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Technical Inaccuracies

WHY, we wonder, are some people so anxious to print technical material about which they know nothing, by authors on the subject who know slightly more than nothing, for readers of whom no more than about 0.001% know anything on such technical matters or indeed wish to know more. Is it to impress the majority, who, caring little about it anyway, might nevertheless be deceived into thinking that they have in their hands a valuable tome or article for future reference?

Our best example is given by two books on marine aquarium-keeping (both unfortunately from a British publisher). One book (atrociously in error throughout) includes a set of chemical analyses of sea water and recipes for synthetic mixtures. Its use of chemical formulae discloses the author's complete ignorance of matters chemical. The other book (a later work and marginally better) uses much the same sets of formulae and reproduces faithfully all the misprints and errors of the first book. It could be answered that as chemists would soon spot the errors and since the readership is little concerned about these minor parts of the books the errors matter little, and we would agree, but it brings us back again to the question—why do authors and publishers include such useless technical data? (The end of the joke about the two books referred to is that the inaccuracies and misprints have all been copied, down to erroneous full points, from an American book published 6 years earlier!)

Last month a further example came to our notice in a British magazine in an article on aquarium pollution. Here it is not entirely clear to what extent the ignorance disclosed is the author's (who fortunately is not named, although the name of his London society is blazoned over his work) or whether the damage has been done in part in the presentation of the material. Names of micro-organisms are inaccurately printed, the chemical 'facts' are in error and the general fumbling use of technical terms shows the near-fantastic condition of the unseeing who would like to lead others who are in the same state. The author does, in fact, conclude by offering to answer questions on the subject he has mangled, which we thought was a magnificently compensatory feature.

Make no mistake about what we complain of: the occasional misprint is a hazard of the printed communications game and we all suffer from it (on this page last month we allowed 'Munks Wood' to appear as 'Marks Wood', we confess to our shame, and even the TIMES gave the contents of the egg aimed at Mr Harold Wilson as 'joke' in its front-page report). It is the careless publication of poor material, given a spurious air of authority by inclusion of technical details that very few readers can challenge, is what we believe to be irresponsible, and harmful to the image of this hobby for informed outside beholders.

Eight Years On

INSECTICIDES have been in the news again. The Oklahoma Wildlife Federation has asked for a complete ban on the sale or use of DDT and Dieldrin throughout the State. OUTDOOR NEWS reports that tests carried out had shown a high concentration of both substances in wild fish examined. Two other American States have already banned DDT and several other pesticides.

Is it really 8 years ago, in 1962, that the series in THE NEW YORKER first warned us all about the dangers of these pesticides? Those prophetic pieces were later to form the book THE SILENT SPRING, by the late Rachel Carson.
LETTERS

Arpee's 3-footer

A RPEE'S insistence on putting a 3 ft tank at floor level 'in a rather dark situation' (PFM, June) is giving himself problems that might well cause him to utter a plea for suggestions about filling it. My answer would be to forget this space altogether as far as tanks are concerned. Floor level aquariums are a dead loss for tropicals because of droughts and they are very likely to get knocked and broken even if used for coldwater fish. For any purpose artificial lighting would have to be fitted.

Arpee's quarantine tanks should be close to the floor and not have other healthy tanks beneath them. Falling drops of water, dripping nets and splashes downwards can carry disease just as well as a transferred fish.

Halifax, Yorks.  
R. LOTHORPE

Arpee wants suggestions for occupants of his 3 ft tank at the bottom of a tier. Unless he is determined that these shall be fish I would suggest to him that he makes the tank an aqau-vivarium and tries keeping a pair of terrapins or cainans in it. These are a lot of fun, I think he should raise the tank off the floor if at all possible or else he will have trouble in keeping a siphon going.

Bournemouth, Hants.  
L. R. KING

Cryptocoryne Disease

I WAS interested to see Mr Jim Kelly's reference to 'cryptocoryne disease' in Transatlantic Topics (PFM, June). He states that this is an infection and infers that bacteria cause the trouble. I wonder whether these are a particular disease organism or whether they are merely purpureative bacteria attacking damaged leaves? Also is it quite certain that this is not a virus infection? Particularly I am interested because my Cryptocoryne cordata established in a tank for about 10 months quite suddenly lost all their leaves. The only change I could pinpoint was the introduction of a few new Cryptocoryne plants 3 weeks before the rotting, but the new plants have not so far shown the symptoms. I will try the remedy Mr Kelly suggests but I'm going to remove the fish first to avoid risk of poisonous effects.

Darlaston, Staffs.  
J. CAULDEWELL

Fly Diet

THE sycamore trees in my garden are absolutely thick with green flies this year. The underside of every leaf is crowded with them. I don't know whether to grow as a gardener or cheer as a fishkeeper as the fish love them. It's not a very good idea, however, to carry the leaves as they are through the house because all the flies come off on the way. I have found the best way to carry them is to shake some leaves into a clean polythene bag, pull out the leaves and insert the bag into the tank. My archer fish is very pleased with life as a result but here it's just a case of shaking the bug under the lid because the archer does not want his green fly under the water.

London, E.2  
J. PETTS

Show Hopper

THANK you for publishing such a full list of advance dates for shows in PFM. In my (non-aquatic) job I have to travel around the country and with 'Dates for Your Diary' in front of me I can plan my trips to be near a show at the right date. Already this year I have been able to get to well over a dozen shows and see what is happening in different areas.

Birmingham  
P.D.

Too Much Fish Talk

I WAS amused to read Arpee's comments on becoming a 'fish bore' to his friends. For us, it's the other way round. I have a very nicely set-up community tank now but the first intense excitement has worn off with the family and we just enjoy having it in the corner. Like the early days of T.V., however, its presence has ruined conversation with friends who call. They now tend to chat in a disjointed way while trying to keep one eye swivelled on the tank, and every now and then make a quick gallop up to the glass to peer in. I've had to give innumerable lectures on the subject and it really has become quite a bore. I hope the novelty for our friends will soon wear off, and we can get back to discussing something other than fish.

Kingston-on-Thames, Surrey  
L. WILLIAMS

Better Advice Wanted

A QUERY in a recent issue of PFM [June] explained that the writer had acquired an elephant-nose fish and was feeding it on Liquity. The query does say that the fish was 'acquired' but if it was from another fishkeeper it's almost impossible to believe that an aquarist would pass on an elephant-nose without explaining that it would need live food. If it was bought from an aquatic shop, I just don't understand the shopkeeper. Aquatic shops get very crowded and it can't always be easy to give detailed advice, but surely it would be to the shop's advantage to explain to the buyer of a specialist fish what its food requirements are to prevent the creature dying of starvation?

Minehead, Somerset  
B. WRIGHT

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Transatlantic TOPICS

By JIM KELLY

Even the last-named reaches an adult length of only 2½ in., despite its tag. Not so common to aquarists over here is a third genus, Thorsacrofus, containing two species, securis and stellatus.

This explanation of just how far these fishes can jump will probably clear up a few mysteries encountered by our readers: (a) how hatchets seem to have mysteriously disappeared from the aquarium, and (b) why their desiccated bodies were discovered so far away. Moral: if you keep hatchets—keep the hatchets bunched down with an all-over, close-fitting cover.

* * *

Would you be willing to pay a shilling a week to keep your fish tanks free from airborne impurities? That is the figure quoted by Biosanics Corporation to run their D-Tox air purifier, which they claim gets rid of everything from tobacco smoke and cooking oils to paint fumes and aerosol sprays.

Plugged into the air system twist and tank, it is a five-layer filter system that last 3 months before it needs changing. One unique feature is a date tag to remind the aquarist when this "change" comes round. Retail price is about 1½ per unit.

* * *

Having the number taken of your parked car usually means that you end up paying a parking fine—not so in some parts of the New World. Latest sales gimmick by pet stores over there is to list car licence numbers in Press advertisements—numbers collected from the vehicles parked round their establishments. Claimants receive a five dollar (£2) prize voucher redeemable for goods or fish at the store. It must make a pleasant change to receive a reward for parking—something that we British car owners would appreciate; it would also provide a more appropriate use for those plastic bags, familiar sights on our windscree.
Garden Pool Embellishments

By BRIAN FURNER

Aquatic plants not only beautify a garden pool but also perform several useful functions. Those which spread their leaves on the surface provide shade to the fish in summer and this shading also restricts the growth of green algae. Bubbles of oxygen rise in continuous streams from submerged oxygenators in sunny weather and cleanse the water. Water clarity is most desirable and is only possible where there is sufficient plant growth to utilise surplus mineral salts in the water.

In a new pool the water may be expected to become green in colour within a week or so after filling but as the aquatic plants get into their stride this condition abates and the water gradually clears. Continued good growth of aquatic plants continues because their roots feed on further supplies of dissolved salts obtained from decomposing matter such as fish droppings and other debris.

It is rare to come across a garden pool without water lilies and our native Nuphar lutea is the more usual species. The leaves are handsome and the white flowers very attractive but what a strong grower this lily is. If planted in soil at the base of a garden pool this water lily rapidly makes a take-over bid for the whole surface area. If the pool owner fails to check this rampant growth then he will rarely see his pet fish in the pool between June and November when the mass of lily foliage blankets the surface.

Although other water lilies are not so renowned for their rapid growth I do not favour planting any of them in loose soil in a pool. I plant water lilies and all other aquatics (apart from floaters) in plastic plant containers. The use of these containers not only prevents rampant growth of any particular plant but it also means there is less work to do when the pool is emptied and cleaned up. It is then so easy to lift out the containers, prune or replant where necessary and put them back again in the cleaned pool.

For my own pool I chose the white water lily Nymphae. This is a semi-double and very attractive. But one need not stick simply to white and I also have Rose Arey (pink) and Froebeli (red). Many of my visitors have never seen pink or red water lilies before and it seems a pity to me that they are not better known among pool owners.

Ideally the growing medium for water lilies is fibrous loam sorted down from turves sandwiched with cow dung for 6 months or so. Like most pool enthusiasts I had none of that around when stocking my pool with water lilies so I used unmaureured garden top soil. My soil is on the sandy side and would not stay in the baskets until I lined them with pieces of old sacking.

Plants come first, with fishes a few weeks later. This is the rule when a new pool is being stocked. The time gap permits the plants to settle down and to start growing before the fish start nosing around them. This nosing around not only stirs up mud but can lead to the uprooting of plants and their death. After planting aquatics I prevent this from happening by pressing large stones over the surface of the soil in the containers. The stones prevent the fish from reaching the soil in them. It is

Above: lining the planting basket with old sacking is helpful if the planting medium is slightly sandy. Right: after plants have been arranged in the basket a few large stones are placed on top of the soil to avoid disturbance and the whole is lowered carefully into the pond.
simple to lower a basket carefully into the pool if one wishes the plant to grow near the side. Where the plants are to grow near the centre of the pool there are various ways of setting the baskets in position. If the pool is empty the containers may be positioned immediately before filling the pool with water. If there is water in the pool it may be possible to wade (bare-footed or in Wellingtons) through a shallow part and lower a basket into deeper water. Alternatively a plank may be placed across the pool so that one may reach any desired spot.

Depth of planting is an important point in water gardening. One can hardly go wrong with many aquatics which need no more than an inch or so of water over their roots. A few, particularly some of the water lilies, do best beneath a foot or more of water. Even with these I find it pays to plant them at first in shallow water and to move them to greater depths a month or so later.

