

BULLETIN

SPRING 2016



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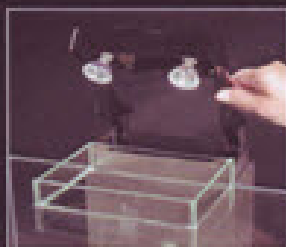
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QUARTERLY BULLETIN

SPRING 2016

CONTENTS

<i>EDITORIAL</i>		Page 4
<i>MARINE CLOWNFISH</i>		Page 5
<i>AQUA 2015 REPORTS</i>		Page 7
<i>AQUARAMA NEWS</i>		Page 13
<i>MID-SUSSEX 50th ANNIVERSARY CELEBRATIONS</i>		Page 14
<i>STICKLEBACK EVOLUTION</i>	Michael le Page	Page 16
<i>THE THERMOMETER STORY</i>	Dr David Ford	Page 20
<i>THE GREEN CORNER (Showing Crypts)</i>	Ron Forder	Page 25
<i>FISH COLOURATION</i>	Dr David Pool	Page 28
<i>SPRING CLEAN YOUR POND</i>	Malcolm Goss	Page 33
<i>USEFUL PLANTING TIP FROM HOUNSLOW</i>		Page 36
<i>2016 EVENTS CALENDAR</i>		Page 37
<i>IN MEMORIAM - HUGH SMITH</i>		Page 38
<i>SAM BRAY - AN APPRECIATION</i>		Page 39

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Edited, published and produced for the FBAS website by Les Pearce

EDITORIAL

Welcome to the Spring 2016 edition of the Bulletin. We have some fascinating articles in this edition - something of interest for everybody.

I would like to take this opportunity to welcome Keith Cocker as the new FBAS Chairman and wish him every success in the position and to thank outgoing Chairman, Joe Nethersell, for all that he has put in over the years and wish him all the best for the future. I would also like to congratulate Mid Sussex AS on their Golden Jubilee this year (report inside).

Please, please keep the articles and information coming in. Anything that you think may be of interest to fellow fishkeepers is always welcome. You can contact me or send articles using the details below.

A big thank you should go to Dick Mills for his continuing and invaluable help in the production of this issue and I would also like to offer my grateful thanks to ALL contributors for this issue and to *New Scientist* and Michael le Page who have given their kind permission to reproduce what I think is a very interesting article. I hope you agree.

LES PEARCE (FBAS Bulletin Editor).

Email: Les_the_Fish@sky.com

Post to: 44 Weeks Road, RYDE, Isle of Wight, PO33 2TL



A MESSAGE FROM RON ALLUM OF HOUNSLOW & DAS

Congratulations to Allan Finnegan and Roy Chapman on becoming FBAS Yellow Badge holders. Retiring Chairman, Joe Nethersell, who presented the badges at the December FBAS Assembly meeting, said they were worthy recipients for the many years of service and their contribution to fish keeping.

Congratulations also due to Keith Cocker on becoming FBAS Chairman.

Ron Allum.

MARINE CLOWNFISH

MALCOLM GOSS

My first experience of keeping a marine aquarium was back in the late 1950s and I had sea water delivered to my house at a cost of 6 pence (2.5p) per gallon. This was before the salt mixes that we use today were readily available.

However, the fish did not live for long and I carried on keeping freshwater tropicals. It was many years later that I started keeping marines again when I set up an aquarium in our hallway. I thought this was a good location as the hallway had no natural light, thus avoiding algae growth. I was soon to learn that I would be wrong. As well as placing the usual corals etc, I also introduced three Sea Anemones that had been given to me. In turn, this led me to purchase four Clownfish. These fish really do live within Anemones, their body mucus giving an invisible protective covering that allows them to live within the Anemone's stinging tentacles. These days, as well as the common Clowns, there are "designer Clowns" that came in a range of prices to match the many colour patterns.

I was told that many marine aquarists had bred Clown fish so I felt I must try myself. I set up a two foot (60cm) all glass aquarium, this tank had been used in a "Furnished Aquarium" competition and was painted on the sides and back so not letting any side light in. I used a powerful air pump, as it is handy to have more air if you think the fish need it. I fitted a low wattage fluorescent light as a friend told me that the young will hide on the bottom if the light is too bright. Filtration can be added but I was worried the young fry may well get sucked in, so I had none, and relied on carrying out regular water changes. Spawning Clowns are very aggressive and will try to bite any fish that invades their tank space. It is best not to disturb them once the tank is set up and the fish are settling in. My fish, like Cichlids, cleaned a space; these cleaned areas can be smooth flat stone or flat shells that are placed very near to the Clowns' favourite anemone.

A cluster of eggs were laid on a flat, smooth, large pebble, they started out being orange in colour, but changed to a darker shade within about five days.

The temperature was set at 84°F. and they started to hatch over a period of between 6 and 10 days. It was noticeable that they were not all hatching at the same time. The parents just left the eggs to look after themselves and it is best if you can to catch them and set up a small tank using some of the water from the main tank, and this will have to be aerated. You may wish to pick up the pebble with the un-hatched eggs and, keeping it under the water, transfer it into a clear jug and then place in the smaller tank thus keeping it in the original water all the time.

The eggs are now silver in colour and you can quite clearly see the eyes within the eggs. After hatching, the young feed on plankton and small organisms. The low light is important at this stage and may even be helped by blocking out half, or even two-

thirds of the light as the fry will stay on the bottom and will not feed under bright light. Even the 'power on' light on your heater might be too bright! Shield this if you can.



The critical times are when the egg yolks have been used up at around four days of age. After this time, feed the fry on Copepods and Artemia along with the smallest amounts of very fine dry fry foods. The fry will grow very fast and within a few days will have reached a size of 5mm or more. After a couple of weeks you can feed them on larger powdered flake foods, minced shrimp and grated mussel and this will tell you the most difficult stages have passed.

You may well experience initial losses, but this is only the start of learning and the adults will spawn again within about a month, and the rewards are great.

AQUA 2015 REPORTS

Hounslow A.S. members Peter Anderson, Malcolm Goss and Dick Mills visited AQUA 2015, held at the Telford International Centre on 14-15th October.

No less than 88 Companies were showcasing their aquatic products and services. The Exhibition is staged within two adjoining Halls and, with so many new products display plus many 'improved' ones, it's a lot to take in – especially if you are only able to visit on a single day. It's also a chance to meet up with many friends



who we have met over the past at such occasions, either at trade Shows or aquatic Shows and exhibitions. All three of us had different interests and views on how we saw the Show although a common factor was that we were there as hobbyists or 'consumers' rather than business folk.

