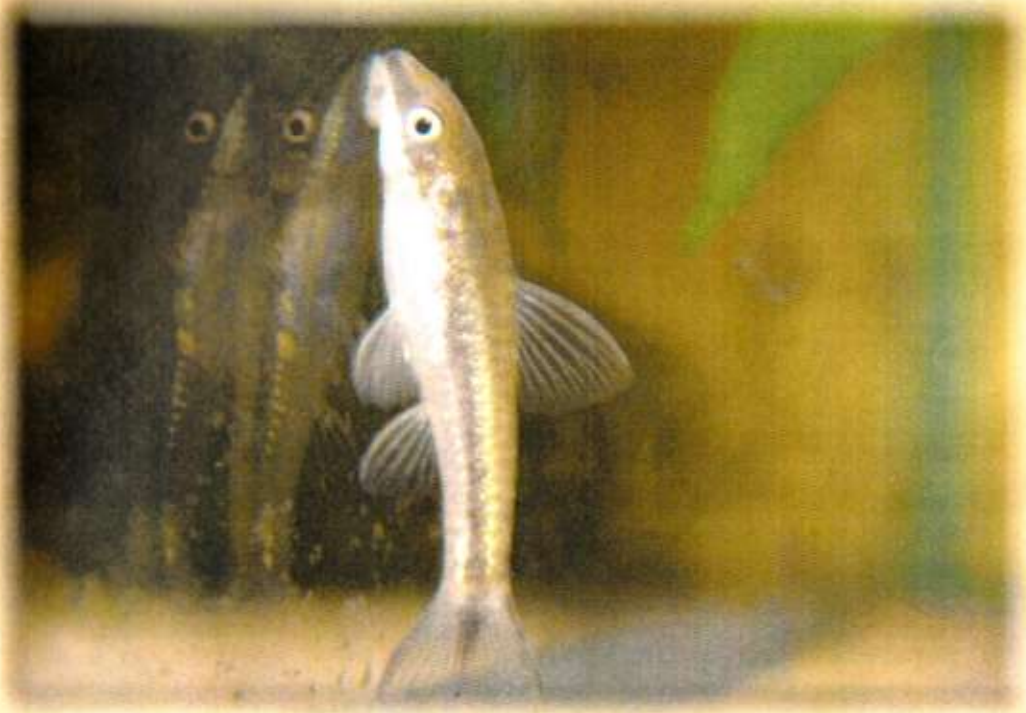


FISHKEEPERS' AND WATER GARDENERS'

BULLETIN

VOLUME 6 ISSUE 10

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OTOCINCLUS SP.

Picture by Dick Mills

See 'Breeding Otocinclus' Article on page 8



**JOURNAL OF THE FEDERATION
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Dear Readers,

Firstly, I would like to join with everybody else in offering my sincerest sympathy to Wyn Ryder over the recent loss of her brother, Wally. Wally was a dedicated servant to the FBAS and to our hobby generally for a great many years and he will be sorely missed.

On a happier note, my thanks go out to all those who have contributed to this issue. It is good to see that some hobbyists are prepared to put pen to paper and share their experiences with the rest of us. It is true that you can never get enough of a good thing and there is always room for more so please, if you have something to share, get it down and send it to me. It can be in any format that you like. On a CD or floppy disc, hand written, typed out, whatever you like. Pictures and/or diagrams are always beneficial and will make your article better but they are by no means essential.

With the Supreme Festival at Hayling Island fast approaching, make sure you have got your booking made in plenty of time - see you all there.

Peter Furze

Editor.

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GETTING THE MOST OUT OF YOUR TEST KITS

David Hulse (Tetra)



One of the oldest sayings in fish keeping circles is to 'look after the water and the fish will look after themselves'.

This is every bit as true today, even with super advanced filtration systems, heated ponds and underwater viewing cameras, we still need to know the condition of the water. If the water quality meets the environmental requirements of the fish, then most of the time the fish are just fine.

A facility to test the quality of the water for the fish is thus absolutely vital. On

even the most basic of fish keeping systems the fish keeper will need to know how the actual chemistry of the water relates to the water chemistry the fish would like. A fish is simply a permeable bag of fluid swimming around in the water. If there is any pollution in the water or the pH is incorrect, then this pollution or incorrect pH will be passed onto the fish.

What is water quality?

When we talk of water quality, we

mean the parameters of the water and the pollution content. The water parameters are properties that describe the water's composition, its pH, hardness level, salinity, temperature, oxygen content.

The water parameters need to be related to the environmental requirements of the fish being kept. For example aquarium Discus fish need to be kept in warm, soft, acid water, goldfish prefer temperate, neutral, medium hard water. Put either fish in the wrong tank and they become very poorly very quickly. Thus it is very important to know the exact environmental requirements of any fish we choose to keep.

The pollution content of the water describes the concentration of chemicals that are the result of the excretion of waste by the fish, plants, filter bacteria and countless other living things in the water. This then includes the big three nitrogenous compounds, ammonia, nitrite and nitrate, and also phosphate. The pollution content also encompasses other chemicals that may enter the water through mismanagement or error. For example copper leaching into the pond or tank through water pipe work.

TIP 1

Pond water pH and tap water pH.

When testing for water pollutants such as ammonia or nitrite, we need to know the absolute result and strive for a zero reading. When testing pH and

hardness, we want to know how these parameters have deviated from the supply water. If the pond is fed by tapwater, then the pH and hardness should be the same as that of the tapwater. Over time, both pH and hardness will usually decrease, the greater the decrease the 'older' the water and the more desperate the need for a water change or addition of pH / hardness replenisher.

So lets summarise so far, water quality parameters describe the composition of the water and pollution describes the natural waste levels in the water. We must relate both to the environmental requirements of our fish.

TIP 2

Zero vs 'undetectable'

We strive for 'zero' ammonia or nitrite in our kai ponds, but there will always be a tiny amount of each, just enough for the biofilter bacteria to feed on as they process the waste of the fish. Thus when we say 'zero' levels of ammonia, what we really mean is a level of ammonia 'undetectable by the test kit'.

