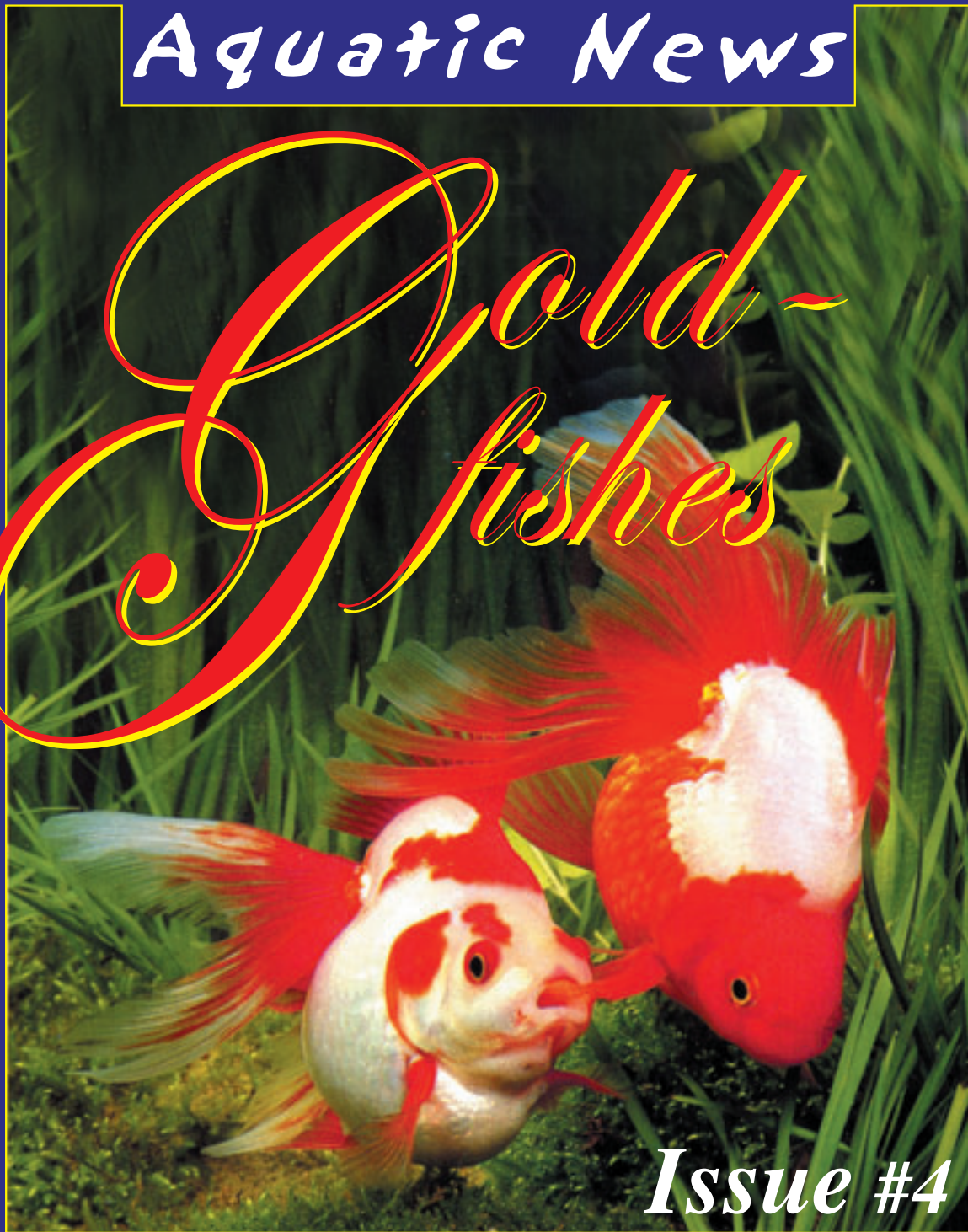


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# NUTRAFIN<sup>®</sup>

## Aquatic News

# Goldfishes



Issue #4 - 2004

### Issue #4



# DO YOU KNOW THE FACTS OF LIGHT?

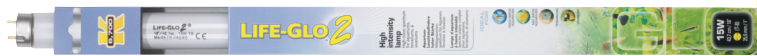
A strong, vibrant light is essential to the growth and health of your aquarium. This much you probably already know. But did you know that the average fluorescent tube loses about 50% of its lighting output quality within one year? This results in a distorted spectrum, inefficient plant and coral growth, and less intense fish colors.

Make me GLO again Aug 05

GLO offers a wide variety of tubes for every aquarium setup. They also provide you with a reminder sticker to place either directly on the tube or on the aquarium itself to remind you when it's time to replace the bulb.

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So, replace your tubes regularly. You'll love the results and your fish will love their home.



**LIFE-GLO 2** High-noon spectrum for aquariums, terrariums & vivariums



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**FLORA-GLO** Optimizes plant growth



**MARINE-GLO** Promotes marine reef life



**SUN-GLO** General purpose aquarium lighting





# Editorial

Dear Reader,

The first three issues of NUTRAFIN Aquatic News have been a hit worldwide. The positive e-mails, faxes, and letters continue to pour in. A further five countries have asked us about NAN, we may have to think of additional versions in the future...

It occurs to me that NAN could be riding on the success of Finding Nemo. You will undoubtedly be aware of Disney's latest cartoon film which took more than 330 million dollars at the box office in the first few weeks in the USA alone and has become the most successful animation film of all time! This fast-moving underwater adventure has had a huge impact through its fascinating scenes in incredible colours such as have never been seen in a cinema film before – only in nature or in our aquaria.

"Nemo" is an entertainment spectacular, which demonstrates that monsters are "out" and fishes "in". In their fifth film the Oscar-winning team from the leading computer animation company Pixar (Toy Story, A Bug's Life, Toy Story 2, Monsters Inc.) transport their public to the Great Barrier Reef off the Australian coast with its strange and varied marine creatures.

During the course of the film almost 700 different shoals of fishes (!) were introduced in different places, practically 100,000 fishes (!) were computer simulated. This game of numbers can be continued ad infinitum (290,000 air bubbles, more than 12,000 corals, etc.). In "Nemo" they again demonstrate their eye for detail, for fishes and their intelligence. Nemo is no clown – although the species of this group are known thus – but highly intelligent like most (or all) fishes. Something very few people know. And in contradiction of the German proverb



Finding Nemo is conquering the hearts of millions, just like the aquarium hobby. But Nemos are definitely not for the beginner's aquarium. A goldfish (our "thread" this issue) or guppy (NAN no. 2) is infinitely better.