MALCOLM GOSS

As an aquarist who takes a lot of interest in furnished aquaria (and there were some beautiful set-ups, both marine and freshwater), for me too many of the trade stands displayed 'dry aquariums'. These are aquariums set up with rocks, gravel and replica plants and having no water. We all know how imitation plants have improved over the years and they certainly have a place, often helping the new aquarist set up their first furnished aquarium in conjunction with real plants; this



helps offset the cost of filling up a fully-furnished tank with real plants from the start.

The selection of realistic replica plants from AQUA ONE could leave no one feeling that their individual tastes couldn't be catered for. Hounslow members are keen on setting up fully-furnished displays with all-live plants as seen at this year's Festival of Fishkeeping.



One technical trick that did catch my eye, was on the ATLANTIS display of cascades; they had a very clever way of silencing the returning water noise – they simply put a thick layer of black foam filter type material in the 'moat.'

Still with pond things, the Oase BioTec Premium 80,000 Filtration System from BIOTECH had a filter that looked as though it could dispense any service you asked of it – luckily the Show had a real refreshment area or else I might have been tempted!

However, I enjoyed my time at AQUA 2015 and it was great to see the strength within our hobby that showed its newest and most technical sides.

DICK MILLS

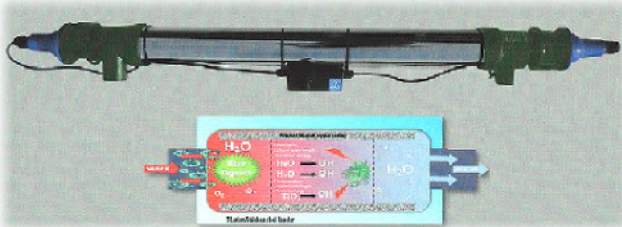
Whilst appreciating the logistical and practical reasons for setting up aquariums 'dry' with self-supporting replica plants, like Malcolm I too like live plants and a great display was on Show at the AQUADIP Stand. Not only a cascading display of greenery but also a huge back-up of products (notably the EASYLIFE range) aimed at prolonging and extending their natural life in the aquarium.



The apparent fascinations at this 2015 event were the very many variations of LED-based lighting systems. Of particular interest was TMC's Light-tile, which set off their nano-sized marine tank (complete with protein-skimmer) to perfection.



We are all familiar with 'healing lamps' and the adverse effect that the long winter months can have on human characteristic, and a new water-treatment lamp, the CLOVERLEAF Radical Steriliser can apparently banish such feelings, along with a huge range of pathogens, from the aquarium. Thanks to the combination of UV light and



the semiconductor Titanium dioxide, the resultant hydroxyl radicals sterilise the water passing through the unit. Obviously designed for commercial installations, - three models are available – there are plans to scale-down the sizes to make aquarium use possible.

If you're looking for a self-contained nano system, then look no further than the NEWA range. '20,' '30' and '50' litre range aquariums are available in freshwater format with the '30R' equipped for marine use. Each freshwater tank includes filtration, heating and lighting with the marine tank you also get a protein skimmer and aeration unit.



So that you can maximise the space within the tank, the whole 'technical works' sits supported on the rear-left-hand corner of the aquarium thus allowing plenty of access to the aquarium's contents.

NT LABS had a 'Best New Product' on show. Their range of Pro-f foods featured highly in the prestigious 'Best New Products' display and you can read about their success elsewhere in this magazine.

PETER ANDERSON

As a 'bottom of the garden fish-house' owner, I am interested in back-up systems for when I am away (or just too lazy to trek down the garden in winter).



Also from CLOVERLEAF, their Auto Air Pump will run on its built-in battery for at least eight hours in the event of a mains power failure. An auto-charger is also built in to ensure the battery is ready to take over at any time, and there is no drop in generated air volume between battery and mains powered operations. Three models are available with output volumes to suit various depths of water and also offering multiple outlets – 6-18, depending on model. The prices are around the same as 'Hi-blo' pumps.

The next item worth a mention was a tablet from INTERPET – no, not a mini hand-held computer, but their latest aquarium aid, whose purpose is aptly described in its name. 'Keep it Clean' tablets are designed to help create the perfect, healthy environment for your fish and plants. Algae, sludge and waste will build up in your aquarium whether you like it or not and will ultimately lead to water quality issues and outbreaks of disease. Keep it Clean will break down excess sludge and algae in your tank allowing it to be easily removed by your filter or as part of your regular partial water changes. Plants will also flourish as key nutrients for plant growth are introduced to the environment to help create a beautiful aquarium. I have a fish-house and some tanks are fine but others have always suffered with algae problems. I'll give these tablets a try and update the Bulletin at a later date. At the Show, it was not on general release but I believe it is now available.



On the lighter side, if you'll pardon the pun, LEDs were everywhere and a few stood out more than others. One that may be useful is Interpet's screw in LED. This can be screwed into existing mains light fittings (ES type). A useful facility is that it can be adjusted so the LED's face the required direction. This could be

way to experiment with LEDs over an aquarium without breaking the bank immediately. Certainly would be one way to illuminate mini-furnished and/or nano aquariums easily. ARCADIA have many LED light units available to the aquatic hobbyist. As a “half way change” it may be worth trying their LED tubes. The Classica T8 LED Lamp integrates an LED light source encased in a traditional fluorescent linear lamp fitting. The LED chips are waterproof inside a clear lens, allowing maximum natural light to flood the aquarium.

CLASSICA



The LED technology significantly reduces energy consumption to one third of the fluorescent equivalent, light output is an average 70% more, giving an overall 5x efficiency improvement. The comparison also indicates the life span is double, lasting 2x longer, reducing the need for lamp replacement.

The light produced from LED also has more visual impact, using a series of spot light sources, it creates a dramatic ripple effect not possible with fluorescent lamps. Powered using traditional Magnetic Controllers, the T8 LED Lamp is the most cost effective and easy way to fit LED, whether you are installing new aquarium lighting or simply upgrading from fluorescent lamps. Please note: These LED units are not compatible with Electronic Ballast Controllers.

[MOST RECENT POST-SHOW UPDATE](#)

Lidl are currently selling LED units (about 2 foot long) at 2 for £20.00. Pete Anderson has invested in some for his fish-house, more pictures and updates to follow.



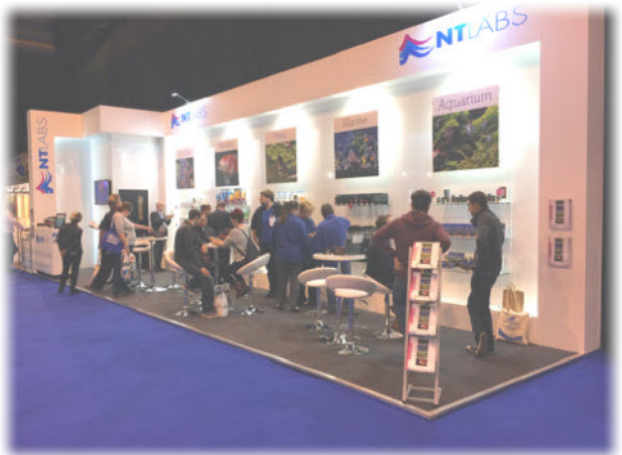
NT Labs Pro-f Named Best New Product at Aqua 2015!