Types of test kits from TetraTest

There are two main types of test kit manufactured by Tetra. Simple 5 in 1 Dip Tests and liquid chemical test kits,

The 5 in 1 dip tests test pH, GH and KH (measurements of the water's hardness), nitrite and nitrate. The stick is simply dipped in a sample of pond or tank

water and the reading taken after a minute.

Dipstick tests are useful as they are very quick to use. They can give a quick snapshot of the water quality. However if a problem is to be diagnosed then it is worth using more accurate liquid kits. In these kits a measured amount of reagent is added to a sample of water and the result compared to a known standard. There are two types of chemical test that the kits use. The most common type is a colorimetric test, where the reagent added forms a coloured complex with the compound being tested. Thus greater the colour intensity the greater concentration of the compound being tested.

The other type of chemistry test used in water test kits is the titration. Here a known quantity of reagent is added dropwise to the pondwater sample until a colour change is observed.

Tetra manufacture the test kits for the following parameters and pollutants:

pH (Freshwater and seawater)
General Hardness (GH)
Carbonate Hardness (KH)
Oxygen (O₂)
Total Ammonia (NH₃/NH₄⁺)
Nitrite (NO₂⁻)
Nitrate (NO₃⁻)

Each is available separately or in the TetraTest Laborett, a multikit containing the vital tests for fish tanks. The TetraPond Water Test Set is a

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multikit containing the vital test for pondkeepers.

Management of test kits

Once you have purchased your TetraTest test kits it is vital to store and use them correctly to ensure that they give you a correct reading. False positive readings can send you into a wild panic for no reason whereas false negatives are very dangerous for your fish.

Tetra formulate their test kits to be very stable and not loose accuracy overtime. However the chemicals in the kit will eventually degrade rendering the kit ineffective. Once the liquid reagent bottles are opened, then the degradation of the chemical speeds up. Thus if you find an old battered ammonia test kit at the back of the cupboard, it is best not to use it. Ideally try to buy new chemical test kits every 8 months. They should be being used weekly, and you should run out well before then anyway!

Storage of test kits is also vital. They should not be left outside next to the pond or on top of the aquarium! Store kits in a dry, cool place, well out of reach of children. Each reagent should be kept in its relevant packaging with instructions and colour scales to hand.

Getting the most out of your test kits

Before any water testing can be done a sample must be taken. Ideally take one large sample that can be carried away

from the water and then dispensed into test tubes for analysis. (This way there is no risk of the reagent chemicals falling into the tank or pond). When sampling ponds take water from the middle as occasionally stagnant pockets may be found at the edges. A cleaned coffee jar tied to a bamboo cane makes a useful sampling device.

Dispense the required amount of water into a test tube that has been cleaned in the water to be tested. This washes out any possible contamination in the test tube. Ensure you add the correct amount of water (usually 5 ml) and make sure the bottom of the water line lies at the specified mark on the test tube.

Before running the test carefully read the instructions, make sure you have all reagents to hand, and a stopwatch handy. Many kits take time for the reaction to proceed, and in cold pond water this can take a long time. The TetraTest Ammonia test kit takes 20 minutes at 20° to fully complete the reaction.

When using TetraTest liquid test kits it is vital to hold the reagent bottles absolutely vertically above the test tube. This way the correct size of drop is formed and thus the correct amount of reagent added. Always add the required number of drops (unless performing a titration).

When using colourimetric kits ensure the test tube is held against a white background when you attempt to ascertain a value, also where possible

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interpret the colours in natural light.

With ammonia, nitrite or nitrate test kits it can sometimes be rather hard to 'zero' the kit, in other words what does 'zero' ammonia look like? If you test a bottle of deionised water, (available from most DIY or car accessory stores), in comparison to your fish tank or pond water, then a true zero reading can be observed.

Finally, once you have taken your sample, performed the analysis, cleaned up and put your test kits away, it is vital to record the results you have just taken. This way trends can be observed. For example, you may remember last weeks result, but what was the pH value a month ago? How does this ammonia reading compare to this time last spring? What was the pH value last time your fish spawned? It is only with detailed record of the water quality in your pond or aquarium that you could answer these questions.

Professional aquarists at zoos and aquaria across Europe maintain weekly water chemistry logs as part of their licensing legislation.

Test kits are the most vital part of the fish keepers tool bag. Tetra Manufacture their kits to a high specification. However errors can creep into the process if the kits are not stored, used and interpreted properly.

Test kits enable us to monitor and look after water quality, that way the fish can look after themselves.

BREEDING OTOCINCLUS

Dave Bent - Corby AS

My real passion in tropical fish is *Corydoras* but, like most fishkeepers, I can't resist the odd 'non-Cory' so consequently my tanks now hold many types of Characin, Dwarf Cichlids, a few *Discus* and *Otocinclus*.

The *Otocinclus* were obtained from three separate sources - two shops and an Auction - the idea being that they might keep one of my stock tanks free from algae. I soon learned that you would have to fill the tank to regulate the algae growth, as my nine fish seemed to graze all day with no effect at all!

After a major reshuffle in my fish room, a suitable breeding tank became available for the *Otocinclus* so they were caught up and transferred to the breeding tank, set up using an air-driven foam filter with several pieces of Java fern on bogwood, and a thin layer of play pit sand. Water conditions were 25°C, slightly acidic and soft - my usual starting point for South American species.

Food at this time was TabiMin, frozen Bloodworm and *Mysis* Shrimp (the Bloodworm and *Mysis* were both grated whilst still frozen).

It soon became apparent that not all the fish were the same type, a size and markings difference led me to believe that I had two types of *Otos*, so out with

the books to identify them.

At this point, a major problem cropped up: firstly, there does not seem to be much information about *Otos* and, secondly, as they started to come into condition their colour and markings changed significantly, making it even more difficult to find them in my books or on the Internet. But, after much searching, I believe I have *O.vittatus* and possibly *O.vestitus* (maybe!).

During the search I had hoped to discover more about the natural environment for these fish, water conditions, food etc., but my water conditions were close anyway, so that left food; my book said they eat 'aufwuchs' but I don't think my shop stocks 'aufwuchs' - and I'm not sure I dare ask them!

