

The first of the genus to be listed was *A. taeniatum* by Günther in 1862 and the latest (but probably not the last) by Meinken in 1969. I have listed *A. borelli* in category (C), but perhaps it should be upped to group (B) as an acquaintance has recently advised me that on a trip to London he saw small specimens of this species offered for sale. I can only say that on more than one occasion I have been offered young *Apistogramma* as one rarer species only to have them mature into *A. ortmanni*, *A. ornatifinnis* or *A. portense*! However, this works in reverse as well, and I have obtained *A. cacatoides* and *A. pleurotaenia* from shipments of other species.

In Nature *A. borelli* is found in the creeks and streams of the Mato Grosso and in the tributary waterways of the Rio Parana. They are shy to the point of almost being unseen for the first 2 or 3 weeks in domestic aquaria and will never settle in brightly lit, sparsely planted tanks.

I have found the following to be suitable conditions for these fish. The size of tank is unimportant, but as three or four pairs seem to flourish and show themselves more often I would suggest using a 30 in. by 15 in. by 15 in. tank. The tank must be heavily planted: I find that clumps of hairgrass, Indian fern and sagittaria grow quickly and give the thick vegetation required for the well-being of the fish. Water should be slightly acid and soft, and this can be achieved by filtering it through peat or sphagnum moss. Sexual characteristics of *A. borelli* are as follows.

Male. The body is olive green with dark-brown and yellow tints and a longitudinal dark stripe running from the eye to the base of the tail. On the belly are four regular stripes, which run the length of the body. The head is somewhat lighter in shade and, dependent on temperature and temperament, may be covered with blue highlights. The lips are prominent and the mouth is accentuated by the light-coloured lips. As you can see from the accompanying photograph this species has quite a large mouth for a dwarf cichlid. The gill plates are edged with dark brown and are peppered with

iridescent green spots. The pectoral fins are transparent, the ventrals are dark yellow tipped with electric blue and the tail is blue-grey with extensions to the outer rays. The dorsal fin is high, with long rays, the first two of which are smokey grey, the third, fourth and fifth are touched with a bright-red flush and the remainder show the same blue-grey as the tail. The anal is also smokey grey but has yellow undertones and is speckled with bright dots.

Female. The body is a dark ochre colour, again with the stripe running from eye to tail. The finnage is short and all fins are dark with yellow edging. There is a black stripe running across the head from the eye to the edge of the gill plates. Under the lower lip is a small black mark, which appears to grow in size and colour density during courtship and spawning.

When fed on a general mixed diet of live and flake foods, *A. boveli* will grow to a length of 3 inches for the males and around 1½ inches for the females. This species seems to prefer the darkest locations as spawning sites and I have found that furnishing the breeding tank with a few coconut shells helps to settle the breeders. The coconut can be used as a half shell or, as I prefer to use them, halved and then stuck together again.

This method calls for a fresh coconut, which should be pierced to allow the 'milk' to drain off and then the nut is sawn in half with a hacksaw. The fleshy fruit should be removed and the empty shells boiled for an hour. After rinsing under the cold-water tap the halves are left in a heated airing cupboard or near a heater to hasten drying. The hole used to drain the nut should then be drilled or

fired until the aperture is approximately 1 inch in diameter. The edges of the two halves should then be coated with silicone sealer, pressed together and left until set. Before placing the coconut shell in the aquarium try filling it with trial quantities of pea gravel until you have counterbalanced the natural buoyancy of the shell. If the breeding pair use the coconut shell it is, of course, impossible to see the eggs, but the chances of parental egg-eating are greatly reduced in the privacy afforded by the shell.

When eggs are deposited in a rockwork overhang or on another more open site it is easy to see them, as they are of a rose-pink colour. Spawning takes place in the usual *Apistogramma* fashion. The female deposits a few eggs and then the male swims over the site and fertilises the eggs. As each partner displaces the other he or she assumes guard duty and chases off any uninvited visitors. The size of the clutch is unusually large for dwarf cichlids, and unless it is that their habitat is impenetrable, or the young are subject to extremely high losses, it is hard to see why this species is comparatively rarely seen. The largest hatching I have witnessed was around 180 fry, but a fellow aquarist in Holland assures me that he has raised almost 400 fry from the one hatching.

Hatching takes between 3 and 4 days and the fry become free-swimming in 2 or 3 days; both these periods are determined by the temperature of the water. This species can be extremely shy and they become even more wary and nervous while caring for eggs or raising fry. Because of this I would recommend that the breeding tank be covered or screened and the intensity of overhead lighting reduced.



Photographs
by
W. A. TOMEY

The male *Apistogramma boveli* is a fine sight when in breeding condition or, with his mate, is guarding the eggs.

With *A. borelli* it is inadvisable suddenly to switch off the tank lighting, as this species often reacts in a frenzied manner and the fish may damage themselves in the resultant headlong rushes against the glass or rockwork. If you cannot dim the lighting gradually, either site the tank where natural light is the only source of illumination or use two or three 15 watt lamps and leave them on all the time during the breeding period.

It should be remembered that in Nature the light is not suddenly blotted out, and as the sun sets the parents have time to collect the fry together, thus protecting them from nocturnal predators. Although these predators do not exist in the breeding tank it is impossible to overcome the instinct, which has protected the species through countless years. Tank-bred specimens do not seem to be 'spooked' in this way but wild-caught fish certainly do.

As a further measure against disturbance I have found it worthwhile to fix a piece of plastic tubing in one of the front corners of the breeding tank, and to deliver live foods (daphnia and glass worm for the adults, brine shrimp and cyclops for the fry) via this inlet. This method ensures that the canopy is not disturbed and no accidental hangs occur.

Both parents care for the young and will do so until the fry no longer accept parental discipline. This usually happens when the fry are about 5 weeks old, when they begin to show the coloration and patterns of their parents.

In conclusion I would advise all aquarists to keep their eyes open for this species, and if they appear locally do not hesitate to buy a few. If you are not fortunate enough to find any in your home town keep your eyes open when visiting London or if you find yourself abroad on holiday or on a business trip. Our fellow European hobbyists, especially in



This species has a large mouth with 'lips' accentuated by their pale hue

Holland and Germany, seem to be able to lay their hands on the rarer species at regular intervals, so this may be one advantage of our joining the Common Market!

LETTERS

Hendon Swings?

WE read with indignation the mouthings of our male dominated committee in your December issue, and wish to redress the balance (metaphorically speaking). Although we show every respect, abject loyalty, obeisance etc. to our beloved committee, we feel that this injustice to our sex cannot pass without rectification.

Do you suffer from tired, lifeless males? Or, even worse, their complaining of headaches at the most inopportune times? Don't get us wrong—we are most impressed with their efforts. Their Congresses are unsurpassable, their Aquarium Show-tableaux worthy of the public gaze, and their illustrated lectures effervescing with the headiest of

bouquets. All we seek is a little more individual male aura with that indefinable pinch of zest and sparkle.

We try the rejuvenation kick but they don't always take the pill. We don't ask them to accept every new idea we give them, but to turn them all down saying 'Experience says no' is just too much! Can you blame us that we plummet to the depth of imbibing on the odd bitter lemon?

What we strive for is that re-fermentation of the yeast, that re-kindling of the youthful flame. Can anyone lend advice? or is the problem still insoluble—as it appears to have been since the Greeks invented so-called democracy.

We are merely the fairer sex—in no way connected to the Amazons that Keith Parbrick lectures on when talking about characins (again).

HELENE THOMPSON
for Hendon's Female Executive

A Community Tank of Lively



By JAMES DUNBAR

An aquarium shoal of black neons (*Hypessobrycon herbertovelloti*) is an impressive sight with their 'glowing' electric red eyes

DURING the past 4 years, I have had my show community tank set up in many different ways, sometimes with masses of rocks, other times with lots of driftwood, in all of these ways having no set theme in my collection of fishes. Once the tank was set up as a dwarf cichlid community, but recently I have been keeping a 'tetra community' tank, having various pairs of these fishes.

The aquarium is 36 in. by 15 in. by 15 in., with silicone-sealed angle iron frame; illumination is by two 40 watt bulbs and one 2 ft. Gro-lux tube. The Gro-lux gives the fishes just that touch of extra brilliance, although I am not keen on the effect given by Gro-lux as the main lighting.

Filtration is by an undergravel filter, the uplifts being camouflaged in one corner by rock formations, in the other with some Indian ferns (*Ceratopteris thalictroides*), whose leaves reach out across the water's surface for some 18 in. Some pieces of driftwood, backed up with

Valisneria and various cryptocorynes, Java fern, umbrella (*Limnophila seminiflora*) etc. are included.

The first of my selection of tetras is everyone's favourite, the neon (*Hypessobrycon bimaculatus*), half a dozen being present. With the neons are four cardinals (*Chirodon axelrodi*), the iridescent reds and electric blues of these fishes sparkling against the lush green plants. A trio of black neons (*Hypessobrycon herbertovelloti*) is my third species. The main colouring of these is grey-green, a black band running from behind the gills right into the tail; the black band is bordered on the top with a luminous ivory coloured strip, and

the upper half of the eye glows electric red.

A very striking tetra, the silver tip (*Haemulon marginata*), is another community occupant of my choice. The colouring of this fish is of an overall bronze. A short black bar commences just in front of the tail, ending up in the tail, and the anal, dorsal and upper and lower portions of the tail fins are tipped intensely with silver. A dark background to the aquarium shows the silver tip off to best advantage.

With my tetra collection there are the very decorative black phantom tetras (*Megalomphodus megalopterus*). The female has a black dorsal and

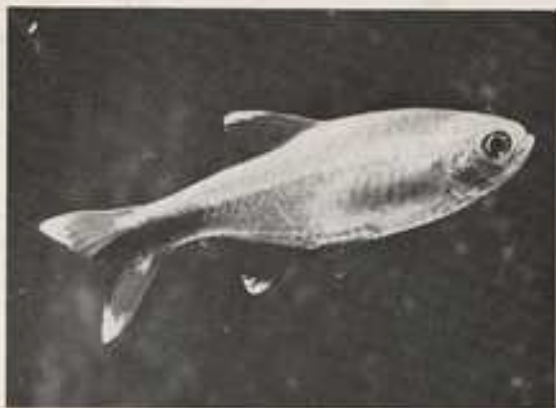


Mysterious in name but otherwise an easily kept and attractive species, the black phantom tetra (*Megalomphodus megalopterus*) displays magnificent finnage

Tetras

Photographs by
the author

tail fin, and the anal and adipose fins are red, bordered with black; a black triangular spot is situated directly behind the gills. The male phantom tetra lacks the red of the female, having an overall grey to black colouring, but what he lacks in colour he makes up for in finnage, having a magnificent high dorsal and long anal fin. The rest of my tetra collection is made up of the head and



Above: the silver tip tetra (*Hememnis marginata*) has anal, dorsal and tail fins tipped with silver



Left: a favourite in many a community tank, the head-and-tail light or beacon tetra (*Hemigrammus ocellifer*)

Below: cardinal tetra (*Chirodon axelrodi*), a hardy and completely inoffensive species that looks at its best in an aquarium shoal

tail-light (*Hemigrammus ocellifer*), whose popular name discloses its striking features, the very beautiful Green's tetras (*Hyphessobrycon greeni*), glowlights (*Hemigrammus erythrozonus*), bleeding hearts (*Hyphessobrycon suburgens*) and lemon tetras (*Hyphessobrycon pulchripinnis*).

All the above mentioned tetras live very peacefully together and enjoy the same foods; I use flake food and tubifex worms, and they thoroughly relish daphnia when these are available. These tetras form a collection of beauty and colour which I find can be observed for many hours.



Giant Vallisneria



By K. RATAJ

Photographs by
RUDOLPH ZUKAL

genus, i.e. above 68°F (20°C). It flowers throughout the summer months but does not produce seeds. It is in fact propagated vegetatively by the separation of the young plants from the rhizome runners. Propagation is much slower than that of the smaller species and if the aquarist wants to obtain a great number of plants he has to separate the plants and

GIANT vallis. (*Vallisneria spiralis* Graciner) belongs to the frogbit family (Hydrocharitaceae) and comes from the Philippines and from New Guinea. It has a bulbous rhizome with a tangle of fairly short roots. From the rhizome 10 to 15 ribbon-shaped leaves sprout. These leaves are a strong green colour, are about $\frac{3}{4}$ -1 in. wide (2.0-3.5 cm.) and 3-7 ft. (90-200 cm.) long with, usually, 15 longitudinal, obliquely connected veins.

The species is dioecious, i.e. female and male plants are separate. The flowers on the female plant grow up to the water surface on long, thin stalks. The male flowers are sessile (i.e. attached directly by the base without stalk or peduncle) and before maturing are covered with the calyx. When the mature male flowers open the pollen rises to the water surface and is carried to all parts of the tank.

Giant vallis. needs a large, but above all a deep tank so that it can develop properly. It is not exacting with regard to its water or substrate requirements but it does need a rather higher temperature than the other common species of this



Unlike the female flower (opposite) the male flower of *Vallisneria spiralis* has no stalk and forms and releases pollen below water

replant them again and again during the months March to August. About 2 or 3 weeks after replanting, one parent plant will sprout two to three root runners on which three to seven new plants will arise. After this, as a rule, no new runners are made. As soon as the runners have grown sufficiently strong they are uprooted with the parent plant, separated and planted again. So the propagation continues.

So-called *V. gigantea forma rubra* is, in fact, *V. neotropica*. A novelty of recent years is the so-called *V. gigantea forma tortifolia*. It resembles *V. americana* (= *V. spiralis* var. *tortifolia*) but it is much more robust. It is often regarded as a hybrid of *V. gigantea* and *V. americana* but it is probable that this plant, reaching about 28 in. (70 cm.) in height, with very densely coiled leaves, has been obtained by selection from *V. americana*, which often has tightly coiled leaves.



Female flower of *Vallisneria gigantea* (enlarged)

It Spawns as it Leaps — the Splash Tetra

By J. LEE

THE splash tetra, *Copeina arnoldi*, is a peaceful and good community fish, a slender, streamlined species that rarely exceeds more than 3 in. in the aquarium, with the male being the slightly larger fish. Sexing is easy enough as the male's dorsal is longer than the female's and more wing-shaped compared with her shorter, rounder fin. Furthermore the male has a bright white or silvery area at the front base of the dorsal with a blackish edging to it. These markings are absent in his mate but the female's dorsal carries a reddish spot near the centre. The anal and ventral fins show a diffused red colour if the fish are in good condition and content in their aquarium.

This species has quite astonishing breeding procedures, which have to be witnessed to be believed, and this I was able to do when breeding them. I had bought a dozen young fish and had brought them on to maturity over months of good rich feeding with sifted small red daphnia, small ghost larvae, whiteworms, Grindal worms, finely scraped dried meat and liver and very tiny earthworms (pulped). The fish were given plenty of room in a 24 in. by 12 in. by 12 in. tank to themselves in water that did not go above DH 8 hardness with a slightly acid reaction. The tank itself was shaded from excess of light.

The tank prepared for breeding was 18 in. by 12 in. by 12 in., the base and sides of which were of grey slate with clear glass back and front. After the

tank had been cleaned out, about 9 in. depth of water with a neutral or slightly acid reading was put in. A layer of peat moss (boiled in freshly collected rainwater) was placed over the base to give the tank a dark interior. No plants were added.