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**A selection of plants for the garden pool**

<table>
<thead>
<tr>
<th>Water lilies</th>
<th>Depth of water over the crown of the plant (in.)</th>
<th>Colour of flowers</th>
<th>Height of plant (in.)</th>
<th>Depth of water over the crown of the plant (in.)</th>
</tr>
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<tbody>
<tr>
<td><strong>Shallow marginals</strong></td>
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<tr>
<td>Albatross</td>
<td>White</td>
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<tr>
<td>Gladstoniana</td>
<td>White</td>
<td>10-36</td>
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<tr>
<td>Gonnere</td>
<td>White</td>
<td>7-24</td>
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<tr>
<td>Colonels Welch</td>
<td>Yellow</td>
<td>10-35</td>
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<tr>
<td>Pygmaea helvola</td>
<td>Yellow</td>
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<td>Sunrise</td>
<td>Yellow</td>
<td>7-24</td>
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<tr>
<td>Firecrest</td>
<td>Pink</td>
<td>7-24</td>
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<tr>
<td>Rose Avey</td>
<td>Pink</td>
<td>7-24</td>
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<tr>
<td>Escarboucle</td>
<td>Red</td>
<td>10-24</td>
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<tr>
<td>Froebeli</td>
<td>Red</td>
<td>3-15</td>
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<tr>
<td>Gloriosa</td>
<td>Red</td>
<td>7-24</td>
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<tr>
<td><strong>Deep marginals</strong></td>
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<tr>
<td>Azum lily</td>
<td>White</td>
<td>12</td>
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<tr>
<td>Golden club</td>
<td>Yellow</td>
<td>6-18</td>
<td></td>
<td></td>
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<tr>
<td>Water hawthorn</td>
<td>White</td>
<td>6-18</td>
<td></td>
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<tr>
<td><strong>Floaters</strong></td>
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<tr>
<td>Duckweeds</td>
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<td>Frogbit</td>
<td>White</td>
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<tr>
<td>Water soldier</td>
<td>White</td>
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Marginals mask the edge of the pool and link it to the rest of the garden. Their habit of growth provides shallow areas of water in which fry may spend their early days in comparative safety. Although water hawthorn and golden club grow well at a depth of 18 in., the majority of marginals require very shallow water conditions. Which—out of the many marginals—one chooses depends on personal wishes and on the size of the pool. Kingcups are the first to provide a rather startling and welcome splash of colour in my pool during April. Pink-tinged white flowers of the bog bean follow in May when the yellow kingcups are fading. Later in May and during June I have a fine display of variously coloured irises. By that time the water lilies have come into their own and they continue flowering on and off all summer. Birds probably brought seeds of the great reed mace and the small clump of these reeds provides an early autumn display of brown 'bullrush' seed heads. Several other marginals are being planted this month so that my water garden flower display may be even more varied.

Waterfalls and fountains are two other pool embellishments worth considering for a new pool or as additions to the pool one already has. To install a waterfall or a fountain was at one time an expensive business requiring an elaborate plumbing system and overflow arrangements to deal with piped water from the mains supply. All this has changed. No plumbing has to be done these days because modern electric pumps make use of the pool water itself—circuiting and aerating it to the benefit of the fish. Apart from any additional electric cable over and above the 10 ft. supplied a waterfall or fountain kit of the ‘Otter’ type costs no more than around £6. With this submersible type of pump the installation is simple and there is no noise apart from the pleasant running of the waterfall or splashing of the fountain.

Meetings and Changes of Officers

BRISTOL T.F. & C. Meetings (change of venue): henceforward to be held on the third Thursday of each month at 7.30 p.m., at the National Dock Labour Board Social Club, Walsh Road, Brisol.


HASTINGS & ST LEONARDS A.S. (Change of name) from the Hastings and Bexhill A.S. owing to formation of the Bexhill A.S.), Chairman, Mr G. Pick, vice-chairman, Mr F. E. Sanderson, secretary, Mr P. R. Martin (at Sillers Road, St Leonards) telephone no. Mr G. Pick; treasurer, Mr G. Chaloner; show secretary, Mr A. McCormick, F.F.I., Mr A. Barnard, Meetings (change of venue): Station Road, Hastings.

HINCKLEY & D. A.S. Change of secretary: Mr W. E. Sant, 32 Rugby Road, Hinckley, Leics.

HOLME VALLEY A.S. (New Society): Chairman, Mr R. A. Young; vice-chairman, Mr J. M. H. Fox; secretary, Mr R. F. Napper; treasurer, Mr F. A. Pitchford; show secretary, Mrs N. Gibson. Meetings: fortnightly at Honley Youth Centre.

HUDDERSFIELD T.F. & S. Chairman, Mr J. Cotton; vice-chairman, Mrs P. Roberts; treasurer, Mr J. Cotton; secretary, Mr J. W. Wynn; show secretary, Mrs M. Bower; treasurer, Mr J. Bower; magazine editor, Mr B. Robinson.

ILFORD & D. A. & P.S. Meetings: Second Monday of month at the Laurence Church Hall, Epping Essex. Enquiries to secretary Mr B. F. Rusling, 192, Hoe Rd., Chadwell Heath, Romford (phone 574 1066).

ISLE OF WIGHT A.S. Chairman, Mr S. G. Stevens; vice-chairman, Mr D. G. Crutchley, secretary, Mr E. Davison (6 High Street, Shanklin); treasurer, Mr J. Noble; curator, Mr S. G. Stevens; judge, Mr D. Crutchley; show secretary, Mr J. Nield; press and publicity, Mr R. L. Nield.

NEW FOREST A.S. Chairman, Mr A. Williams; vice-chairman, Mr C. Grumby; secretary, Mr R. A. Strong (of Oakdene Avenue, Brockenhurst); treasurer, Mr D. Duckworth; show secretary, Mr J. H. A. Duckworth; magazine editor, Mr D. Marshall; assistant, Mr D. Marshall; P.O.R.O., Mr G. Hinton.

STONE A.S. Chairman, Mr A. Smith; vice-chairman, Mr J. B. Hand; secretary, Mr P. J. Weale (at Wood Street, Stone); treasurer, Mr P. J. Weale; show secretary, Mr J. R. Bridges; social secretary, Mr C. Brindley; minutes secretary, Mr B. Pinn.
GOING BRACKISH—2

My Brackish Community

By ROY PINKS

ONE of the first things that struck me after setting up my brackish water tank was the extraordinary brilliance of the scene. Under Geo-lux lighting the red organ pipe coral contrasted vividly with the groups of white varieties: the light colour of the sand also contributed to the overall attraction by reflecting light upwards and illuminating certain planes of the coral in a particularly appealing fashion. The ease of striking an acceptable layout was also noteworthy. I have tussled long and tediously with conventional freshwater arrangements in an effort to arrive at something that pleases, but I think this comes much less readily, often at the cost of broken plants and frayed tempers.

Freshwater layouts also take longer to settle because plants have to get their roots down into the compost and it is seldom that we are satisfied with the look of the rockwork until we have looked at it from all angles for anything up to a week. This in no way detracts from the pleasures of constructing a freshwater group, but it does emphasise how simple is its brackish or saltwater counterpart, even for the complete beginner.

A further factor which will influence one at this stage is the thought that the tank will exist purely to display the inmates and never to breed them. Perhaps this is a bit defeatist but in view of the pronounced lack of success in breeding the brackish water fishes in captivity it is not altogether unreasonable to assume that you are more likely to derive visual pleasure from your charges than families. In circumstances like this it seems legitimate to plan to spend rather more on it in the interests of decorative impact than would be the case in aquaria which might have to be transformed or adapted suddenly as a consequence of an unexpected spawning or livebearing.

The overall range of fishes for a brackish community is not large, but what this lacks in quantity is more than compensated by quality, or so I have always thought. I can always recall gazing spellbound at a solitary specimen of Mosasaurus sebae in an exhibition tank some 20 years ago. It was a superb specimen and everything about it was a tribute to its class. For the average aquarist M. sebae is a remote acquisition indeed and would be likely to outlive any but the biggest tanks. It is also notoriously panicky and is likely to drop dead upon you at any moment.

The commoner argenteus mono is well known as the Malay angel but tragically seems to die off sooner than most of its admirers would like, possibly because it is given the wrong sort of surroundings and company. It is a gloriously proportioned shining silvery fish which looks every inch a true 'marine', with its vivid yellow and black markings, and how it flicks itself through the water, so effortlessly, just like so many others of the open sea. They

"blush" to a shade of black when under pressure from fear or anger, but soon regain their normal hues when the mood passes.

The fish most likely to be associated with monos are the scats, most usually referred to as Scalophus argus. Discoid in shape, with striking finnage, these are available in various sizes and two main colour groupings. One group is coloured yellowish green with black spots and the other is purplish with black spots and carries prominent orange markings on the head and back. The former are called spotted scats and the latter are dubbed tiger scats, but there is a terrible lot of confusion about the nomenclature and all sorts of theories about the reasons for the colour variations. It is sometimes held that it is sex which determines colour whilst other authorities hold that the one is an adult form of the other. It would be nice to know the facts, though in practice all that seems to matter is that you have representatives of both colour groups in your collection, as they are equally worthy.

I think the lighter coloured fish has a slight edge over what I term the tiger scat because it stands out more readily, but on the other hand the darker fish is undoubtedly the more handsome. Unlike the monos they are not normally very graceful—though they can move like lightning if they so choose. Of normality they amble around the tank and often assume such curious positions—head up or head down—that the uninstructed are inclined to thumb up the disease books to discover from what particular form of swimbladder trouble they may be suffering. A recent contributor to PFM did them less than justice by asserting that they have no interesting characteristics and are only enjoyable to look at. The latter characteristic is surely a great point in their favour, and furthermore their size, shuffling habits and willingness to feed from their owner's hand put them well up the table for popularity.

I chose bumble-bee gobies as the third of my initial selection. These diminutive creatures, so like their namesakes as to be almost uncanny, are technically Bicolor gobiidae sanctaeosus, which is a terrifying label for such a charming midget. This fish has a small sucking disc on its underside with which it attaches itself to selected anchorages from which it surveys the passing scene with its large unwavering eyes. It is much more active than many give it credit for and it assiduously explores every nook and cranny which it encounters. It is extremely colourful and charming and several, not ones and twos, are the right proportion for a collection of brackish fishes.

Continued on page 118
Breeding Behaviour of Seahorses

By KARL PROBST

Photographs by the author

WHENEVER it comes into the conversation that I have for many years had a number of seawater aquariums, as a rule I am asked if I also have seahorses. Hardly any other type of creature from the sea is as loved by man as are seahorses. For this reason many people know that with these fish it is the male that 'brings the young into the world'. And the belief is also true that these males behave very courteously to their wives. Aquarists would be the first to doubt this, because in the spawning of fish they seldom see behaviour reminiscent of cavaliers!

In mating seahorses behave like turtledoves and the love play is full of tender elegance. It proceeds according to a strict ritual, which zoologists have been trying for decades to record. Up to now, however, only line drawings and faded photographs which were taken of dried seahorses have been published. Therefore it gives me all the more pleasure that I can show here real photographs and thereby add to the previous observations of scientists.

There are many different kinds of seahorses throughout the world, which one can classify according to the following definite characteristics: (1) how the armoured-plated body rings are spiked; (2) to what extent the head bears a helmet-like top or 'crown'. The European prickly or spiny seahorse (Hippocampus guttulatus) is most familiar to us, and occurs in the Atlantic (as far as northern Europe and West Africa) as well as in the Mediterranean. It most resembles the tropical prickly seahorse (H. zosterae) and is also called the 'maned' or 'horned' seahorse because two large spikes reminiscent of horns are on the head. From the Mediterranean to western France the Mediterranean helmeted seahorse (H. antipodarum) is distributed. This has no spikes but shows a 'helmet'. The old name 'short-snouted seahorse' should not be used any more because new tropical varieties with short snouts have been recognised.