The *Otos* were split into species groups and housed in two tanks with exactly the same conditions. I now started to try lots of different foods as well as the food already mentioned; I tried newly-hatched brine Shrimp, Microworms, Grindalworms and chopped White worms and very fine high-protein fry food which the fish would harvest from the plant leaves as they searched for algae, all of which were readily eaten.

I also tried cucumber, lettuce and potato but the *Otos* ignored them preferring to



eat algae. It should also be remembered that heavy feeding can quickly pollute the water so I started changing 10% of the water every day and 50% once a week.

After a couple of weeks of this regime, my *Otos* had undergone a complete change. The females showed full abdomens and the males competed to be next to them, pushing each other out of the way to be near the largest female. I did not witness a spawning, but it became obvious when it was about to happen as the males would chase all around the tank to be the one to fertilise the eggs, which were always placed on plant leaves and usually out of sight, unlike *Corydoras* I never found an egg on the sides of the tank.

After a few days, young fry could be seen all over the tank, on the glass, on the plants and on the sand base. They were very small and I

OTOCINCLUS FRY

was concerned as to what they would eat, but it became clear they were grazing on the bio-film that occurs naturally in an established tank (bio-film probably consists of algae, bacteria and micro-organisms, the nearest I could get to 'aufwuchs'). The fry grew at a good rate and were soon eating the same food as the adults.

Every few weeks a new hatch would appear and it soon became obvious that I would have to stop the adults spawning or run out of room, so I moved the adults back into the stock tank to allow the youngsters room to grow, and grow they did, within a few months I had two very full tanks of young *Otos* to find homes for.

Eventually, all were sold at auctions and I hope they gave their new keepers as much enjoyment as they did me.

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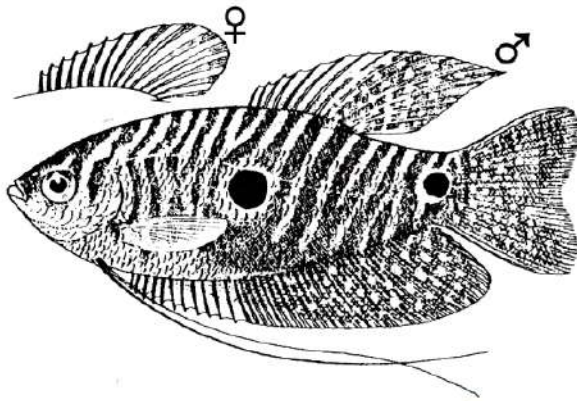


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KNOW YOUR FISH

Trichogaster trichopterus (Pallas, 1770)



Common Names: Blue Gourami, Three Spot Gourami, Opaline Gourami, Gold Gourami

Scientific Name: *Trichogaster trichopterus*

Synonyms: *Labrus trichopterus*, *Trichopodus trichopterus*, *Trichopodus maculatus*, *Trichopus trichopterus*, *Trichopus septa*, *Trichopus siamensis*, *Trichopus cantoris*, *Ospromemus saigonensis*, *Ospromemus siamensis*, *Ospromemus insulatus*, *Ospromemus trichopterus*,

Where found: Asia, Mekong Basin, Yunnan, Thailand, Cambodia, Vietnam, Malay Peninsula, East Indies, (also introduced elsewhere).

Characteristics: Olive brown on back. Silvery overlaid with olive on the sides. A number of irregular dark stripes, varying in intensity, laid obliquely across the sides. A black spot, approximately the size of the eye, is apparent on the caudal peduncle and a further, larger black spot is positioned midway between the eye and the rear spot. The soft rays of the anal fin are mottled with orange-yellow spots while the dorsal and caudal fins are pale olive with paler spots. The female is less colourful and without yellow in the finnage. The dorsal fin on the female is more rounded while that of the male reached a very discernable point. Some specimens exhibit a hump on the dorsal contour of the body just before the dorsal fin. This is considered a fault when judging, as are broken, kinked or uneven pelvic filaments. A subspecies exists which originates from Sumatra. This fish is similar in appearance but has a blue ground colour. It is known as *Trichogaster trichopsis sumatranus*.

Habitat: Lives in lowland wetlands. Found in marshes, swamps and canals, preferring shallow sluggish or standing-water with a lot of aquatic vegetation. Occurs in seasonally flooded forests throughout the middle and lower Mekong. Undertakes lateral migrations from the Mekong mainstream, or other permanent water bodies, to flooded areas during the flood season and returns to the permanent water bodies at the onset of the dry season. Feeds on zooplankton, crustaceans and insect larvae.

Breeding: Builds a bubble nest at the water surface. Eggs are smooth and spherical. The male usually gathers the eggs, placing them in the nest and guarding them until the fry reach the free-swimming stage. After spawning, the male drives the female away.

Remarks: Although only two spots are evident, the common name of 'Three Spot Gourami' refers to the eye as the 'third spot'. Several colour varieties exist including blue and gold forms hence the unusual variation in common names for this fish. Forms also exist that are devoid of the two black spots at the caudal peduncle and in the centre.

FBAS Show Class: 'E'

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SEX AND THE SELECTED PARENT

Eric Franklin (SPASS)
Pictures © FBAS

Now that I have your attention.....!

We are talking about breeding goldfish. There are many reasons that we select one parent fish over another, it could be for body shape, colour, finnage, or even a special characteristic. All these four points, go toward making the perfect fish. Which one you choose first will depend on the fish you are starting with. If the starting fish male or female has good colour but poor body and finnage, choose a fish with the best body shape and finnage for its breeding partner, this will improve the overall quality of the offspring. Sometimes you do not achieve the desired result with the first spawning. If you cross the best youngster back to the best parent next year, you will see a marked improvement of the young from that crossing.

The first thing you need to learn with goldfish breeding is patience. Selection of breeding pairs of fish should be done very carefully. Bad selection can result in you raising a spawning of fish for four months, after weeks of feeding, cleaning and selection, without the desired results.

Selection of single tailed varieties of fish, common goldfish, London, Shubunkins, Bristol Shubunkins and Comets. The first two varieties are the same body shape, as well as the same finnage, only their colour and scale type vary.