# Editorial

"silent as a fish in water", fishes can communicate, often better than people... As I write, the film is making equally great waves in Europe. People young and old are standing in long queues at the cinema box offices. There seems to be no end to the fascination, and there are now all sorts of "spin-off" toys and games – even models of each individual fish species. People are besieging the pet shops and demanding Nemos, or putting their fishes down the toilet thinking they will really gain their freedom... This highlights the only two problems with this film. Firstly, children shouldn't be allowed to buy clownfishes. They are marine fishes, and although they are now bred all over the world, it requires a high degree of technical knowledge on the part of an advanced aquarist to maintain such fishes (in a saltwater aquarium). This also requires a lot more experience and more equipment than for a freshwater aquarium. Novices should always begin with the latter. And PLEASE NEVER put a fish down the toilet, as it is bound to die, as even in Sydney the (fresh) water from the toilet doesn't flow directly into the sea. A saltwater fish will be long dead before it gets there... But "Nemo" does demonstrate that fishes are "in" and that they, like any animal (or person), need a little fuss. And believe me, it is possible to accustom fishes to being stroked. I have been doing it for years. Once they have settled in they will not only feed from your hand, but they actually like to be stroked! You can easily try it for yourself with goldfishes. The Chinese have been doing it for thousands of years, as you will read, inter alia, in this issue.

Yours aquatically,  
Heiko Bleher

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### NUTRAFIN Aquatic News

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# Fishes in nature and in the aquarium

*Ornamental fishkeeping began with the goldfish. It is said that in the 2nd year of his rule (769 BC) during the eastern Zhou (Don-Zhou) period (770-720 BC), King Zhou Pingwang wrote about Kin Yu in the first Chinese script. The name translates as “red fish” – as it is still called today in Italy (pesci rossi) and France (poissons rouges). Linnaeus (1758) gave it the scientific name *Cyprinus auratus*. The Germans first of all called it Silberkarausche and today Goldfisch, while in English-speaking countries it is likewise the goldfish, and pez dorado wherever Spanish is spoken. Meanwhile the Portuguese call it the Japanese fish (peixe Japonés), even though it didn't reach the Land of the Rising Sun until 1500 AD. It first “landed” in Europe in the 17th century. Nowadays there are more than 125 varieties of different shape and colour, and the latter now rarely matches the name.*



## Goldfishes

### and their history

by Heiko Bleher

It is no exaggeration to say that some aquarium fishes, for example discus and coral fishes (see Nemo), are nowadays worth their weight in gold. They are colourful, attractive in form, or have unusual habits. And above all they are in fashion.

But amidst all these diversions there is one fish we should never forget: the goldfish and its numerous “sports”, in both colour and form. Of course it is possible to buy beautiful common goldfishes, veiltails, and celestials for only a little money, but for really good specimens, as conceived by the creators of these oriental beauties, the Chinese and Japanese (but not just them), the enthusiast must pay a high price. “High carat” goldfishes really are worth their weight in gold and cost between 600 and 2000 dollars each; the sky's the limit. And the goldfish can also lay claim to another superlative: it is the oldest ornamental fish in the world. It all started with the goldfish, and no other fish can take that away.

Goldfishes were already being bred in China thousands of years ago. The earliest mention of one of these little golden fishes dates from the period of the Sung dynasty (960 to 1126 AD). At that time Governor Ting Yen-tsan had what was probably the first goldfish pond constructed in Kahsing. Others followed, in Hangtschou and Nanking. Goldfishes were held in the highest regard. They were admired and revered. The nurture and care of these wondrous divine creatures was reserved for the priests.

It was illegal, under pain of punishment, to eat them or use them for any other purpose. Then, round about 1163 AD, they started to be maintained in private ponds as well. At first it was chiefly the feudal lords that kept them. But by around 1547 the goldfish had become a regular pet. The nobility, such as dignitaries and mandarins, kept them in wonderful garden ponds, sometimes of fabulous design, while the well-off utilised vessels of precious jade. Among average folk, by contrast, they were kept in earthenware tubs, vats, and bowls. These containers were popular, as

By this time too the various cultivated forms of the goldfish, such as the bubble-eye, the celestial, and the lionhead with the double tail, had already been developed. The Chinese cultivated forms of the goldfish were – and still are – short-finned fishes with rather globular bodies, reminiscent of a bizarre dragon or a corpulent domestic deity. They are a manifestation of Chinese taste, a liking for the grotesque and demonic.

The goldfish is said to have probably reached Japan via Korea around 1500. But Japanese taste is very different from that of the Chinese. It is lighter, more playful, and more harmonious. The Japanese moulded the goldfish according to their own ideas. From the “Chinese dragon” they created charming, “flowery”, elegantly-formed fishes with smaller bodies and longer fins, intended to be viewed almost exclusively from above. This is very important, as nowadays the cultivated forms of the goldfish are kept mainly in all-glass aquaria, where they are viewed from the side. Seen from this viewpoint they are



*Carrasius auratus auratus* - the original goldfish – wild caught from the Da-hu river in Miao-Li in China. This natural fish still survives today and all the variations of colour and shape, whatever their names, have been derived from it by selective breeding.

the fishes grew well in them, and bred too.

How seriously goldfish-breeding was taken by people in ancient China was described extensively by one of the Sons of Heaven from the kingdom of Chang Ch'ien te (1577 to 1643), in his book on the subject. This was the first book of its kind, but many more were to follow.

Around 1644, towards the end of the Ming dynasty, almost every household – whether rich or poor – had its own large or small goldfish basin, which acted as the focus of the dwelling. The goldfish brought people pleasure and provided interest and entertainment. The goldfish had become the absolute darling of the entire Chinese people.

often misunderstood and disliked, even by goldfish enthusiasts, and are even condemned as deformed. But if they are viewed from above they actually look less like a fish than a fairytale blossom. And the pleasure the Japanese take in the darting gold now makes sense.