The team at NT Labs are thrilled that the new range of Pro-f foods have won this award. Judges said "This is a good range with an innovative pour or shake feature, innovative colourful packaging, and a great price point." The Pro-f range of aquarium fish foods has been engineered over a number of years to an unrivalled specification. All of the foods in

the range have been made using the highest quality ingredients along with the latest nutritional technology. From perfectly manicured aquascaped aquaria with ornamental shrimp and nano fish species, through to competition grade discus, all the fish you love to keep are catered for.

This prize rounded up the best Aqua so far for NT Labs who saw a huge increase in the number of orders taken. As always the team at NT Labs enjoyed seeing all of their valued customers at the show and would like to thank the team at Impact Exhibitions for putting on such a fantastic show! For more detailed information about Pro-f and



all other products be sure to visit www.ntlabs.co.uk. Check out Pro-f in action at www.youtube.com/ntlabsofficialsite and make sure you like NT Labs on Facebook: www.facebook.com/ntlabs.



AQUARAMA MOVES TO CHINA!

VNU EXHIBITIONS ASIA LTD and UBM EXHIBITION SINGAPORE PTE LTD are pleased to announce that they have completed a deal to transfer the ownership of Aquarama and Pet Asia wholly to VNU EXHIBITIONS ASIA LTD, which will operate these events beginning with the 2016 edition.

Aquarama is Asia's most important ornamental fish, invertebrates, plants and accessories trade show having taken place in Singapore biennially since 1989. The world-acclaimed and highly-regarded Aquarama International Fish Competition is a regular feature of the event boasting more than 1,200 entries. In 2007, Pet Asia was introduced as a co-located event to extend the offering to pet supplies and services.

In a fast changing environment, it is time for Aquarama to embrace a new future. With immediate effect, the show becomes an annual event and is relocated to Guangzhou, where it will benefit from a fast growing domestic market, a strong network of aquarium accessories suppliers and the rising role of China in the ornamental fish trade industry.

Aquarama 2016, the 15th International Exhibition for Aquarium Supplies and Ornamental Fish, will take place at Guangzhou Import & Export Fair Pazhou Complex on September 22-25, 2016. With more than 300 exhibitors expected, the event will propose a much larger show floor than previous editions, top-level seminars, numerous on-site activities, farms and factories visits and of course fish, shrimp and aquascaping competitions.

Along with a clear focus on ornamental fish and aquarium supplies trade, specific exhibit sections for upstream suppliers, public aquariums, quarantine and transport solutions will be combined with an ambitious hosted buyer program to bring the right audience to the show. Aquarama 2016 will be co-located with Aqua Fair Asia and Pet Fair South-China, two events introduced in 2015 by VNU EXHIBITIONS ASIA LTD to support the development of Aquaria and Pet markets in South-China.

MID SUSSEX CELEBRATE THEIR

GOLDEN JUBILEE

The only thing missing was a telegram from Her Majesty!

On the 27th February, nearly 70 fishkeepers within reasonable distances gathered at Patcham Community Centre to celebrate the 50th Anniversary of the founding of Mid-Sussex Aquarist Society.



STELLA SOPER RECEIVING HER COMMEMORATIVE

As with any 'Big Occasion' there needed to be some formalities and respects to be paid. Stella Soper, wife of the late Society President David Soper, received a Commemorative Award from Andy Feast, whilst Chairman Ken Best had a dual duty to perform –

welcoming the guests to the evening and also presenting his wife, Marion, with the Society's 'Member of the Year' Award.



MARION AND KEN BEST

Notwithstanding, the 'serious side' of the evening was getting to grips with the lavish Buffet and the subsequent socialising between fishkeeping friends.

Ben Sayers was rightly congratulated on achieving the ripe old age of 80 and coming right up to date, John Smith offered a 'Product Placement' moment by advertising the Society's forthcoming Open Show.



Tombola and Raffle prizes were donated by a wide range of sources, from Members, Guests and the aquatic Trade. A magnificent Venetian Glass



Fish (what else?) was the top prize in the Lucky EntryTicket Competition and is now living with Trevor and Carol Butler. There were lots more rewards to be had in the main Raffle drawn later in

the evening.

A display of Society memorabilia – Show Cards and photographs from years past – proved a popular place to stop and reminisce. A visual Fishy Quiz was provided by Dick Mills but, after the exertions of journeys to the Buffet, not too many people gravitated to the far end of the Hall in order to be able to view the projected clues! However, it did reinforce the theme of the evening was fishkeeping after all!



Here's to the next 50, Mid Sussex!

Super-fast Evolving Fish Splitting Into Two Species In the Same Lake

By **MICHAEL Le PAGE**

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[New Scientist](#) and Michael Le Page

Original article may be found by clicking [HERE](#)

Some thought it was impossible. But a population of stickleback fish that breed in the same streams is splitting into two separate species before our eyes, and at rapid speeds.

Three-spine sticklebacks were introduced to Lake Constance in Switzerland around 150 years ago – a blink of an eye in evolutionary terms. But since then, the fish have begun splitting into two separate types: one that lives in the main lake (pictured above left, female top, male in breeding colours below), and another that lives in the streams that flow into it (above right).

The main lake dwellers are bigger, with longer spines and tougher armour. In theory, these differences could be due to lifestyle rather than evolution – perhaps lake fish survive longer and grow larger.

But David Marques of the University of Bern and colleagues have found that there are already clear genetic differences between the two types. “We could be glimpsing the beginnings of two species,” he says.

What makes this finding extraordinary is that both types of fish breed in the same streams at the same time of year. They have been interbreeding all along, and still do, yet they are splitting into two genetically and physically different types.

Splitting Apart

This kind of speciation, known as sympatry, was once thought to be extremely unlikely, says Chris Bird of Texas A&M University Corpus Christi, who studies how organisms are evolving by analysing their genomes. The conventional view is that speciation almost always requires two populations to be physically separated to prevent interbreeding, for example, living on different sides of a mountain, or on different islands in an archipelago.

This is because when animals mate, a process called recombination mixes up gene variants, meaning the genes of a mother and a father will be shuffled together in future generations. As long as interbreeding continues, it's unlikely that two groups with distinctly different genetic traits will arise.

But Marques' team found that the genetic differences between the two fish types are concentrated on the parts of chromosomes that are less likely to undergo recombination. As a result, the sets of gene variants that give the two types their distinct characteristics are less likely to get split up.