FBAS Bristol Shubunkin Standard

The Bristol Shubunkin, within the Nationwide Standards, has the same body depth/length as the above fish with longer finnage a large round lobed tail and is calico colour only.

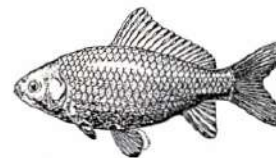
The comet can be either metallic or calico. It has extended, pointed finnage and a large pointed tail. The body should be smooth & streamlined. If you intend keeping more than one of these varieties, you must learn not to let them cross breed, because you will end up with a load of rubbish.



FBAS Standard for the Comet

When selecting common goldfish parents choose fish with rich deep metallic colour, smooth dorsal and ventral contours, short rounded finnage a short concave dorsal and square caudal peduncle. Do not use fish with any silver in them unless you wish to

produce variegated metallic fish. Silver is easy to introduce but hard to breed out.



FBAS Standard for the Common Goldfish & the London Shubunkin

The London Shubunkin has the same body and finnage as above but calico colouring, i.e.: blue base overlaid with red, yellow, orange, brown, mauve and peppered with black spotting. The fins should have colour extending into them from the body striped with black. The gill covers should appear soft (not metallic) the eyes should have metallic rims, only mart fish should have shoe button eyes.

The Bristol Shubunkin has the same colour as the London i.e. blue base overlaid with red, yellow, orange, mauve and brown patches with black spotting.

The body should be a smooth torpedo shape with dorsal and ventral contours that are equal and mirrored. It should have a rounded head and a strong caudal peduncle to support the large rounded lobed tail. The outer fins should be longer than the London and slightly pointed. Special attention should be paid to the caudal fin and its support when selecting parent fish.

The comet should have a streamlined body with a rounded head and a square caudal peduncle. It should have extended fins and a caudal fin which is as long as the body with pointed ends.

The colour should be a strong metallic or calico as previously described. Special attention should be paid to the pointed caudal and its support when selecting parent fish.

The three calico fish above should have a minimum of 25 percent blue colouration on the body.

Twintails can be divided into three groupings:

- (1) Rounded body, short double tail.
- (2) Round Body, long double tail.
- (3) Round body, no dorsal fin, short double tail.

All these fish should have twin anal fins and a well divided caudal fin, as well as plump bodies and smooth contours. I will talk more about twin tails next time.

SPAWNING

I would usually select either pairs or trios of fish, if using trios it would be two males to one female. Selected fish would be placed in bare bottom tanks, containing Java moss and good quality water, temperature about 64° F or 17° C complete with a sponge filter.

The best time to place the fish in the tank is late afternoon, with a bit of luck, they might spawn next morning. If not,

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don't panic they will spawn in the next day or so. Check the tank first thing in the morning. If they have spawned remove the Java moss and place in a hatching tank containing water of the same temperature as the spawning tank. Place a heater in the hatching tank and raise the temperature slowly up to about 72° F or 22° C the eggs will hatch in about 5 days.

I find this hatching time ideal as the fry rise and cling to the glass. If you hatch eggs to quickly the fry sink and lay on the bottom for some time before rising to stick on the glass, and seem weak.

Once the fry are on the glass I seed the tank with liquify, to start producing infusoria, the fry absorb their yolk sac in a day or so, they can then be fed on the Liquify dispersed in the tank for one or two days, then on to brine shrimp. I will feed them on brine shrimp for as long as practical (even adult fish love brine shrimp) move the fry on to dry foods, which not only contain high protein levels for growth but also contain high levels of vitamin C, E & B to help combat high temperature levels and produce good skeletal growth.

At this stage I use frozen bloodworm, which is scraped very finely with a razor Blade, thawed out and then placed in the tank. As the fry grow the bloodworm can be increased up to full size. Useful foods for fry are Liquify, fine powder ZM granules, Aquarian Growth Food and also Aquarian Goldfish Flake, crushed and passed through a sieve. The last two contain high levels of vitamin C & E.

You should select out the fry as soon as possible because bad or unwanted fry eat the same amount of food as good fry and take up much tank space.

There are two methods of selection, positive selection where you select only fish that you think are good and discard the rest. The other method is negative selection, where you gradually weed out unwanted fish until you are left with the best ones. In both cases these methods look for good body contours and straight lines through the body and tail when seen from above.

Good colour in shubunkins and darkest colours in metallics, as these seem to turn good rich reds when they have decoloured.

The fish will develop very quickly as they progress, a further selection for finnage, shape and colour, should then take place. The selected fish should be given as much food and space as possible to keep the growing at the fastest speed.

I hope these few pointers will help you spawn and raise quality goldfish successfully.

If you have any questions or points you would like to raise please send them to the editor who will then pass them on to me and I will answer them through the Bulletin.

Happy Spawnings

Eric Franklin.

AND NOW FOR SOMETHING COMPLETELY DIFFERENT

David R Gamble (Aberdeen Fishkeepers' Club)



We at the above named club had a rather different Club meeting which went very successfully and I thought it would benefit other Clubs if I told you all about it. Like most Clubs we always strive to find something of interest to our members and do our best to ensure we do not repeat the same topics at our meetings.

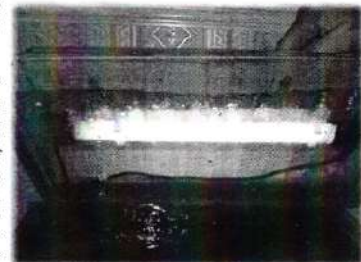
A few months ago we came up with the novel idea of having all our members go home and taking pictures of their tank set-ups and bringing the pictures along to the next meeting so we can all see what each other is doing. We made it clear that it was not a talent competition to see who had the best fish or could take the best pictures. If we could include the fish in the pictures that would be good but it was primarily the tanks and room positions we were looking for.

Everybody was quite enthusiastic about the project. Most already had digital cameras or were able to borrow one. We had a couple of members who had no computer, but took the pictures, so it was a simple matter to transfer the pictures to a disc for them to nip away to the

nearest Tesco and have the pictures printed from the disc. Others printed pictures on A4 paper, some full-size and some were 4 or 6 to a single sheet. The format didn't really matter on the night as we were all able to clearly see what set ups we all had.