Seahorses are hardy in numerous ways: on the one hand they are so well armoured that there is hardly an enemy who wants to eat them. On the other hand, they are exceedingly resistant to rough methods of capture and are very hardy introductions to the aquarium. They would make good beginners' fish but for the difficulties with their feeding; they only accept living food which they can take in through their tubular mouths. And if one does not feed them several times a day they are unlikely to survive more than a year. Freshly hatched brine shrimps are accepted only by dwarf seahorses (H. zosterae). For the larger ones, older Artemia and small Mysis are ideal. The best food from freshwater is the phantom (giant) larva or 'glassworm', chiefly because this creature can live up to

An early breeding sign in the European seahorse is the enlargement of the male's breeding pouch by continuous pumping movements which causes the tail to be pushed to the front.

Male and female come together in the coral. Both have adopted breeding coloration (yellowish-white in the female and the male is covered with glittering spangles)

First attempt is made by the male to embrace the female with his tail. Despite the clear distinction of the sexes by colour seahorses often appear initially to select a partner of the same sex.
With tails curled around and held by one another the pair swim together. A swift uplift of the female's head is the signal for the next stage, occurring in open water.

The pair swim hastily to the water surface close together. The black frontal stripe developed during breeding from throat to breeding papilla is a conspicuous feature.

Frontal surfaces of the pair are brought together as they circle round and round at the water surface and the female endeavours to insert her breeding papilla into the male’s open brood pouch.

2 days in seawater. Then mosquito larvae (Culex), Cyclops, Daphnia and young guppies. Freshly dead food will only unwillingly be taken from the bottom. Aeration does not hold such food in movement long and one avoids a fine bubbling emission, otherwise swimbladder disease can occur.

In a seahorse aquarium there should always be objects to which these animals can cling with their prehensile tails. They are so awkward in their feeding habits that one dare not keep them with quick-moving fishes. Furthermore they can fall victims to larger anemones by mistake or be snapped up by rapacious crabs. Although breeding can be achieved with several species, suitable care is needed. The photographs show typical moments in the breeding behaviour, which in previous literature have been little regarded or not described.

The most complete publication on the mating of European seahorses was delivered by Kurt Fiedler in the form of his Dissertation (University Munich, 1954). In this he alluded to the difference in the behaviour of H. antiquorum (as H. brevisnatis) and H. guttulatus, of which he had obviously studied the first more closely than the second (he had not seen the egg-laying of H. guttulatus). The distribution he explains partly through the hypothesis that these species live in different biotopes (H. antiquorum more on a sandy base, H. guttulatus amongst sea grass Zostera marina). My observations digress in the following points:

(a) Fiedler many times alludes to the point that with H. guttulatus the mating does not begin on the bottom, as occurs with H. antiquorum, but immediately between plants. I believe that the hypothesis of Fiedler can only be pertinently demonstrated if no open sand surfaces are available. On the contrary, the H. guttulatus pair also prefer these open surfaces and glide over them with tails dragged along behind and stretched-up heads. The H. guttulatus male, while pumping his breeding pouch, mostly stretches the tail so far forwards that overall he appears rectangular, and the tail can reach right up to his breast.

(b) That the intertwining of the tails comes soon after the pressing of the heads together, Fiedler alleges to be characteristic of only H. antiquorum, also the fact that females ready to mate ‘at last come to gripping by the
tail'. This behaviour, as well as the fact that while ascending the female pulls on the male's tail, I have also observed with *H. guttulatus*, and with this species the male also does it. *H. guttulatus* males are apparently more active in that they show the female their distended pouch much more and by striking with the tail. It further appears that these males recognise the female's sex earlier, because with them there is seldom long distractions with pairs of males together.

3. The black stripe on the front (from the throat to the laying-papilla or brood pouch), previously unmentioned in the literature, appears to fulfil an important marking function. (The contrast is much clearer with the female, because while stimulated she is almost white.) The pair see clearly, because of its presence, that their body fronts are exactly together as soon as the black marking stripes stand out in the middle of the light surrounding. Throat and head indeed lie in a plane with the body and the eyes of the seahorse, which are easily swivelled 'equine' forwards and down. Then the lower ends of the marking stripes need only to be aimed at each other, to bring the laying papilla into the brood pouch. *H. guttulatus* appears to have more need of this aid, because the union must take place more frequently, until all eggs are laid. According to Fenszio (1874), at each union only a very few eggs are transferred (perhaps just one), but with *H. antiquus* there are more than 200. Accordingly the length of the mating process is variable: with *H. antiquus* about 10 seconds and with *H. guttulatus* only about 2 seconds.

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**My Brackish Community**

*Continued from page 115*

My final selection was a solitary glass perch. This has always been a favourite of mine and I have often regretted giving up the small collection I made a year or so ago. They were, however, in a badly positioned tank and never got the attention and feeding that they deserve, so they were never revealed to best advantage. In some ways this fish was the odd one out in my brackish collection because it has none of the truly 'marine' looks possessed by the others. I was unable to secure any puffers when I first set the tank up, but I was determined to add some later, as these contribute further flavour to the scene I had set, and were much more appropriate to it than the glass perch.

In making my selection of fishes enthusiasm for procuring new species to me undoubtedly showed up one serious fault. I had been (well) advised to get small specimens, and to stock to near the capacity of the tank, totally disregarding the fact that the fishes would grow. The idea is that they will all remain at much this size, and all will survive—a sort of 'dwarfing' technique. My initial purchases, of scats, complied with this injunction. I bought three tiger scats, and within as many days two had died, leaving one which was pale and weary. These had been accommodated in an ordinary angle-iron tank which contained freshwater to which salt had been added at the rate of a teaspoonful per gallon.

It is possible that the saline water reacted against the metal and poisoned the fish, but I think not, as the time was too short for this to have happened, and I am more inclined to the belief that I had bought hollow-hulled specimens which always seem to succumb sooner or later. This obvious liveliness of the survivor strengthened this conclusion. A couple of weeks later I secured some magnificent monos and two equally splendid tiger scats which were about 3 in. long. Three bumble-bees joined them. The settling-in period was of about 3 days' duration, and whilst this was taking place all the fishes with the exception of the gobies were extremely nervous and were off their food.

Considering that each fish had cost me between 20 and 30 shillings I was not enamoured of the prospect that these, too, would take the vaptures and leave me. Nothing seemed to appeal to their taste until I offered them some white worm, and this really got them going. Despite all the suets I find this is the most popular live food which is available the whole year round, though, of course, it should not be overfed. Once the fishes were feeding they got away very well and were soon displaying signs of superb condition. All that was wrong was the disparity in size between the large scats and the rest of the collection, and I wish that I had held back until some smaller specimens had become available.

I was getting quite frustrated about my total failure to track down some puffers of suitable size, and hence when I was presented with these *T. somphongia* I was delighted with the possession of a species which is noted for its docility and at the same time its unique colour—it is rather like a little tortoiseshell cat with blue eyes. Many aquarists are deterred from keeping any of the Tetraodon because they are snappy things with a taste for tails of their own kind as well as others. Some come from freshwater and others from the sea, but most are said to be happy in brackish conditions. The three *somphongia* I secured were not given much chance of survival by their donors, since I had a 100 mile car journey before I could quarantine them, but ever-optimistic, I did not share these views. They certainly stood the journey without a qualm and it was not long before they were putting on size; they took food as soon as I got them home, and this is always encouraging.

After some 10 days in isolation I put them into the main tank with the scats, monos, bumble-bees and the glass perch. They seemed to settle down peacefully and managed to get their share of food without any difficulty so one might have concluded that the surroundings were quite satisfactory. By this time I had added more salt to the water and the concentration was about 1 tablespoonful of Meressazal per gallon. Everything was happy enough and feeding normally. These conditions prevailed for a fortnight, then the roof fell in.

*To be continued*
Pond Life and Live Foods

FEEDING with live foods is very important, especially for the fish breeder, but many aquarists are unaware of the different types of live foods available to them. In the interests of better fishkeeping the author has been collecting and feeding live foods to his fishes for over 25 years and passes on some of his experiences in this article.

To keep our fishes in the best of condition, in good colour and to maintain overall harmony in the tank, I believe that live foods should be fed as well as the prepared dried products, and with the many varieties of live foods available to the aquarist with a little knowledge on the subject, it should be possible for our fishes to receive some form of live food throughout the year.

Daphnia can be found in our ponds and even streams right through the winter unless conditions are so severe that the ice is too thick to break through. Some people believe that Daphnia as a food has no solid foundation and that the creature's hard shell merely produces a laxative effect. It is not, of course, a complete food in itself but all fish seem to find it a wonderful food and will eat it with relish. There are many species of Daphnia to be found in this country, and they come in all sizes and colours from 1/16 in. across down to brine-shrimp size, red, greenish, grey or almost black depending on what they have been feeding and the sort of water they have been collected from.

Large numbers of Daphnia die off during the winter, of course, but their method of reproduction ensures the reappearance of the crustacean when in spring and summer conditions are once again favourable. For long periods the females go on producing eggs and their young without the presence of the male. When conditions require it, the males reappear and fertilised eggs (resting or winter eggs) are produced. These eggs lie dormant for long periods, awaiting suitable conditions when they will hatch out.

Another wonderful live food is the Chyadorus larva. It goes under several names such as ghost or phantom larva and glass worm and varies in size from 1/32 in. to 1/16 in. The larvae can be found in ponds and lakes from November right through to the following April or May according to weather conditions. They are transparent creatures, taper at both ends, and move through the water in horizontal jerks. They are suitable only for the larger species of fishes, such as angels and the larger characins and barbs, which seem to find them delicious. These larvae should not be fed in breeding tanks because of the risk of their eating the fry. I have never witnessed this, but since they feed naturally on Daphnia it is very possible.

In the same ponds from which we obtain our Daphnia and ghost larvae can be caught another species called Cyclops. These are also plentiful in winter. They grow to slightly less than the size of a water flea (Daphnia) and look like small darts or tops, according to how they catch the imagination. These creatures live on small animal life, such as rotifers, Infusoria, tiny Daphnia, and thrive in green water and on green algae. Cyclops maupili (a stage of young Cyclops) are a very suitable food for some of the smallest species of fishes we breed in our aquariums. I believe that this live food has been grossly under-rated. Some aquarists say that their fish will not touch them, or that they are too hard on the fishes' mouth, but over the years I've found this food to be rated high in the fishes' diet and is more than appreciated when no other live food is available.

From the pond also comes our finest food for the smallest baby fish, pond Infusoria. Cultures of Infusoria can, of course, also be produced at home with lettuce leaves, dried hay, dried banana skins or potato peel. These should be placed in vessels of cold water and allowed to stand for a few days. The bacteria that arise provide the food for the Infusorians, the spores of which are airborne and will find their way into the vessel.

Perhaps Infusoria cultured at home are safest as our ponds unfortunately not only hold valuable live foods but also unwanted aliens. One of these that can be brought in with Daphnia and glass worms are ugly-looking Hydrae. These may be white, green or brown and can be seen sticking all over the glass sides of the tank and on the plants. They will breed into large harvests if not checked. They lie in wait for fry and use their long hair-like tentacles to poison and devour small fry or Daphnia or Cyclops.