Same lake, different fish
Eawag/David Marques

Rapid Change

We cannot know for sure that the Lake Constance sticklebacks will continue evolving until they become two non-interbreeding species, says Marques. But

evidence for sympatric speciation is growing, from mole rats in Israel to palms on Lord Howe Island, Australia, leading some evolutionary biologists, including Bird, to think it could be surprisingly common.

There is another case where sympatric speciation seems to be occurring nearly as fast as in the sticklebacks, Bird points out: apple maggots evolved from hawthorn maggots within two centuries of apples being introduced to North America.

As for the speed of the sticklebacks' separation, there are now innumerable other examples of recent evolution that show how fast it can happen, from cancers becoming resistant to drugs and bedbugs becoming resistant to pesticides, to fish getting smaller to avoid becoming our dinner. It's possible that such rapid evolution may even be the norm, rather than the exception.



OATA ON THE LOOKOUT FOR NEW CHIEF EXECUTIVE

The Ornamental Aquatic Trade Association has announced the retirement of its long-standing Chief Executive Keith Davenport after 25 years in the post.

Keith was recruited to help set up and run a new trade association, originally called OFI UK, to tackle a number of big issues facing the industry at the beginning of the 90s. Renamed OATA in 1997, he has taken the organisation from strength to strength, raising standards



and awareness over a quarter of a century. The trade association will now start the process of recruiting a new Chief Executive and the role will be advertised shortly.

“The OATA Directors are very sad that Keith will be leaving us but we understand that he considers it’s the right time to hand over the reins after a quarter of a century protecting and promoting the industry,” said OATA Chairman Mark Evenden.

“Keith came to us as a fresh-faced lecturer at Sparsholt Agricultural College where he taught the ornamental fish-related courses. He was recruited by Richard Sankey and Dave Keeley to help set up and take forward a new trade association to tackle a number of big issues threatening the industry in the 1990s. And frankly he hasn’t stopped since!

“The fact that our members – and indeed all companies that work within the ornamental aquatic industry – are still doing business is largely down to Keith’s tenacious efforts on our behalf. He’s represented UK businesses at national, European and even world level and we estimate that because of his work he’s saved the industry more than £250 million in that time. That’s quite an achievement but after two and half decades he’s probably earned a bit of a rest!

“We’ll certainly miss him but we have known this was on the cards so we’re now planning for the future. We’ll be advertising the role in the very near future and Keith will be with us as we plan a smooth transition for the new Chief Executive.”

Keith added: “After 25 years at OATA I feel it’s time to move on and do other things. It is purely down to the passage of time. It’s a great opportunity for OATA to take forward its development and increase its ability to promote and protect its members and the industry as a whole. I have a period of notice to serve so I’ll be around for some time and I hope I’ll continue to receive the tremendous support that I have to date and I will continue to do my best for OATA.”

THE THERMOMETER STORY

Dr DAVID FORD

This is my Goldfish aquarium – now installed, like me, in a centrally-heated apartment. So it does not include a thermometer; the wall-mounted barometer shows the room, aquarium and fish temperatures, which remains constant at 24°C.



If I had a tropical or marine aquarium, I would need a heater, even at 24°C, to make the water a little higher – and safeguard against room cooling. This means a thermometer would be essential to record and so regulate the water heating.

So what type of thermometer is needed and indeed - what are they?

How It All Began

The thermometer began life as the Thermoscope in the 1600s, invented by a Chemist called Galileo Galilei, in Vienna. It had glass spheres filled with coloured water-alcohol mixtures floating in a sealed glass tube full of water. The spheres moved up and down according to the ambient temperature. Pretty, but not very accurate.

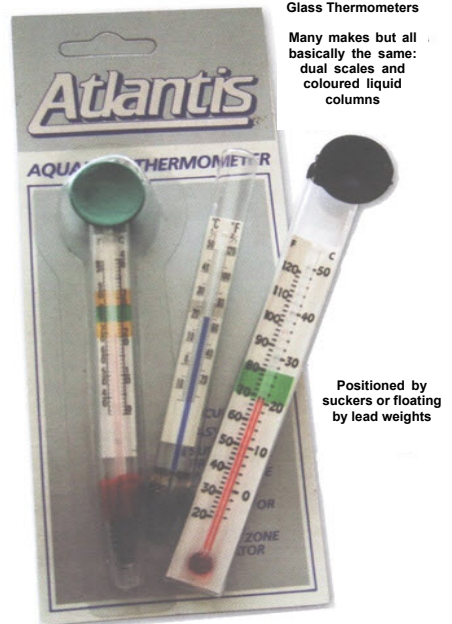
A medical doctor colleague called Santorio Santorio added a scale to the Thermoscope, and so the Thermometer was born. The scale was arbitrary but made precise by a German Physicist called Gabriel D. Fahrenheit in 1724. He chose an iced water mix as the lower value and boiling water as the higher one. For unquoted reasons he decided to divide the difference by 180, with 32 being the freezing point and so 212 the boiling point.

Hence the Fahrenheit scale was born and adopted by the scientific community – for a while. In 1742 Anders Celsius, a Swedish Astronomer, decided to metricate the scale and chose 0 for the freezing point and 100 for the boiling point. He called it the Centigrade scale, based on an old French word cent for 100 parts. This was preferred by the scientific community and replaced the Fahrenheit scale, but only in their publications.

What It Meant For the Hobby

The aquarium hobby began in the 1800s and so chose the Fahrenheit scale – which is still used to this day. With metrication, especially in Europe, the Centigrade scale became increasingly used whereas in America, for colonial reasons, they stayed with Fahrenheit. This gave rise to aquatic publications quoting both values so manufacturers of aquarium thermometers decided to include both scales thereon.

As usual, things are even more complicated. 'Centigrade' means 'degrees of a circle' in



Spanish hence their scientists had a problem, solved by the EU choosing 'Celsius' after that inventor Anders Celsius as the preferred name ... the units remain the same.

This was a step too far for the Aquarists, so we still quote Centigrade and/or Fahrenheit in the fish's world, but Celsius in our world – unless you are American!

Furthermore, when physicists understood the nature of 'heat' (it is simply the vibration of molecules - that is why microwave ovens work!) they decided that a scale based on this property was best. Lord Kelvin (actually Sir William Thomson, Baron Kelvin of Largs, Scotland) did this in 1848 by choosing the lowest temperature possible (when the vibrations cease) as 'Absolute Zero'. In Centigrade this is minus 273.15°C (minus 523.67°F)...there is (so far) no upper limit and the values are quoted as degrees Kelvin °K. Won't affect aquarists.

Thermometers For Our Fish Tanks

The choice for the aquarist is very great these in these technical times – but whatever the system is chosen they are all precise and accurate. The traditional thermometer is a glass tube with Mercury-filled internal bore, but these are becoming rare now that the use of Mercury is banned by the EU regulators (the metal is toxic).