One thing about this meeting was that every one who brought pictures had to take turn and tell us all about his/her set up and what were the future plans etc. It was great to see the enthusiasm and delight most had in having the opportunity to do the talking.

One member took great pride in showing off his tank lid which he made himself.



His pictures showed him holding the lid open so we could see inside the lid with the equipment in place.



A female member of our Club had several fish tanks in various rooms in her house. A few pictures were shown and where the fish species didn't show well in the picture, she was able to explain to us what was in there and what her plans and hopes were. We did have a couple of individuals who were able to take fairly good pictures of the fish themselves as well as the set ups so this gave a good talking point also as to the actual techniques for taking fish pictures and using flash.

We had another member who had recently set up a rather large corner unit tank and was able to show it being assembled (the cabinet) and put into



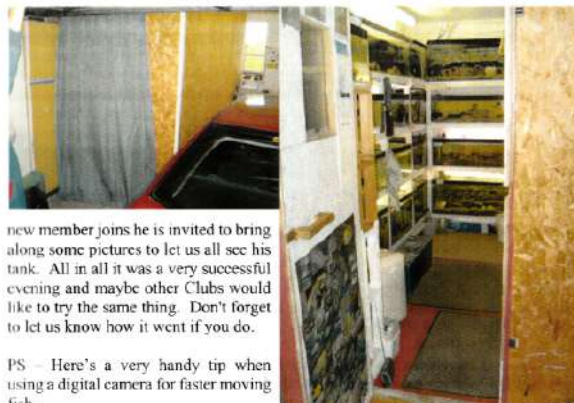
place.

He was able to show and explain the difficulty and problems of lifting a rather heavy, awkward 3-sided corner tank into place. Just getting it in through the door was a task in itself! It was a delight to be able to see this tank finished and partially planted and stocked with fish.

As for my own contribution to the evening?

Well, I've got my 'fish house' incorporated within my garage (there's still room for the car!) so I showed shots of that. They say the camera cannot lie but, seriously, my 'shed within a garage' is larger than it looks and can hold quite a few tanks, as you can see from the pictures opposite.

We still talk about this pleasant evening several months later and whenever a



new member joins he is invited to bring along some pictures to let us all see his tank. All in all it was a very successful evening and maybe other Clubs would like to try the same thing. Don't forget to let us know how it went if you do.

PS - Here's a very handy tip when using a digital camera for faster moving fish.

If taking a picture of fish constantly moving, then flash is the best way to freeze it in focus. Unfortunately, flash often gives reflections or whiten out the whole picture. Try this idea - it does work.

I used to use a SLR camera and still do sometimes. My view is that digital cameras have taken the skill out of photography. However in order to prevent flash reflections the flash was best set away from the camera or even on top of the fish tank. I often found if I pointed my flash in the air and used a slave flash above the tank then a good well lit picture was often obtained. Now 'off-camera flash' on a digital camera is not reasonably possible unless we opt for a seriously expensive

model. Wait a minute - it surely is possible, I thought!

Thinking back to my SLR days I got out the slave flash and tried it to see if it would activate with the digital camera flash. Yes it did! It's a simple task to deflect the on-camera flash and to use the cheap slave flash either held in someone's hand, or sat on the cover glass. And it's cheap and easy to experiment with digital as we see the results immediately.

Give it a try and get flashing. Have fun and tell us all about it or better still send in some results. (No humorous comments about the last few sentences please)

EASTBOURNE POND CLUB GO ON AN UNDERWATER ADVENTURE

Wendy Nicholls Reports



On a cold but sunny afternoon fifteen Pond Club members took a trip to Hastings.

Whatever were we going to do in Hastings?

Well, John Cowderoy had organised a visit to Underwater World and what a fascinating time we had.

The Sea has always played a vital role in the life of Hastings. In fact, when William the Conqueror arrived from Normandy in 1066 there was a long harbour where the modern town now stands. In the Old Town area of Hastings, there has been a fishing community for hundreds of years and the oldest beach-based fishing fleet in the country is still providing fish for us all.

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At Underwater World, situated on the seafront of Hastings, we were to see an amazing range of creatures which live in our local waters and along our shoreline. The marine life is beautifully brought to life by the quality of the displays. All of the amazing creatures at Underwater World live in environments specially designed to recreate their natural habitats. Let's take a look at these varied displays.



"Goat's Ledge" a local reef just to the west of Hastings Pier.

Many creatures make their homes below the surface of the sand and if we looked closely we could see Cockles and Razorshells and Sea urchins. Other creatures, which live partly or completely buried in the sand, are crabs and a huge variety of Rays. We saw Thornback Rays and a Hermit Crab and the unusual Gurnard which appears to walk over the sand with specially adapted fins.

In the display depicting life amongst the rocky reefs we saw Sponges and Sea Anemones, Lobsters, shellfish and larger fish, such as Bass.

We then for an underwater walk – a spectacular walk-through tunnel took us beneath the water for a fish-eye view of the ocean reef display. This is so lifelike as Smooth Hound Sharks, Rays and other exotic creatures swim towards you. Apparently, this is a reconstruction of a section of the

The grand finale of our experience at Underwater World was a look at a tropical paradise – a collection of colourful marine life from a warmer part of the globe. It was so interesting to compare our local sea life with some



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of their foreign cousins.

We saw such unusual creatures as the Clownfish, Parrot Fish, Porcupine Fish (covered with spines) and the Lion Fish, one of the most poisonous fish in the sea.

Also within the displays is the unique Neptune's Nursery where Underwater World carries out their own breeding programme. The breeding programme is particularly concerned with conserving the rarer species, such as the Seahorse, such an enchanting little animal.

We had been enthralled and educated by our journey through Underwater World – time to move on to explore Hastings Fishermen's Museum. This building is just a few yards away from Underwater World.

The Museum exists to preserve the maritime history of Hastings and started out as the Fishermen's Church of St Nicholas rected in 1854. In 1955 it was suggested that the one time Fishermen's Church should become the Fishermen's Museum and in May 1956 the Museum was formally opened, the opening ceremony being recorded and televised. Though no longer a Church, christenings are still carried out in the Museum and, at Christmas, there is a very popular Carol Service.