Knowing that the fish leap out of the water to spawn and lay their eggs well above water level I looked around for something firm to provide a spawning site, and after some thought I decided to strap a piece of rough blue slate under the cover glass and fix it with aquarium sealer.

This did not turn out very successfully and in fact seemed to frighten the breeders a little. So, for my second plan, I found a piece of very rough crinkled glass with sharp niches and crevices. This I cut to the size of the tank top and on this and on the cover glass I painted an area about 8 in. by 6 in. near the centre with flat black paint. One good male in excellent condition and a nicely rounded female full of eggs (she being slightly the smaller fish) were put into the tank at dusk and allowed to settle. The water temperature was 75°F (24°C).

For the first 5 or 6 days the fish inspected their new quarters over and over again, the male displaying in courtship his beautiful colours of salmon pink and wine-red fins. On the seventh morning

both fish were under the darkened region near the tank centre. The male's colours were breathtaking and the female was in good colour, too, although she was quite calm. During the next few hours I witnessed one of the most fascinating sights I had ever seen in the aquarium—I watched 'without moving a muscle' so that I might catch every fine detail of this very unusual, fast spawning sequence. Indeed I got as close as I dared and looked through a powerful magnifying glass. The two fish would leap as one from the water, in this centre area, jumping in an arc over the surface. As the female turned at the highest point of the jump, the male right behind her, the eggs were released. It is my theory that the top lobe of the male's caudal fin, which is pointed and longer than the bottom lobe and bends over the female, is used as a booster lever to push the female up. The fish continued over a few hours, jumping in and out of the water, until the female was spent of eggs. Large flat rocks 2 or 3 in. above the water line have been used as a spawning ground with success.

Now here, perhaps, is the most remarkable point of the whole procedure and one that is hard to believe. After the jumping was finished and I was able to look at the jelly-mass of eggs I could see that none had been overlaid and were even a good distance apart and, what's more, it subsequently turned out that the eggs were very nearly all fertile. *Copeina arnoldi* are not, in fact, a difficult fish to induce to spawn provided you have good stock and they are well conditioned.

To return to the eggs that have just been laid—

the final stage of the spawning behaviour is as amazing as the rest. The male takes over now and by leaping and swirling the water surface, lashing and spraying and splashing about with the long pointed lobe of his tail he continuously sprays and keeps the eggs moist. This goes on for the 3 or 4 days that elapse until the embryos can be seen in the eggs, after which the fry fall off the cover glass into the water. *Copeina arnoldi* are good parents and it is reported that they may be left with their young, but I was taking no chances and removed my breeding pair after a few days.

This unusual spawning behaviour raised quite a few queries in my mind. The male performs his duties in preventing the eggs from drying out faultlessly but what if he were taken away? Would the eggs remain moist enough without his efforts? What if the eggs were placed beneath the water-line with slight aeration; would this be sufficient for their development? Or if the eggs were taken away from the male would he know and stop splashing or would he continue his performance?

The fry grow rather fast on a first food of Infusoria, suspended yolk of egg or Liquifry, and then brine shrimps, micro worms and sifted fine foods.

The splash tetra is a member of the family Characidae and named after an American scientist E. D. Cope and J. P. Arnoldi of Germany. Its native waters are those of the lower Amazon, and to achieve and witness a spawning of these fish is bound to satisfy the thirst for knowledge of any aquarist.

Book Review

AQUARIUM FISHES AND PLANTS. By K. Rataj and R. Zukal (translated by Daniela Cowan). 122 pages, 36 colour plates. Spring Books, Prague; published in U.K. by Hamlyn, London. 90p.

ONE has to view this book in the light of its extremely modest price of 90p, which, for its size (8½ in. by 10½ in.) and generous colour plate content (36) is quite remarkable. Its introductory pages contain some highly questionable statements like 'plants can live without fish, but fish can only live without plants with the help of a whole range of technical aids'. There are also some oddities that arise from translation, such as 'plants... emanate carbon dioxide' and 'hydra

... eat paradise fish and gouramies'. Such statements as 'predatory fish do not accept dried food' will also be challenged by most readers.

The book does, however, forward the notion that aquarium keeping in modern centrally heated homes is a distinct advantage for the house plant enthusiast, as the enhanced humidity counteracts the drying influence of conventional heating apparatus.

In the main body of the text, some 36 fishes are described, each commentary being accompanied by a colour plate showing both the species and a plant originating from the same geographical area. Descriptive and cultural notes on the latter are also included. The plates are very much better than the text, since this is stereotyped to a degree and contains some very curious information. In numerous cases it is stated that a species breeds at x°F and spawns at y°F, the second temperature usually being up to 10° higher than the first!

I think that 'lives' or 'thrives' should be read in place of 'breeds', throughout. Then, on page 20 it is said that the clown loach has been bred since 1936, but also that it has not been bred in captivity.

Overall, the book presents some rather ill-assorted facts for the beginner—for it is not for the more experienced fishkeeper—but its real value is as an introduction to what many common species really look like. The plant drawings are especially faithful and J. Maly is to be congratulated on a very fine job. Many of the plates are worth framing, so even if you only buy this book to dissect for this purpose, by all means do so. If the effort proves too much for you, don't despair, as you will nevertheless have an addition to your library which will offer pleasant browsing if not an actual fund of scholarship.

R. PINKS

A Catfish for the Specialist

Pimelodus clarias



By
J. ELIAS

Photograph
by the author

THIS splendid example of the catfish family Pimelodidae comes from a relatively wide area covering central America and the northern and central parts of South America (excluding the Andes) together with the islands that comprise the West Indies. In the wild it reaches a length of 30 cm (12 in.) but imported specimens are usually much smaller than this; this is not just because of the problems of importing larger fish but because with age the coloration of this species fades and the distinct black markings become unrecognisable.

On a good, plump specimen the area around the abdomen is glistening grey with bluish overtones. The body is tapered and the mouth underset. A pair of very long 'whiskers' adorn the upper jaw and two much shorter pairs protrude from the lower. The dorsal fin and the pectoral fins are tipped with small spines, a wound from which in large specimens can cause pain and inflammation and even, on occasions, blood poisoning. The body and fins carry black markings, that gradually disappear with maturity. This species is equipped with a supplementary air-breathing organ.

These fish are quite undemanding in their environmental requirements, needing only moderately acid or neutral water at a temperature of 72–79°F (22–26°C). They are nocturnal and during

the day they will seek cover in clumps of plants, amongst rocks or even under stones. They show some preference for live foods such as tubifex or blood worms, but are otherwise quite happy to forage on the bottom. Sex differences are unknown and there is no record of their breeding in captivity.

My own memories of *P. clarias* in our permanent Aquatic Exhibition will remain with me for a long time to come. It all started the very first time we tried to catch the fish. Whilst it was quickly induced to go into the net it was not nearly so keen to come out again. The little creature stayed there, with its erect spines firmly embedded in the fabric of the net. We tried everything possible, but a pair of scissors was the only remedy. With a second specimen we again had to destroy the handnet—by now we had just one net left in reserve and at this rate we would soon be completely without tools. We came to the conclusion that we would have to try catching them by hand. The hunt was on! But we soon discovered the effectiveness of those spines on human skin—in no time all the people around were scratching themselves. However, we were successful by this method in the end. I got the

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A Filter for Bare Aquaria

By F. W. COLES

THE question of filters, in one form or another, frequently crops up in aquarists' discussions. Of course, the circumstances under which the filter is to be used usually form the deciding factor as to which kind is preferred. For a community tank the undergravel filter is widely used, as it also is for marine aquaria, and people who dislike these filters, for whatever reason, usually adopt an outside filter of some kind. The main criticisms of these filters are that the undergravel type tends to restrict plant growth unless a fairly thick layer of gravel is provided, and the outside filter is somewhat restrictive in the depth of water that can be used.

I have written previously about fish breeding in fish houses with bare tanks (without plants or gravel), and under these conditions the types of filter applicable are further restricted. The undergravel type is out, and the outside filter is, too, because if you need to reduce water level for breeding, or fry rearing, the filter will not operate. The only types suitable then are inside filters of one kind or another. The ones available, corner filters, sponge type etc., unfortunately are usually of insufficient capacity, and need very frequent cleaning if they are to remain effective.

Obviously the best type of filter for a fish house is the closed circuit, water-pump type (Eheim etc.), which are very effective. They are also very expensive, and can only be used in one tank at a time, although they can be changed from one tank to another quite quickly and easily. I have one and would not be without it, but feeling the need for more and larger capacity bottom filters to be available, I constructed one, which after a reasonable trial seems to fulfil the need at a really minimum cost.

My filter was made from a length of plastic fall pipe, 2½ in. inside diameter (which can be obtained from any builders' suppliers in the form of offcuts, if you are persuasive enough), and some plastic sheet from which to cut the discs. No doubt some of the stiffer plastic containers could be used for this, as well, but a small piece of stiff plastic or perspex can be obtained from model shops if necessary.

The filter consists of a length of plastic tube laid flat along the bottom of the tank. This tube has a perforated disc at one (intake) end, and a chamber formed by two discs at the other, these discs being

separated by a spacing ring to form a chamber into which the airlift tube to house the airline is inserted. The inner disc of these two is perforated, but the outer one is not, and this is the only water-tight joint required, with the exception of the hole for the airlift tube, which must also be a tight fit.

First cut your plastic tube to the required length; 1 in. less than the inside length of the tank will do. Then, from the plastic sheet, cut the three discs required. This can be done by using a short length of tube as a guide, and scribing the circle required by running a sharp point round the inside. I used the leg of a pair of compasses, but anything with a sharp point will do. Cut out the discs with a pad saw, or cut out a square and then trim the corners off, and finish the edge with a file or rasp to the scribed line.

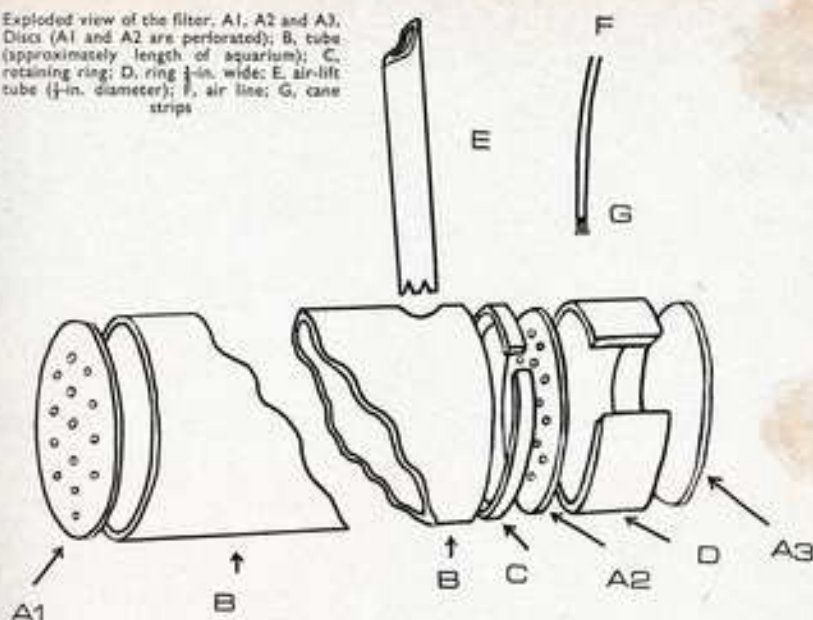
The disc for the intake end should be reasonably tight in the tube, but can be cemented in with silicone rubber if necessary. This disc must be drilled with a small drill to allow water in, and keep fry out. The inside disc, which must also be drilled, can be a slacker fit and needs to be removable. As mentioned above, the third disc at the airlift end must be a good fit, with a watertight seal if the filter is to operate efficiently.

Cut two rings of tube from a spare piece of pipe. The thickness of one is not critical as this is merely a retaining ring, but the other needs to be approximately ¼ in. wide to allow clearance for the airlift tube that will contain the airline. Cut a piece out of each ring. For the retaining ring this cut needs only to allow the ring to close sufficiently to be pushed into the tube; the other ¼ in.-wide ring needs a segment about 1 in. cutting out, as in addition to making it possible to slide it into the tube there must be a gap left to clear the entry of the airlift tube.

Drill a hole in the side of the main tube 1 in. from one end and widen it out gradually with a round file, or sandpaper wrapped round wood, so that a length of ¼ in. tube can just be pushed in. (This tube cannot be cemented in, as it needs to be removable, but the fit must be watertight.) The ¼ in. tube is merely a piece of the plastic tube used for siphoning and is sold at all aquarists' shops. Garden hose will not do because it is ribbed on the outside and would not give a watertight fit.

To assemble this filter, first insert the perforated

Exploded view of the filter. A1, A2 and A3, Discs (A1 and A2 are perforated); B, tube (approximately length of aquarium); C, retaining ring; D, ring $\frac{1}{2}$ -in. wide; E, air-lift tube ($\frac{1}{2}$ -in. diameter); F, air line; G, cane strips



disc at the intake end of the main tube and silicone it in place. Then insert the retaining ring and silicone this in place. This is fixed past the airlift tube hole and must allow room for the inside disc to be inserted as well. When the silicone has cured, insert your filter, finishing with a pad of filter wool up to the retaining ring, and place the inside disc in position, keeping it there by inserting the $\frac{1}{2}$ in. ring. Next insert the airlift tube into its hole and then the end disc, which must be firm and water-tight. If it is at all slack, place a piece of thin plastic (bag etc.) over the tube end and then insert the disc and trim off neatly. As this end disc will need

to be pulled out to clean and replace the filter media, I drilled a hole in the centre so that a bent wire could be inserted to pull it out, and then plugged it with a removable piece of hardwood.

The airline can be pushed nearly to the bottom of the airlift tube, but as this is not very efficient without a diffuser stone, and these stones are usually too large to go inside a $\frac{1}{2}$ in. tube, I found that a good substitute could be made by cutting a small piece of bamboo into tiny strips and pushing as many as possible into the end of the airline. This makes a good efficient airlift that will work perfectly.

A Catfish for the Specialist

Continued from page 495

impression that these little demonstrations were a main cause of the rise in the number of visitors to our Aquatic Exhibition.

These animals are not particularly friendly towards each other, our largest specimen adopting a very aggressive attitude towards his smaller companions. It attacks with such speed and ferocity that we have had to intervene. So far, however, other species of fishes have not been attacked by the catfish at all, almost as though they had not been

noticed. It is curious how these fish, which usually lie quite motionless, can find their way to the opposite end of the aquarium in a fraction of a second; they achieve astonishing speed in such a short interval. Breeding in the wild takes place in well-shaded surroundings, the youngsters using the many hiding-places provided for them on the bottom of the river. And they never completely lose this youthful shyness, though in time they can be induced to feed during the day.

Duels between the fish seldom result in serious injury but a continuous check should be kept on their condition and appropriate action taken in case of injury. May I offer you one last word of advice—always keep a good supply of nets in reserve!



Dutch Aquaria are Gardens Under

By W. A. TOMEY

Photographs by the author



Harmonious blend of water plants: Left (back) water wisteria (*Cyrtosolus triflorus*), (front) *Bacopa amplexicaulis*; centre (back) *Alternanthera lilacina*, *Blyxa japonica*, (front centre) spotted African lily (*Nymphaea lotus*), (front) *Heteranthera zosterifolia*

FROM what I read in aquarium literature in English, I get the impression that there is one rather big difference between the aquarium hobby in Holland and that in England. Perhaps this arises because English aquarium hobbyists are more established in keeping tropical freshwater fishes than they are orientated to cultivating water plants.