From clear-running freshwater streams we can also obtain excellent live food suitable for the larger fishes. This is Asellus, the freshwater house. If bunches of plants from such streams are taken and shaken into a container, Asellus of all sizes, from 1/32 in. to 1/16 in. or more, will come tumbling out of the water. Another similar creature that many fishes will relish is Gammarus, the freshwater shrimp. These grow to about 1/4 in. to 1 in. long and like Asellus are grey in colour. Large numbers of these can be found in clear streams, around rocks and plant roots.

Tubifex or mud worms can be collected from dirty, stagnant ponds where there are plenty of rotting branches and leaves and mud round the edges. But it's a messy job collecting it and seems hardly worth the while when any amount of these worms can be purchased from local aquatic shops at a very low price. A great deal of Tubifex worms are collected from the Thames. Years ago I used to collect my own Tubifex from a pond that has since been filled in, but the worms were a really deep crimson colour, probably because of the different environment in which they lived. This is a live food that can be obtained all the year round. A lot of aquarists will not use these worms...
and say that they cause disease, but if they are kept properly and cleaned thoroughly the risk of disease is no greater than with any other live food found in water. The best way to keep large amounts of Tshifux is to use a small sink, the bottom of which has been covered with clean, coarse sand, and direct a continual stream of water onto it.

Bloodworms (the larvae of Chironomus midges) lay their eggs in a large mass formation that can be seen on plants just below the water line, where they hatch out and settle round the edge of the pond under leaves, twigs and in the mud itself. They move through the water with a figure-of-eight movement, are over 1/2 in. in length and are blood red. It is not good practice to give them to small fishes, which can choke on them, but they are very acceptable to larger fish.

Another tasty dish is the mosquito larva, to be found during the summer months. The eggs are laid in ‘raft’ formation round any pond or ditch where there is water and the larvae can be collected with a fine net. I’ve often taken these ‘rafts’ from the top of a little water found in cart tracks in a field. This is a delicious food for tropical fish but it must be used as soon as possible after it is obtained.

Often, dips with the Daphnia net in the summer pond bring up a good supply of different sized water tigers or dragonfly larvae. I agree that these ugly-looking brutes are very frightening, with their scorpion-like pincers at the front end and a nasty-looking tail end, but, in spite of their reputation, never throw them out. They are good food for certain types of fishes—the centre of their bodies is very soft and kills fishes, the patchbox group, reveal in eastern them. I get the large water tigers up to 2 in. or more in with the Daphnia and they all go in the tanks for food.

Away from the pond, there are four species of worm that must be mentioned in any discussion of live food. Perhaps the richest food of all is the common earthworm (Lumbricus). There are a lot of different species of worms and some are to be avoided—I learnt this a long while back, being an angler for the biggest part of my life and engaged for many years in collecting worms for fishing. I always avoid worms from smelly dung heaps. The best are the small pink or red worms about 1 in. to 3 in. long, which anglers call ‘brandlings’, and the best place to find these is under old privet hedge and lawn cuttings. If a wet sack is placed over these you will soon have a small colony of these precious worms. When the worms are gathered they should be placed in some nice green moss where they will thread themselves through and clean themselves of the mud they contain. These worms can be bred in very large earthenware flowerpots. The pots should be kept in the dark and cool and the worms fed on porridge. To get the worms out of the soil I have found that a most effective method is to pour a little mustard water over the surface: as a rule the worms then come up.

Enchytraeae, or as we all know them, white worms, are another good solid food for fish that can be found in the garden. These worms range in size from 1 in. to 5 in. and by far the easiest way to start them is to obtain a culture from a shop or those who supply them. They are very easy to culture and breed. A small wooden or plastic container is required containing a mixture of soil, peat and a little charcoal and sharp sand. They should be kept in a cool, dark, moist place preferably, such as a cellar, and fed regularly on porridge, potato mash or bread soaked in milk. A small piece of glass put flat on top of the soil after feeding keeps the worms together and makes it easier to collect them off the glass. White worms are excellent for conditioning fish, along with other live foods, to spawn.

A smaller worm, very similar to white worms, are Grindal worms and they are bred and fed in a manner similar to that described for white worms. The worms grow to about 1 in. in length and are excellent for feeding to fishes too small to take white worms. They should, however, be kept at 60-70°F.

Finally, the smallest worm of all, the micro worm. These tiny creatures are cultured in porridge, potato mash or oatmeal and after a few days the top of the medium is swarming with thousands of them. They can be seen as a shimmering mass and as a food are wonderful for baby fish and play a big part in their successful rearing after the hatching stage. The worm is just visible to the eye and sinks in the water fairly fast. It is pointed at both ends and under a strong magnifying glass has been seen to use its pointed ends to dig its way out of sight below the compost. However, when kept correctly they will swarm up the sides of the container in a web-like pattern. A scrape round the side of the container with a finger or matchstick will leave the worms adhering to the implement, which can then be dipped in the tank. These cultures require changing every so often or they will turn sour and smell. Micro worms are best kept in the seventies.

There are many forms of insect and other animal life that is available for the taking in an abundant and everlasting supply. So, this summer, if you are prepared to put yourself out a little for your fishes, why not take a large Daphnia net and a small box and look for a meadow with tall grass. If you take a few long sweeps through the grass with the net and look at your ‘lucky dip’ you will, I am sure, be very surprised at the number of small insects trapped there which will make tasty meals for your stock. Together with the creatures in the water, there is an enormous variety of life available to make a constant supply of live foods for our fishes.

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“Liven it up you chaps—no. 3 is getting restless”
THOSE old codgers like myself, who were around in the early days of organised guppy breeding in Great Britain, know that the aquarist in those halcyon times was often called upon to perform miracles and often did. The impossible took a little longer.

On 31st May, this year of 'Aquarist', contemporary hobbyists saw the impossible happen when The Fancy Guppy Association staged its Fifth International Show at Glebe Farm, Stockford, near to their Birmingham Section. Just look at the record: 846 entries brought some 1200 guppies to the bench. Exhibits came from both the Pacific and Atlantic coasts of America, from Germany, Austria, Denmark and Singapore.

If the names of their owners were a little strange to our Saxon ears, the product of their efforts spoke a common language to all keepers everywhere. The 15 Class 'A' judges had their work cut out trying to sort out the best from guppies that would have done justice to any show. One class alone, the Short Dorsal Veiltails, boasted 90 entries. Even classes normally thinly supported, like Lower Swordtails, had 33 figures that would make any show secretary's mouth water.

There are not enough superlatives in our language to describe the high standard of fish and the efforts of the organisers. Sufficient to say that after a decade the guppy folk have realised the ambition of staging the world's largest show. A big effort from aquarists who boast such a little fish!

* * *

The gestation time, the period between the female being fertilised and her giving birth, is usually reckoned to be between 22 and 24 days, though the optimum conditions created by the hobbyist when he brought the fish into captivity has resulted in this figure being increased to 25 to 30 days.

Once so fertilised by the male, the guppy mother can have up to a further six broods without any further attention from her spouse. Experiments just completed have shown that the time intervals between successive broods of guppies can be shortened by increasing the number of hours the tank containing the female is illuminated. A warning: leave the lights burning too long and sterilisation can result.

By PETER UNWIN

For quite some time now aquarists have been making use of sponge as a filter medium. Its availability and low price have tempted many hobbyists to use it as a substitute for other filter media. And, seeing as it is used in many of the smaller types of manufactured internal filters, why not?

Unfortunately, many of the pieces of sponge on sale at the ironmongers and supermarkets contain toxic dyes and resins, definitely not suitable for immersion in the aquarium. Don't blame the manufacturers: after all, they didn't make it for this job.

One letter from a guppy breeder told of a complete tank full of fancy guppies, which after such a sponge had been in use for some weeks suddenly started to whirl around like some Indian dervish. Death came quickly, despite rapid attempts at medication. Tests carried out by an expert on both the fish and the tank water revealed that the dye and resins used in the manufacture of the sponge sheet that the breeder had used in an external-type filter had produced the poisons; these had not made their effect felt until sufficient time had elapsed to null the aquarist into a feeling of security.

Play safe and, if you are not sure, use only the sponge sold for such purposes. Try leaving a piece of the sponge in water along with a few live Daphnia as 'guinea pigs'.

* * *

Do guppies emit sounds? Like the familiar dolphins, do they have a language all of their own?

Research into the subject gives the answer 'yes'. The noises emitted by Poecilia reticulata under test varied from a very low volume 'cheep'-ing, rather like a box of newly hatched chicks, to the squeaking of baby mice and certain insects. The report adds that only those guppy keepers with acute hearing capable of detecting sounds slightly above the normal human hearing range will be able to detect the sounds.

I'm not even going to try! Between the row in my fish room that emanates from the argumentative voices of visiting hobbyists and a pump that emits noises like the boiler room of a sinking ship, you would need acute hearing indeed. I doubt whether the guppy equivalent of a sergeant major could be heard above that little lot!

* * *

Readers of 'Guppy World' often write and ask for the names and addresses of pen friends overseas interested in guppies. Knowing what the publication of such information can result in—mail that would rival a pop singer's, I hesitate to publish these without the permission of the correspondent. However, here are some folk who actually ask for letters. After each name I have listed their particular guppy interest.

Dr Victor Scholz (genetics), 5330 South Western, Los Angeles, California, U.S.A.

John R. Parrott (black and cobalt guppies), 4488 Paula Street, Lakewood, California, U.S.A.

May Chase (blue and reds), 1135 East 7th Street, 4 Lond Beach, California, U.S.A.

Arnold Seth (guppy photography), Terry Setz (red and cobalt), 1934 Robinson Street, Radondo Beach, California, U.S.A.

Corine Burch (blue and half-black), 57177 Priory, Bell Gardens, California, U.S.A.
During the last year or so dealers have been offering for sale a very attractive little fish which they variously advertise as the platignum, the platinum or the golden tetra. So far as I am aware there is absolutely no connection between this and the famous make of fountain pens, so we will therefore concentrate on the last-named label.

If you refer to standard works on the subject you will find that the platinum tetra is listed as Gephyrocharax atracandatus, and if you compare its description with that of the fish, which, perhaps, are disorders themselves in your tank, you will find yourself taking issue with authority. ‘Body elongate, strongly compressed. Dorsal fin inserted far back. Lower supporting ray of caudal fin detached, spine-like in the male. . . .’ and so on. Sterba seems to be talking about something altogether different, and so he is.

If we consult him on the matter of the golden tetra, however, the picture becomes very considerably clearer, because here he sketches a fish that exhibits a beautiful shining gold . . . an intensely shining spot on the nape . . . a dark lozenge shape on the caudal fin root. This goes by the tag of Hemigrammus armstrongi, or Armstrong’s tetra. It is a fish to which I took an instant dislike when I first saw it a couple of years ago. I saw a tank of them in a dealer’s and although they were of good quality there was something not altogether straightforward about them that made me suspicious. As I couldn’t quite rationalise this feeling I asked the dealer some questions about them but he turned the tables on me and asked me what was upsetting me.

I answered that it was the uneven iridescence that seemed not quite natural and almost suggested that the fish were in some way diseased. Not altogether to my surprise I was told that it was to some form of minute parasite that this species owed its unusual appearance, that this only existed naturally in the home waters of the fish, and that it did not reproduce elsewhere. As a consequence, although the fish would spawn fairly readily in captivity its offspring were always of sombre tones and never achieved the brilliance of the parents. This seemed a fascinating story and convincing enough, but I have not since seen corroborative evidence of the parasite and its ecology.