The news of the Chinese “cult of the goldfish” reached the western world as well very early on. The first reports date back to Marco Polo (1254 to 1323). The first live goldfish probably arrived in England during the reign of James I (1566 to 1625). Around 1650 the goldfish turned up in Russia, a gift from Chinese merchants to Tsar Alexei Michailovich. It is authentically documented as reaching Portugal in



1691, and from there the trail leads to Italy. Around 1750 it was introduced to France at the court of Louis XV, as a present to Madame Pompadour, though this probably had nothing to do with the fact that before this famous lady was enobled she bore the bourgeois name of Poisson (= Fish!). All these fishes were Chinese common goldfishes. It wasn't until much later that the first fishes (including various fancy varieties) arrived from Japan (which by around 1700 had already taken over the leadership as regards goldfish breeding), as that country had for a long time cut itself off from outside influences. Japanese fishes formed the basis of the first really top quality stocks in England and Germany. In Germany the "Matte strain", which Paul Matte bred at Lankwitz near Berlin from Japanese specimens imported in 1885, became very famous.

In 1878 Rear-Admiral Daniel Ammon took the first fishes from the Far East to the USA, and in the period that followed numerous large breeding establishments sprung up there. By around 1900 goldfish-keeping had reached its peak in Europe, and a little later in the USA. Thereafter interest in the goldfish declined somewhat, as a large number of other small, colourful, tropical fishes were imported for the expanding aquarium hobby. The goldfish was pushed aside: more precisely, into the garden pond.

Enthusiasts in many countries the world over have tried to counteract this development. They established fixed breeding standards in order to maintain top level quality in the goldfish. The English breeding organisations were at the forefront of the work in this direction. These efforts were all very successful. To the present day the goldfish has firm fans among aquarists and owners of garden ponds. But as in the past it is most highly regarded in Japan: every year some 100 million goldfishes pass through the trade.

But the goldfish managed to secure itself an even greater circle of friends worldwide: children. For them it remains a fish filled with interest and the



A small sample of the sports of the goldfish, as regards both colour and form. Top right (1) is the silver form, the original sport of the eastern Asian wild goldfish *Carassius auratus*, formerly known in Germany as the *Karausehe* (see photo left). No other freshwater fish species has such a wide distribution – today it is also found in European waters. Interestingly only females of the silver form are found in the remotest areas colonised, and they mingle with spawning shoals of other fishes in order to fertilise their eggs. Lower down (2) we see the *kin yu* – the red fish, our goldfish (*Hibuna* in Japan, where it first meant gold, then red). Then the egg-shaped *nanking* (3); the celestial – *choten gan* (4); bubble-eye – *suihogan* (5); red-capped oranda (6); pompom – *hana fusa* (7); pearl-scale – *chinshurin* (8); calico telescope-eye – *calico demekin* (9); Bristol shubunkin (10); comet – *kometto* (11); lionhead – *ranchu* (12). From the Russian Encyclopedia of Living Creatures, Fishes volume (1971).



"In summer one must ensure that the lovely colours and nimble movements catch the eye. The container of choice for this is a large glass ball with an opening large enough to ensure that the fishes can obtain sufficient air, but small enough that they cannot jump out and die if nobody is at hand." This was written (in German) about the goldfish bowl in 1856 in issue 19 of the magazine "Die Gartenlaube".

undoubted Number One among ornamental fishes.

To go into the almost innumerable goldfish clubs and associations is beyond the scope of this article, but below are details of a few sites on the World Wide Web.

At [www.altavista.com](http://www.altavista.com) there are more than 570,000 websites listed under "goldfish", but there is rarely much on its history or origin. There are, to be sure, lots of photos of the newest cultivated forms (as on the following page), and details of judging standards and international meetings. And the man who named his 22 cm goldfish "Golly" loved it dearly, got on with it better than with most people, and found it full of heart. He enjoyed its company for 25 years – longer than most friendships last...

And anyone who travels and misses his goldfish should spend the night at the Hotel Monaco in Chicago: they welcome goldfish enthusiasts and provide every guest with a "complimentary goldfish companion" in his room. They look after and maintain the fish during his stay... (courtesy of Chicago's Shedd Aquarium).

Just a few recommendations: The Goldfish Society of America with a bit of everything: [www.goldfishsociety.org/index.html](http://www.goldfishsociety.org/index.html) The Canadian Goldfish Society with exquisite breeders at [www.canadiangoldfish.com](http://www.canadiangoldfish.com) or RWT's goldfish information page: [www.geocities.com/Tokyo/4468](http://www.geocities.com/Tokyo/4468) or another good site <http://www.kokosgoldfish.com>

It is Japan, however, that still has by far the best ranchus, breeders and elite clubs. They maintain the bloodlines and quality of the egg-shaped ranchus better than anyone else and breed them only in limited quantities. The best-known breeders are Kashino, Washizu, Ishikawa, and Kawai, who have all established their own strains and invariably take home the top prizes from the AJRS (All Japan Ranchu Show). Even their youngsters at only 5 cm long! (More information on ranchus can be found (in English) at [OzekiRanchuClubSG@yahoo.com](mailto:OzekiRanchuClubSG@yahoo.com)).



On this page a few of the latest goldfish “creations” at Aquarama 2003 (see also p.14), shops, and judging methods: 1. Red and white veiltail – *ryukin*. 2. A lionhead – *ranchu* (first in its class, Aquarama 2003). 3. Red and white telescope-eye veiltail – *demekin*. 4. Chinese telescope-eye (first prize). 5. A red white lionhead – *oranda* – a new (?) creation, it can no longer see!. 6. Red lionhead– *oranda shishigashira*. 7. Goldfish and koi being sold in Tung Choi Street, Hong Kong – each fish is pre-packed. 8. Judging *ranchus*, which are always classified from above. They are divided into three categories: *todsai* (fish of the year); *nisai* (more than two years old); oya (more than three years old). 9. A *ranchu* seen from the correct perspective – winner of a competition (Singapore 2000). 10. Tightly-packed goldfishes waiting on the shelf for buyers, Guangzhou, China. 11. Goldfish selection in Hongkong. 12. Pearlscale – *chinshurina*. 13. A Tosakin – the latest prizewinning freak (my term for it)? 14. Ditto? 15. Bubble-eye – *suihogan* (like the *ranchu* (and others) a cultivated form designed for a birds-eye view). 16. In Korea...