It also strikes me that English aquarium hobbyists have a greater interest in technical matters concerning the aquarium. In Holland we are more interested in keeping the many different species of water plants and often the technical matters, although important, take second place. Most Dutch aquarium hobbyists see their aquarium as an underwater garden in which tropical freshwater fishes are kept.

There are a very great number of species of tropical freshwater plants available and we try to arrange these in the aquarium in such a way that the greatest possible contrasts arise in colour and form. How can one establish a really well-planted home aquarium? First we can select the position for the aquarium in our living rooms, also taking care that it fits in with the lay-out and furniture (do not use an old-fashioned style tank in bright modern surroundings!). For a simple aquarium we can use

Planting like species in groups gives the natural effect shown opposite. However, large 'solitary' plants like the beautiful *Scheuchzeria palustris*, Ratai, seen in the picture to the right are given individual positions in a display.



Water

unwashed coarse river sand on the bottom, over which a layer of well-washed sand is spread out. If you want to include some of the special and more demanding plants you can mix some peat dust and some silt into the bottom sand.

After the aquarium has been filled with water, it is quite simple to plant the plants with a little silt, although some practice is required to do it properly. Arrange the water plants carefully according to their size and length of the leaves and take account of different colour and form of the leaves. Don't forget that most species of tropical water plants show their own characteristics better if they are planted in clusters (although this does not apply, of course, to typical 'solitary' plants such as large *Scheuchzeria* and *Apogonon* species). When planting is finished, there comes the most difficult time for the keen aquarist, that is to keep the aquarium for a couple of weeks without fishes! In such a period the plants have an undisturbed time in which their roots can make their way into the bottom substance. After this 'natural' environment is established we can put the fishes into the tank.

Plants can't live without light and really good illumination is necessary, although this does depend on the position of an aquarium in the room. It usually works out best to establish what the required illumination must be by experiment and experience. Here in Holland most of the modern aquaria are built to the length of fluorescent tubes and with this form of lighting the best result can then be expected if we proceed on the basis of 1 watt per centimetre depth of water (30 watts for a 22 cm. depth). Obviously, in any installation of lighting equipment above the aquarium we take the best possible safety measures.



A small-leaved plant but one that forms a beautiful group is *Micranthemum micranthemoides*. Colour of the leaves is pale green.

For a balanced and decorative effect to be maintained the planted aquarium requires regular attention. In this tank as in an unattended garden, the plants have gone 'wild' and the whole scene is untidy. Judicious pruning and uprooting can soon restore the required picture.



Here are some general principles to observe in creating a pleasing aquarium scene.

If possible use a tank that is broader than high! Place the bottom medium so that it is not seen above the lower front edge of the aquarium frame.

Plant from the back of the tank towards the front.

Allow for variegation in form and colour of the plants when planting them and avoid rectilinearity.

Place high against low, broad against narrow, coarse against fine, red against green.

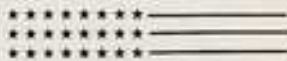
Avoid having eye-catching plants right in the middle of the aquarium.

Also take care to build up the plant masses asymmetrically.

Generally speaking, provide as much contrast as possible.



TRANSATLANTIC TOPICS



By JIM KELLY

Similar in leaf form to *Ludwigia nodiflora*, grows about 6 in. per month in the aquarium and costs the hobbyist nothing! If that hasn't whetted your appetite, it ought to in view of the high price of plants.

I am referring to the grapefruit plant and though it has had a passing mention before in these columns, it is worth repeating as I think newcomers to the hobby may like to experiment in raising this beautiful addition to aquarium decoration.

Fill a small-sized plant pot with John Innes no. 2 potting compost, to 1 in. from the rim. Make small holes in it, about 1 in. deep and the same distance apart, with a

pencil, and place the seeds from your next breakfast grapefruit in each. Fill the holes with compost, and, after tamping down, water liberally.

If the pot is kept in a reasonably warm room the shoots will start to show in approximately 4 weeks. This can be speeded up by enclosing the pot in a plastic bag.

When the plants are 2 in. above the soil, remove them and after gently washing them under a tap replace in the aquarium gravel. The plant pot can now be replanted with fresh seeds to ensure a regular supply of this attractive addition to our aquarium. (Best results are obtained from the 'plop' seeds.)

Ever wondered how some of the 'common' names we give our fishes originated? Many are obviously derived from outstanding external features such as the bloodfin, half beak or head-and-tail-light, but you have to be very careful when using these names because many can be parochial.

A case in point is the *Theyoseus sanctae-mariae*, which in Europe is often referred to as the hockey stick, yet is always penguin in the New World. It can be confusing.

One pet shop in Michigan, the 'Tropical Fish Pond', owns and has on display a rather repugnant toadfish (*Coryrichtys trispinosus*), named 'Ralph' by its owner. As its scientific name is such a mouthful it's no surprise that Ralph is now becoming synonymous for this fish all over the Detroit area.

I remember asking a well-known American expert about the derivation of the name of that popular cichlid, the oscar. He told me that when *Astronotus ocellifer* was first introduced it soon became the king pin of the aquarium world and was

named after the well-known Hollywood top award!

* * *

When a fish is to be found in both the Atlantic and Pacific sea boards of the United States one would reasonably expect it to be plentiful and readily available for hobbyists' tanks—assuming its suitability, of course! The fact that the fish is one of the 400 species of goby that inhabit the inshore coral reefs should clinch the matter.

Yet, paradoxically, the spotted sleeper goby isn't so popular or readily available. Perhaps its scientific name (*Dormitator maculatus*) has a bearing on the matter, because when this fish is startled or frightened it promptly goes into a coma reminiscent of Lewis Carroll's dormouse.

Though not very active at the best of times, its colouring of grey and brown spots is enhanced by a blue spot behind the operculum and a similar coloured edging to the anal fin.

So realistically does this fish play dead that it has often been removed from the tank by the unsuspecting owner before its 'carcase' could foul the water!

* * *

Two U.S. aquarists who have been enjoying success in breeding dwarf cichlids are Cam and Sida Harlan.

In a 15-gallon tank they put six *Apistogramma coarctata* (the male fish displays a bright orange in its exceptionally long dorsal fin). With frequent changes of water and a diet of adult brine shrimp and tubifex worms, the females soon filled up with eggs.

In due course eggs were deposited on the outside surfaces of ceramic pots, containers that had been found easier to sterilise than the usual glass pots. The Harlans found that it was always the female who guarded the egg clusters, and because they chased away the males it was difficult to say which was the father!

Rather than run the risk of the eggs being eaten, Cam removed them and hatched them in a separate tank, in water heavily coloured with methylene blue. A fine airstone was kept running to ensure good water circulation. The eggs hatched in 3 days and by the end of a week the fry were free-swimming and eagerly taking micro worms.

AquaGLOSSARY

No. 6

A PFM guide to the meanings and accepted pronunciation of the scientific names of aquarium subjects, arranged by word-roots in alphabetical order

Amphi (Greek): both sides. Pronounced 'am-fee'. For example, the marine anemone fish genus *Amphiprion* ('am-fip-ree-on), so named because the gill-covers on both sides have saw-like edges (*prion*, Greek: saw), and the synbranchoid eel *Amphinoxus cuchia* ('am-fee-noose kew-kee-ah'), which has an air-containing lung beneath the skin on each side.

Macula (Latin): spot. Pronounced 'mack-yew-lah'. The trivial names *maculata* ('mack-yew-lah-tah') and *maculatus* ('mack-yew-lah-tuss') have been used many times for fishes having characteristic spots or blotches of pigment. Examples are the platy (*Xiphophorus maculatus* ('ziff-off-or-uss mack-yew-lah-tuss'), the spotted metynnis *Metynnis maculatus* ('met-tin-iss mack-yew-lah-tuss'), *Otocinclus maculicaudata* ('ott-ob-sink-luss mack-yew-lee-coe-dah-tah'), and *O. maculipinnis* ('mack-yew-lee-pin-niss), and the marine fishes *Chaetodon unimaculatus* ('kite-oh-don yew-nee-mack-yew-lah-tuss') and *Dascyllus trimaculatus* ('dass-kill-uss try-mack-yew-lah-tuss').

Nigro (Latin): black. Pronounced 'nee-grow'. For example, the trivial name *nigrofasciatus* ('nee-grow-fash-ee-ah-tuss') (and *nigrofasciatum*) indicating the possession of black bands is given to the black ruby barb (*Barbus nigrofasciatus*), to the spotted danio (*Brachydanio nigrofasciatus*) and to the convict cichlid (*Cichlasoma nigrofasciatum*). The upside-down catfish, *Synodontis nigricentis* ('sin-oh-don-tiss nec-gree-vent-iss'), has its black undersurface referred to in its trivial name (literally black belly; *ventra*, Latin: belly).

Ocell (Latin): little eye. Pronounced 'os-sell'. Eye-like markings on the body of fishes are referred to as ocelli and are often described in the scientific name by this word root. For example, the oscar, *Astronotus ocellatus* ('ast-roh-no-tuss os-sell-lah-tuss'), which has a red-bordered 'eye-spot' on the caudal peduncle. Also, the beacon fish, *Hemigrammus ocellifer* ('hemmy-gram-uss os-sell-if-er'), the dwarf cichlid *Pelmatochromis subocellatus* ('pel-mat-toh-crow-miss sub-os-sell-lah-tuss') and the pencil fish *Nannostomus ocellatus* ('nan-noss-stow-miss os-sell-lah-tuss').

Sub (Latin): under, below. For example, the trivial names of the N. American blind cavefish, *Typhlichthys subterraneus* ('tiff-lick-thiss sub-ter-rah-nee-uss'), the dwarf cichlid, *Pelmatochromis subocellatus* ('pel-mat-toh-crow-miss sub-os-sell-lah-tus) and the water plant *Ceratophyllum submersum* ('ker-rat-off-fill-um sub-mer-sum').

Taeni (Greek): band or ribbon. Pronounced 'tee-nee'. The black-striped rasbora, *Rasbora taeniata* ('raz-bor-ah tee-nee-ah-tah'), the half-lined hemiodus, *Hemiodus semitaeniatus* ('hemmy-oh-duss semmy-tee-nee-ah-tuss'), the one- and three-striped African characins, *Nannostethus unitaeniatus* and *N. tritaeniatus* ('nan-nee-thee-ops yew-nee-tee-nee-ah-tuss and try-tee-nee-ah-tuss').



by
ARPEE

Personal COMMENT

I HOPE that somebody not too far away will one day supply me with one or two of my favorite silvery tetras—*Rhipidichthys orbicularis*, for which I have been on the look-out for several years. In the meantime I have had to compromise with substitutes, but have found that nothing really comes very near to filling the gap. Shopping around last year, however, I was attracted to a couple of very lively silver tetras (*Ctenopoma spilargenteum*), or knife tetras as they are sometimes called. I cannot remember their ever having been on sale locally in any numbers, but even if they had I should have been put off by the reputation attributed to them by McInerney in ALL ABOUT TROPICAL FISH, who rates them as being fin-nippers, plant-eaters and skulkers. The THE LOOSELEAF EDITION describes them as being unexpectedly large when fully grown, bullies and always on the go. Hervey and Hems, in FRESHWATER TROPICAL AQUARIUM FISHES, are more restrained and catalogue the fish as being peaceful and fond of eating algae. All these books give detailed descriptions of the fish, but to me it is markedly a tall and rather thin silvery fish with a black mark at the base of the tail and another on the 'shoulder'. None of them mentions the area between the vent and the tail, which is extremely glittery and which drops away at the trailing edge to such a sharpness that the cross-section is immediately suggestive of that of an old-fashioned cut-throat razor.

I bought my fish somewhat on impulse, but I had a feeling that there was a hidden catch, though I couldn't quite place it. As I intended putting them in my 36-in. tank of assorted tetras—now lorded over by the red-tailed black shark—I was somewhat apprehensive about the prospects of continued equilibrium, but I decided to chance it. I usually take the view that even where marginal community fish like this are involved, success might be achieved by the introduction of smallish specimens. To have added adult fish would almost certainly have spelled disaster, but it often happens that young fish will adapt themselves to a given environment without unduly displaying their nastier tendencies.

There were no troubles with these fish during quarantine, not that I expected undue difficulty

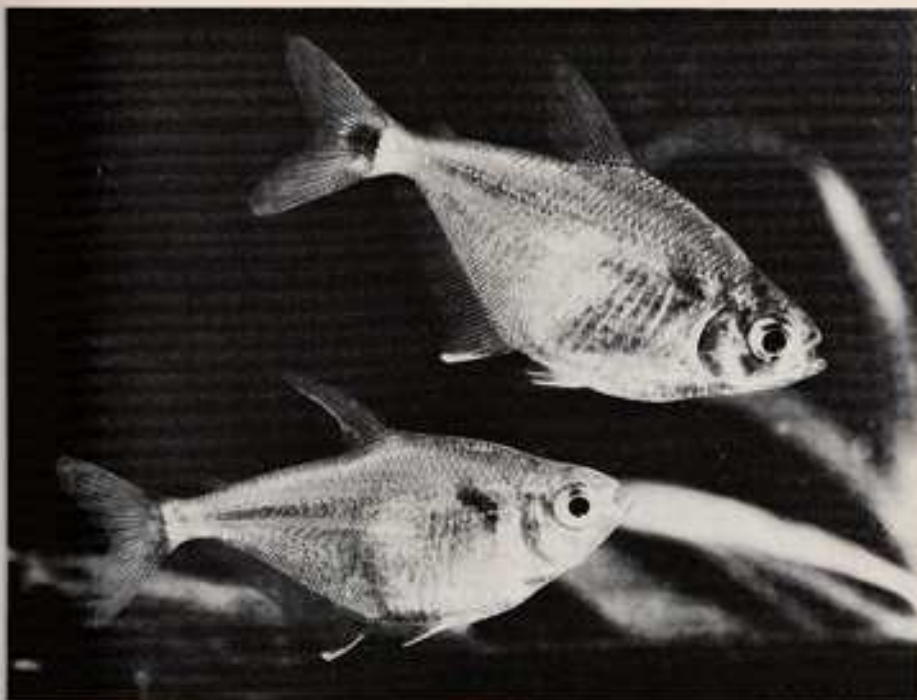
with a species otherwise described as hardy and not too particular about tank conditions. Probably the worst thing you could do to them would be to condemn them to too small a tank, and nothing under 36 in. should really be considered suitable. Their appetite was quite embarrassing, and they accepted every sort of live and dry food offered, and then came back for more. Their liveliness was refreshing and they disported themselves to and fro all the time, to such an extent that I feared their potential as aggressors right from the start. The only consolation was that the shark had enabled the other occupants of the main tank to sharpen up their evasion tactics. I was certainly a little worried about the neons!

I cannot at the time of writing state whether this is a success story or not. The silver tetras were transferred to their new home about 2 months ago and they have so far behaved quite well. They have grown extremely quickly to a little over 2 in. and the rate now seems to have slowed. So far as attractiveness is concerned they have more than paid for their keep on account of their mobility and their very real presence. Far from skulking they have kept well to the fore, mainly sporting with the larger fishes in the tank. The smaller creatures seem to have been ignored so far and I can detect no damaged fins anywhere; the plants, never particularly luxuriant, have so far got away unscathed, but they are admittedly of the tougher species of *Cryptocoryne* and *Bacopa*.