It is perhaps sufficient to say that most authorities confirm the disappointing characteristics of fry which are reared in strange waters, so it seems that we have to accustom ourselves to buying in these fish if we wish to take advantage of their charms in a community tank.

I have kept a weather eye on this species for some time now and there seem to be those which exhibit a golden glow and those which exhibit a distinctly more silvery hue. Then there are those with blacker markings in the tail, then others in which the markings are either almost absent or markedly red. The latter are especially eye-catchers but I am unable to say whether one can rely on any of these forms retaining the features that are evident at purchase.

Some months ago I overcame my initial repugnance when I saw some adult specimens for sale and I decided to give them a trial, though I was far from optimistic about the likely outcome. They were an absolute dream during quarantine and took food almost as soon as they had been rehoused. They never showed any signs of nervousness and put on weight and just a little size. When they joined my other tetras they were immediately evident and have remained so ever since, and it is not being unfair to any other species to say that they rank only a little lower than the cardinals as being the most noticeable fish in the tank.

Whatever the conditions we can be sure of getting signals from these two: then come the glowlights and the fire rasboras and the tiny ‘fireflies’ in the form of the green-eyed rasboras and the lampeyes. Evidently I was fortunate in getting a pair of these golden tetras, as they have already spawned in the community tank, but this is as far as I shall bother about their procreation, unless some different and more favourable light is thrown on the likelihood of producing high quality fry. The fact that they are a pair no doubt helps keep their colour high, but even without this I think I would be tempted again and again to have some of these fish around, as I have been completely converted to them after not such a long acquaintance. I shall be very interested to see how they fare in the longevity League Table, and if they do well in this test they should become firm favourites within a few years.

For those thinking of following my example and trying their hand with this fish, there seem to be no problems connected with their welfare, given normal conditions. They eat almost anything and push their way to the head of the feeding queue quite fearlessly. They seem very happy in the 75-80°F (24-27°C) temperature range, in which the smaller tetras always seem brighter and more active than when they are in the lower reaches of the seventies (°F). If you have room for a shoal they should look superb. I am always on the lookout for fish which will behave well as shoals in community tanks but since I buy so many pairs and trios of different species I never seem to have the vacancies. Since this seems to be the lot of so many fanciers perhaps those who have had particular success in this direction would make their own recommendations in the PFM ‘Letters’ columns.

One mistake frequently made by beginners setting up their first tank is undue economy in the purchase of plant life. Sometimes this is because of the dilemma of every schoolboy, the perpetual lack of ready cash, but failure is caused by over-confidence in the ability to raise twelve vallineria from one plant within a month! I nearly always advise the overstocking of a tank in terms of plants, as the reverse process seems to create a

Continued on page 124
PETFISH MONTHLY visits

Mr and Mrs R. E. Dudley at Home

Mr R. E. Dudley is a particularly well-known figure around the club shows, and over the last 2 or 3 years has been steadily building up his position as one of the most successful exhibitors of coldwater fishes in the south-east. Ron, as he prefers to be called, is ready to admit to the pleasure he derives from an informal chat and friendly exchange of ideas with his fellow hobbyists, and when PEM visited his Wimbledon home recently it was only with the greatest difficulty that the conversation was steered to cover his own background and achievements in the hobby.

Ample proof of his popularity is to be found in the numerous visitors he entertains each week, and he is also host to the South Park Aquarist Study Society, which he and his wife, Marguerite, founded some 3 years ago. Their 16 year old son, David, has helped them and is now developing an equal skill in his own aquatic activities. All three are members of the Goldfish Society of Great Britain, and Ron is particularly enthusiastic about a new venture he is planning for the development of fancy goldfish varieties: he aims to establish a small nucleus of GSGB members, with sufficient time and tank space to spare, who will each concentrate on the breeding and improvement of a single variety. By specialisation in this manner, it is hoped to preserve the past quality of the fish and avoid the deterioration of stock which Ron fears could cause a serious setback to coldwater fishkeeping in the next decade.

The Dudleys' experience in fishkeeping goes back over 20 years, when Marguerite invested in an aquarium for Ron's birthday—complete with a pair of goldfish. Their serious pursuits began with the arrival of their original fish house in 1960, and since then they have worked as a team to breed and raise various strains of fancy goldfish: this 'team' concept is particularly appropriate since Ron tends to work on long-term ideas, leaving the feeding, cleaning, topping-up and other routine duties to the other members of the family. The earliest successes were with goldfish eyes, joined more recently by pearl scales: American sunfish have also earned a place in their fish house, and although a spawning of pumpkinseed bass was lost last year, high hopes are held out for 1970. Marguerite succumbed, albeit briefly, to the tropical side of the hobby a short while back, but despite successes with breeding Cichlaoma zonatus, blue acaras and convict cichlids she found they did not offer the challenge and satisfaction of the coldwater species (tropical enthusiasts please note!).

Having heard of the great faith the family have in their own foods, such as live daphnia, white worms and dried ox heart, the visitor would not doubt be taken aback to discover an enormous collection of empty proprietary food drums around the fish house; David, however, is quick to explain that these are the fruits of the various raffles and awards at the club shows they have visited. The secret of success, Ron assures us, is good feeding, plenty of natural light and clean tanks. On this last point, Ron has always been an enthusiastic supporter of sub-gravel (biological) filters and his own aquaria are kept in

Interviewed and photographed

By CLIFF HARRISON

Mr Ron Dudley and son David at work on their new fish house that will have a water-circulating system.
good order with them: 'This type of filter is the closest one can get to Nature, and surely that would be hard to improve upon'. Certainly he has some of the closest coldwater tanks to be found, and by avoiding any overcrowding appears to have found the ideal balance.

The Dudley's garden is fast becoming a maze of concrete ponds, and the aim is to build even more each season to cope with the increase in stock. Ron has always found lack of space to be a big problem and his latest creation—a new fish house to his own design—should help to solve it. The inside is being planned around the late Dr R. J. Affleck's original principles of continuously moving water to achieve optimum growth in young fish, and will hold three 12-ft.-long trough tanks at different levels. Water will be flowing continuously from tank to tank, and between each one there will be a special biological filter to remove the waste and debris.

A shallow, circular pool is also to be built, with another water pump to ensure the constant movement of its contents. Although there is still much work to be done during the summer, it is pleasing to see a complete break being made from the jumble of odd-size tanks so often seen in fish houses. When everything is finally in working order, Ron should not be too surprised if he finds other people adopting similar ideas for their own use.

Back indoors, over coffee, Marguerite brought out some of their collection of trophies and awards, including those from the 1969 Aquarium Show. Their proudest possession is a 10-in. high model of a veiltail goldfish, beautifully sculptured in German Silver by dockyard apprentices in the early fifties, awarded to them last year at the Portsmouth A.C. Open Show: on this occasion, as at an increasing number of such shows, they managed virtually to sweep the board in the coldwater classes. At most weekends during the summer the family are to be found at some show or convention, representing in strength the coldwater scene. In this way they hope to foster new enthusiasm for what has been regarded for many years as an area of declining interest in the hobby, the 'Cinderella' side of fishkeeping, and thereby to restore fancy goldfish to their pre-war importance.

Ron Dudley will no doubt be envied by many for the undoubted success he (and his family) have achieved for their efforts in recent years. But in spite of all these successes, perhaps his most important characteristic is one of contentment, reflecting the genuine enjoyment he still gets from fishkeeping—whether it is browsing through his collection of aquatic magazines, collecting Daphnia and plants 'in the wild' or just planning new ventures. And isn't that, after all, just what any hobby is about?

Personal Comment
Continued from page 122

It is also very much of a mistake to imagine for one moment that the initial layout of plants will in any way resemble the way in which Nature will have rearranged it within a year or so. People often say kind things about the plant arrangement in some of my tanks, but I have to tell them that, more often than not, the disposition was only very slightly of my own making. One learns from some of the less expected reactions of plants, but these vary from tank to tank, and from district to district, so that not every failure need be attributed to personal misjudgment. Provided that one keeps an eye on the trends of the more vigorous varieties and holds back their invasions into smaller clumps by judicious pruning, pleasing general contours can be achieved, but it is a mistake to let things just take their course because this is the certain way to get a tankful of just one plant, and the chances are that everyone else for miles around has a surplus of the very same!
THE AQUARIUM CATFISHES—16

“All Persons Turn Away”
(Family Chacidae)

The more familiar one becomes with the world of fishes, the more difficult it becomes not to notice certain similarities and parallels appearing in completely isolated families and species. It is apparent from this that certain ideas of design and function score proportionately more evolutionary successes than others. While we can only speculate concerning the exact reasons, we can imagine that certain procedures appear in different places at the same time simply because the design was a good and functional one which filled a need and therefore was successful when presented with its mutational chance at establishment.

The idea of a sedentary, bottom-dwelling life sustained by a proportionately enormous mouth is by no short tentacles on their heads and rings of tentacles around their eyes, others do not. Whether this is a sexual characteristic or is possibly seasonal in nature is not known, but specimens which I have seen appeared not to have them.

This is quite an interesting fish which in spite of its remoteness both geographically and according to family is not dissimilar in its actions to the banjo catfishes of South America (Asprediniidae), since it will burrow in the sand and even when touched or dug from beneath the sand with a finger makes little effort to get away.

A predator in Nature, in the aquarium live earthworms or small fishes such as guppies are advisable foods, since

By BRAZ WALKER

Chaco chaco, drawn from above (from Day’s Fishes of India)

means a novelty in the fish world, but the Indian catfish family Chacidae in some ways seems almost to be a low-cost imitation of the goosefish, Lepisosteus, which is without any doubt one of the sea’s most homely creatures. The similarity of Chaco chaco, the only known representative of the family, to the goosefish has occurred to me not only because of the appearance but also the similar mode of living, but I was a bit surprised to find that this same parallel had been drawn many years ago by Cuvier and Valenciennes when they described the fish as ‘Chaco lophiodont’. The specific name lophiodont means ‘like Lepisosteus’ (the goosefish).

Briefly, the goosefish is the largest of the saltwater angler fishes and certainly among the ugliest. With its built-in fishing rod which is in reality a modified dorsal spine, it waves a juicy-looking ‘bait’ in front of its unbelievably cavernous mouth. This is adorned outside with concealing fleshly flaps and inside with a battery of murderous teeth. The gape transverses the entire front end of the huge head, and the goosefish earns his living by lying sedentarily in wait for its victims, which consist of everything from sea birds to small sharks.

Described by Hamilton-Buchanan as ‘of all the hirudin animals of this tribe . . . the most disagreeable to behold’, Chaco chaco is one of those fishes which is so strikingly ugly that, especially to the collector of the unusual, there is an immediate attraction. Some specimens have some specimens seem shy about eating. Meikten called the fish ‘omnivorous’ but I would view this with some reservation, and suggest either live foods or good substrates such as ground ox heart and frozen or freeze-dried foods. Feeding will probably prove much more successful with the lights out. This is where living foods have a definite advantage since they can be left in the aquarium overnight without danger of water fouling.

Because of its sluggishness, Chaco chaco is at a disadvantage with swift, aggressive feeders. For this reason an aquarium of its own kind or of fishes with which it will not have to compete is probably advisable. This is not a large species, reaching little more than 8 inches in Nature and less in the aquarium.

In conclusion, a few sentences from Day’s THE FISHES OF INDIA, in which he quotes Hamilton-Buchanan, seem appropriate (Uranoscopus is the stargazer and Cottus is the sculpin): ‘It has the habit of the fishes called by Lacépède Uranoscopus and Cottus, that is, it conceals itself among the mud from which, by its head appearance, and a number of loose filamentous substances on its skin, it is scarcely distinguishable, and with its immense mouth open, it is ready to seize any small prey that is passing along. In order that it may see what is approaching, the eyes are placed on the crown of the head. All persons turn away from it with loathing.’