# Aquatic plants - cultivation in the Aquarium

In NAN no. 3 (page 9) we provided advice on and others to set up breathtakingly beautiful below). In addition (no. 3, page 7) we of different aquarium plants. To complete additional hints and suggestions for an pleasure. Good luck – and



aquarium planting to make it easy for hobbyist aquaria (for example like that to be seen offered suggestions regarding a number what we have begun, we now bring you underwater garden to give you daily remember, it really isn't difficult...

Here are some helpful tips when purchasing and maintaining your plants:

## Purchasing Aquatic Plants

When purchasing aquatic plants, there are several important points to consider:

1. Ensure that you are actually purchasing aquatic plants. Consult knowledgeable pet store staff and books.

2. Look for healthy specimens. Avoid plants that are damaged (holes, broken leaves and/or stems) or exhibit yellow or brown leaves. Rooted plants should have clean looking (usually white) healthy root masses (exception = bunch plants).

3. Look for proper holding facilities. Plant tanks should be well-lit and kept at approximate tropical aquarium temperatures.

4. Purchase rapid growing plants at the beginning, commonly sold as bunch plants. This will provide maximum competition for algae.

5. Make sure plants stay wet or damp during the journey home; do not allow any part to dry out.

## Planting Tips

1. Incorporate groups of plants in your décor. Select a few species with a quantity of each, as opposed to many different species and minor quantities of each.



2. Position plants in appropriate positions with respect to the species. Plant taller plants at the rear and shorter plants towards the front. Take into consideration lighting requirements when choosing prospective sites for your plants. For example, plants that prefer lower light levels may be planted in the shade of tall plants.

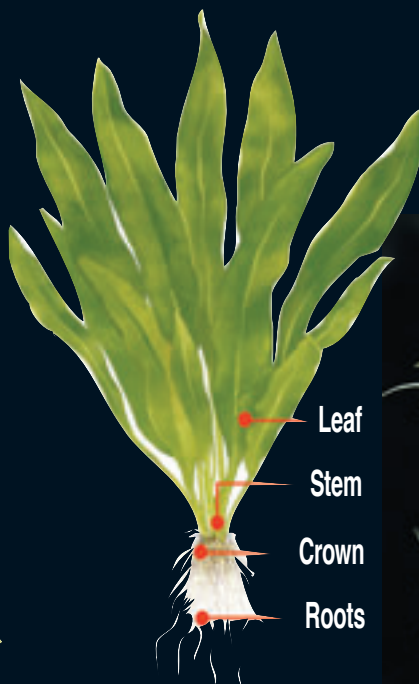
3. Always remove devices used to bunch plants together. Any damaged or dead leaves should be removed. Bunch plants should have only the bottom 1 to 2 inches (2.5 – 5 cm)

of stem planted.

4. Planting should allow for a little space between groups of plants (bunch plants).

5. Never bury the crown of a plant. Expose the crown and avoid gravel between stems (ex. – *Echinodorus* species).

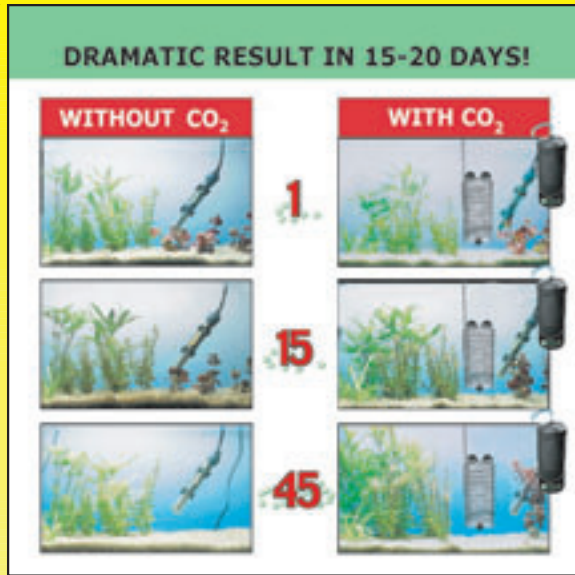
6. Remember – plants grow! Be aware of their maximum size and provide the room and correct initial placement to account for this.



Select small group-plants as *Echinodorus tenellus* for the foreground.

# Do it yourself: setting up an aquarium...

We continue where we left off with aquarium planting in NAN issue no. 3 (p. 9), by explaining that CO<sub>2</sub> injection does more than just encourage more vigorous growth in the aquarium plants (see right) and contribute to improved water quality, but also offers a method for gradually lowering the pH. And is thus suitable for many plants and fishes. It should be added that the NUTRAFIN natural CO<sub>2</sub> system relies on natural fermentation processes to supply carbon dioxide – a practical and cost-effective alternative to pressurised gas. Our product range includes a highly efficient bubble-counter/diffuser, available separately for aquarists who wish to upgrade their existing CO<sub>2</sub> injection system using this component.



should be sloped from the front in an upward direction to the rear. This will give a deeper look to the aquarium. There are a number of interesting natural gravels available, so choose a color that will contrast attractively with the wood and rock that you plan to use. Some gravel will affect pH and/or hardness values, so check the packaging to verify if this is indicated. If you are unsure about potential effects on water chemistry, it is recommended that you either consult knowledgeable store staff or purchase epoxy-coated gravel.

When choosing rocks and wood there are several basic rules to remember. These items are accents and as such their placement should support the overall visual balance of the aquarium. Always position rocks and wood first, then add the



## Choosing Elements for Creating an Aquatic Display

Creative forethought is perhaps the most enjoyable aspect of planning an aquarium display. In order to gain inspiration there are numerous books and magazines that demonstrate a multitude of different aquatic tapestries and themes.

The first step in decorating a planted aquarium is to choose an appropriate substrate. Gravel measuring 2 to 5 mm in diameter is ideal and



plants. When purchasing rocks, select one type and place them to add depth to an aquatic scene. Creating a grotto that cascades on a downward diagonal from rear to front can do this. Rocks can also be effectively used to highlight feature plants, such as some of the larger *Echinodorus*, *Vallisneria* and *Aponogeton* species, by placing them in small clusters close to their base.





# ... decor material - planting - CO<sub>2</sub>

Larger rocks often look best when positioned behind or off to the side of larger plants as a backdrop or accent. Another effective technique is to use flat rocks to create terrace walls to support elevated gravel terraces for planting.