The replacement is alcohol stained red or blue with a stable (won't fade in the light) dyestuff. Both Mercury and alcohol are 'thermometric' liquids, which mean they expand with rising temperature but shrink with cooling, hence the accuracy of the scale readings as the liquid moves up and down the internal tube.

But now we have the digital age where liquid crystal technology is used to show the numerical values directly. A sandwich of plastic strips holds a 'chital nematic liquid crystal' – these are long-chain symmetrical molecules that arrange themselves in ordered chains of spirals. When light strikes these chains it is reflected in a particular colour if the wavelength is the same as the spiral's pitch. As the pitch of the spirals changes with temperature, so the

colour of the reflected light changes too. By choosing a particular molecular structure that reflects light at a given temperature, each 'cell' in the manufactured strip shows a colour when that temperature is reached. It does not reflect at other temperatures.



The strips holding the cells of liquid crystals are plastic with self-adhesive backings. Hence they can be stuck to the outside of

the aquarium glass or acrylic side and accurately show the temperature within that tank..

Go Digital

These digital thermometers are now mass produced in the Far East and so are cheaper than the traditional glass ones. They 'read' the temperature of the aquarium glass, which will be the same as the internal water. The liquid crystals change colour from black to orange, then green, then blue, then back to black as the temperature passes through the cell's particular sensitivity range. The green colour is the value to choose as the true value – but the orange and blue are only 1°F or ½°C apart.

Heater–thermostats can have these thermal readers built-in (with heat barriers so the heater itself is not read) or LED (Light Emitting Diodes – yet another



story) added to reveal the effective temperature.

As technology marches on manufacturers will exploit every discovery to help (i.e. sell to) aquarists.

The latest gadgets available at (just) affordable prices are Digital Meter Readers.

American Marine Inc. make the above range of meters that electronically measure pH, Conductivity, Calcium, Nitrate, Oxygen, Salinity, Redox and Temperature via a waterproof probe. The temperature meter is accurate to 1/10th of a °F. These instruments will be found in most public aquarium units or aquatic research laboratories.



If you own a fish house and want to have up-to-date technology get the PINPOINT® Wireless Thermometer. This will measure the temperature at the waterproof probe tip on remote sensor(s), utilizing a radio wave signal, and will display the temperature in ¼ °F or ¼ °C. The PINPOINT® Wireless Thermometer accepts up to 4 remote sensors, thus expanding the monitoring capability to 4 different locations. These can be displayed on the same PINPOINT® Temperature Display Monitor.

...or you can do what I do, stick a finger in the aquarium and then in the water change bucket.

GROWING CRYPTOCORYNE SPECIES TO SHOW CONDITION

THE GREEN CORNER

RON FORDER

All plants with a root system that are exhibited in our Plant Classes (Z) are displayed in pots to keep them portable. However, they will grow just as well in an aquarium if conditions are right.

The best rooting medium is a mixture of loam and aquarium gravel at proportions of about 30% loam to 70% gravel. With this medium it is not advised to have either catfish or cichlids that would dig into the gravel if kept in the same aquaria. If power filters are to be used, then place the delivery pipe or hose horizontal at the bottom with no air intake, also no airstones. These plants do not like violent water movement or air bubbles.



Where possible these plants like natural daylight from overhead. This, along with white fluorescent light, is adequate and in winter, they require to be on 12 hours a day. I have found that white light is as good as any other and

standard fluorescent is also the cheapest to use and can be purchased from DIY stores and often at supermarkets.

While natural light is good, try to avoid as much side-light as possible, this also encourages algae growth, as does aeration. Plants do not like it and in nature light only comes to the plants from above. Plants grown with a significant amount of side-light grow sideways towards it and would lose points for presentation on the Show bench.

All species of *Cryptocoryne* dislike uprooting or other disturbance and will take months to settle down again. They also suffer badly from changes from soft to hard water, or vice versa, unless it is in very gradual stages. However they like weekly water changes of between 5% and 10%, but no more, and they will grow well in 21 deg. of hardness. I use 50% rainwater to 50% tap water but this may have to be adjusted to suit the hardness of your local tap water supply.



The rotting of their leaves, known as *Cryptocoryne* Disease, is nothing more than a reaction to old water or other unsuitable conditions. Out of dozens of *Cryptocoryne* species known to science, only about eight are commercially viable to grow within our aquariums. Others need special environmental conditions and are much too slow to grow. Never purchase *Cryptocoryne* plants with badly damaged or non-existent roots. I know you are thinking, how can I see the roots in those tiny sponge-filled pots? Only chose plants with the root growth extending from these pots.

The roots should be white to amber in colour. Although the plant may have emerse type leaves (showing the plant has been grown as an out of water marsh plant), they will soon settle in and grow submerged leaves.

There is an advantage in growing possible 'Show Plants' in terracotta colour plastic pots within a community aquaria so as not to uproot the plant when taking out for a Show.

Often the sides of the pot will be dirty and possibly have a growth of green algae. You can easily overcome this apparent eyesore, just use two plastic pots of the same shape and size so one fits inside the other. Now grow your Show plant in one of them and if when you wish to exhibit this plant, you can slide the clean second one over it! Please note that the plant shown here is a variety of Swordplant – *Echinodorus* sp., not a *Cryptocoryne*)

Lastly, cut off any dead or damaged leaves, ideally you need at least 7 to 8 good leaves (find out the Pointing details for almost every aquarium plant, in the FBAS Booklet 11 – *Aquarium Plants*, available online at www.fbas.co.uk), and don't forget the crown of your plant must be showing.

FBAS Plant Booklet

Packed with information both for
Showing and as a general aid

Download from:

<http://www.fbas.co.uk/PLANT%20BOOK.pdf>

You will need Adobe Acrobat Reader
Installed on your device.



FISH COLOURATION

Dr DAVID POOL

The colouration and patterns of the fish that we keep in our aquaria and ponds are, in many cases, the things that attract people into the hobby of fishkeeping. For enthusiasts who show fish, these two factors are also very important in determining the quality and therefore the value of any particular fish.

Yet our understanding of fish and particularly koi colouration is still a relatively inexact science, with the known scientific facts clouded by theories and old wives tales. In the following paragraphs I would like to have a look at the colouration of fish and help to explain some of the changes you may observe in your own fish.

What Makes Colour?

The colouration of a fish is produced by three colour pigments which are largely contained within cells called Chromatophores. The 3 pigments are Erythrin (Red), Melanin (Black), and Xanthin (Yellow) each of which occurs in different chromatophores. Complementing the colour pigments are irridocytes, which are best described as tiny reflective spheres within the skin.