Always mindful of tempting fate I add the note of caution that these are early days yet, and I would therefore suggest to the beginner that he should treat this species with due discrimination. The present boisterousness could so easily develop into outright aggression, especially if at any time I am tempted to overcrowd the tank, and the plants may owe their survival to the mat of *Riccia* which covers much of the water surface. It may help to keep a plentiful food supply going, though I must admit to being impressed by the way in which this species appears to be well content with prepared foods, even for protracted periods. Perhaps the best precaution one can take with fish such as these is to have another sort of community to which they can be transferred if trouble breaks out, and in this I am fortunate in having the cichlids in the apartment below. The only unknown factor, though, in the event of sudden transference, is who would be most terrified of whom, and I am taking no bets.



It is interesting to reflect that at any given moment one-third of all aquarists and pondkeepers are trying to get rid of algae, one-third view it with total indifference and the remaining third is trying



Pair of silver or knife tetras (*Ctenbrycon spilaris*)

Photo: E. Kah

like anything to induce it to grow. For practical purposes these minute forms of plant life which constitute the algae may be divided into those which are planktonic by nature—that is, they are 'wanderers' in midwater—and those which attach themselves to suitable anchorages or footholds. Readers who heeded my advice to try their hands at microscopy will find much to fascinate and puzzle them in this group of organisms, and the great diversity which exists accounts in some ways for the varied forms in which they show themselves in the water.

It is perhaps the pondkeeper who will be the most blessed or afflicted by algae and the inexperienced will probably panic in the springtime when the pondwater becomes first brown and then green. If he would but give it a chance to change yet again—to clear, there would be considerably less nonsense written on this subject than in fact there is, but thanks to numerous commercial preparations and equally pernicious fringe advisers, gallons and gallons of algicides are poured into ponds between early spring and late summer. Their long-term value is virtually nil and they are about as bene-

ficial to a pond as a load of dead leaves in the autumn: they kill off the algae, which is left to rot away, which of course takes some time. Added to the other pond debris it constitutes a store of trouble under the winter ice. So much for the planktonic form. The anchored forms of algae, which assume threadlike growths, are at least a beautiful green and provide hiding places for tiny fish or tadpoles. They are easily removed in quantity if they get too rampant and are good for mulching the rose beds.

The amount of algae you get is largely dependent upon the factors of locality within the pond itself, but especially on the extent to which available sun can penetrate the water. Extensive water lily plantations will inhibit the growth of algae, and so will the presence of large quantities of creatures like daphnia, but as the latter are eaten so readily by fish, their value is limited. Thoughtful siting of your pond will make all the difference between trouble with algae and that delightful state of affairs wherein you get just the right amounts of algae at the right times. You have to study your compass and decide on possible shading media

before you commit yourself to a firm site.

From the pondkeeper to the aquarium keeper is but a step, and some indeed find their problems of algae suppression as difficult as any they encounter in the hobby. Usually, though, the aquarium keeper is in a favoured position because he can choose how much light to apportion to his tank and what it shall contain. He can add and subtract light by the use of bulbs or tubes of varying wattage. He can even control it within his tank by the skilful placement of light-sources, and he can even vary the colour of these. Floating plants, especially *Riccia*, which grows into quite deep mats, can be arranged in surface banks which keep light away from some places and yet allow it to penetrate to others. The tank scraper, aided by algae-eating fishes, are further reasons why the aquarist should feel reasonably in control of the algae situation.

All these things are physical, manual means of dealing with a potential problem, and no aquarist worth his salt will reach out for a bottle of algicide unless every other means has proved unavailing. Even so, it should be remembered that small quantities of algae, especially the static species, can be distinctly decorative and of nutritive value to many fishes. In mixed collections it is particularly important to recognise that if you kill off the algae you are probably going to kill or adversely affect

some of your fishes. This is easily avoidable by considering the tactics you should adopt and is cheaper than the bottle of chemical whose contents are undisclosed and whose function is imperfectly described on the wrapper.

The final group of aquarists is probably made up by the majority of marinists, whose initial experience of algae may actually put them off it for life. They find that, instead of the green forms which appear in their tropical freshwater tanks, a nasty brown 'fur' appears all over their favourite corals and this sometimes becomes reddish, sometimes green. Green forms they don't mind in the least, but more often the brown form persists and nothing much seems to shift it. The lack of green in the average domestic marine scene adds to the general frustration, and there are several chemical preparations on the market said to bring about the most wonderful yields of green algae imaginable. It should be said that these cannot function without adequate light-sources, but they are claimed to create the tank conditions in which the limited marine plants available will hold their own. A lot of experimentation is going on in this direction, but what the bottles do not tell you is how to restrain the fishes from eating the plants before they have had a chance to grow! Indeed, we have a most contrary hobby at times.

Readers' Queries Answered



All Egg-layers

Please settle an argument for us: are there any livebearing barbs?

No, barbs are oviparous, egg-laying. It may be that someone is thinking of *Barbus viviparus*. This barb from south-east Africa was thought to be livebearing when first dissected by the German ichthyologist Weber, who recorded the fish in 1897. He reported finding fry in the ovary. However, this observation has never been repeated and there is no reason to suppose that this barb differs in its method of reproduction from the other species in its genus.

Bleeding-heart Tetras

I have bought several pairs of bleeding-heart tetras but they seem to

be a very delicate fish and quickly die. My community tank has been operating now for nearly 6 months and other fishes do well in it.

Since you do not report that the bleeding-heart tetras are leaving disease behind them in your community tank one must assume that you are obtaining healthy stock to start with. We also must assume that you have checked that the new fish are not being bullied by an established occupant. It is then possible that the tetras are not thriving because the tank conditions do not suit them. Young *Hyphessobrycon rubrostrigatus* do not take easily to water changes and it is important that they should be given soft, slightly acid water. Mature specimens will not die in hard water but their colour fades

and young specimens can react very badly to it. A well-planted, reasonably sized (not less than 24 in.) tank containing soft, peaty water presents these fish with ideal conditions for growth.

Algae-eater

I have obtained a Siamese stone-lapping fish, which I have been told is a useful algae-eater. I do not know much else about it—presumably it is a harmless fish as most of the algae-eaters seem to be.

Garra tarsiata is a peaceful fish even though it can grow up to 6 in. in length. It is an algae-eater and you should make certain that it has enough algae to eat or else provide it with additional green matter in the form of scalded lettuce. Its common name 'stone-lapping fish' is a translation of its Thai name that describes not only its appearance when grazing over algal growths on stones but also its ability, by means of its ventral sucking disc, to hang on to stones and rocks even in swift-flowing streams. It will eat live and dried foods as well as algae and prefers a well-planted tank that gives it hiding places in which to rest.

An Egglayer for the Beginner to Breed—the Flame Tetra



Hyphessobrycon flammeus

By **RUDOLPH ZUKAL**

IT is not always easy to find the right introductory phrase to start an article recommending a certain species of fish. I would like to be able to begin: "This is a really ideal fish for everyone"—but how often can this be said, with a clear conscience, of any fish? Most aquarists buy their fish in accordance with their own tastes. And just as with dogs, where the most attractive and the bravest is always the one you own yourself, so with the aquarist the fish he tends to favour is the one with which he has had the greatest success. As I have kept a great many different species of fishes, I find it extraordinarily difficult to recommend one fish rather than another, except from the point of view of cost.

Photographs by the author

It would be simple if every aquarist had at least ten tanks and could keep just what pleased him—some livebearers, some cichlids, a few characins etc. Unhappily, the situation is usually quite the reverse, for most tropical fish fanciers own only one or two tanks, and so advice is important. The fishkeeper must ask himself, when deciding what to put in his tank: shall I get attractive and expensive fishes that will make other fishkeepers envious, or shall I get the kind of fish that I know I can provide a suitable environment for? (And I hope he will decide on the latter course.) This month's article is for the aquarist who wants to keep a beautiful, peaceful and not too delicate species. And certainly the flame tetra fits this description.

Translated by F. MARSH



A pair of flame tetras (*Hyphessobrycon flammatus*). The female is the upper fish.



The shape of the female flame tetra (upper fish) reveals that she is full of eggs. She is being closely attended by the male before spawning.

Hyphessobrycon flammatus grow to a size of about $1\frac{1}{2}$ in. and have found a welcome in aquarists' tanks since 1920, when they were first imported into Europe from their home in the Rio de Janeiro region. They are content with small tanks, need little light, and water conditions are not critical, but for optimum conditions they require a well-planted tank. A temperature as low as 68°F (20°C) will be tolerated and they can survive temperatures even lower than this without damage. Although I've

said that they require only smaller tanks, this does not mean that they can't be put into the larger community tank. On the contrary a shoal of flame tetras or a mixed group of peaceful tetras will liven up any community tank. Their food requirements are also no problem as they will take live and dried foods.

Flame tetras are similar in body shape to the beacon fish (*Hemigrammus ocellifer*) but are rather smaller. I will not repeat a description of their

After butting the female as a signal of breeding intentions, the male presses his body against and around the female and for a very brief time the pair of fish are almost stationary in the water.



appearance for they are such a well-known species that I am sure everyone will have seen a flame fish. Perhaps I should just mention the sex differences. The male is the slimmer fish, somewhat smaller than the female, and his anal fin is black-bordered. The female is larger and considerably fuller in the belly and paler in colour.

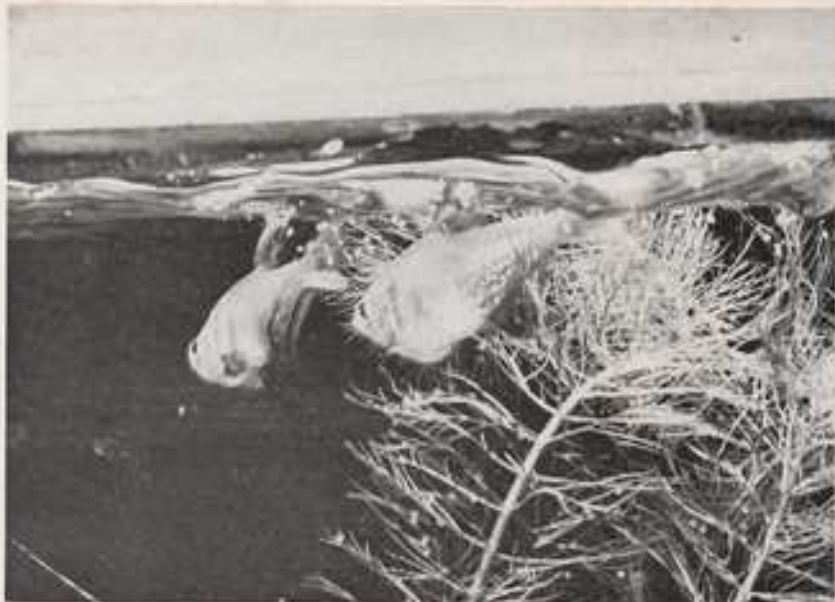
Flame tetras reproduce very easily and present no obstacles to the breeder, and for this reason it is an ideal fish for anyone looking for an easy egg-layer. Again, a small glass tank will be sufficient for the purpose—containing up to a gallon of water—and there need be no gravel but a quantity of fine-leaved

plants, *Myriophyllum*, *Cabomba*, *Hygrophila* and so on, should be present. Normal tap water that has stood for 2 days and been well aerated will be suitable. If the fish are put into the tank in the evening they can be expected to have spawned by next morning. After the spawning the parents must be removed since, like many characins, they are also egg-eaters. For the body size of the flame tetra, the number of eggs is fairly large and often amounts to more than 200. The brood are free-swimming after 6 days. For the first 3-4 weeks of their existence the young fish spend their time near the bottom of the tank, where they search for food.



The pair separate after the first spawning contact, the male (right) falling away very nearly upside down.

The moment of spawning—this time at the water surface. Movement of the fish has agitated the water surface and eggs can be seen swirling around the pair.



They are quite small and must be fed with very fine fry food. After 6 months they are sexually mature and can reproduce.

During the course of the spawning that I photographed things happened that were already familiar to me from my other spawning sequences. The female was chased and rammed by the male. The spawning took place in the plants and it was quickly over. The fish started to twist together, spun very quickly around each other, and the eggs were

ejected and immediately fertilised.

The eggs, small and crystal clear, fell to the bottom of the tank, though many of the eggs remained adhering to the plants. The spawning itself took place in different parts of the tank, even just under the water surface, while the fish were in various positions. At one time their heads might face upwards; at another time downwards, as you will see in the photographs.



Another release of eggs, taking place in a plant clump. The eggs are visible adhering to the fronds of the leaves. In these pictures the variety of spawning postures adopted is well demonstrated.

Four Varieties Without Dorsal Fins

By M. D. CLUSE

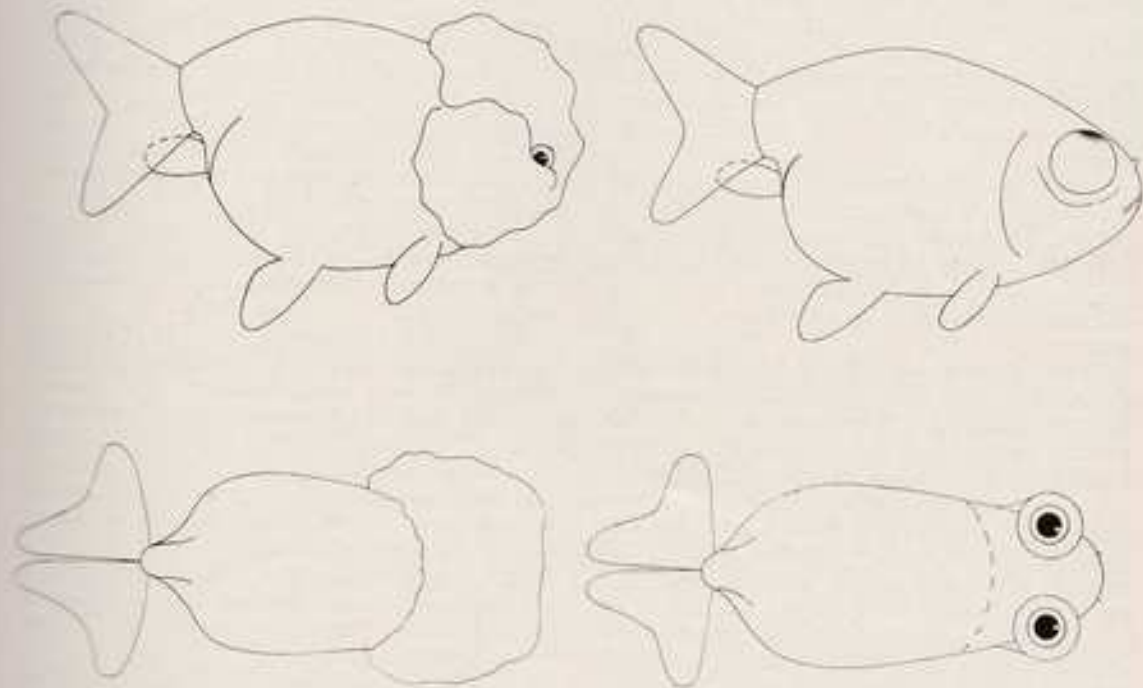
President, Goldfish Society of Great Britain

THE Chinese have nurtured some noteworthy mutations of the goldfish (*Carassius auratus*), with features among which the deep body, the long fins, the doubled caudal and anal fins are well known; but perhaps most extraordinary is the fish without a dorsal fin. In the Orient it is known as the Phoenix or Egg fish. It has a divided tail and twin anal fins. From this variety apparently have sprung four special further characteristics associated with the head.