Driftwood is an excellent accent to divide taller, larger plants at the rear from groups of plants at the front. It is also the object of choice for attaching *Anubias* or *Microsorium*. This is done by carefully tying the rhizome with a piece of fishing line to the driftwood. The plant will eventually grow and affix its roots to the wood. Larger pieces of driftwood with numerous branches can make for a very attractive display when they are well adorned with either of these interesting plants. Driftwood that features a long substantial segment not only offers the possibility of dividing groups of plants from rear to front but adds an interesting visual element as it emerges from a heavily-planted area into an open space.

Currently there are perfectly replicated driftwood and rock accents that offer a realistic look with none of the potential effects on water chemistry. The authentic look is achieved by a mold cast from select real rocks and wood. Using replications eliminates the organic decomposition one would see from real wood and the water hardening effects of some rocks, a benefit to stable water quality. GeoSystem Planting Rocks are an accurate replica of lava rock complete with convenient planting hollows, which are ideal for grouping bunch or foreground plants, while



also adding an attractive highlight to various larger plants.

For aquarium owners who insist on completely unstained, clear water conditions, GeoSystem Wood provides an ultra real-looking driftwood composed of resin. This highly accurate replication eliminates the amber tint and other potential undesirable conditions often associated with the use of actual wood. Real or artificial, correctly positioned rocks and driftwood add an element of realism to planted aquaria.

## Plants

Live plants represent the core central dynamic element in planted aquaria. As they grow, the look of your underwater garden will change, so make sure that they are positioned appropriately. In general, plants may be classified as foreground, mid-ground and background. There are many good books and guides on aquarium plants that provide important information about size, growth rate, light requirements, and where to plant. The aesthetic element is also an important factor in deciding where plants should be located. Color and leaf shape play important roles in providing contrast to achieving a stunning visual impact. Larger feature plants with prominent broad leaves, such as various species found in

the genus *Echinodorus*, are perfectly highlighted by surrounding or adjacent groups of bunch plants from the genera *Rotala*, *Linnophila*, and *Ludwigia*. (See also NAN #3 and this issue page 7.)



# New practical products

## Life Glo 2

The Glo line of fluorescent lighting has eliminated the internal reflector in its premium full spectrum triphosphor bulb, the Life Glo, resulting in outstanding performance at a lower cost. Boasting the same superior Kelvin temperature as its predecessor, the Life Glo 2 is complete with triphosphor formulation and powerful light output, continuing to be an excellent light source for fresh and saltwater aquariums. Light-Glo canopies with dual fluorescent lighting and high efficiency reflectors will make the most of the new Life Glo 2.



## Fluval Tronic Heaters

Stable water temperatures are insurance for the health of tropical fish, the Fluval Tronic Heater is the best policy. The Fluval Tronic employs microchip technology to provide exact pin point control of heating and Safety Shut-Off functions, supporting the constant water temperatures fish require. In addition to precise control, speed and accuracy are addressed with two features. Fast Heat Technology ensures that the heater stays on continuously to achieve and maintain the desired temperature, unlike conventional bi-metallic heaters that cycle on and off. What good would a fast and precise system be without accurate input? A Patented Thermal Sensor continuously samples actual water temperature directly through the glass of the heater tube ensuring accurate data is relayed to the control circuitry.

Available in 5 sizes: 50 Watts, 100 Watts, 150 Watts, 200 Watts and 300 Watts.



## New Foods

### Nutrafin Max Plus

Nutrafin Max Plus foods are available in three different formulations to satisfy most species of tropical fish, as a treat or core diet. Combining freeze dried food with flakes allows for enhanced palatability and a quality protein source for superior growth rates and conditioning. These highly nutritious products meet Nutrafin Max requirements by including a top quality proprietary multi-vitamin, advanced processing

methods and rigorous selection of raw ingredients.

### Nutrafin Max Brine Shrimp Flakes plus bits of freeze dried brine shrimp

This extremely palatable food combines 20% ultra high quality freeze dried brine shrimp bits with 10% spray dried brine shrimp applied to the flakes. Great for getting finicky feeders to accept dry foods as well as providing a natural color boost.

### Nutrafin Max Mysis Flakes plus bits of freeze dried mysis shrimp

Mysis is a freshwater shrimp that represents an irresistible energy packed food source for fish. Nutrafin Max Mysis Flakes Plus includes 20% genuine *Mysis relicta* freeze dried bits with an additional 10% spray dried mysis applied to the flakes. Even the most finicky fresh and saltwater species will not be able to resist.

### Nutrafin Max Earthworm Flakes plus bits of freeze dried tubifex worms

A number of worms are used by fish breeders to grow and condition many varieties of tropical fish. Nutrafin Max has included 20% whole freeze dried Tubifex worms with flakes that contain 10% spray dried Earthworm meal. This potent combination will not only support excellent growth rates but will also enhance health, spawning readiness and condition.



## Aqua Clear Filters

A New look from an old friend! One of the most trusted brands in the Aquatic industry just got better! A new look on the outside and increased biological filtration on the inside! AquaClear Power Filters now offer you a complete solution for all your filtration needs. Mechanical, Biological and Chemical filtration are all accomplished using the AquaClear Multi Stage Filtration System. Biological filtration has been drastically expanded using a BIO-MAX Filter Insert. BIO-MAX provides a vast surface area for beneficial bacteria to grow on, helping to reduce and control toxic ammonia and nitrite.





# New in the trade

## Fishes

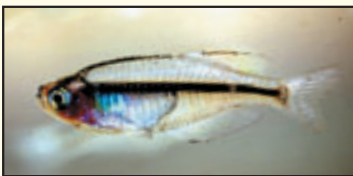
### Blue-eyes

The blue-eyes are small fishes with, as their name suggests, blue eyes, and are found exclusively in Australia and New Guinea (ie Papua New Guinea and the Indonesian part of the island) plus almost all the surrounding offshore islands. They belong to the family Pseudomugilidae and are divided into two sub-families, the Kiunginae with one extinct and one newly discovered species, and the Pseudomugilinae with 15 described species. They are primarily freshwater fishes, although a few species are also found in brackish and salt water (eg *P. cyandorsalis*, *P. majusculus*). In nature the blue-eyes sometimes live in tiny biotopes, often together with rainbowfishes (*Melanotaeniidae*). For precisely this reason they are ideal for small aquaria. They generally live in the upper layers of the water and some right at the water's surface (eg *P. novaeguineae*, *P. pellucidus*). They are generally encountered among vegetation in shallow water. Only a few live in open water (eg the brackish-water species). They are splendid, usually colourful, little fishes (the largest attain barely 2 inches – 5 cm TL). In this article we present two new species, a rare one, and one that is now extinct.