All, perhaps, but collectors of rare catfishes.
The Black Widow is a Beginner’s Fish

By RUDOLPH ZUKAL

Photographs by the author

Translation by F. MARSH

The most usual request that the newcomer to the hobby puts to the aquatic trader or to the experienced tropical fish breeder is: please recommend a fish for me to start off with that is not too demanding or expensive. I get this request almost daily and my answer is not, perhaps, what you might expect. I don’t recommend one of the livebearers, but one of a number of barbs and of a few members of the Characidae family. Many experienced aquarists like angel fish (Pterophyllum scalare), but the beginner’s first tank is often too small for the fish. So I always recommend the black widow (Gymnocorymbus ternetzi). In body shape and colour it is not unlike the angel fish but is not so demanding about ‘living room’, as it only grows to about 1½–2 in.

The black widow was first imported into Europe in 1955 from the River Paraguay and the River Negro in Brazil. Its pleasing shape, and the fact that it is undemanding and peaceful, makes it easy to understand why it is so often seen in aquaria. It has a deep, fairly elongate body, compressed at the sides, with well developed fins. The front of the body is silvery grey with two black oblique bands behind the jaws and with a dark streak across the eyes. The jaw is black. In young fish the hind part of the body, and the dorsal and anal fins, are deep black but with age this black becomes less intense. Pectoral and caudal fins are pale-coloured and transparent.

The male is the smaller, slimmer fish and when he swims against the light it is possible to see that the male’s body-cavity tapers towards the rear. The caudal fin of the male often has visible white
After attempts by the darker male to stay by the side of the female he rams her gently in the belly region spots on it. The female fish is bigger, rather more robust-looking and, again, when the body cavity is visible it can be seen to be rounded at the posterior end. The female is also somewhat lighter in colour.

A medium-sized tank, normal tapwater and a variety of ordinary aquarium plants, with a few floating plants, suit this fish very well. They will eat all types of food, prefer to be kept in a small shoal and can be recommended for a community tank with inhabitants of *Hyphechisobrycon* and *Hemigrammus* species.

Black widows are not at all difficult to breed. So that I could photograph the fish in the act of spawning I used an all-glass tank, of about 2½ gallons capacity, filled with tapwater that had stood for some time and had been acidified with the help of peat. The temperature was 79°F (26°C). As these fish spawn on fine-leaved plants I put a few clumps of Najas at the back of the tank, and in the foreground, Java moss and single *Myriophyllum*. The fish are very productive and it is not unusual for up to 1000 eggs to be laid, but the parents should be removed after the spawning is completed as they will eat the eggs. It is very difficult to see the eggs whilst they are being laid.

The fry hatch after about 36 hours and are free-swimming after a further 5 days, when they must be fed well with the finest fry food and live food. Because of the quantity of young involved the tank must be provided with good aeration and, of course, if all the young are to be reared they must be spread out into numerous tanks after 2-3 weeks. The fish become sexually mature after 8 months, but it is best not to put them to spawn before their second year. Long-finned varieties of black widows have been bred recently.
THE TROWBRIDGE & D.A.S. fifth Open Show was an outstanding success with a record number of fish entries, 665. Over 500 visitors visited the pleasant venue, the Nelson Haden Girls School hall, and took full advantage of the members surplus fish trade stand. The special display of aquarium fishes proved very popular. Class winners at the show were:

Small barbs, Mr F. Brown: a.o.v. barbs, Mr F. Brown, H. & H.; Mr R. Harvey; Joye Charite, Mr C. Phillips; Apistogramma and Nanacara, Mr T. Hatton; a.o. hatch, Mr P. Treadgold; angla, Mr A. Bull; Siamese fighting fish, Stokers; a.o.v. labynotini, Mr C. Butler; Egglaying tompkins, Mr C. Phillips; Catfish, Mr R. Smill; Corydoras, Mr F. Williams; Rasboras, Mr R. W. Patrick; Denison and mini, Mr G. Butler; Botia, loaches and eels, Mr G. Further; A.o.v. tropical, Mr B. Jones; Seised pairs, Mr C. Phillips; Guppies, male, Mr M. Baydon; female, Mr J. W. Wheatley; Swordtails, Mr T. Hodge; platys, Master Patrick; mollies, Mr J. Pumphord. Common goldfish, Mr R. Sadler; shubunkins, Mr D. Langdon; A.o.v. fancy goldfish, Mr R. King; Breeder egglayers, Mr P. Treadgold; livebearers, Mr G. Further. Furnished jars, Mr C. Phillips.

The fish that won the best in show award and the award for the best tropical was a red-fin HM work entered by Mr T. Jones of Weymouth.

THE UXBRIDGE & D.A.S. open show attracted 477 fishes in the 24 classes. Judges Mr J. Essopp, Mr F. Tomkins, Mr C. Brown, Mr H. Towell, Mr K. Nutt and Mr R. Esson, awarded first prizes in class to the following:

Individual furnished aquarium, Mr R. Fordor (Uxbridge). Barbs, Mr P. Grooveren (Peter Ginger Bar Bap, Schuberti barb). Characins, Mr J. Welsh (Tetraodon, Schuberti, dwarf, cyclopterus, Mr A. Blake (Bassingbroke, A. rami). A. labynotini, Mr F. Kendrick (Freelance, combtail). Egglaying toothcarp, Mr Tarrant (Henderson, Breeding shub). Tropical catfish, Mr C. Buckland (Riverside, P. gracilis). Corydoras, Brochis, Mr S. Moorley (Tottenham, C. coahuilis). Rasboras, Mr B. Furnell (Uxbridge, R. dem Minimum). Danios, minnows, Mr R. Smith (Kingston, zebra danio). Lomaches, Mr M. Carter (Bracknell, dwarf, Pinicula). Tropical egglayers, Mr D. C. Bunday (Betal Green, red-fin shark). Two pairs of a. tropical fish, Mr G. Greenhalt (Kingston, blue finless, giant danio). Guppies, male, Mr R. Bowes (Walthamstow); sword, Mr T. Cruickshank (Ealing, red sword); platy, Mr R. Fordor (Uxbridge, best sword, female); a.o.v. platy, Molli, Mrs D. Cruickshank (Trophy presented by the Arena Pet Stores, Uxbridge, value: 45). A.o.v. livebearer, Mrs D. Cruickshank (L. citrinellus).

Single tail goldfish, Mr D. Goodbody (Walthamstow, long shub); twin tail goldfish, Mr W. Matthews (Uxbridge, twin tail goldfish). Breeder egglayers, Mr R. Cox (Hayes, Hypancistrus, C. galacticus). Livebearers, Mr G. Greenhalt (Kingston, veliferus mollies).

Plants, Mr R. Fordor (F.B.A.S. Colindale Plant nursery, Uxbridge, zonellus).

Mr G. Greenhalt won the Annual Common trophy for the best fish over 9 in. long —a black shark. The Cup for the club with the highest points went to host club Uxbridge (2, Kingston; 3, Walthamstow).

BOSTON A.S. second Open Show proved a real 'crowd-puller'. Entries were exactly double those of last year and 348 exhibitors from many societies competed for the 11 classes, trophies and other prizes. Prizes were presented by Mr A. Woodthorpe, and judges were Mr A. Link, Mr J. Reynolds, Mr B. Inman of Nottingham. Two societies, the week-old Sherwood A.S. and the well-known Alfreton A.S., took the major share of the prizes. Mr J. Wright of Alfreton won the best fish in the show trophy and the best coldwater fish award, and the best coldwater fish Cup was won by Mr M. J. Saunders of Spalding.

Alfreton's display of fish was of high quality and the Society made with its first show should have been so enhanced by its second. Other class winners were:

Guppies, Mr G. Buchanan (Sherwood); mollies, Mr J. Igos (Sherwood); swordtails, Mr H. Bunnage (Lincoln); platys, Mr H. Kuhn (Lincoln). Barbs, Mr L. Wright (Alfreton); large, Mr E. Parker (Grimsby). Characins, small, Mr J. Wright; large, large, Mr Duffin (Boston). Killifish, Mr M. Skippington (Alfreton). Minnows and danios, Mr M. Allsop (Alfreton). Mousefishes and foxtails, Mr T. Sands (Boston). Rasboras, Mr S. Gerrard (Alfreton). Cichlids, dwarf, Mr H. Kuhn; large, Mr J. Wright; angels, Mr D. Sewell (Sherwood). Catfish, Mr G. Buchanan (Sherwood). Lomaches, Mr D. Jackson (Dulcote). Fighters, Mr Parton (Grantham); a.o.v. amphilates, Mr H. Bunnage. A.o.v. tropical, Mr E. C. Smaller (Boston). Breeder egglayers, Mr J. Igos; livebearers, Mr H. Kuhn. Plaines, egglayers, Mr R. Clarke (Sherwood); livebearers, Mr P. Strangeways (Kettering). Goldfish and comet, Mr Bunnage (Boston); shubunkins and fancy goldfish, Mr Saunders (Spalding). A.o.v. coldwater, Mr T. Sands (Boston).

ORASM A.S. Open Show was judged by Mr W. Loder and Mr B. Pengilly (F.N.A.S.) who awarded first class in the following:

Anabantids, Mrs A. Gregory (Nelson, 75); fighters, Mr and Mrs Hogarth (Salford, 73). Barbs, small, Mr F. Gregory (Orrery, 81); large, Mr K. Perkins (Merseydye, 77). Labeos and sharks, Mr B. Seabright (Gorton; Opening Show, 84); best fish in show; Characin, small, Mr F. Gregory (80); medium, Mrs S. Gregory (85).

Corydoras julii that she entered won for her the best fish in show award and the Best Egglayer Cup. She was also presented with one of the Rose Bowl. Twenty-seven clubs in total were represented at the show and bunched 551 entries. Club members, with Mrs. Hall entrance, judges and visitors who helped to make the show a success.

Those who came first in classes were:

Barbs, Mr C. Pike (High Wycombe, Schuberti) (Walthamstow, 1st); Mr P. Grooveren (Peter Ginger Bar Bap, Schuberti barb) (Uxbridge, 2nd); Mr J. Welsh (Tetraodon, Schuberti, dwarf, cyclopterus) (Kingston, 3rd). Characins, Mr G. Greenhalt (Kingston, T. niloticus, 81); dwarf, Mr G. Greenhalt (Sherwood); Breeder egglayers, Mr J. Igos; livebearers, Mr H. Kuhn. Plaines, egglayers, Mr R. Clarke (Sherwood); livebearers, Mr P. Strangeways (Kettering). Goldfish and comet, Mr Bunnage (Boston); shubunkins and fancy goldfish, Mr Saunders (Spalding). A.o.v. coldwater, Mr T. Sands (Boston).

MRS NICOLL of Reigate & Redhill was very successful at the Croydon Cup. Mr. J. Reynolds and visitors from all over southern England, the EDMONTON SECTION OF THE FANCY GUPPY ASSOCIATION made a very good stand to the show when they held their Spring Open Show. This was the first open show
of the year for guppy breeders and the exhibitors, some of whom had made the journey down from Birmingham, put on a display of guppies of which quite a few must be considered the finest in Great Britain if not the world. The principal award winners were presented with perpetual desk calendar and pen sets while the individual class winners received engraved ash trays bearing an enamelled guppy motif. While the judging took place visitors were entertained with a film on marine life.