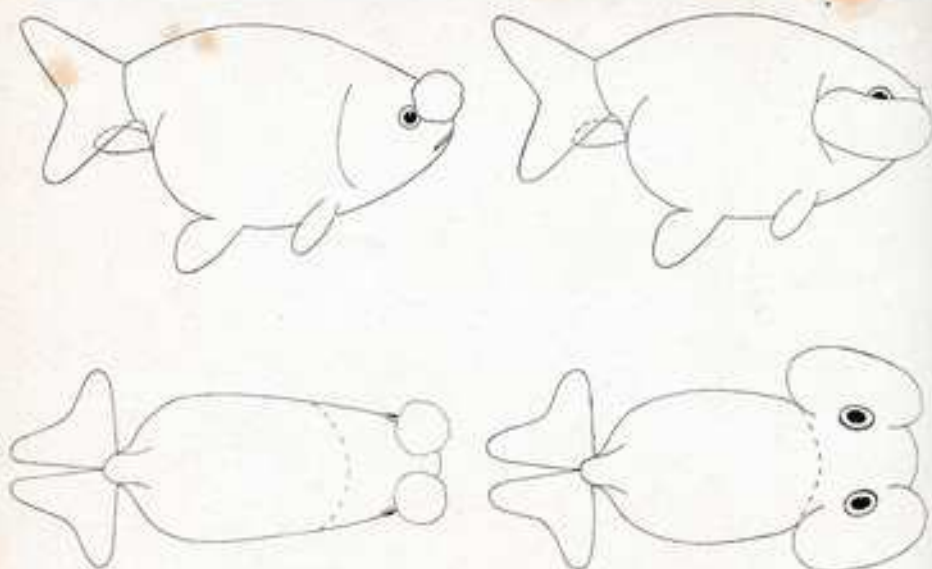
A Chinese scroll of 1772 in the Paris Natural History Museum shows a fish without a dorsal fin and with upward protruding eyes (see THE GOLD-FISH by G. F. Hervey and J. Hems). This was prob-

ably the forerunner of the celestial (Japanese, Chyotengan, gazing-heavenward fish). Incidentally it seems also to have a 'peacock-tail'—a mutation unknown at present in the United Kingdom. I think that from this may have 'sported' the bubble-eye (Chinese—Sui Hō Hō), whose sacs under the eyes, I am told, are filled with a jelly-like substance. Specimens of this variety often have upward-pointing eyes.

Another mutation was a raspberry-like growth on top of the head and down over the gill plates. It has gathered many names: bramblehead (GSGB), lionhead, tigerhead (from an oriental who had never seen a tiger, I suppose), buffalohead (a good



GSGB Standards outline drawings for (left) the bramblehead and (right) the celestial fancy varieties of goldfish. (The illustrations with this article are reproduced with permission from the Society.)



GSGB Standards outline drawings for (left) the pompon and (right) the bubble-eye fancy varieties of goldfish

American description) and Ranchu, the Japanese name. There are various other names applied when the 'hood' is incomplete. The fourth variety is the pompon (Chinese, Fung Ch'iu, velvet ball; Japanese, Hon Shu Chu Yui). This has extremely developed nasal septa in ball-like form on the nostrils.

The foregoing mutations could occur in conjunction with other genetic factors, e.g. short or long fins, double or single caudal fins, deep or long body or pearlscales. However, the Goldfish Society of Great Britain has standardised for all four varieties factors which are generally accepted in this country.

These factors are: (a) a barrel- or egg-shaped body; (b) short fins; (c) divided caudal and twin anal fins; (d) normal shaped scales.

Thus a distinct group of these four goldfish varieties can be shown in the schedules of competitive shows and the judges will find them very comparable in appearance except for the special characteristic of each of the four varieties—(a) bramble or hood, (b) upturned eyes, (c) eye sacs, (d) nasal pompons.

These fish are accepted in the metallic, nacreous or matt groups in the GSGB Standards booklet. At the time of the first edition (1950) and the second edition (1962), only the metallic group was available in Britain but the Standards catered for the

three 'shine' groups. A calico lionhead was mentioned by Innes in the 1926 edition of *GOLDFISH VARIETIES AND TROPICAL AQUARIUM FISHES*, and A. Fraser Brunner illustrated a calico pompon in *THE GOLDFISH* (Hervey and Hems, 1948). At the East London Aquarists' Open Show last autumn, Mr Joe Linale swept the board with two generations of nacreous celestials in the breeders' classes. Several years ago, Joe produced nacreous bubble-eyes. A nacreous bramblehead was entered at the GSGB September 1972 Open Show. Some immature calico pompons were brought along to a quarterly meeting in 1972 by Mr Tom Halpin.

There is a definite upsurge of interest in these fish without dorsal fins and we can expect to see more on the show benches during 1973. Because they have short fins the metallic group seem to be pond-hardy during the whole year, provided that the water is clean and is sufficiently deep to avoid solid freezing. Calico fish may prove to be a little more delicate, but whilst they are rare no doubt they will be wintered indoors.

The diagrams in outline that accompany this article are reproduced from the Goldfish Society of Great Britain's Standards booklet, which was revised and published in 1972.

The GSGB Standards booklet (40 pages, price 40p or \$1.50 U.S.A.) is available from PF Publications, 554 Garratt Lane, London SW17 0NY.



FBAS Basic Show Class Letters: A, furnished aquaria and aquascape; B, Barb; C, characin; D, cichlid; E, labyrinth; F, egg-laying tooth-carp; G, tropical catfish; H, Corydoras and Brochis; J, rasbora; K, danio and W.C.M.M.; L, loach; M, a.o.s. tropical egg-layer; N, pairs of fish; O, guppy male; P, guppy female; Q, swordtail; R, platy; S, mollie; T, a.o.s. livebearer; U, single-tailed goldfish; V, two-tailed goldfish; W, a.o.s. coldwater; X, breeders classes; Y, marine fish; Z, plants.

AT the second leg of the inter-society competition **ALFRETON & DAS** held **DERBY REGENT** to a 52 to 20 points win though Derby Regent won overall by 70 to 64. 130 fishes were benched in 12 classes. Class winners were:

Swords and mollies, Mr A. Cox. Small barbs, Mr and Mrs Jones. Large characins, Mr S. Hill. Fighter and anabantids, Mr S. Hill. Large cichlids, Mr R. Harlow. Killifish, Mr S. Hill. Minnows and danios, Mr A. Dean. Rasboras, Mr J. Wright. Livebearer pairs, Mr G. Stringer, a.v. Juniors, Mr P. Mannan. Breeders, egg-layers, Mr J. Wright. Loaches and botias, Mrs V. Wright. Best in show was a clown loach owned by Mrs V. Wright of Alfreton AS. Fishes were judged by Mr Bruce Inman.

SPA AQUATIC DISCUSSION GROUP was formed on 27th November 1971 as a result of a few friends talking together and forming the opinion that a small group meeting in each others' homes could perhaps achieve more in the way of learning and specialised forms of fishkeeping than is possible in a larger society. There are now 16 adult regular members and 11 children, and a waiting list of those who would like to join if space becomes available. The club is more than a discussion group. There were seven outings during 1972—to commercial fish houses, major aquarium shows, and to the seaside for marine catching. The Group took eighth place (out of 24) at the MAAS inter-society show at Drayton Manor Park, won second award in the Leamington Carnival and first award at the Kenilworth Carnival. The outstanding achievement amongst Society members was that of Mr and Mrs E. Bird, who won the Champion of Champions contest at BAF, taking the class trophy with the same fish at The Aquarium Show '72, winning two best in show awards and several

first and second awards in local Open Shows.

SECRETARY OF THE BRITISH KOI-KEEPERS SOCIETY, Mrs H. M. Allen, writes: 'Formed in July 1970, the Society now has over 220 members nation-wide. This clearly indicates the ever-growing interest in nishiki koi and the need of a specialist society to deal with the requirements of these many-coloured and captivating fish. The objects of the Society are simple—the furtherance of interest in koi-keeping and the dissemination of knowledge about this fancy variety of carp. To encourage a spirit of friendliness between Society members, names and addresses are published from time to time so that contact may be made with each other. Regional activities are also developing, whereby it is hoped that local groups of members will meet informally to talk about koi-keeping. By virtue of being a truly nation-wide Society, it is appreciated that meetings are few, but members are kept in touch by means of regular newsletters in which facts, information on feeding, breeding and rearing koi, also on good management and pools, are featured. Visits to importers are arranged periodically. The AGM is held in July each year. In 1972, for the first time a Society show stand was arranged at the FNAS Festival, Belle Vue, and this event will provide a meeting place in future. A guest speaker usually attends the autumn meeting during The Aquarium Show held at the Royal Horticultural Hall, London, SW1 in October. The Society is affiliated to both the FNAS and the FBAS. Anyone interested in koi-keeping is welcome to join at any time. For further details of membership, subscriptions etc., please write (enclosing s.a.c.) to: The Secretary, Mrs H. M. Allen, 1 Anthony Close, Peterborough, PE1 3XU.'

FREEZING fog did not stop some 40 members and guests from attending **WELWYN GARDEN CITY AS** AGM at the end of the Society's first full year. Chairman Mr Mike Graham summed up the year's achievements including a steady growing membership and recognition by other local societies of an 'up-and-coming' group. He congratulated the committee on establishing the Society on a sound foundation from which it could flourish and mentioned particularly Mr B. Hancock for arranging such a varied programme, and the general secretary, who had volunteered to fill the post to help establish the Society. Four 8 mm colour films on tropical marines delighted the audience. These included extremely clear close-up

spawning sequences and progress of the young up to about 8 weeks. The films belonged to Mr W. Taylor in Manchester and the Society wish him a happy retirement when he moves to New Zealand shortly. The Brucey Cup for the highest number of points in 1972 was won by Mr Glen Tipping and the Matthews Cup for fish of the show by Mr D. Fitts. The first edition of the Society's magazine 'The Scavenger' has now appeared, thanks to the hard work of Mr M. Graham and Mr B. Hancock and their wives.

WRENHAM TFS is to provide a regular water hardness testing service for members. This follows a talk and demonstration by Mr F. Oliver clarifying the general misunderstanding about acidity, chemical elements and water hardness. He said the control of hardness was essential for the growth of fish and plant life. Also at this meeting Mr C. Pritchard gave a talk on cichlids and their behaviour, particularly during breeding. Mr Roy Mather won the fish competition for breeding pairs (2 & 3, Miss Valerie Jones). Endeavour trophy results were: 1, Mr F. Oliver (671); 2, Miss V. Jones (652); 3, Mr T. Pound (632). The Paramount trophy for best fish of the year went to Mr F. Oliver. The Cunliffe trophy for the home aquarium competition was awarded to 1, Mr F. Oliver (70); 2, Miss V. Jones (73); 3 (tied), Mr T. Pound and Mr E. Jones (72). Mr F. Oliver's success in winning all the trophies is the greater achievement as he has only one tank.

RESULTS of the seventh annual closed show of **DIDCOT & DAS** are:

a.v. Coldwater: Mr A. Davidson (Stuff, 74 points); plants, Mr A. Watts; barbs, Mr J. Brown (Guppy barb, 75); cichlids, Mr J. Davidson (*Tilapia mariae*, best fish in show, 77); characins, Mr J. Davidson (*Metynna*, 70); guppies, Mr B. Turner (male guppy, 78); a.o.v. livebearer, Mr D. Whiting (velidra molly, 76); rasboras, danios, minnow, Mr J. Trinder (zebra, 77); labyrinths, Mr J. Davidson (pearl gourami, 74). Cats and loaches, Mr A. Thistlethorpe (Corydoras, 78); a.o.v. Tropical, Mrs S. Davidson (redfin shark, 79); furnished jar, Mrs C. Geary; breeders livebearers, Mr A. Watts (guppies, 70); breeders egg-layers, Mr J. Brown (*H. burtoni*, 81); best junior, A. Davidson.

Mr B. Bisson of Basingstoke judged the show and presented the trophies. The Money and Friend Shield for the Aquarist of the Year was presented to Mr D. Whiting.

BETHNAL GREEN AS were hosts to the last table show of 1972 between the **ESSEX, EAST & NORTH LONDON AQUATIC ASSOCIATION** group, incorporating Bethnal Green AS, Chingford AS, Enfield

AS, Harlow AS, Leytonstone & Stratford AS, Tottenham AS and Walthamstow AS. FRAS judge was Mr R. Baker and results are as follows:

U: 1, 2 & 3, Mrs S. Hudson (BGAS); V: 1, Mr D. Nutt (Tottenham); 2, Mr L. Crosson (Tottenham); 3, Mr D. Martin (BGAS); W: 1 & 2, Mrs S. Hudson; 3, Mr W. Dale (L & S); X: 1, 2 & 3, Mr K. Nutt (Tottenham); 4, Mr D. Adams (BGAS); X-1: 1, Mr R. Nutt; 2, Mr R. Luggan (L & S); 3, Miss R. Adams (BGAS); X-2: 1, 2 & 3, Mr D. Nutt; X-3: 1 & 2, Mr A. Chandler (Walthamstow); 3, Mr & Mrs Hudson (Walthamstow).

Although Tottenham & DAS won the evening's show, Bethnal Green were the overall winners for the year by 4 points.

THE second annual open show of HAVANT & DAS was an outstanding success despite a drop in the number (750) of entries from last year's figures. The best fish in the show was an *Aptoglossoma agassizii* owned by Mr F. Willis of Portsmouth AS. The best junior entry was a *Corydoras melanostomus* owned by Miss Fiona Etheridge of Gosport AS. Mr D. Bookes of Portsmouth was the successful exhibitor for the best coldwater entry with a fathead minnow from North America. Detailed results are as follows:

Farmfish aquaria: Ad: 1, Mrs D. Bookes (Havant); Agh: 1, Mr K. Bissone (Basingstoke); 2, Nicola Davis (Wimborne); 3, Mr R. Dean (Havant); B: 1, Mr R. Bissone (Basingstoke); 2, Mr A. Marshall (Basingstoke); 3, Mr D. Jones (Southampton); C: 1, Mr R. Bissone (Basingstoke); 2, Mr S. Crutcher (Havant); C: 1, Mr C. Fisher (Havant); 2, Mr A. Bridger (Havant); 3, Mr P. Spangher (Havant); Dac: 1, Mr A. Tracy (Gosport); 2, Mr S. Gorman; 3, Mr N. Dean; Dc: 1 & 2, Mr F. Willis (Portsmouth); 3, Mr R. Bennett (Yare); Dc: 1, Mr K. Clough (Gosport); 2 & 3, Mr D. Haines (Gosport); Dc: 1, Mr S. Prensantia (Gosport); 2, Mr K. Taylor (Havant); 3, Mr J. Hughes

(Basingstoke); Ea: 1, Mr & Mrs K. Etheridge (Gosport); 2, Mr K. Ross (Gosport); 3, Mr A. Ford; K: 1, Mr J. Hughes; 2, Mr D. Tull (Salisbury); 3, Mr N. Davis; F: 1, Mr G. Foster (Newbury); 2, Mr N. Franklin (Havant); 3, Mr D. Jones (Southampton); G: 1 & 2, Mr K. Taylor; 3, Mr C. Bees.