### 1. The new *Kiunga* species



This is a new, so far undescribed species (male above; female below) which Heiko Bleher discovered for the first time in 1991, to the south of the town of Kiunga, Papua New Guinea. Unfortunately on that occasion the live specimens were lost by the airline along with his luggage. At the second attempt, in 1993, he caught just three individuals and they didn't breed. In 2003, during a week of pouring rain, he managed to catch a larger number in the same stream



(the species is found nowhere else – 57 waters in the region were thoroughly investigated) and after a flight lasting 28 hours they arrived safely in Europe. The water parameters in the field at noon (in tropical rain) were: pH 5.9; conductivity 29 µS/cm; water temperature 80.42 °F. This is a shoaling fish of max. 1 inch (2,5 cm) TL and difficult to find because of its transparency.

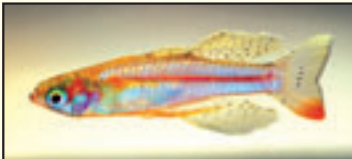
### 2. *Pseudomugil cf. novaeguineae*

The *Pseudomugil* species shown below (upper = male, lower = female) is a further blue-eye that occurs in the same region but is difficult to catch. It is similar in appearance to *P. novaeguineae*, which has a wide distribution. However, the fins in the new species are much larger and more prolonged. It lives exclusively just below the water's surface like hatchetfish species, apparently lying in wait for passing insects.. The water parameters are similar to those for the *Kiunga* species but the two are not found together.



### 3. *Pseudomugil paskai*

Another blue-eye species, *P. paskai* (below, with female), is likewise known only from the Kiunga region. It is a glorious fish which was imported alive shortly after its description by Allen & Ivantsoff in 1986, exclusively by Bleher, both then and repeatedly since. A beautiful, (almost) problem-free species, ideal for small aquaria. It does well at a temperature of about 80.6°F, and should be kept at a pH of 6.5 and a conductivity of about 100 µS/cm.



### 4. *Pseudomugil ballochi* – Extinct

And here (below) we have a photo by the famous Australian rainbowfish expert Neil Armstrong, showing *Kiunga ballochi*, a fabulous fish that has become extinct in the wild due to habitat destruction. (see *aqua, Journal of Ichthyology and Aquatic Biology* 8 (3) 2004).



## Plants



### A new aquatic plant

This time we present a totally new aquatic plant which Heiko Bleher recently discovered for the first time in Mozambique. Although it looks like a fern it isn't one, but a species of the genus *Hydrostachys*. Scientists recognise a single genus with some 30 species in the family Hydrostachyaceae and these occur only in Madagascar and the south of Africa, north to the upper Congo



basin. They are so far unknown in the aquarium hobby even though they are totally aquatic plants (ie they can only live underwater). In the wild they are found only in waterfalls or strong rapids (see bottom photo), like the members of the family Podostemaceae (which, however, contains 40 genera with more than 200 tropical and subtropical species). They root very firmly, practically exclusively on rocks (above) and are ideal for the aquarium, because plants rooted fast to rocks or wood can be moved wherever one wants in the aquarium, without the plants having to re-root and coming to harm. For this reason it has



for some time been possible to buy plants thus rooted – but unfortunately still no *Hydrostachys*; however, hopefully it won't be long (they are in the process of being propagated). Their robust leaves (top) and totally aquatic mode of life are ideal for the aquarium, at parameters of pH 7.0; conductivity 100 µS/cm and temperature 75.2-82.4 °F.

# Biotope aquaria: for Goldfishes

## The Goldfish Aquarium

Every newcomer to the aquarium hobby should start with guppies (NAN no. 2) or a goldfish aquarium (and experienced aquarists can enjoy them too). Goldfishes are amongst the hardiest ornamental fishes, and this is one of the reasons they have been kept for more than a thousand years (page 4). Today the original goldfish is still found in the waters of China, which freeze during the winter months. It lives beneath the ice (and sometimes in it), at temperatures around freezing point, and survives. In the same biotope where in summer the water heats up to more than 86.0°F – I have measured up to 105.8°F.

These are points that should also be borne in mind when purchasing goldfishes (young or old), and, of course, you must decide whether to keep them in a pond, an aquarium, or perhaps even in a paludarium. The traditional Asian method, still practised today, of keeping them in open-topped earthenware basins, porcelain bowls, or vessels of jade has never really spread further afield, and for a number of reasons is best reserved for specialists and for the more extreme forms, and hence I will not discuss it here. Likewise the goldfish bowl (in the interests of appropriate maintenance as well). From the viewpoint of the (normal) goldfish a pond is the ideal habitat, and this is generally the only environment where it will breed without the intervention of the owner. But I won't go into pond maintenance here either, as there are (almost) innumerable publications on the subject, and instead we will deal with the aquarium maintenance of goldfishes and provide a few simple (biotope) suggestions. As an aside, however, I do also recommend ornamental carp (nishikigoi, often called koi (which simply means carp), which will be covered in a future issue of NAN) for a pond, and that the pond should be populated with a natural, native fauna and flora.

**Setting up the aquarium:** From an aquarium ecology viewpoint, the same general principles apply to a goldfish aquarium as for (almost all) other aquaria. In other words, don't allow anyone to tell you a small aquarium will suffice for goldfishes. I recommend a tank at least 100 cm long (they need swimming space, just like discus, for example) and 35 cm wide (the wider the better), and at least as deep. Use medium (grain size 0.2-0.6 mm) or coarse (0.6-2.0 mm) sand, never more than 2 mm as goldfishes like to dig. Fill the tank with this to a depth of 2 inch (5 cm) – somewhat more towards the rear – but only after rinsing out the tank with warm water

and making sure that the sand is also well washed. Don't forget to include some (true) aquatic plants (often people think goldfishes don't need them, or eat them). The plants will enrich the water with oxygen, utilise the inevitable metabolic by-products of fishes and bacteria, and provide



micro-organisms with surfaces to colonise. And thriving plants are the most effective answer to algae. Two groups of plants are advisable (as plants are part of the goldfish's natural diet, but they nibble only at soft-leaved plants, and at small or new, tender leaves). One group should be a more

robust type such as vallis (*Vallisneria* species), which is both suitable and biotope-correct. One end of the tank, or part of the background, should be densely planted with such plants, as goldfishes also need a place to hide. Vallis grows well under fairly bright lighting (and maybe CO<sub>2</sub> fertilisation). Other suggestions are a waterlily (eg *Nuphar lutea*), which likewise won't be eaten, a *Bacopa* species, and Java moss (*Vesicularia dubyana*), in which goldfishes love to search for small invertebrates. Useful plants for "snacking" include, for example pondweed, *Egeria densa* or *Elodea canadensis*, which grow rapidly (they can readily be propagated in another tank and transferred as and when required); or hornwort (*Ceratophyllum demersum*), which will generally continue to grow floating – given good light. If you decide on an open-topped tank then floating plants such as water lettuce (*Pistia stratiotes*) or riccia (*Riccia fluitans*) can be added. Other decor can include basalt, granite, or lava rocks, as well as well-weathered bogwood.