The main exhibit in the Museum is "The Enterprise" the last of the Hastings luggers built for sail only. In the middle window at the east end of the Museum

is an illuminated glass panel which is a memorial to those fishermen who lost their lives at sea and in two world wars. The Museum also houses many fine paintings by local and recognised artists.

In 2001, an extension was built on the back of the Museum with the aid of a Lottery grant, enabling the Museum to hang many more paintings and to put on temporary exhibitions. The Museum owns and displays a large collection of photographs of local fishermen and their families, mostly donated by the families. I found this collection intriguing.

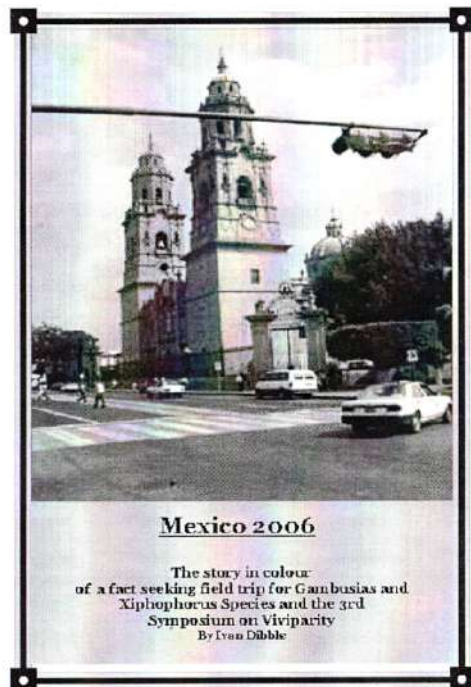
We also enjoyed looking at the model ships and boats and interesting beach finds, including cannon balls, parts of aeroplanes, urns from Spanish ships etc. This little Museum is well worth a visit if you are in Hastings with some time to spend.

The afternoon has flown by and everyone was feeling hungry so we made our way to the Neptune where fish and chips had been ordered. We had a really enjoyable meal in such a friendly atmosphere.

Feeling replete, but rather weary, it was time to go home. Many, many thanks to John for organising this trip and for looking after us all so well!!

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Mexico 2006

The story in colour of a fact seeking field trip for Gambusia and Xiphophorus Species and the 3rd Symposium on Viviparity
By Ivan Dibble

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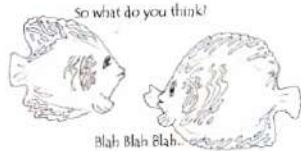
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FISHY CARTOONS by PIA

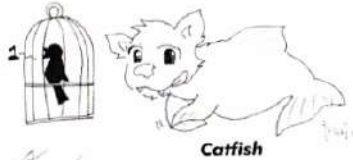
Pia is a 14 year-old girl
from Bangalore in India



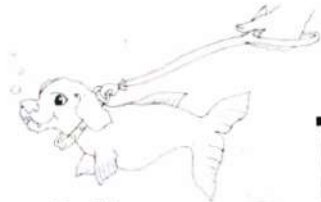
Blind Cave Fish



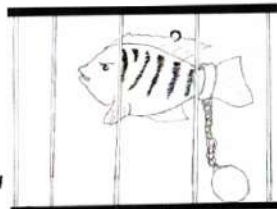
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Catfish



Dogfish



Convict Cichlid

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THE GILLS OF FISHES - PART ONE

Dr Peter Burgess, Senior Consultant to the Aquarian Advisory Service
Email: AquaticsDoctor@aol.com

In previous articles, I have covered various organs and tissues of fish, including the skin, blood, and eyes. No series, however, would be complete without a review of the gills. In this two-part article we begin by looking at the various functions of the gills, and common signs of gill disease.

Gills: a multi-function organ

Fish possess two sets of gills, one on each side of the head. These feathery-looking organs lie beneath the protective gill covers (opercula). If you look closely at the gills of a live fish you will see that they are red in colour and comprise numerous finger-like projections, called primary lamellae. These fan out from the gill arch to which they are attached. Examination of a single gill lamella under the microscope will reveal its many side branches, known as secondary lamellae. The gill lamellae have a rich blood supply in the form of tiny blood capillaries. It is the blood that gives the gills their bright red colour.

Chemical Traffic

The branching lamellar arrangement provides the gills with a vast surface area across which a two-way traffic of gases (notably oxygen and carbon dioxide), salts, and other substances pass between the fish and its

environment. This "chemical traffic" is key to the fish's various life processes that are summarised below.

1) Respiration. Fish require oxygen to breathe, just as we do, but the vast majority of species obtain this gas from the surrounding water, not the air. Dissolved oxygen within the water diffuses across the thin gill membranes and into the fish's blood. Here, the gas is taken up by red blood cells that transport it to various oxygen-requiring tissues and organs. Fish breathe out carbon dioxide, again just as we do, and this "waste gas" also passes through the gills, ending up in the surrounding water.

2) Osmoregulation. Basically, the process by which the fish maintains its internal balance of salts and water (aka "hydro-mineral balance"). The fish's tissues and cells must be bathed in exactly the right concentration of salts in order for them to function normally. The salt content of freshwater fish is kept higher than that of the surrounding water. Conversely, the salt content of marine fish is lower than the surrounding seawater.

In the case of freshwater fish, water from outside will constantly enter the fish's body by a physical process known as osmosis (you may recall "osmosis" from your school science

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days!). Salts will be lost from the fish's tissues through simple diffusion. The freshwater fish must continuously compensate for this dilution effect by extracting salts from the water. This is where the gills play a role. Special cells within the gills, known as chloride cells, actively remove salts from the surrounding water, to ensure that the fish's internal tissues are bathed in the correct salt level.