H: 1 & 2, Fiona Etheridge (Gosport); 3, Mr K. Taylor; J: 1 & 2, Mr D. Tucker; 3, Mr N. Franklin (Havant); K: 1, Mr R. Bissone; 2, Mr B. Crutcher; 3, Mr Kevin Holman (Havant); L: 1, Mr R. Crutcher; 2, Mr R. Adams (Salisbury); 3, Mr R. Bissone; M: 1, Mr D. Riley (Havant); 2, Mr N. Davis; 3, Mr T. Fisher (Havant).

O: 1, Mrs Le Carter (Basingstoke); 2, Mr D. Tucker; 3, Mr C. Bees; P: 1, Mr C. Bees; 2, Mr M. Mansbridge (Basingstoke); 3, Mr A. Marshall; Q: 1, Wendy Spangher (Basingstoke); 2, Mr D. Riley; 3, Mrs Le Carter; R: 1, Mr D. Tucker; 2, Mr K. Bissone; 3, Mr A. Marshall; S: 1, Mr N. Davis; 2, Mr A. Ford; 3, Mrs D. Bookes; T: 1, Mr R. Bissone; 2 & 3, Mr M. Mansbridge.

Uho: 1, 2 & 3, Mr R. Conley (Gosport); Uoi: 1 & 2, Mr J. Hopping (Wimborne); 3, Mr E. Bissone (Portsmouth); V: 1 & 2, Mr & Mrs J. Lambell (Portsmouth); 3, Mr V. Hart (Havant); Wc: 1 & 2, Mr D. Bissone; 3, Mr V. Hart; W: 1, Mr D. Bookes (Portsmouth); 2, Mr V. Hart; 3, Mr W. Ryder (Portsmouth); Z: 1, Mr W. Ryder; 2, Mr J. Hughes; 3, Mr D. Haines; X-1: 1, Mr F. Willis; 2, Mr D. Jones; 3, Mr N. Franklin; X-2: 1 & 2, Mr R. Bissone; X-3: 1, Mr C. Bees; 2, Mr D. Tucker; 3, Mr D. Riley; X-4: 1, Mr D. Stokes.

THE third and most successful of the three EAFA shows attracted 170 fishes in 19 classes. Societies present were: Norwich (N), Yarmouth (Y), Ipswich (I), Thetford (T), Bury St Edmunds (BE). The best fish in show was a *N. goodei* entered by Mr Robbin of Norwich. Other results were:

B. barb: 14 entries; 1, Mr Catham (Y., black ruby); 2, Mr Lacey (Y., black ruby); 3, Mr Holland (N., tiger); C. channa: 22; 1, Mrs Carl (I., J. brown); 2, Mr Johnson (Y., sepioid); 3, Mr Jimmy (I., J. marginata); B. caudata: 7; 1, Mr Hart (Y., normal); 2, Mr Watson (Y., angul); 3, Mr Johnson (Y., blue acari); D. dwarf caudata: 4; 1, Mr Workley (Y., J. variegata); 2, Mr Y. Green (I., shamus); 3, Mr Robbin (N., J. aquaria); E. latirostris: 12; 1, Mr R. Green

(N., pink kissing gourami); 2, Mr Watson (Y., three-spot); 3, Mr Adcock (N., kissing gourami).

F. toothcarp: 1; 1, Mr Robbin (N., N. goodei); 2, Mr Straton (Y., American flag); 3, Mr R. Green (N., P. sheri); G. catfish: 11; 1, Mr Howard (I., ayuda); 2, Mr Robbin (N., P. pates); 3, Mr Turner (I., beatus); H. rainbow: 4; 1, Mr Holland (N., weissgold); 2, Mr Wood (BE., weissgold); 3, Miss Durr (T., barbus); K. cyprinoid: 8; 1, Mr Jimmy (I., pearl daisy); 2, Mr Chapman (I., White Cloud); 3, Miss Durr (T., pearl daisy); M. a.s.s. egyptian: 14; 1, Mr Wilson (Y., ruby shark); 2, Mr Adcock (N., molting perch); 3, Mr Robbin (N., red-tail black shark); N. pairs: 12; 1, Mr China (Y., cherry barb); 2, Mr Adfret (I., chequer barb); 3, Mr Robbin (N., gold gourami).

Q. guppy: 1; 1 & 2, Mr Clark (BE.); 3, Mr Cooke (I., Q. swordtail); 2, Mr D. Kinn (T., and); 2, Mr V. Green (I., black); 3, Mr Andrews (Y., orange); R. platys: 17; 1, Mr Clark (BE., sunset); 2, Mr V. Green (I., yellow wagi); 3, Mr Jones (I., magenta); 8. Mollus: 3; 1, Mr Clark (BE., velaria); 2, Mr Andrews (Y., hi in live); 3, Mrs Pitts (Y., mollus); Y. a.s.s. livebearer: 1; 1 & 2, Mr Catham (Y., Guinean molly); 3, Mr Adfret (I., half back); X. brederi: 4; 1, Mr V. Green (I., copper); 2, Mr Koff (T., java); 3, Mr Workley (Y., angul); Y. Java: 12; Kinn (T., jiro); 2, Clark (Y., platy); 3, Saunders (Y., platy); Y. cold-water: 3; 1 & 2, Mrs Carl (I., tricolor); 3, Mr Lacey (Y., comet).

WHEN TOTTENHAM & DAS organised the aquaria section of the 'Haringey Show', coldwater was the main theme, although tropical marine and freshwater furnished aquaria were included. A much admired decorative pond was set up by Mr R. Elden and other ponds were arranged by Mr L. Bromley, of Lea Bridge Aquatics, to help decorate the marquee. An 'air ring-main' was a new idea tried out at an Open Show, and successfully supplied every tank with plenty of aeration.

The following class results were decided by Mr M. Chase and Mr R. Eaton: The Haringey Council Special Awards: Best club furnished aquaria: Stock, TDAS; best

British Marine Aquarist's Association Annual Report

MR M. STRONG, PRO of the BRITISH MARINE AQUARIST'S ASSOCIATION reports: 'The Association was formed in November, 1970 by a group of enthusiasts in the Midlands to cater for the needs of the ever-increasing ranks of marine aquarists, both tropical and native. Membership has grown steadily and now we have members from all parts of the UK and even a few abroad, notably in Malta, U.S.A. and Australia. The principal means of linking together our far-flung membership is through the medium of our monthly journal "Marine". A list of members is circulated to enable those living in the same area to contact one another. Where a number of members live in one area it is possible to form a local group,

which meets regularly and functions along the same lines as an ordinary aquarist society, i.e. the West Midland Group and the South Western Group have both organised collecting trips and also joint ventures with sub-aqua clubs to obtain otherwise unavailable specimens. Many dealers are prepared to allow substantial discounts to BMAA members and it is possible to recoup your annual subscription in discounts. A dated membership card is being introduced to facilitate the claiming of discounts. Slide shows are being compiled for hire. A Beginners Guide is being compiled to avoid the need for continued repetition of basic fishkeeping. The Judging and Show Standards Committee have devised a pointing system for

marine fishes on the show bench and it is hoped to issue detailed standards in future. A number of marine judges are available for judging at Open Shows. The Association has an attractive and distinctive badge depicting our sea horse emblem to help members to recognise each other at the big aquarist shows. By the free exchange of information and ideas the Association plays a major part in developing and strengthening the marine hobby in its many and varied facets. So why not progress with the BMAA? If further information is required please do not hesitate to write to the secretary, BMAA, Mr J. H. Vickery, 26 Rosalind Avenue, Bramford Estate, Woodseton, Dudley, Worcs. DY1 4JW.'

individual furnished aquaria Cup, Mrs J. Nutt; best marine furnished aquaria Cup, Mr J. Bramley; best fish in show Cup, Mr P. Kadwell (reftail), Single entry awards: Singletail US, 1st, Mr T. Hawley (common goldfish & London shubunkin); Singletail US, 2nd, Mr R. Dudley (common goldfish & London shubunkin); Singletail US, 3rd, Mr P. Kadwell (Brazil shubunkin); 2, Mr D. Goodbody (Brazil shubunkin); 3, Mr L. F. Clements (Brazil shubunkin); Twinstail, 1st, Mr D. Nutt; 2, Mr P. Kadwell; Twinstail Vb-a: 1, 2 & 3, Mr P. Kadwell (crusta, paracale, arata); Twinstail Vb-k: 1, 2 & 3, Mr P. Kadwell (3 colorials, bluehead, d.o.s., W); 1 & 2, Mr R. Dudley (unspangled loach, golden rudd); 3, Mr T. Flouvis (golden rudd); Breeders' twinstail XV: 1, Mr P. Kadwell (voluta); 2, Mr D. Nutt (voluta); 3, Mr A. Lawson (arata); Plates Z: 1 & 2, Mr D. Nutt (Iridota crapa, P. rana); 3, Mr R. Nutt (P. rana).

Mr FRED CAMPBELL reports: "The policy of BURY & DAS of encouraging its own members to give lectures paid off handsomely when Mr Arthur Buckley, making his debut, delivered a most interesting and informative talk on 'Breeding the Siamese Fighters'. A keen photographer, he produced a succession of coloured slides depicting vividly the mating behaviour and subsequent hatching and development of the fry. I forecast that here is a new lecturer who will soon have a full diary of engagements. Considering the inclement weather, the table show was well supported and a pleasing feature was the winning of the 'Fish of the month' class, which was for anabantids, by a new member, Mr Parton, at his very first attempt at showing. The monthly Grand Challenge medal was won by Mr and Mrs D. Glen with a particularly good specimen of the maculatus platy."

NEW chairman of the BRITISH AQUARISTS STUDY SOCIETY is Dr G. Caut, Mr H. J. Aylott and Mr F. Tomkins standing down from their respective positions of chairman and secretary—in which both have given valuable time and service to the Society that has been much appreciated by members. The Society's AGM opened with the announcement that Mr Henry White was the president for the forthcoming year. Mr D. Armstrong of the BKA gave a lecture on egglaying testis carps. Interestingly, this lecture was illustrated by live specimens that were handed around to the audience during the course of the lecture. Mr Armstrong also brought along foods and various other equipment useful in the keeping of this type of fish. The lecture was followed by a spirited discussion on points raised by the lecturer including nomenclature and taxonomy of egglaying toothcarps. After this Mr R. Forde of the BASS Research Committee announced details of the new toothcarp experiment taking place and pairs of *Aphyosemion gardneri* were

distributed to members. The meeting closed with a behind-the-scenes visit to the London Zoo Aquarium. The Committee and the Society now look forward to a vigorous and interesting year.

THE fifth and final round of the THREE COUNTIES AQUARIST GROUP Fish League resulted in a win for DIDCOT & DAS (28 points); High Wycombe 26; Bracknell and Basingstoke drew 24; Reading (3). Mr P. Ginger of Uxbridge judged the show and awarded first places to the following: F: Mr J. Jackson (Basingstoke, *A. gardneri*, 79); L: Mr M. Carter (Bracknell, *B. sidthimunki*, 78); UVW: Mr A. Wilkinsons (Didcot, shubunkin, 79); M: Mr J. Trinder (Didcot, *sebra danio*, 81); S: Mr R. Peck (Basingstoke, speckled veldera, 75); T: Mr M. Strange (Basingstoke, *P. amatus*, 78); X: Mr R. Turner (Didcot, guppies, 77). The final result of the 1972 Fish League

The programme has been announced for the three GOLDFISH SOCIETY OF GREAT BRITAIN meetings in 1973. These are being held at Conway Hall, Red Lion Square, Holborn, London, WC1, 7.30 p.m., and as well as table show classes there are the following lectures to look forward to: 7th April: *Goldfish for Beginners*, part 2, by Mr R. Whittington; the merits and demerits of handpancaking; panel. 7th July: *Part three of Goldfish for Beginners* by Mr R. Whittington; a talk by the Technical Director Mr J. Buxell on feeding the young goldfish; panel. 3rd November: *Part 4 of Mr Whittington's series; the British shubunkin* by Mr L. Emery; *Choosing next year's breeders*; panel.

won: 1, Bracknell (141) points; 2, Basingstoke (137); 3, High Wycombe (136); 4, Didcot (92); 5, Reading (63). An overspill class was also held to accommodate the large number of fish not selected for the Fish League; this was judged, at short notice, by Mr B. Binson of Basingstoke. The results were: 1, Mr M. Carter (Bracknell, *B. sidthimunki*, 78); joint 2nd, Mr G. Geary (Didcot, mollie, 76); Mr B. Lesley (High Wycombe, *A. seyma*, 76); Mr D. Geffery, Mr R. Rich, Mr L. Ligford tied for 4th place with 75 points. Apart from the fish competition, all present enjoyed a very social evening meeting many friends from the other four clubs. The Club had also enjoyed a lecture by Mr Mervyn Strange of Basingstoke, which proved to be very thought-provoking. The table show at this meeting was for livebearers and proved to be a field day for the guppy

enthusiasts: 1 and 2, Mr R. Turner; 3, Mr A. Watts.

JUDGES at the MIXENDEN FFS 8th Open Show were Mr P. Moorhouse, Mr B. Pengelly, Mr M. Jones and Mr R. Francis. There were a record 600 entries and results were:

Livebearers, Guppies, male: 1, Mr M. Laycock (Sheffield, 71); 2, Mr & Mrs Stephens (Castleford, 71); 3, Mr & Mrs Bucknham (Owlham, 71), Guppies, female: 1, Mr P. Stoddart (Don Valley, 71); 2, Mr C. Hodgson (Mansfield, 71); 3, Mr C. Woodroffe (Huddersfield, 71), Platy: 1, Mr & Mrs Daines (Doncaster, 71); 2, Mr T. Smith (Sheffield, 71); 3, Mr & Mrs Cohen (Castleford, 71), Molli: 1, Mr J. S. Hall (Aireborough, 70); 2, Mr & Mrs Stephens (77); 3, Mr L. S. Hunter (York, 70), Swordtails: 1, Mr H. Ostrowski (Morrisville, 70); 2, Mrs Charlton (Castleford, 71); 3, Mr & Mrs Bucknham (74), s.o.v.: 1, Mr J. Furness (Wellbeck, 74); 2, Mr J. S. Hall (71); 3, Mr A. Moss (Ghazal, 72), Barbs, up to 300: 1 & 2, Mr F. E. Gregory (81 and 76); 3, Mr & Mrs Blades (71); over 300: 1 & 2, Mr L. S. Hunter (74 and 70); 3, Mr Spence (South Leeds, 72), Characins, up to breeding heart: 1, Mr F. E. Gregory (Oldham, 75); 2, Mr J. Cartwright (Huddersfield, 77); 3, Mr & Mrs Blades (78); over breeding heart: 1, R. & B. Booker (Morecambe Bay, 76); 2, Mrs P. Muller (Leeds, 75); 3, Mr & Mrs Wallis (Morecambe Bay, 75), Cichlids, dwarf: 1, M. & W. Hishop (Swillington, 77); 2, Mr J. Furness (76); 3, Mr J. Whitely (74), Large: 1, Mr L. S. Hunter (80); 2, Mr J. Whitely (76); 3, Mr D. Geary (Blackburn, 76), Angels: 1, Mr L. Marsden (Blackburn, 76); 2, Mr & Mrs Smith (76); 3, Mr & Mrs Blades (Crawwell, 74), Anabantids, Cobie: 1, Mr & Mrs Cohen (Castleford, 80); 2, Mr Walker (79); 3, Mr & Mrs Smith (73), Fighters: 1, 2 & 3, Mr S. Holland (Barnsley, 78, 78 & 74), s.o.v.: 1, Mr P. H. Batchelor (Leeds, 76); 2, Mr & Mrs Blades (78); 3, Mr & Mrs Armstrong (Tral, 74), Carps & minnows: 1, Mr & Mrs Blades (77); 2, Mr & Mrs Smith (Sheffield, 76); 3, Mr D. Whitson (74), Danios and rambos: 1, Mr Jackson (Nottingham, 75); 2, Mr A. Moss (77); 3, Mr & Mrs Dickson (75), Sharks: 1, Mr J. S. Hall (77); 2, Mr R. L. Payne (Morecambe, 76); 3, Mr T. Smith (71), Flying fishes: 1, Mr N. Turner (70); 2, Mr P. H. Batchelor (72); 3, Mr R. J. Payne (74), Corydoras: 1, Mr H. A. Waring (Latham, 77); 2, Mr N. Turner (Ghazal, 76); 3, Mr & Mrs Clark (Barnsley, 74), s.o.v. Catfish: 1, Mr W. Ostrowski (78); 2, Mr D. Charlton (77); 3, Mr J. S. Hall (76), Loaches: 1, Mr F. E. Gregory (77); 2, Mr & Mrs Bucknham (75); 3, Mr C. Carl (Stratfield, 75), Toothcarps, s.o.v.: 1 & 2, Mr J. Mosley (78, 76); 3, Mr & Mrs Blades (74), Pairs, Livebearers: 1, Mr J. Whitely (77); 2, Mr & Mrs Galle (Cromfield, 71); 3, Mr G. Robinson (Roughley, 74), Egg-slayers: 1, Mr A. Moss (70); 2 & 3, Mr F. E. Gregory (Owlham, 75, 75), Breeders, Livebearers: 1, Mr & Mrs Smith (74); 2, Mr J. S. Hall (71); 3, Mr & Mrs Daines (Doncaster, 72), Egg-layers: 1, Mr D. Charlton (75); 2, Mr & Mrs Palko (Tral, 74); 3, Mr L. Marsden (73), s.o.v.: Tropical: 1, R. & B. Booker (82); 2, Mr Kennedy (Kerghley, 80); 3, Mr F. Batchelor (76), Coldwater, Common goldfish: 1, 2 & 3, Mr J. S. Hall (78, 77, 75), s.o.v.: 1, Mr D. Stoddy (74); 2, Mr J. P. Jackson (74); 3, Mr J. S. Hall (76), Loaches, Tropical: 1, Mrs B. Booker (82); 2, Mrs Cohen (78); 3, Mrs Dickson (Castleford, 74), Coldwater: 1, 2 & 3, Mrs Hall (Aireborough, 75, 74, 73), Juniors, Tropical: 1, Master C. Rushforth (Huddersfield, 77); 2, Master S. Clark (Barnsley, 74); 3, Master A. Kaye (Trop Tan, 77), Coldwater: 1, Master J. Furness (Wellbeck, 73); 2 & 3, Master A. Kaye (74, 73), Furrowed jaw: 1, 2 & 3, Mr D. Shields (Hull, 74, 74, 73), Best in Show: R. & B. Booker (Morecambe Bay, spony red, 84).

In Brief . . .

. . . AN added attraction at the first open show to be held by the **TYNE-TEES AREA ASSOCIATION** of the FRAS on 25th March 1973 at Longscar Hall, Seaton Carew, Hartlepool, Co. Durham, will be a section devoted to the fishes that have won a 'best in show' award in 1972, to be called 'The Best of the Best Fish in Show'. Schedules and entry forms will be available shortly.

. . . **BHISTOL TFC** Cup and medal for most points gained in table shows throughout 1972, open and novice,

was won by junior member Nigel Gray. The club has had a most successful year that ended with an excellent slide lecture by the Rev. R. Sutton, a missionary in South America for many years, on 'Behind the Jungle Curtain in Amazonia'.

. . . **THROUGHOUT 1972 COVENTRY P & AS** members have done very well in the coldwater classes and probably proved that outside of Birmingham MAPS they are the strongest coldwater club in the Midlands. Pride of place must go to Mr Fred Watts' magnificent common goldfish that won Best in Show at the Society's Open Show (against 600 other entries), was featured on television in 'ATV Today', won three or four other firsts at Open Shows, got a second at Bingley Hall and has been among the card winners throughout the year.

. . . **MR A. LEUTSCHER**, the well-known authority on all aspects of nature life and author of a number of books on pond life in the British Isles gave a most interesting lecture to club members of **ILFORD & DISTRICT AQUARIST'S AND PONDKEEPERS' SOCIETY** entitled 'Reptiles and Amphibians'. This Society is always keen to enrol new members, and visitors are welcome to attend meetings. These are held on the second Monday of every month at the St Laurence Church Hall, Hamilton Avenue, Barkingside, at 8 p.m.

. . . **THE** recently formed **NORTH-WESTERN SECTION OF THE BRITISH KOI-KEEPERS' SOCIETY** held its inaugural meeting in December, which was very well attended. The next meeting will be held on Sunday 6th March 1973, in

Meetings and Changes of Officers

ADDRESSOGRAPH MULTIGRAPH AQUARIUM KEEPERS SOCIETY, New Society, Chairman, Mr R. Fox; treasurer, Mr B. Gosser; secretary, Mr G. Taylor (14 Coles Hill, Gade Bridge, Hertfordshire, Herts.); librarian, Mrs A. Lawn.

AYRSHERE AS, President, Mr J. Hogg; vice-president, Mr A. Donaldson; secretary, Mr H. Spence; treasurer, Mr D. Bingham; show manager, Mr J. Watt.

BOURNEMOUTH AS, President, Mr J. Scott-Morgan; chairman, Mr B. Coombes; secretary, Mr R. Marley; treasurer, Mr R. J. Jones; show secretary, Mr J. V. Jeffrey. Meetings: first Monday of month, 7.30 p.m., Kingston Community Centre, Pelham Park, Kingston. All welcome.

BHISTOL AS, Meetings: second Monday of month, Bishopston Parish Hall.

BHISTOL TFC, Life president, Mr L. Lintons; chairman, Mr W. Holland; vice-chairman, Mr R. Toose; secretary, Mr M. Ellick; assistant, Mr C. Mew; treasurer, Mr R. Lawrence; reporting secretary, Mr G. Farber (1 East Parkway, Sea Mills, Bristol); Programme officer, Mr B. Chapman; librarian, Mrs P. Chapman. Show committee: manager, Mr G. Stone; secretary, Mr Dick. New venue: The Black Horse, Old Market, Bristol, third Thursday in month.

CLEVELAND AS, Change of venue. Albion Club, Kirkcubbin St (behind the York Hotel), Redcar, Teesside.

DIDCOT & DAS, Show secretary, Mr B. Turner; secretary, Mr D. Whiting; treasurer, Mr G. Geary. Meetings: first and third Fridays at 8.00 p.m., East Research Centre on A34 nr. Abingdon. All welcome.

EXETER & DAS, New secretary, Mr A. J. Wigmore (18 May Street, Exeter, EX4 6LL).

FANCY GUPPY ASSOCIATION, BIRMINGHAM SECTION, Meetings: fourth Sunday afternoon of month, Gills Farm Community Centre.

GRIMSBY & CLETHORPES AS, New secretary, Mr Eric Holton, 4 Saxon Street, Cleethorpes, Lincs.

HAVANT & DAS, Chairman, Mr H. Armitage; vice-chairman, Mr N. Davis; secretary, Mr Keith G. Foster (260 Middle

Park Way, Leigh Park, Havant, Hants, PO9 4NL); phone Havant 77001; treasurer, Mr G. Lillycrop.

HOUSLÖW & DAS, Chairman, Mr R. Adams; secretary, Mr H. Parish (18 The Barrons, Twickenham, Middlesex); treasurer, Mrs S. Parish; social secretary, Mr B. Nethomas; press secretary, Mrs R. Brewer; show secretary, Mr H. Platt; librarian, Mr A. Chastagnaz, P.O., Mr M. Collins; editor, Mr R. Scott. Meetings: alternate Wednesdays, 8.00 p.m., St Stephen's Church Hall, Whitten Road, Hampton. Visitors welcome.

INDEPENDENT AS, New secretary, Mr F. Cude (1100 Sloop Road, London, E17); phone 01-912 0970.

LINCOLN & DAS, New secretary, Mr B. Sellers (24 Hawthorn Avenue, Cherry Willingham, Lincoln); show secretary, Mr B. Kolan.

MEDWAY AS, Chairman, Mr L. Arnold (phone Medway 59110). Open Show manager and Society secretary, Mr J. Marshall (57 Dargens Road, Walsley, Chatham, Kent); phone Medway 67111.

ROEHAMPTON AS, Chairman, Mr J. Weller; secretary, Mrs P. Lambourne (7 Wharfedale Court, Trough Road, London, NW11 2AX); treasurer, Mr F. Furnace; show secretary, Mr D. Lambourne; assistant, Mr S. Mason; social secretary, Mrs J. Mason. Meetings: alternate Wednesdays, Mornvale Gardens, Old Peoples Club, Mornvale Gardens, Roehampton, SW15.

SEVERN SIDE ICHTHYOLOGICAL SOCIETY, Chairman, Mr R. Parry; vice-chairman, Mr B. Hollis; secretary, Mr M. Poches; assistant, Mr P. Warham; treasurer, Mr M. Price; assistant, Mr S. Austin; P.O., Mr B. James (93 Conroy Drive, Telford Estate, Shrewsbury); assistant, Mr D. Griffiths; show secretary, Mr L. Brink; assistant, Mr G. Roberts. Meetings: first night (February and 19th), Labour Club, Abbey Foregate, Shrewsbury. All welcome.

STEVENAGE AS, Chairman, Mr G. Ward; vice-chairman, Mr Cook; secretary, Mr P. Jones (54 Wildwood Lane, Stevenage, Herts); assistant, Mr B. Hancock; treasurer, Mr M. Curwath; show secretary, Mr P. Downes; assistant, Mr B. Higgins; P.O., Mrs R. McAuley; Fund Raising secretary;

Mrs Cook; FRAS delegate, Mr Rasmussen. Meetings: first Wednesday of month, 8.00 p.m., Bedford Community Centre. All welcome.

STONE AS, Secretary change of address. Mr B. Hughes (4 Harrow Crescent, Warrington, Stoke-on-Trent, Staffs. ST4 2ET); phone Ash Bank 12121.

TORBAY AS, Chairman, Mr R. King; vice-chairman, Mr Graham; secretary, Mr J. Dennis; treasurer, Mr C. Towler; show secretary, Mrs G. Gifford; assistant, Mr T. Boshay; editor, Mr M. Matthews; assistant, Mr J. Dennis; librarian and Cup secretary, Mrs M. Matthews; social secretary, P.O., Mrs P. Brown (18 Mincot Close, Watcombe, Torquay). New venue, St George's Church Hall, Shipbay, every second and fourth Tuesday of month.

TOTTENHAM & DAS, President, Mr D. Nutt; chairman, Mr R. Eldon; secretary, Mr L. F. Clements (47 Wincoburn Road, Tottenham, London, N17 6X); phone 21-807 1220; treasurer, Mr K. Massey; show secretary, Mr R. Nutt. Meetings: second and fourth Thursday of month, the T. L. & R. Club, High Road, Tottenham, London, N17 (between Braze Grove and Scotland Green).

WELWYN GARDEN CITY AS, Chairman, Mr S. Matthews; secretary, Miss Janet Edwards (188 Highlands, Welwyn Garden City); phone 483011; programme secretary, Mr P. Street; sales & insurance secretary, Mr P. Taylor; show secretary, Mr D. Gills (14 Lillards, Welwyn Garden City; phone 21350); assistant, Mr B. Hancock; treasurer, Mr J. Wagner; junior representative, A. Margrave; senior representative, Mr B. Noble; librarian, Mr G. Lewis; catering, Miss L. Green. Meetings: first and third Monday of month, 8.00 p.m., The Forest Hut, Great Dill, Welwyn Garden City. New members welcome.

WORKSHOP A & ZS, New secretary, Mr T. Hardier, 27 Rydal Drive, Workshop, Notts.

YORK & DAS, Chairman, Mr M. Richards; vice-chairman, Mr P. Casey; secretary, Mr G. B. Hawkey (71 Milner Street, Acomb, York); treasurer, Mrs E. L. Taylor; Open Show secretary, Mr P. Ross (20 Don Avenue, Gringhouses, York); Meeting Show secretary, Mr J. Snowdon; editor, Mrs A. Turner; librarian, Mrs L. Overall; P.O., Mrs H. Snowdon. Meetings: second Tuesday of month, The Railway Working Men's Club, Blossom Street, York. New members welcome.

Manchester. All are welcome. Full details of venue, membership etc. may be obtained (a.s.c. please) from the Section Secretary, Mr W. R. Seal, 7 Highlands Road, Offerton, Stockport, Cheshire, or the Society General Secretary, Mrs H. M. Allen, 1 Anthony Close, Peterborough, PE1 3NU. The British Koi-Keepers' Society presently has more than 230 members and it is anticipated that further regional activities will develop.

... THE high standard of lectures enjoyed by **LEAMINGTON & DAS** was upheld by those given at the close of the year. These included a talk on plants for the aquarium by Mr J. Harvey, on fish photography by Mr Nicholson and a slide show on marines organised by Mr A. Skinner. Mr B. Chittenden has won the home aquarium competition with 82 points (2, Mr Childs, 78; 1, Mr Tony Dobson, 71; 4, Mr D. Hawkins, 71).

... **INCREASING** costs of production have caused **YORK & DAS** to decide that their club magazine should appear quarterly in future, but a new venture will be a monthly Newsletter that should help to fill the gap between issues of the major club publication.

... **GRIMSBY & CLEETHORPES AS** have enjoyed a lecture on Malawi cichlids by Mr Flatt. Table show class winners were: male swordtails, Mr E. Kirk (best in show); breeders livebearers, Mr J. Kirk; marines, 1 & 2, Mr A. Metcalf; junior, T. Hughes. A slide show and quiz provided another popular evening, when Mr W. D. Gilding of Gainsborough AS judged the table show. Class winners were: pairs mollies, Mr B. Pullford; arabianids, 1 & 2, Mr D. Norton; sharks, Mr D. Noeten; junior, T. Hughes (best in show). The December table show class for loaches was won by Mr T. P. Walker, for large barbs by Mrs J. Kirk, and the junior class by N. Pinnay.

... **BRIGHTON & SOUTHERN AS** fish of the year table show was well supported by members and judged by Mr Jack Stillwell (FRAS). He awarded first prize to a blind cave tetra belonging to Mrs J. Davies. A general discussion evening followed and it made a pleasant social occasion where fishkeeping problems were sorted out. Members were given a bumper issue of the club magazine to read over the Christmas holidays.

... **BOTH** adults and children were catered for at the pre-Christmas meeting of the **GKN P & AS**. Quizzes and Bingo occupied part of the time but the highlight was the arrival of Father Christmas with presents for the children. The annual awards and trophies were also presented. At the Society's first inter-club table show of the winter there

was a grand total of 38 entries in all. Mr R. Newall won in the cichlid class and Mr T. Saunders in that for a.o.v.

... **OVER** one hundred members and friends of **RUNNYMEDE AS** enjoyed the club's annual presentation and social evening. Trophies were presented by the chairman's wife.