The high standard of fishes on show was reflected in the fact that of the 35 class winners 12 were given Gold and Silver Star awards. Mr. Fowles and Mr. Vinall entered the best fish in show, a delta-tailed male, and the best in breeders class, a team of females. Best Opposite Sex was a natural-tailed female entered by P. Morrissey. Class winners were (section names: EL, East London; E, Edinburgh; B, Birmingham; R, Reading): Male classes: Cofer, Mr. D. Crane (EL). Top award, Mr. W. Holmes (E). Second award, Mr. D. Dugdale (E). Male Scales: Mr. F. W. Green (EL). Female classes: Meased, Mr. C. Vinall (EL). Male Scales: Mr. F. W. Green (EL). Best Opposite Sex: Mr. W. Holmes (E).

THURROCK A.S. third annual Open Show was held recently and while the judges were assessing the 506 entries, visitors were able to watch the afternoon’s sport on a specially installed T.V. set. Thurrock member Mr. Ed. Nicoll prepared and cooked a meal for over 80 people and light refreshments were served during the afternoon. Apart from the 456 tropical fishes entered, there were also 15 furnished aquaria, 29 tropical plants and 20 goldfishes. Twenty-three societies entered the show as well as many freelance aquarists. Many visitors congratulated show secretary Mr. D. Durrant and his assistant Mr. J. Furber on the show’s arrangements. Mr. Ted Jessop, chairman of the F.R.A.S., presented the awards. First-place winners in the classes were as follows:

- Furnished aquarium, Mr. S. Mason (Furnace). Tropical plants, Mrs. Rose (Walthamstow). Scales tail goldfish, Mr. D. Durrant (Walthamstow). Secretary’s Trophy, Mr. C. Goodbody (Walthamstow). Best coldwater fish, Mr. K. Appleyard (Thurrock). A.A.S. coldwater, Mr. J. F. Story (Walthamstow).


- Juvenile classes: Male, Mr. R. Smith (E). Female, Mr. D. Durrant (Walthamstow). Best bred, Mr. R. Smith (E).

- Breeding classes: Male, Mr. D. Durrant (Walthamstow). Female, Mr. D. Durrant (Walthamstow). Best matched pair, Mr. D. Durrant (Walthamstow).


- Junior classes: Male, Mr. A. J. Greenhalgh (Walthamstow). Female, Mr. D. Durrant (Walthamstow). Best juvenile fry, Mr. D. Durrant (Walthamstow). All entrants are invited to membership of the M.I.S.B. and the Membership Secretary is Mr. K. Low.

- AN UPSIDE-DOWN catfish, shown by Mr. K. Low, achieved the best in the class award at STOCKTON-ON-TEES A.S. Open Show. Class winners were:

- Furnished aquaria, Mr. J. R. S. Green (Walthamstow). Tropical plants, Mr. D. Durrant (Walthamstow). Scales tail goldfish, Mr. C. Goodbody (Walthamstow). Secretary’s Trophy, Mr. C. Goodbody (Walthamstow). Best coldwater fish, Mr. K. Appleyard (Thurrock). A.A.S. coldwater, Mr. J. F. Story (Walthamstow).


- Juvenile classes: Male, Mr. R. Smith (E). Female, Mr. D. Durrant (Walthamstow). Best bred, Mr. R. Smith (E).

- Breeding classes: Male, Mr. D. Durrant (Walthamstow). Female, Mr. D. Durrant (Walthamstow). Best matched pair, Mr. D. Durrant (Walthamstow). All entrants are invited to membership of the M.I.S.B. and the Membership Secretary is Mr. K. Low.

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- Breeding classes: Male, Mr. D. Durrant (Walthamstow). Female, Mr. D. Durrant (Walthamstow). Best matched pair, Mr. D. Durrant (Walthamstow). All entrants are invited to membership of the M.I.S.B. and the Membership Secretary is Mr. K. Low.

SUNNY WEATHER brought many spectators along to the BURRY & D. A.S. Open Show and many Lancashire and Yorkshire societies were well represented, to bring the total number of entries well up on last year’s total. Bury itself won back the inter-society shield which they lost last year. Mr. J. Tonge of Oldham won the best fish in show award with a snakehead. Class winners were:

- Guppies, male, Mr. J. Tonge (Oldham). Female, Mr. J. Tonge (Oldham). Scales tail goldfish, Mr. D. Durrant (Walthamstow). Secretary’s Trophy, Mr. D. Durrant (Walthamstow). Best coldwater fish, Mr. K. Appleyard (Thurrock). A.A.S. coldwater, Mr. J. F. Story (Walthamstow).


- Juvenile classes: Male, Mr. R. Smith (E). Female, Mr. D. Durrant (Walthamstow). Best bred, Mr. R. Smith (E).

- Breeding classes: Male, Mr. D. Durrant (Walthamstow). Female, Mr. D. Durrant (Walthamstow). Best matched pair, Mr. D. Durrant (Walthamstow). All entrants are invited to membership of the M.I.S.B. and the Membership Secretary is Mr. K. Low.
A GREAT deal of activity has been taking place on the subject of a national competitive standard for coldwater fishes. A meeting was held in May, at the Ladywood Community Centre in Birmingham, under the chairmanship of Mr. T. L. Dodge, which was attended by delegates from areas covering the North, North East, London, Bristol and the Midlands. It was there unanimously resolved that a truly national competitive standard, democratically arrived at, was much needed, and personal invitations were sent out to all known Associations, Federations etc. to send a minimum of three delegates, all of whom should carry voting authority from their respective organisations, to attend another meeting on 15th July. We hope to publish the results of this meeting as soon as they are received.

AT the SOUTHEND, LEIGH & D.A.S. Open Show, the best fish in the show award went to Mr. R. Kertridge. Other winners of the classes were:

- Guppies, a.v. male, Mr. K. Lane (Southend); a.v. female, Mr. R. Pannier (Southend); a.v. platy, Mr. R. O'Brien (Thurrock); a.v. angelfish, Mr. D. Edwards (Southend, D. Edwards trophy).
- Cichlids, dwarf, Mr. D. Edwards (Mundy trophy); a.v. angel, Mr. D. Chevallier (Southend).
- Loaches, Mr. R. Shakerley (Bowthorpe).
- Breeder, Breeder, Mr. Jones (Norton, 74, section winner).
- Agassiz, Moor Esmeralda & Endler (Bolitho, 75, section winner).
- Cichlids, small, Mr. J. Standley (Bolton, 75, section winner).
- Loaches, Mr. J. Standley (Bolton, 75, section winner).
- Cichlids, dwarf, Mr. D. Edwards (Mundy trophy).
- Loaches, Mr. R. Shakerley (Bowthorpe).
- Breeder, Breeder, Mr. Jones (Norton, 74, section winner).
- Agassiz, Moor Esmeralda & Endler (Bolitho, 75, section winner).

WHEN Mr. Alan Jackson lectured to MID-SUSSEX members on catfish, he reminded his listeners that a few scraps of food reaching the bottom of a tank after the other fishes had eaten their fill were not sufficient to keep catfish well fed; they should, furthermore, be fed at night as they are nocturnal fishes.

WHEN the EAST MIDLANDS SECTION of the FEDERATION OF GUPPY BREEDERS SOCIETIES were hosts at the Spring Assembly, the meeting was held in the lovely surroundings of the Eyres Monsell Community Centre in Leicester. It proved to be a most enjoyable meeting though members had hoped for a bigger attendance. Class winners were:

- Pistia, Mr. C. Cleave (Leicester).
- Cichlids, Mr. J. Baker (Sutton). Original valued, Mr. H. Bird (Sutton). Double valued, Mr. H. Bird (Sutton).
- Cichlids, Mr. D. Edwards (Southend, D. Edwards trophy).
- Cichlids, dwarf, Mr. D. Edwards (Mundy trophy).
- Angel, Mr. D. Chevallier (Southend).
- Cichlids, small, Mr. D. Edwards (D. Edwards trophy).
- Loaches, Mr. R. Shakerley (Bowthorpe).
- Breeder, Breeder, Mr. Jones (Norton, 74). Other classes: Best breeder, Mr. J. Carter (Leicester); Best fish in show, Mr. A. Baker (Sutton). All other awards, Mr. J. Carter (Leicester).

- D.A.S. Open Show—The Eric Shaw trophy for best fish in show, the tank for the best small fish in show and two plaques, Mr. E. Hazledine (left), the show secretary, presented the prizes.

- D.A.S. Open Show—The Eric Shaw trophy for best fish in show, the tank for the best small fish in show and two plaques, Mr. E. Hazledine (left), the show secretary, presented the prizes.
In Brief . . .

. . . HINCKLEY & D.A.S. members enjoyed a slide lecture on anabantids by Mr D. Bennett of MAA.S. Mr Shepherd won in the table show for novices and Mr C. Watkin in the female guppy class. A large trophy will be presented for the best marine fish and also a trophy for the second place. An individual or supply will be provided for all marine entries so that each entry can receive continuous aeration.

. . . MEMBERS of TONBRIDGE & D.A.S. found the talk on tropical fish diseases given by Mr J. G. Osborne most interesting and enlightening, particularly the advice on remedies that he had found successful. Mrs L. Bellingham won in the table show classes for barbs and female guppies and Mr T. Hines in the class for male guppies.

. . . THE BREEDING and life cycle of ciclids was the subject of the slide show YATE & D.A.S. enjoyed in May. Members have won 54 prize cards in four open shows recently.

. . . MR LANE of AMESBURY & D.A.S. took joint first, second and fourth places in the May bottle show judged by Mr Lennex. Mr Rose was joint first and Mr Elliot third.

. . . THE CONSTRUCTION, design and siting of garden ponds was the subject of the talk given by Mr W. Ryder of Portsmouth to members of SOUTHAMPTON A.S. at their monthly meeting in St Deny's Church Hall, Southampton. Mr Ryder illustrated his talk with coloured diagrams and sketches and gave listeners many useful tips. The table show for twin-tailed goldfish was won by Mr V. Fish with a moor.

. . . NORTHWICH & D.A.S. have won the trophy for the first time in their annual inter-society quiz and table show competition with Chester. The club won both sections of the competition and Mr H. Bowman was the leading points scorer with five first prizes and the best fish in the show award. Northwich now hold the trophy until the away return match at Chester in October.

. . . MR CHURCHILL of Cardiff gave a most interesting talk on home aquaria illustrated with a fine selection of colour slides to BISHOPS CLEEVE A.S. A flying fox entered by Mr F. Evans won the table show; Mr F. Scrivin won in the guppy class senior and Mr Tester in the guppy class junior.

. . . The first leg of the Six Club meetings took place at INDEPENDENT A.S. venue, Holloway Institute, Eden Grove. Total points allocated by judge Mr Ted Jessopp were: Hendon 22; Riverside 19; Independent 14; Hampstead 3 and Brent 2.

. . . VARIOUS fish now available to the would-be marine aquarist were illustrated on slides by Mr G. H. Jennings when he spoke to WALTHAMSTOW & D.A.S. on keeping marine. New members are very welcome to attend meetings and should contact secretary Mr A. Chandler, 68 Uplands Road, Woodford Bridge, Essex.

. . . TOPICS of interest to new members of the club made a very interesting discussion at the May meeting of WEYMOUTH & D.A.S. It is also proposed to arrange a show on fish breeding for the beginner shortly. Table show classes will be: August, a.v. labyrinth; October, Corydoras; November, H. and H.; December, a.o. cichlids.