**Fishes for the aquarium:** This is largely a matter of personal taste. On pages 5-6 you will see a few of the many variations in shape and colour. Basically, I suggest avoiding the forms intended to be viewed from above, such as celestials, bubble-eyes, and buffalohheads.

Telescope-eyes should also be viewed with caution, as the eyes protrude so far that they can easily be injured (especially during netting). Recommended forms include: veiltails – red/white (also called *sarasa*) or the colourful calico; the type of veiltail first bred in the USA which is less high-backed; veiltail fantails, a western form; comets, Bristol shubunkins, London shubunkins; plus orandas, lionheads, or eggfishes. (The last of these has almost died out, definitely only a cultural loss.) It is important not to try and keep any of these forms at low temperatures like common goldfishes. The very fancy varieties are acclimated to warmer temperatures.

**General:** Goldfishes require good lighting (see also NAN no.1) and a suitable power filter that turns over the aquarium volume a minimum of 2 to 3 times every hour. A heater is unnecessary as long as the water temperature doesn't drop below 64.4 or 62.6°F in winter. Allow the planted aquarium to run without fishes for 14 days to allow it to mature biologically (this will also allow the plants to root), allow your goldfishes adequate swimming space, and don't overpopulate the tank: as a rule of thumb, 1 cm fish (total length) per 3 litres of water.



## What happened at the start of 1800?

As the 18th century drew towards its close, the whole world seemed in uproar and the repercussions from the French Revolution of 1789 pushed Europe into a new war (in 1795 Poland was partitioned for the third time, in 1796 Napoleon again made war on the Austrians in Italy, in 1797 Austria ceded Belgium to the French in return for Venice, and Friedrich Wilhelm III became Kaiser of Prussia), but, despite all this, widespread public interest in the study of nature was awakening. Long gone were the days when the goldfish was simply a jewel at the courts of princes (NAN no. 3). These wonderfully colourful fishes were now kept in sugar jars, porcelain containers, tubs, and small artificial ponds in the houses of ordinary citizens, for the pleasure of adults and the education of children.

And it was at precisely this time that Johann Matthaeus Bechstein (1757-1822), the future minister of domestic finance and forestry, was teaching in Thüringen at the Öffentliche Lehranstalt für Forst- und Jagdkunde (public college of forestry and hunting), founded by him in 1794 on the Freigute Kemnak. He was a recognised authority on zoology and botany. His four-volume work *Gemeinnützige Naturgeschichte Deutschlands aus allen drei Reichen der Natur* (1789-1795) marked him out as a student of nature. He kept a large number of animals in his study, not only bird cages but also containers of glass, porcelain, and stoneware for fishes and amphibians. And in 1797 his book *Naturgeschichte der Stubenthiere, Säugethiere, Amphibien, Fische, Insecten, Würmer* (The natural history of domestic animals, mammals, amphibians, fishes, insects, worms.) appeared.

Now the big question is, did Bechstein, who is sometimes known as the “father of aquarium and terrarium science”, thus lay the foundation for the aquarium? That is what they say in Thüringen and Sachsen, the green heart of Germany – that it was there that aquarium and terrarium science had its beginnings. And later on the preface to the third edition (published in 1807) of his book stated that aquarium and terrarium science began in 1797. In addition, *Die Gartenlaube*, an illustrated family magazine from Gotha, published various series of articles such as “Der Ozean auf der Tische” (The ocean on the table) (1854-1855) and “Der See im Glas” (The lake in glass) (1856, see illustration on p. 4). The latter were by Emil Adolf Roßmäßler (1806-1867), known in Germany as the “first popular German expert on natural history”. From his pen too came

*Das Süßwasser-Aquarium* (The freshwater aquarium), published in 1857 by Verlag Hermann Mendelsohn in Leipzig, Roßmäßler’s birth-place. Moreover the oldest aquarium club on Earth (founded on 3.5.1882) called itself Aquarium zu Gotha (Gotha Aquarium), and it is said that the first pet shop was opened by Otto Gitter in Leipzig in 1850.

But back to Bechstein. All the earlier publications on *Stubenthiere* (the first German word for pets?) had been lists of animals, fisheries publications, or works by scientists. Bechstein’s book was an enthusiast writing for enthusiasts, on fishes and other pets. It



An early Victorian ornamental rock-work and fountain aquarium, with a glass tank on a decorative stand, from the cover of P. H. Gosse’s *A Handbook to the Marine Aquarium; containing Practical Instruction for Constructing, Stocking and Maintaining a Tank and for Collecting Plants and Animals*. London 1855.

was so successful that three editions, each one better than the last, were published.

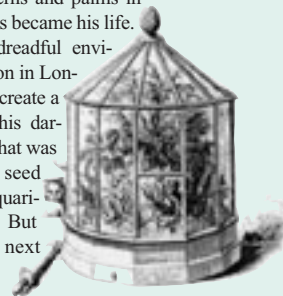
I will quote just two extracts from the 1807 edition, translated into English. The description of the *Goldkarpfen* (*Chinesisches Goldfischchen, Kinju*) (Golden Carp (Chinese Goldfish, *Kinju*)) reads, “An unusually splendid creature, resplendent in the loveliest colours. It originates from the rivers of Japan and China and has been kept in England since as long ago as 1611, and spread from there to Europe. It is sometimes kept in ponds and basins in gardens, sometimes in glass or porcelain containers indoors as a feast for the eyes. It looks like the common carp which attains a length of 12 to 14 inches, but the latter (Chinese Goldfish) grows only to 4 to 8 inches long. Like all domesticated creatures it is very variable in form and appearance, especially as regards the fins. *Cyprinus auratus*, Gemlin, Lin. ...”