... **A CONTINUED** membership of 45 and a steady financial balance was reported to members of **BOURNEMOUTH AS** at the

Badge of the Month



THIS month's Badge of the Month is the one worn by members of North Staffs. Aquarist Society. The Society has been in existence for 25 years and is now one of the largest and most popular societies in the Midlands. The basic design of the badge, a shield bearing the lettering arranged to make fish outlines, was devised in the Society's early days but at the instigation of secretary Mr K. Ankers, a new die has been made and the badge brought up-to-date. The secretary's address is 4, Castle Street, Chesterton, Staffs, and the Club meets on the first and third Tuesday of each month at the Newcastle S-O-T Art Centre.

Society's AGM. The Chairman, in his report, commented on the difficulty of obtaining new speakers. Mr H. Greenhalgh won the 1972 Annual Points trophy (26 pts; 2, Mr Watkins, 21; 3, Mr Walker, 10). In the table show for plays Mr Chatfield took all the cards.

... **AT** the **HOUNSLOW & DAS** 23rd AGM the retiring chairman, Mr R. Scurry, spoke of the success of the 1971/72 season in both the competitive and social fields. Special thanks were given to secretary Mr H. Parish for arranging many enjoyable slide shows and lectures, to Mr Eric

Sheppard who as show manager arranged the smooth running of the open show, and to Mrs H. Pratt, Mrs S. Parish and Miss N. Brewer for providing refreshments on many occasions. Mr Scurry commented on the harmony in which the entire committee had worked to make the year such a success.

... **THE** Member of the Year competition at **AYRSHIRE AS** was won by Mr Neville Baines (2, Mr H. Spence; 3, Mr A. Donaldson). Fish of the year was owned by Mr S. Carr (2, Mr J. Graham; 3, Mr H. Spence). The first prize in the home aquarium competition went to Mr T. D. Comer (2, Mr A. Donaldson; 3, Mr T. Hawthorn) and the Breeders shield was awarded to Mr A. Donaldson (2, Mr T. Graham; 3, Mr H. Spence).

... **MR** E. Newman's talk to **KNOWLE & DAS, BRISTOL** on furnished aquaria was of particular interest in view of the Society's own competition. An informative talk by Mr L. Littleton on swordtails and platys and one given by Mr S. Lloyd on fish foods and methods of home-made food production proved most helpful to members. Nigel Gray won in the table show open classes for angel fish and swordtails and platys and Mr Kevin Gray in the novice class for the same fishes.

... **THE** last meeting of 1972 was organised by the junior members of **KEIGHLEY AS** as an occasion of surplus fishes and equipment. Free supper was provided. Mr D. Mosley won in the a.o.v. and novice a.o.v. classes, Mrs Heap in the fish of the month (a.o.v.) class and Master Barton in the junior a.v.

... **METHODS** of keeping cold-water fish during the winter formed the basis for a discussion evening for **BRISTOL AS**. A new chart is to be kept to record temperatures and feeding at weekly periods. One member described how he made a window in the ice by means of a metal bucket filled with hot water, and then removed some of the pond water to make an ice roof over the pond under which the fish could survive in safety.

... 1972 finished in great style for **UXBRIDGE & DAS** with 170 attending the very enjoyable Christmas dance and social. The Society has also much enjoyed a coach outing to Queensborough Fisheries, two slide talks on man-made fishes by Mr P. Gieger and an inter-club quiz with Hendon & DAS when both clubs scored 29 points. A full programme is planned for 1973 with lectures, table shows and inter-club shows, and an Open Show on 8th April.

... **TORRBY AS** thoroughly enjoyed the talks and film shows given by

club member Mr N. Gray, home on leave from the Ministry of Land and Agriculture in the Solomon Islands. During his travels he has been able to follow his own interest as an aquarist, and has found many unknown varieties of fish and plants that are still unrecorded. Mr Gray's shells and carvings, made by the Islanders, were displayed at the Society's open show and members wish to record their thanks to Mr Gray for the work he has done for the club. Mrs Griffiths has won the table show for the Champion of Champions.

... Mr M. DeJingpole was presented with the Best Exhibit medalion for a team of grade 1 females at the last meeting of 1972 of the BIRMINGHAM SECTION of the

FANCY GUPPY ASSOCIATION. Mr E. Morgan received his fifth silver card, gaining him his silver guppy badge.

... **SEVERN SIDE IS** goes from strength to strength as membership builds up. A BKA slide and tape show and lecture on filtration and tank cleanliness by Mr K. Parry, illustrated with different types of filters and cleaners, proved very enjoyable. Mr P. Croft, a lecturer in biology, gave an interesting lecture on pond life with slides of a variety of insects and descriptions as to their food value or harmfulness to fish. A microscope under which daphnia etc. were viewed was of much interest. A lecture by Mr M. Patches, secretary of the Society, on books for the aquarist illustrated by a wide range

of books loaned by Sabip Aquatics) was most helpful.

... **FISH** of the year award at **ENFIELD & DAS** was won by a *Heterandria formosa* owned by Miss C. Collins. The Society look forward to a full and active year and welcome all new members.

... **THE** accent will be on furnished aquaria at the **WEYMOUTH & DAS** Open Show this year (Sunday, 27th May; see Dates for Your Diary).

... **VAUXHALL MOTORS AQUARIST SECTION** are going to stage their first Open Show on Saturday, 9th June. It will be in conjunction with the Vauxhall Motors Sports Day Spectacular (see Dates for Your Diary).

Dates for Your Diary

Note your special dates in the **PFM Aquarist's Pocket Diary 1973**, now available (45p post free from PFM, 554 Garratt Lane, London SW12 6NY).

18th February. **ROTHERHAM & DAS** 4th Open Show. Rotherham Manor School, Rotherham Lane, Rotherham. Details: Mrs J. Aitton, 4 Burn Lathas Avenue, Rotherham, Yorks S60 4BL.

22d March. **FRAS Assembly**, Century Hall, Red Lion Square, London, WC1, 4.30 p.m.

4th March. **KEIGHLEY AS** Open Show. Victoria Hall, Victoria Park, Laskholme Lane, Keighley, Leeds. Details: Mr J. Mowbray, 11 Moorcroft Avenue, Oakworth, Keighley, Yorks. BD21 7NE.

17th March. **RIVERSIDE AS** Open Show. St. Severus Church Hall, Colindale Road, London, W12. Schedules: Mr W. Netherhall, 13 Greenbank Road, Fulham, S.W.6 (phone 01-383 0275).

18th March. **DON VALLEY AS** 2nd Open Show. British Steel Corporation Staff Dining Rooms, Stockbridge, 1st, Sheffield. Schedules: Mr G. A. Hoyland, 35 Haggstone Road, Oughtibridge, Sheffield.

14th March. **WORKSOP A & ZS** Open Show. Worksop College of Further Education, Carlton Road, Worksop, Notts, S80 1LL. Schedules: Mr P. E. Spittlehouse, 8 Dennis Street, Worksop.

15th March. **NELSON AS** Open Show. Civic Centre, Stanley Street, Nelson, Lancs. Schedules: Mr H. Dillingworth, 44 Birnwood Road, Colne.

14th March. **TYNE-TEES AREA ASSOCIATION FRAS** Open Show, Longport Hall, Sutton, Cares, Hartlepool, Co. Durham. Schedules available shortly.

1st April. **HOUGHTON & DAS** Open Show. Details later.

7th April. **THURBROCK AS** Open Show. Arthur Street School, Arthur Street, Gwent, Essex. Schedules: Mr A. L. Riddler, 2 Pym Place, Grays, Essex.

7th April. **YATE & DAS** 7th Open Show. Newman's Centre, Yate, nr. Bristol. Schedules: Mr M. Emery, 124 Sandridge Park, Yate; phone Chipping Sodbury 212545.

7th April. **GSGB AGM**, Corway Hall, Red Lion Square, Holborn, London, E.C.1 p.m.

8th April. **UXBRIDGE & DAS** Open Show. GPO Social Club, Willow Tree Lane, Yeading Lane, Hayes, Middx. Schedules: Mrs S. Whitford, 31 Herberts Walk, West Drayton, Middx.

8th April. **WARRINGTON AS** Open Show (FNAS Rules). Venue later. Show secretary: Mr J. Higham, 44 Hood Lane, Searby, Warrington, Lancs; phone 35952.

14th April. **INDEPENDENT AS** Open Show. The Public Hall, Illegation Town Hall, Upper Street, Illegation, London, N1. Schedules: Mr B. Mason, 29 Myddleton Square, London, EC1.

15th April. **COVENTRY POOL & AS** Open Show. Foleshill Community Centre, Foleshill Road (448), Coventry. Details: Mr S. Woodbridge, 33 Ridgeway Avenue, Soyedale, Coventry or Mr D. J. Grant, 23 Cecil Road, Cheltenham, Coventry.

15th April. **SHEFFIELD & DAS** Open Show. Grenville College, Grenville Road, Sheffield 2 (nr. Midland Station). Schedules: Mr T. Smith, 175 Woodburn Road, Sheffield 9.

21st April. **RUNNYMEDE AS** Open Show. Details later.

22nd April. **YORK & DAS** Open Show. The Folds Hall, New Earswick, York. Schedules shortly: Mr P. Ross, 30 Don Avenue, Dringthorpe, York.

13rd April. **SOUTHAMPTON AS** Open Show. Avenue Hall, Banching up to 12 o'clock, 7 judges. Details: Mr P. J. Brown, 212 Spring Road, Sholing, Southampton.

29th April. **MIDWAY AS** Open Show. New venue to be announced.

6th May. **DUKESIES AS** Open Show. Full details later.

6th May. **ROSHAMPTON AS** Open Show. Details: Mr D. Lambourne, 7 Wheeler Court, Plough Road, London, SW11 2AN; phone 01-243 2539.

6th May. **OSRAM AS** Open Show. Osram Recreation Hall, Refuge Street, Slon, Oldham, Lancs.

12th May. **GLOUCESTER AS** 2nd Open Show. Gloucester Education and Leisure Centre, Paternock Road, Gloucester. Schedules: Mr M. Brooks, 114 Melbourn Street, Gloucester from February on.

13th May. **CROYDON AS** Open Show.

17th May. **CORBY & DAS** Open Show. Corby Civic Centre, FRAS rules. Details later.

17th May. **DERBY REGENT AS** Open Show. Sherwood Foresters Recreation Centre (Newnham Barracks), Newnham Road (A5111) Derby. RAC sponsored. Show secretary: Mr B. G. Harlow, 182 Mansfield Road, Derby; phone 44322.

17th-19th May. **SECOND NATIONAL WELSH** Open Show. The Central Hall, Tonypandy, Rhondda. Banching 17th May 12.30 p.m. to 12.30 p.m. 18th May. Details: Mr M. Williams, 114 Top Trefonog, Trefonog, Rhondda, Glamorgan.

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19th May. **SOUTHEND, LEIGH & DAS** Open Show, St. Clement's Hall, Factory Green, Leigh-on-Sea, Sefton. Mr. D. C. M. Durrant, 122 Trinity Road, Southend-on-Sea, Essex; phone Southend 619275.

19th May. **MERSEYSIDE AS** Open Show, Ryniah Legion Hall, Cranwood Avenue, Liverpool. Details: Mr. Brian Hall, 141A Broughedge Hey, Cootin Farm, Liverpool L25.

19th May. **YEOVIL & DAS** Open Show, The School Hall, Church Street, Martock, or Yard. Details later.

19th May. **WYMOUTH AS** Open Show. Details later.

22nd June. **FRAS Assembly**, Conroy Hall, Red Lion Square, London, W.C.1, 2.30 p.m.

2nd June. **BOURNEMOUTH AS** Open Show, Kinson Community Centre, Fulham Park, Bournemouth. Details: Mr. J. V. Jeffery, 30 Brunner Avenue, Southbourne, Bournemouth, BH6 4JF.

19th June. **HAVANT & DAS** 2nd Open Show, St. George's Hall, Waterlooville. Details: Mr. V. B. Hunt, Cargill, 120 London Road, Waller, nr. Portsmouth, Hants.

19th June. **VAUXHALL MOTORS AS** Open Show, Details: Mr. A. Philip, 11 Hildbush Road, Luton, Beds.

19th June. **LLANTWIT MAJOR AS** Open Show, Show secretary: Mr. J. Edwards, Glasfryn Mill Park, Llanblethyan, Cowbridge, Glam.

19th June. **HIGH WYCOMBE AS** Open Show, The Lane End Village Hall. Details later.

19th June. **GKN POND & AS** Open Show, GKN Canteen, Salisbury Street, Darlington. Details: Mr. Ken Rowley, 125 Wolvinstunton Street, Darlington, South.

19th June. **LINCOLN & DAS** Open Show. Details: Mr. H. Kahn, 44 Scares Street, Lincoln.

17th June. **FREELANCE AS** Open Show, Amersham Community Centre, Throstle Street, London, S.E.17. Details: Mr. J. Stamp, 22 Redmond House, Lamb Street, Bournemouth, S.E.1.

17th June. **SWILLINGTON AS** Open Show, John Stansons School, off Berrick Road, Leeds 14. Show secretary: Mr. N. Stansley, 25 Goodwood Avenue, Kippax, 12 Leeds, Yorks.

14th June. **GOSPORT & DAS** 7th Open Show, Stubbington Community Centre, Stubbington, Hants. FRAS Wales. Details: Mr. N. L. Aylmer, 33 Pender's Way, Buntingford, Gosport, Hants, PO13 4LR.

14th June. **ALFRETON & DAS** Open Show, Adult Education Centre, Alfreton Hall, Alfreton. Details: Mr. B. Hickling, Parkview, 13 Coppice Drive, Eastwood, NG16 3PA (phone: Langley Mill 31045).

1st July. **EXETER & DAS** Open Show. Further details later.

7th July. **GSGB Quarterly Meeting**, Conroy Hall, Red Lion Square, Holborn, London, 2.30 p.m.

14th July. **BASINGSTOKE & DAS** Open Show, Carrow Hill Basingstoke. Schedule: Mr. B. Rich, 61 Pinkerton Road, Basingstoke, Hants.

12th August. **NORTH STAFFS AS** Open Show. Details later.

1st September. **FRAS Assembly**, Conroy Hall, Red Lion Square, London, W.C.1, 4.30 p.m.

8th September. Combined **BRACKNELL AS, DIDCOT AS & READING & DAS** Open Show, White Knagles, Shipland Road, Reading. Details: Mr. John Hawley, 4 Bickmans Close, Woodley, Berks. (phone: Reading 666477).

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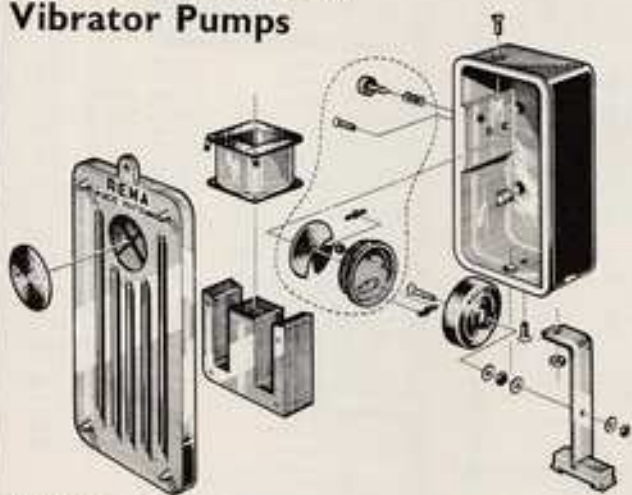
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