3) Excretion. Fish produce both solid wastes (droppings) and liquid wastes. As we fish-keepers are all too aware, it is the invisible liquid wastes that can spell trouble for our fish: the major culprit being ammonia. Ammonia originates from digested proteins within the diet that are broken down into their unit "building blocks", the amino acids. Excess amino acids are partially recycled within the fish, but their nitrogen content is excreted. The majority of bony fishes (teleosts) excrete the excess nitrogen as ammonia. This toxic molecule is the fishy equivalent of our urea, which we pass out with the urine. Hence fish are known as "ammonotelic" excretors whereas we humans are "ureotelic". (A useful bit of science to impress your friends at parties!). Most of the fish's ammonia wastes are excreted from the body via the gills.

4) Other functions. The gills play a role in many other vital processes, such as acid-base regulation (effectively, a process that maintains the fish's internal fluids at the right pH) and in their responses to various hormones.

Visible Signs of Unhealthy Gills



"Whenever you suspect a fish health problem, always check the water. Multi-parameter test strips are now available for rapid testing."

1) Gills produce copious mucus

Healthy gills have some mucus on them, but when lots of mucus is produced this is often a sign of trouble. Special cells within the gills secrete extra mucus in response to irritating gill pathogens or certain adverse water conditions. If you see one or more fish that have mucus trailing from their gills then an immediate investigation is required.

Action: First check the pH and ammonia level in case it is a water problem. Low pH is one cause of gill irritation in fish, but certain water-borne pollutants may also elicit mucus hyper-production. If the water parameters are all within acceptable limits then consider a possible gill infection, such as caused by bacteria or parasites. Investigate further and seek help if required.

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2) Very pale gills

Healthy gills should be bright red. Fish with pale gills may be generally unwell.

Action: Check the water conditions and examine the fish for any outwards signs of disease (eg: ulcers, lumps, red marks, frayed fins, parasites, etc) that could give a clue to the underlying problem.

3) Brown or tan coloured gills

This could indicate nitrite poisoning. High levels of nitrite in the water will affect the fish's blood. Specifically, nitrite binds to the oxygen-carrying molecule, haemoglobin, which occurs within the red blood cells. Nitrite converts haemoglobin into methaemoglobin which is brown in colour and is poor at carrying oxygen. Hence, fish that are suffering from nitrite poisoning may exhibit respiratory stress (fast gill beats; gasping at the surface) and their blood and gills will be slightly brown or tan coloured.

Action: Check the nitrite level with a test kit. (API have produced a range of test strips that allow rapid testing.) If the nitrite reading is high, then the filtration system is either not working properly or is inadequate for the number of fish stocked - so investigate and rectify. As a quick-fix, perform one or more largish partial water changes to keep the nitrite level below about 0.25 mg/L. Adding a small amount of salt (sodium chloride or solar salt, 100 milligrams per litre = 0.1 grams per L) to the water will help reduce nitrite toxicity. This very low

salt level is tolerated by most fishes, including catfishes and tetras.

4) Bleeding from the gills

Very occasionally, the gills may leak blood (haemorrhage) or eject a blood clot as a result of the fish being removed from the water. The latter can happen when handling big fish, such as koi. Often, the bleeding is not observed until the fish is returned to water. Although it may look alarming, slight bleeding from the gills generally causes no lasting damage and usually stops within a few minutes (fish blood clots rapidly).

Action: No action is usually required other than to keep an eye on the affected fish for a day or two. If bleeding continues, seek professional advice.

Next time... In part 2 we shall look at various pathogens, parasites, and water quality problems that can cause gill damage in aquarium and pond fish.

Need expert advice? The Aquarian Advisory Service can help with your enquiry. Visit www.aquarian.com. (If you haven't visited this website for a while, first click on the "UK" option, shown on the world map). On the Home Page, click the mouse over "Aquarian Advisory Service" (next to the goldfish image) and submit your question on the form. General fish-keeping advice, nutritional problems and water quality issues are usually dealt by Dr David Ford. Fish disease problems will be dealt by Dr Peter Burgess.

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SPAWNING OF THE BLUE PHOENIX (2003)

Sheridan Moores (Northern Goldfish Society)

Members of the Northern Goldfish Society congratulated Eric Hutchinson on spawning a pair of his Blue Phoenix, the fish they hold on licence from the Chinese National Collection as a British breeding scheme. Eric's is the first spawning of the experiment and he is quite probably the first and only person to have spawned this variety in Britain.



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Eric has distributed some of the fry to other members taking part in the scheme, Dean Roberts reported that his had many joined tails and, as is to be expected with a dorsal-less variety, many vestigial spikes on the backs; the other Phoenix holders agreed with these observations.

It was agreed that as we do not know what standard of fry to expect on this first spawning that we should not be too quick to cull but should wait to see what mix of characteristics we get.

Eric is feeding his fry on some of the 'Brilliant 'F' green stuff' he has left from last year mixed with honey and reported that they go mad for this. David Padfield remembered that there were stories some time ago of Jim Day putting sugar and salt in his fry tanks. Dean said he often used salt in his tanks. John Davies warned that Corydoras, sometimes kept in Goldfish tanks, could not tolerate salt in the water. Eric stated that when he had run a shop all his tanks had salt added at the rate of one teaspoon to the gallon this helped to avoid many health problems especially white spot

VISIT TO TOMMY SUTTON (2003)

Sheridan Moores (Northern Goldfish Society)

In 2003 the author and Dean Roberts visited Tommy Sutton's in Birmingham. They were pleased to have found Tommy looking fit, his reduced work load - he has cut down on his varieties and has been selling off stock rather than spawning for the past couple of years - seems to be suiting him. He is planning to scale down his operation still further, spawning many fewer fry from a more limited number of varieties. He is stopping spawning and therefore selling: Scaled Veiltails (all stock now sold); Pearlscales (all stock now sold); Broad-tail Orandas (all stock now sold); Fan-tail Orandas; Moors and Jikins. He intends to continue with Fantails, Bristols and possibly Lionheads. He doesn't think he will do calico Veils again as he considers they are the hardest variety of all to produce but will miss them particularly and so isn't totally ruling them out.

Dean purchased several beautiful fish, including the very last Broad-tail Oranda and the author selected three fish for John Davies, who had not been well enough to make the journey himself.

Goldfish keepers who have never visited Tommy really are missing both a treat, because of the Goldfish they will see, and the opportunity to experience at first hand a major and unique part of the development and history of British Goldfish.