All of the colours we see in freshwater fish are a mixture of these components. For example orange is a combination of red and yellow chromatophores, brown is a mixture of black and yellow and red is just the red chromatophores. If there are no chromatophores the fish will appear white due to the presence of the irridocytes or the background colour of the skin and muscle will show through.

The position of the irridocytes within the skin of the fish will influence it's reflective properties. Irridocytes on the surface of the scales will have a silvery appearance such as that found on tinfoil barbs or hatchet fish. If the irridocytes are in the lower layers of the skin the fish have a matt white colour. In certain cases the irridocytes can combine with the chromatophores to produce reflective colours. Irridocytes combined with chromatophores containing Erythrin, for example, will result in a shiny gold appearance.

Blue is an unusual colour in fish in that it is a result of black pigment deep in the skin,

with irridocytes in the middle layers of the skin. The irridocytes interfere with the light to give a blue colour.

Density of Colour

The chromatophores may be positioned on the surface of the skin (above the scales), immediately under the scales or deeper in the skin. If the chromatophores are very dense the colour will also appear dense, with the chromatophores on the surface of the skin blocking those below.

Of interest to koi keepers is that the position and density of the chromatophores affects the stability of the colour. The colouration and pattern of koi is known to change significantly as the fish grows, with colour 'patches' appearing and or disappearing as the fish ages. The chromatophores on the surface of the skin tend to be less stable due to them being more easily removed (by rubbing against underwater objects) or spreading as the fish ages and grows. Those deep in the skin are more stable and less likely to break up. The ideal for a koi is to have dense colour pigments in all layers of the skin as this results in both dense and stable colouration.

Where Does the Colour Come From?

In general, fish cannot make their own colour pigment therefore they have to consume it in their diet. In the wild these pigments would originate from eating algae, shrimps, snails etc. In the confines of an aquarium or pond there is not enough algae or other natural supplies of pigment, so it has to be included in the food that you provide. As with all foods it is important that the colour enhancing food given is of high quality to ensure that the pigments are in a form that the fish can absorb into its body.

If foods containing colour enhancers are not given, the chromatophores may not be filled with pigment and the fish may look pale or poorly coloured. When the chromatophores are filled with pigment, any excess will circulate through the body before being passed out in the faeces. Koi keepers will be familiar with this – when strongly colour-enhancing foods are fed over a prolonged period of time the white colouration of the skin can start to turn pink. If the colour enhancing foods are stopped the white colour will return after a few days.

The colour enhancing ingredients in fish food can be either natural or artificial, but all are a source of the pigments mentioned previously. Natural ingredients which are rich in colour pigments that can be utilised by our fish include krill, spinach, spirulina

algae and carrot. It is worth looking for these ingredients in your fish food if you wish to optimise their colouration.

Ageing

Each fish is born with a fixed number of chromatophores, with this number remaining relatively constant throughout its life. As the fish ages and grows, these chromatophores have to cover a larger area of skin and therefore with some fish, there is a tendency for the colour to become paler (due to the chromatophores becoming less dense) or to fragment. Koi again provide a good example of this. Some young fish appear stunning with intense colouration on their bodies. As they grow bigger this colouration fades and may disappear. Buying young koi from a 'high quality bloodline' usually means you are buying fish which are likely to have more dense chromatophores, resulting in more stable colouration as they grow. In some koi varieties (eg Showa and Sanke) it is common for the colour patterns to change considerably, with surface colouration fragmenting, revealing a deeper, different colour.

Both koi and goldfish tend to become paler as they age. This is a sign of the chromatophores both spreading over the body surface which reveals the paler colour underneath, as well as the cells holding less pigment. In many ways it is the equivalent of our hair turning grey.

Changing Colour.

A chromatophore is a very branched cell with finger like projections, within which the colour pigment can be moved. Two extremes are a) for the pigment to spread throughout the chromatophore, in which case the cell is the colour of the pigment and b) for the pigment to be concentrated into one area within the cell, which results in the background colour showing through (usually pale or dark). The distribution of this pigment is affected by a number of things.

- The nervous system and hormonal system. In some fish species there is evidence that they can control the distribution of pigment in the chromatophores, allowing them to change their colour for camouflage or display, for example.
- Water quality. Different conditions can have a marked impact on the distribution of colour pigment. Raised levels of pollutants such as ammonia, nitrite and chlorine tend to cause the pigment to concentrate, resulting in the fish becoming paler or

darker. The pH and hardness of the water can also have an impact. Black pigment in koi and possibly other fish tends to spread in harder water, making them appear a more intense black colour.

- **Background colour.** Fish tend to adjust their colour intentionally or unintentionally, in order to be less conspicuous against the background. The flatfish species that live around the British coast are a great example of this, with many adjusting their colour to mimic the substrate. Aquarists who show their fish recognize this and will, where possible, avoid having 'colourful' fish in a pale container. Showing the fish against a black background and with dark coloured gravel ensures they look at their optimum.

- **Treatments.** When added to a pond or aquarium, many medications will result in a noticeable change in the colour of a fish. Adding salt is a good example and, for freshwater fish that can tolerate it, will result in the colouration fading.

- **Algae.** Koi and goldfish which have lived in an algae rich green pond for some time are usually intensely coloured due in part to the lower light conditions and partly to the impact the algae have on the water.

- **Temperature.** Coldwater fish are usually at their best colour-wise in the autumn and winter when the cold temperature causes the pigment in a chromatophore to spread throughout the cell. In the middle of summer when temperatures are (hopefully) hot, the reverse occurs and the fish appear less intensely coloured.

The subject of fish colouration is a fascinating one. The genetics of any fish plays perhaps the major role in what colour the fish will appear, but there are other variable factors which can have an influence – and which we can adjust. Hopefully this article will have given you some insight into why your fish are the colour that they are – and why that colour can change in some instances.

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Environmentally friendly and sustainable

Easily digested for low waste

Plus

Naturally enhances the colour of the fish using Spirulina algae, paprika and krill

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FishScience Malawi Flake Food

Specially Formulated for Malawi Cichlids



- Contains 3 different species of Algae (Spirulina, Chlorella and Kelp) in addition to peas and spinach to recreate the natural, algae based diet that Malawi Cichlids would eat in the wild.
- Uses Insect meal made from the Black soldier Fly *Hermetia illucens*, which is cultured in Holland
 - The environmentally friendly and sustainable alternative to Fish Meal.
 - Fish have evolved to digest and process insects over millions of years. The new formula foods are easily digested resulting in less waste
 - Insect larvae are naturally eaten by Malawi Cichlids as they feed on algae
- In common with all FishScience foods, the Malawi Flake contains natural ingredients such as paprika, shrimp, Spirulina and Chlorella algae to enhance the natural colour of the fish
- Garlic, Beta Glucans and Omega oils added to promote a healthy immune system and ensure the fish remain as healthy as possible
- Excellent feedback from Malawi Cichlid keepers and importers. Wild caught Malawi Cichlids feed on the food from day 1, showing excellent condition, colour and growth

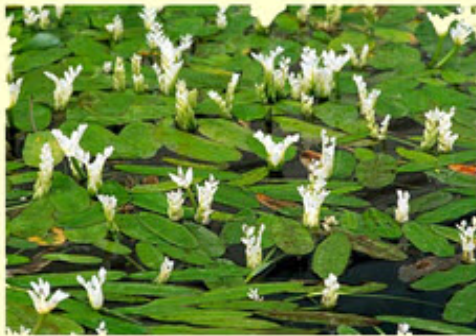
.....and most importantly, the fish really like it.

www.fishscience.co.uk

IS YOUR POND FACING THE DREADED 'SPRING CLEAN'?