. . . COLOUR Genetics in Goldfish was the title of the lecture given by Mr R. Gardiner to members of ILFORD & D.A.S. Afterwards he kindly acted as one of the judges of the table show. The a.v. single tail goldfish class was won by Mr H. Berger. Mr S. Buxton was awarded first in the a.v. swordtail class and Mr T. Bloomer first in the a.v. labyrinth class.

. . . HOPES that first interest in the Society has now become deeprooted were fulfilled when 25 people attended the May meeting of CARshalTON & D.A.S. held at their regular meeting place, The Sun, North Street, Carshalton, Surrey. Mr Ted Jessopp drew on his own experiences to give an amusing and helpful talk on general fishkeeping. Mr John Layne and Mr A. Rusling gave an excellent table show of the egger pair class, Mrs Jean Horley in the a.v. catfish, and Master John Dixon in the junior egger pair classes. Would-be junior members, senior members or members of other societies who would like to attend a club meeting should contact the secretary at 8 Reading Road, Sutton, Surrey.

. . . THE JIM IRVINE trophy competition has just got under way again at EALING & D.A.S. (this is an any species competition with each nominated entry being shown four times throughout the year). There were 54 entries bunched in round one, with a speckled mollie taking first place. Table shows are now held at practically every meeting so that each class in the FBAS recommended schedule is covered twice during the year. A behind-the-scenes visit to the Aquarium at the London Zoo took place recently, the highlight of which was the hand-feeding of the monster record-breaking carp.
HARROGATE & D. A.S. have enjoyed talks on livebearers by Mr A. Rudd of Bradford, on keeping tanks clean and in good condition and on foods and feeding by Mr K. Bateman of Aireborough though some of the lady members found the thought of worm-chopping somewhat distasteful. Mr Mike Allen was auctioneer at the club’s first auction, and the club magazine, editors Mr David Foster and Mr E. Gandy, is to take a big step forward with the adoption of a coloured cover.

MID-SUSSEX A.S. members worked hard to make their float and stall for the local Dolphin Fair a great success. The Society also holds a monthly auction of fish and plants, which is very popular with members. The club supported the Portsmouth inter-club show when 15 societies showed fishes in eleven classes. Mid-Sussex took sixth place jointly with Portsmouth. At the Brighton inter-club show Mid-Sussex achieved 904 points (the winner, Portsmouth, was awarded a total of 913).

WHEN Mr Armstrong of Basingstoke lectured on killifish to NEW FOREST A.S. A.A. took along specimens of the species referred to. His lecture covered some of the early history of killifish-keeping in Europe and America, and the breeding of, maintenance of, and water conditions suitable for these fishes. Winners of the club’s Champion trophies have been: Coldwater Points trophy, Mr L. Menhammet; N.F.A.S. Tropical Points trophy, Mr D. Harding; Champion coldwater, Mr L. Menhammet (all first four places); Champion tropical, Mr C. Knapp.

A NEW and bold step was taken by the MIDLAND ASSOCIATION OF AQUARIUM SOCIETIES when they held their first inter-society show at Drayton Manor (N. Warwick A.C. being the host), but it was an enormous successful venture. Twenty-two societies bunched 336 fishes in 10 classes. A points system operated for the first six places and Bedworth A. & P.S. came on the shield for 1274.

ATTENDANCES of 40 and 59 at meetings of the GUEST, KEEN & NETTLEFORD A.S. will leave room for more, and visitors will be welcome to attend meetings held in the G.K.N. Works Restaurant.

VAUXHALL MOTORS A.S. enjoyed a busy evening when Mr B. Hawkins was the guest speaker. After a very well illustrated and interesting talk on all aspects of guppy breeding and showing, not only did the club hold its own table show for guppies and Corydoras (Mr T. Martin won in both classes) but a friendly match with Bletchley was also held. Another talk, by Mr Graham Cox, illustrated with some beautiful slides, made members very keen to start marine fishkeeping.

OLDHAM & D. A.S. in announcing the date of their Open Show, Sunday, 20th September, point out that an added attraction of their venue, Werneth Park, is the fine natural history museum in the grounds.

... THIS year sees the twenty-first Annual Open Show of RETINAL GREEN A.S. and preparations are under way for a special ‘Birthday Show’ to be held on Saturday, 9th September. More information will be made available as soon as possible. Club member Mr S. Cowell completed his success at the Tottenham A.S. open show (four firsts, a second, third and fourth) by winning the club’s own table show ‘Fish of the Month’ competition.

... AT the first monthly meeting in May, club member Mr Philip Gurr not only gave a very enlightening lecture on genetics to GUILDFORD A.S. but went on to win first, third and fourth places in the over tanks class in the table show. The second monthly evening was a ‘lucky dip’ when members were invited to pick up one of a number of pieces of folded paper and give a short talk on the subject written on it.

... SEA-SIDE club, HASTINGS & ST LEONARDS A.S., found that they were still able to learn a great deal about native marine fishes when Mr Ted Jessopp gave a lively and interesting talk on the subject. Keeping to the same theme members enjoyed two excellent films—‘Between the Tides’ on native marine fishes and one of tropical marine fish filmed off the East African Coast. Annual award winners are: Mr A. McCormick, the Chiswell Cup for most points in table shows; Mr Alan Reed, Member of the Year Cup; Mrs J. Gregg, Horne Aquaria Cup; Mr J. Gregg, Singapore Bowl; Mr G. Chalcraft, A.O.V. Cup.

... THERE was a large attendance at the BASINGSTOKE A.S. meeting when Mr C. A. T. Brown spoke on killifish and the audience was not disappointed. The club congratulates the F.B.A.S. on the high quality of all their speakers whose services they have been fortunate enough to obtain this year. Club member Mr Les Jordan also spoke with authority on the subject of cichlids as the possessor of many fine specimens of this species.

... MR J. SEALEY of YEOLMIL & D. A.S. triumphed again when he won the Entisch Stainer Tropical Pairs Cup with a pair of blue gouranis in the Society’s competition. Mr Sealey is a new member and Mr Hubbert, the chairman, stressed how pleasing it was to see new members at the Society among the trophy winners. The annual inter-club show with TAUNTON A.S. resulted in a draw, both societies gaining 55 points. The best fish in show was a tinfoil barb entered by Mr Larkcombe of Taunton.

... BRADFORD & D. A.S. have hit the right formula of devoting the second meeting of every month primarily to the introduction of newcomers to the hobby when problems can be sorted out in an informal manner, and a talk by Mr R. Winterburn on plants was excellent for this purpose. At the first meeting in the month a talk by Mr O. Ricketts of Huddersfield on the health and biochemistry of fish and animals proved most instructive.

... A LARGE and attentive audience of LEAMINGTON & D. A.S. enjoyed the talk by Mr Phil Jenks on guppies. Mr Jenks has been specializing in the breeding of the cofer guppy for 15 years and he explained just what points must be met to get the required stock. Club members have also enjoyed a lecture by Mr Jarvis on ‘Water Content’ and a day’s outing to Twyescroft Zoo.

... NOTTINGHAM & D. A.S. won the second inter-society show with Hucknall & Bulwell by 42 points to 28.

... ANNUAL trophies were awarded to the following members of THE ISLE OF WIGHT A.S. at their annual dinner: Points Challenge, Mr S. F. Stevens; Guppy Cup, Mr E. Davison; best tropical Mr. J. Bradley; best coldwater Mr. K. Willis; novice coldwater, Mr R. Easteal; home-humbled aquarium, Mr S. Stevens; Plant Cup, Mr E. Davison; Ladies Cup, Miss J. Foster. At a recent inter-club match with Hounslow A.S., host club Hounslow won by 293 points to 209.

... TORBAY A.S. came second in the inter-club show held at the Crawford Hotel, Exeter, between seven West-of-England clubs. Taunton A.S. were first with 19 points, Torbay 12, Exeter 3, Plymouth 9, Torquay 2, Ilfracombe 2, Bideford 0.
**Dates for Your Diary**

25th July. **GLOSOOP A.S.** Open Show. Glossoop Centre, Talbot Street, Glossoop. Details from Mrs. M. B. Slee. 3 Chapel Lane, Hasfield via Hyde, Cheshire.


27th July. **LYTHAM R. A.S.** Open Show. Lytham Road, Birkbeck, Lytham St. Annes. Details from Mr. G. Howard, 26 Ellerdale Avenue, Blackpool (phone 407520).


29th August. **CUMBERLAND A.S.** Open Show. The Market Hall, Kendal. Details from Mr. J. F. Wall, 16 Wordsworth Avenue, Kendal (phone 4066).

29th August. **LEIGH A S.** Open Show. Venue to be announced.


30th August-2nd September. **BEDWORTH A S.** Open Show. Bedworth Town Hall, Bedworth. Details from Dr. M. F. Elliott, 75 Station Street, Atherstone, Warwick.

1st September. **YEOVIL & D. A.S.** Open Show. Yeovil & District Agricultural Society, Grange Farm, Thrushmorton, Yeovil. Details from Mr. D. M. Plass, 3 Field Lane, Bogsworth, Yeovil, Somerset.

1st September. **CINCINNATI A S.** Open Show. Clifton House, North Street, Diss, Norfolk.


3rd September. **STOCKTON A.S.** & **CLEVELAND A.S.** Open Show (joint venture). Stockton Road, Stockton-on-Tees. Details from Mr. R. E. G. Young, 22 Park Road, Stockton-on-Tees. Details from Mr. J. A. Robinson, 52 May Street, Sunderland. Details from Mr. J. R. B. Hannant, 225 Pennington Road, South Shields, Tyne and Wear. Details from Mr. R. K. Thompson, 46 Treford Road, Shrewsbury, Shropshire. Details from Mr. R. J. G. Teasdale, 14 Kings Road, Reddishmore, Near Crewe, Cheshire.


4th September. **SOUTHAMPTON A.S.** Open Show. Hampshire Youth Centre, 499 Emsworth Road, Southampton, Hampshire. Details from Mrs. J. Woodward, 34 Emsworth Road, Emsworth, Hampshire.

4th September. **WARRINGTON A.S.** Open Show. The Queen's Head, Hindley Lane, Warrington, Cheshire. Details from Mr. J. Higgin, 11 Hillside Road, Horsforth, Leeds. Details from Mr. J. W. W. Higgin, 11 Hillside Road, Horsforth, Leeds.

4th September. **FOUR STAR A.S.** Open Show. Details from Mr. I. C. Williamson, 3 Queen Street, Lincs.

4th September. **RIVERSIDE A.S.** Open Show. 24 Officers' Club, Liverpool Road, Bromborough, Wirral. Details from Mr. J. E. Parker, 3 Barnaby Road, Bromborough, Wirral.

4th September. **BRACKNELL A.S.** Open Show. Prastwood Community Centre, Bracknell. Details from Mr. R. W. Smith, 326 Chester Road, Nantwich, Cheshire (phone 22415).

4th September. **TOBACCO A.S.** Open Show. Tobacco Town Hall, Tobacco. Details from Mr. J. E. Parker, 3 Barnaby Road, Bromborough, Wirral.


4th September. **EAST LONDON AQUARISTS & PONDKEEPSERS ASSOCIATION** Open Show. Rippon Road Park, Barkingside, Essex.


11th September. **BRENT A.S.** Open Show. Brentwood Memorial Hall, High Road, Wadhurst, Kent. Details from Mr. J. W. W. Higgin, 11 Hillside Road, Horsforth, Leeds. Details from Mr. J. E. Parker, 3 Barnaby Road, Bromborough, Wirral.


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