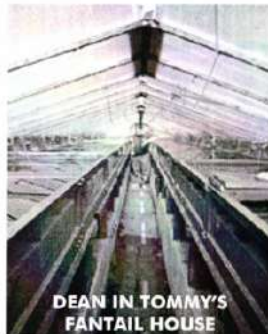
For decades Tommy's late father, also



called Tommy, supplied British hobbyists with high quality Fancy Goldfish from the thousands he bred each year. There can be very few breeding lines of British goldfish that do not contain a large proportion of Tommy Sutton stock blood.

Tommy's extensive establishment is situated in the large garden and substantial parts of the surrounding house's gardens, which have been bought over the years, behind his large semi-detached house in Water Orton just outside Birmingham. First time visitors are always amazed by this arrangement as there is no clue or indication of any sort from the road outside as to what lies behind the houses.

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Entry is made via an unmarked wooden door in a high piece of fencing at the rear of the house, exactly like countless other garden gates throughout the country. Once through the gate, though, you enter Goldfish Wonderland. A path takes you over a small bridge spanning an informal pond and on to the first fish house. All the fish houses were self built by Tommy senior and Tommy junior and, though different shapes and sizes look similar inside consisting of concrete walled vats beneath and thick angle iron framed tanks supported on substantial cylindrical posts above. The picture of the interior of the Fantail House, above, gives a good general impression of both the size and construction of the fish houses, though most of them have yet another tier of tanks built above the first layer. All the tanks are fitted with a drip and overflow water exchange system so there is a continual slow through flow of fresh tap water. On leaving the first fish house the path takes you back down the

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side of it and into the second and biggest fish house, housing (up until Tommy's recent cut backs in varieties) Moors, Scaled Veiltails, Lionheads, Pearlscales and Jikins. You exit at the back of this fish house (everything has to come through there) to the main part of the set-up where there is the long low Fantail House and the smaller Veiltail House and Oranda House and of course the ponds.

Tommy has about a dozen large ponds approximately 25 feet by eight or nine feet and all quite shallow at about six inches, to give maximum surface area but to be quickly heated by the sun and not stay too cool, except for a small deeper area about two feet by three and a couple of feet deep for the fish to retreat into if threatened or cold. These ponds are flushed out by a hose every three days. There are also numerous smaller ponds of similar construction wherever there is room for one.

The ponds are used for growing on only and their design certainly facilitates this, the fish are sold from the tanks in the Fish Houses. At one time fish were sent out to order by rail, but these days



Above - Tommy's pond area and veiltail house (centre)

this is not practical and you must visit to choose your own fish. When you do, if you are above average height be prepared to be very careful not to bang your head on the roof or one of the many overhead pipes, the Suttons are of short stature and the building was made to measure for them.

Tommy's unique fish represent the culmination of dozens of generations of expert line breeding over many years and are therefore not cheap. Prices start from about £25.00 for the least quality and rise to many hundreds for the very best. Tommy will happily advise you as to the best fish for your needs. When you have decided your fish will be carried in a white washing-up bowl up to the back door of the house where Tommy will bag them up prior to your departure.

If you are thinking of going remember entry is strictly by appointment only.



WALLY RYDER - (1921 - 2007)

A tribute by Les Pearce

The 18th June 2007 was a very sad day for both Portsmouth Aquarists' Society and for the fishkeeping hobby in general, for it marked the death of one of the hobby's most likeable and dedicated friends.

Born on 21 December 1921, Wally Ryder was the last surviving founder member of the Portsmouth Society, which was formed in 1951. During his time with the club he served in several capacities. He worked hard as the Social Secretary from 1959 to 1966. Following on from this, in 1967, he took on the job of Librarian,

performing this until 1977. In addition, he organised the stock and the running of the Portsmouth AS 'club shop' which was 'open for business' at every club night. As if this was not enough, he was also the Society's Show Secretary for 47 years, organising all of the Portsmouth Society's Open Shows and Table Shows. In 2005, he was proud to receive a commemorative long service plaque, awarded to him by the Portsmouth Society in recognition of this. After Jack Stillwell's death, a few years ago, he even reluctantly 'stood in' as Chairman of the Portsmouth Society for an interim period, a position he

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never really had a desire to hold, he preferred to be 'hands on' rather than 'shaking hands'.

Wally owned a goodly selection of slides and he used these as a basis for his talks, which he was more than willing to give to local fish clubs. Subjects included pond dipping in the New Forest and a selection of slides depicting the 'big' shows from days gone by.

As well as his extensive commitments to the Portsmouth Society, Wally was also very active within the FBAS and the Association of Southern Aquarists' Societies. He supported the vast majority of FBAS events. Indeed, together with his sister, Wyn, and their long time close friend, Rose Froud, he was regularly seen at FBAS events, festivals, shows and assemblies for many, many years. All three were awarded the coveted FBAS Yellow Badge for their services and their support of the FBAS and of the hobby over a long time. In 1954, Wally was made an FBAS Coldwater Judge, rising to be an 'A' class Coldwater Judge, an office he served with devotion and dedication over a lengthy period.

Outside of the fishkeeping hobby, Wally served an apprenticeship as a

Wally is pictured here in the dining room at Bracklesham Bay



cabinet maker and then undertook a second apprenticeship as a shipwright. He spent his working life in Portsmouth Dockyard where he was employed in his capacity as a shipwright. This was broken only by the Second World War, during which time he saw active service in Ceylon (now Sri Lanka).

Wally was interested in naval history and, together with Wyn, was a keen and active member of the Portsmouth Royal Dockyard Historical Trust.

Following an illness, Wally passed peacefully away on the morning of Monday 18 June 2007. He will be sadly missed by Wyn, Rose, his friends and relatives and all who knew him, and our hearts go out to them.

Wally was one of life's genuine 'nice guys'. He always had a ready smile to greet you and, in all the time I knew him, I can never recall him having a cross word to say about anybody. From the Isle of Wight Society's point of view, he was counted amongst the club's closest friends and was always more than willing to make the trip over the water to judge, talk or sometimes just to be there with us. Goodbye, old friend, and thank you for everything, may you rest peacefully.

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