Under *Merkwürdigkeiten* (special attributes) I found another nice extract, “They don’t feed in winter”, followed by, “They have good hearing as they soon learn to recognise the voice of the person who feeds them, and come to the surface of the water whenever they detect his presence, by whatever means. In China a little whistle hangs by every container in which they are kept, and this is used by the ladies, who get as much pleasure from them there as they do here, to summon them to the surface for food.” In other words he was a keen observer and realised even back then that a fish makes a good pet, something a lot of people still don’t believe today...

Bechstein relates extensive details on maintenance; changing water; population; sitting in the room, in summer and in winter; on the colours and forms (a lot were known even then – see pp. 4-6); and much more. He also provides a detailed *Beschreibung* (description) and *Merkwürdigkeiten* for the *Wetterfisch* (= *Cobitis fossilis*, Gmelin. Lin.) (the weather loach), which can also be kept in the home. But he still doesn’t get as far as a proper aquarium...

Be that as it may, in 1819 the British chemist William Thomas Brande published the following: “Fishes breathe the air which is dissolved in water; they therefore soon deprive it of its oxygen, the place of which is supplied by carbonic acid; this is in many instances decomposed by aquatic vegetables, which restore oxygen, and absorb the carbon...; hence the advantage of cultivating growing vegetables in artificial fish-ponds...” Thereby demonstrating that “vegetables”, as he termed what we call plants, provide oxygen in the water for the fishes... Likewise, in Bordeaux in 1830, the Frenchman M. des Moulins was able to establish that fishes were healthier and did better in water containing plants and bivalves than in that without. And at a meeting in 1833 in Cambridge (UK) Dr. Danbery produced evidence that aquatic plants give off oxygen and take up CO<sub>2</sub> under the influence of light.

But still no aquarium. The foundation was supposedly laid in 1829 by a Briton – although he actually started with a terrarium. I refer to Dr Nathaniel Bagshaw Ward (1791-1868), who by the age of 13 had become so enchanted with ferns and palms in Jamaica that plants became his life. Because of the dreadful environmental pollution in London he wanted to create a better home for his darling plants – and that was supposedly the seed from which the aquarium grew as well. But more of that next time...



# Nutrafin news

## Nutrafin visits Aquarama 2003 in Singapore



countries were filled with amazement. Nutrafin was there too, represented by its Malaysian agents, and exhibited its newest products.

The highlight of the exhibition was the fishes. Thousands, from 12 countries, were entered in the 14 categories of the

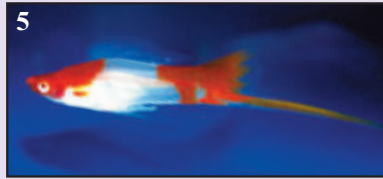
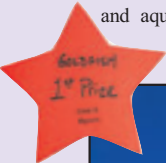
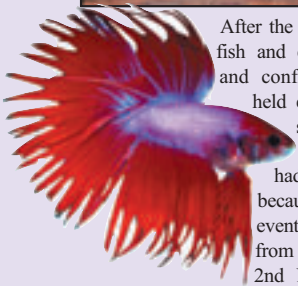
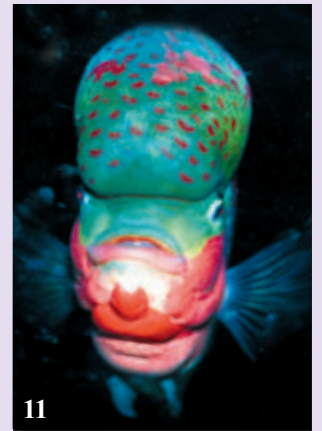
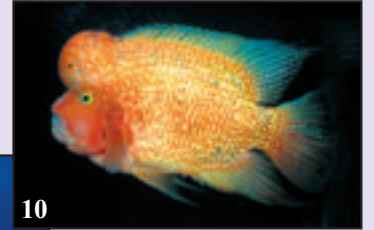
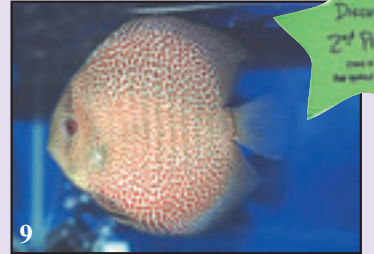
After the largest aquarium fish and equipment show and conference in Asia, held every other year since 1989, normally in May, had to be postponed because of SARS, it eventually took place from 30th October to 2nd November 2003

instead. Heiko Bleher attended the exhibition on behalf of Nutrafin.

Exactly 199 aquarium hobby exhibitors (136 of them from 23 overseas nations and 63 from Singapore) displayed everything to do with ornamental fishes, and 30,575 fish and aquarium plant enthusiasts from 65

competition: discus; goldfishes; guppies; dragonfishes (*Scleropages formosus*); tetras; barbs; *Corydoras*; gouramis; mollies; platies; swordtails; bettas (left, a prizewinner in class 4: bicolor single tail); flower horn; new species (wild fishes newly discovered during the past two years – but there were none there). 31 judges from 22 countries had to evaluate the numerous fishes, only a tiny fraction of which are shown here.

Tremendous numbers of the public thronged around the fishes, but there was also a remarkable interest in the aquatic plants, which found a ready market. It would appear that people in south-east Asia are gradually waking up to the idea of creating a beautiful underwater world in their homes – as has long been the case in Japan (see also pages 7-9 in this issue).



1. The entrance to Aquarama 2003. 2. The Grand Champion of all the goldfishes. 3. This red arawana (*Scleropages formosus*) also won the top prize in its category (dragonfishes). 4-5. There were swordtails (*Xiphophorus helleri*) in never before seen colours, as with many of the fishes. 6. This live-bearer (*Poecilia velifera*) with 4-5 swords and an enormous veil-like pectoral was also new, and, like the goldfish champion, a freak. Such cultivated forms are incapable of reproducing themselves... 7-8. Any more than are these new mollies...

9. The 1. prized Red spotted Discus was also the Grand Champion of all Discus, but the fish in 2nd place in Red spotted was the most attractive. 10-11. The Flower Horn craze is slowly beginning to subside again in Asia. Even so there were crowds around these cichlid hybrids.



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