MALCOLM GOSS

How many of us clean, or have even tidied, our pond in the late Autumn. The very thought of doing so gives you the blues with the work you now have to do before everything starts to grow again?



Aponogeton distachyos
Water Hawthorn

First, you have to remove all forms of plant life either fully aquatic (oxygenating) plants, marginal plants and any water lilies (*Nymphaea*) and Water Hawthorn (*Aponogeton*). To make this very wet job easier, lower the water level by about a foot, or to a depth where you can stand in the pond

with your wellingtons on. However, never stand in a pond that has a ridged fibreglass lining. Over a period of some years and in very cold weather, they can become brittle and “crack” with the weight of yourself. If this is the case you will have to carry this out by removing the marginal plants from the side and, with the aid of a broom, pull the water lilies to the edge. These can be heavy and a second pair of hands may be needed. Oxygenating plants such as *Elodea crispera* and *Ceratophyllum submersum*, if grown whilst floating, will be easy to pull out and placed still fully-submerged in a separate container, possibly a fish tank.



Nymphaea sp.
Water Lily

Now you have to make a decision - either to catch all the fish and then pump out all the water or, with the aid of a large and very strong net, preferably with a straight and flat front, gently push this across the base of the pond and collect most of the dead leaves. By far the best method is to switch off any pump or filtration and use the pump to empty your pond, as it gets down to the last 150 mm (6"), after which the fish will be much easier to catch!

These need to be placed in an aquarium using old pond water you can check their condition for any parasites or scale disorders. Always put a cover over the fish container as they do have a habit out of jumping out. If the container is now over-crowded, set up an air pump for extra aeration

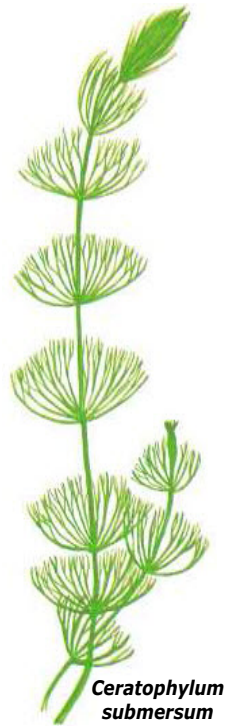
Now you can remove all the remaining debris and dead leaves and carefully remove any Frogs or Newts to an area away from the pond or they will be back in the pond before you have finished your clean up.

Power washes are only any good being worked on concrete ponds to remove algae they have no effect on ponds that have a butyl liner. I use a dustpan with a rubber edge, it not only protects the liner but cleans it surface really well. It is better to leave a small growth of algae than to scrub away and damage the liner.

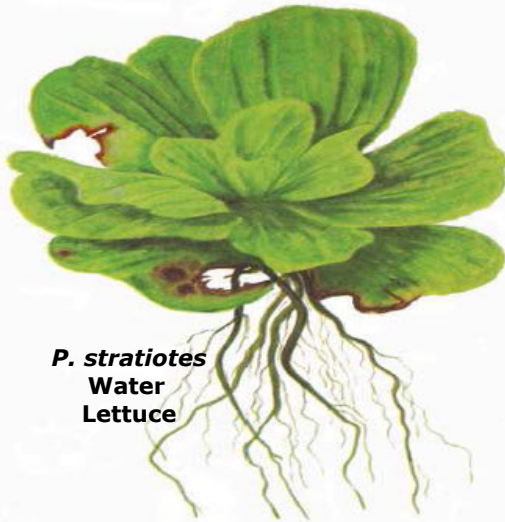
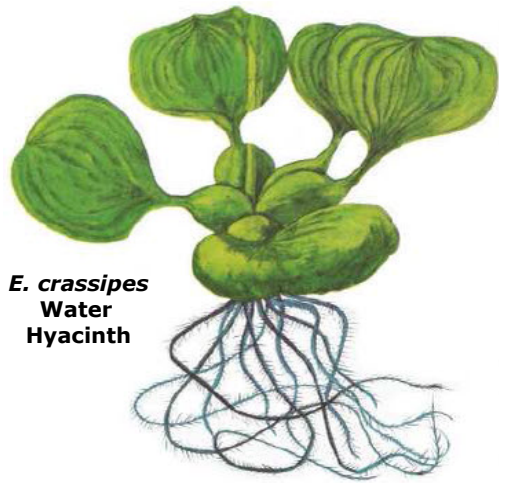
Now is a good time to clean and check the pump, including checking whether there has been any damage to the electric cable - do this right back to where you connect to your mains supply. If there is any damage do not try to repair with tape or any other method but replace the pump. Remember live electric will not only endanger your fish but you too.

Even if you do not have anyone helping you, always make sure someone else is at home before you start, and they don't go out without telling you (health and safety!).

Once the pump is in order, clean the filter box and if the filter medium is too dirty then replace it. Water lilies often outgrow their container, roots rise to the container's surface, often breaking or distorting the container.



It may be better to purchase a larger round container with two handles making it easier to remove from the pond next time. Fit a container liner so the earth does not filter out, cut your root growth to half size, fill with heavy earth possibly with some added clay half way in the container, then place the root system so any new shots will be just above the planting medium when topped up and then covered with gravel



to stop the earth floating up. Water lilies like to be just below the surface no more than 30 cm (1 foot) (stand their containers on bricks in deeper water), this will ensure they get full sunlight.

Oxygenating plants such as *Elodea crista* can either be bunched up and potted or they will do just as well thrown in the pond to float and will grow very well. Marginal plants may

also need serious cutting back, like *Iris laevigata* or *Orontium* (Golden Club). Other plants need all their dead leaves cut off (if you did not do this in Autumn). One of the first marginal plants to flower in March is *Caltha palustris* (Marsh Marigold). I have the double flowering plant, after the plant has finished flowering, cut the plant right back leaves as well, and this encourages the plant to flower a second time later in the year.

At this time of the year with very sunny days your pond water will turn green. Do not add lots of chemicals, remember algae is a form of plant and what kills algae off will also stop growth of water lilies. Just hold on and wait a few weeks for your lilies to start spreading their leaves shading up to four fifths of the water surface and your water will be clear again.

You may also feel adding floating plant such as *Lemna* (Duckweed) or *Azolla filiculoides* (Fairy Moss) will add shade. However, they will grow very fast and in no time will cover the entire pond and this gives you the problem of getting rid of it, if ever you can. *Eichhornia crassipes* (Water Hyacinth) and *Pistia stratiotes* (Water Lettuce) are sub-tropical plants and give good cover in summer days, but will die when winter starts; however they are large enough plants to net up and throw away.

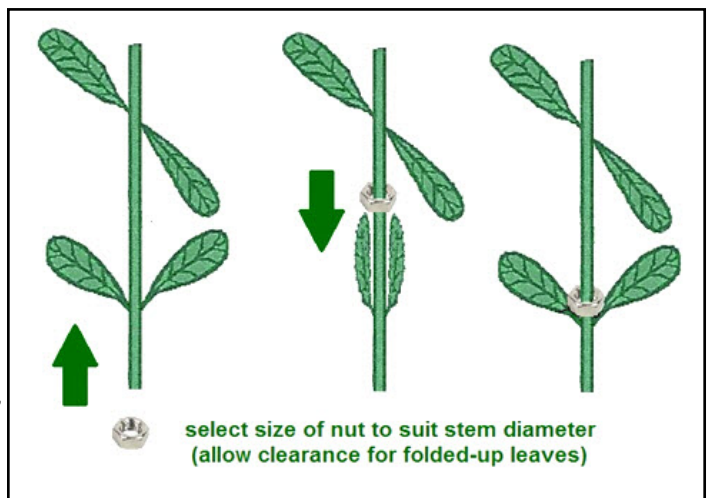
Once you have fully topped up the pond water you can add a biological enhancer this eliminates Ammonia & Nitrite and makes the water safe so you can place your fish back into the pond straightaway. If you have no water conditioning agents, then leave the pond water to stand for 24 hours before returning the fish. Now switch on the pump and filter get out the deck-chair and the sun-glasses, sit and enjoy. Oh dear, do I hear 'her indoors' calling?

AVOID DAMAGING STEMS WHEN RE-PLANTING CUTTINGS

The ease of making new plant groups from re-planted bunched cuttings makes space-filling an easy task, but how often after fiddling about with strips of lead do you find that you've crushed the delicate plants stems?

Hounslow's Spike Collins reckons he's come up with a better way to do things, which avoids this problem.

He uses stainless-steel nuts (they won't rust or adversely affect water conditions) and, by choosing the right size, can be used to weigh down any stems.



2016 EVENTS DIARY

All information correct at date of publication.

FOR FULL AND UP TO DATE DETAILS VISIT: www.fbas.co.uk

A.A.G.B Members Weekend-----	9-10th April
Mid-Sussex Open Show-----	10th April
Kirkcaldy A.S Show + Auction-----	10th April
Castleford A.S.Open Show and Auction-----	17th April
Central A.S Bus Trip Castleford *prov*-----	17th April
A of A Auction-----	17th April
W London Killifish Auction-----	17th April
Lothian Fishkeepers Tabletop Sale + Auction-----	24th April
NETS:-----	24th April
Eastleigh & Southampton Open Show-----	8th May
Glenrothes Show + Auction-----	15th May
Bradford A.S.Spring Open Show Auction-----	15th May
Corby Open Show-----	15th May
Southend Open Show-----	21st May
Greater Manchester Cichlid Group Auction-----	29th May
Ashby A.S. Open Show and Auction-----	5th June
STAMPS-----	5th June
Bracknell Open Show-----	11th June
Ryedale Open Show and Auction-----	12th June
Hounslow Open Show-----	18th June
Kirkcaldy Auction-----	19th June
West Lothian A.S. Auction-----	3rd July
Y.A.A.S Open Show-----	3rd July
Castleford A.S.Catfish/Loach Show & Auction-----	10th July
ASAS Open Show-----	17th July
Southern Livebearer Group-----	24th July
Central A.S. Auction-----	4th August
Friends of Yorkshire Open Show and Auction-----	14th August
Castleford A.S. Night Auction-----	17th August
F.S.A.S. Auction-----	28th August
TTAA Open Show-----	4th September
Preston A.S. Convention-----	11th September
Fair City A.S. Show + Auction-----	25th September
Greater Manchester Cichlid Group Auction-----	25th September
British Killifish Association Convention-----	7-9th October
FESTIVAL of FISHKEEPING-----	2nd October
Kirkcaldy A.S. Auction-----	9th October
Kirkcaldy A.S. Bus Trip-----	16th October
S.A.F. Show + Auction-----	23rd October
West Lothian A.S Club Bus Trip-----	29/30th October
Bradford A.S. Show and Auction-----	13th November

In Memoriam

Hugh Smith Hounslow & D.A.S.



Hugh's fishkeeping lasted for very many years and, in fact, you could say he had two separate bites of the cherry.

Hounslow members' first reaction when he joined them was 'Didn't you used to belong to Roehampton Club?' So, if any readers can remember an aquarist Society of that name,

they'll know how long ago we're talking about here!

According to the man himself, he'd dropped out of fishkeeping to concentrate on aviary birds but eventually found that their upkeep was too strenuous for him so he decided to return to fishkeeping.

Hugh was an experienced aquarist who really delved deeply into the subject. More often than not, he would come out with a query that others had not considered with the consequence that he made everyone think that little bit harder.

His real passion was the keeping and breeding of Livebearers, although he wasn't a bad killifish-keeper either. Needless to say, due to the relatively small size of his favourite fishes, his fish house contained a very large number of modestly-sized tanks! Until he became the victim of his debilitating illness, he travelled to many specialist Society Conventions, tracking down his preferred 'must have' species.





SAM BRAY . . .

An appreciation

*Ilford & District Aquarist
and Pondkeepers' Society
pay tribute to one of
fishkeeping's legends*

It was with great sadness for our Society (and, no doubt, many others) to hear of Sam Bray passing away.

Sam was a good aquarist who specialised in Malawi Cichlids in the early days and used to travel all over the country seeking new species.

Later when all-glass tanks came into vogue he specialised in making excellent tanks under the name of Seabray Aquariums. His Company produced large aquaria for zoos around the world.

Sam was always a good Club man. He was a member of East London Aquarists Society for some years until its demise. He then became a member of Ilford Aquarists and Pondkeepers Society and was made one of our Vice-Presidents in recognition of his great support.

A kind and cheery man, he was generous to members of many Societies.

We send our sincere condolences to his wife, Kath, and his family. He will be sorely missed by many of us.

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For more information: www.tetra.net