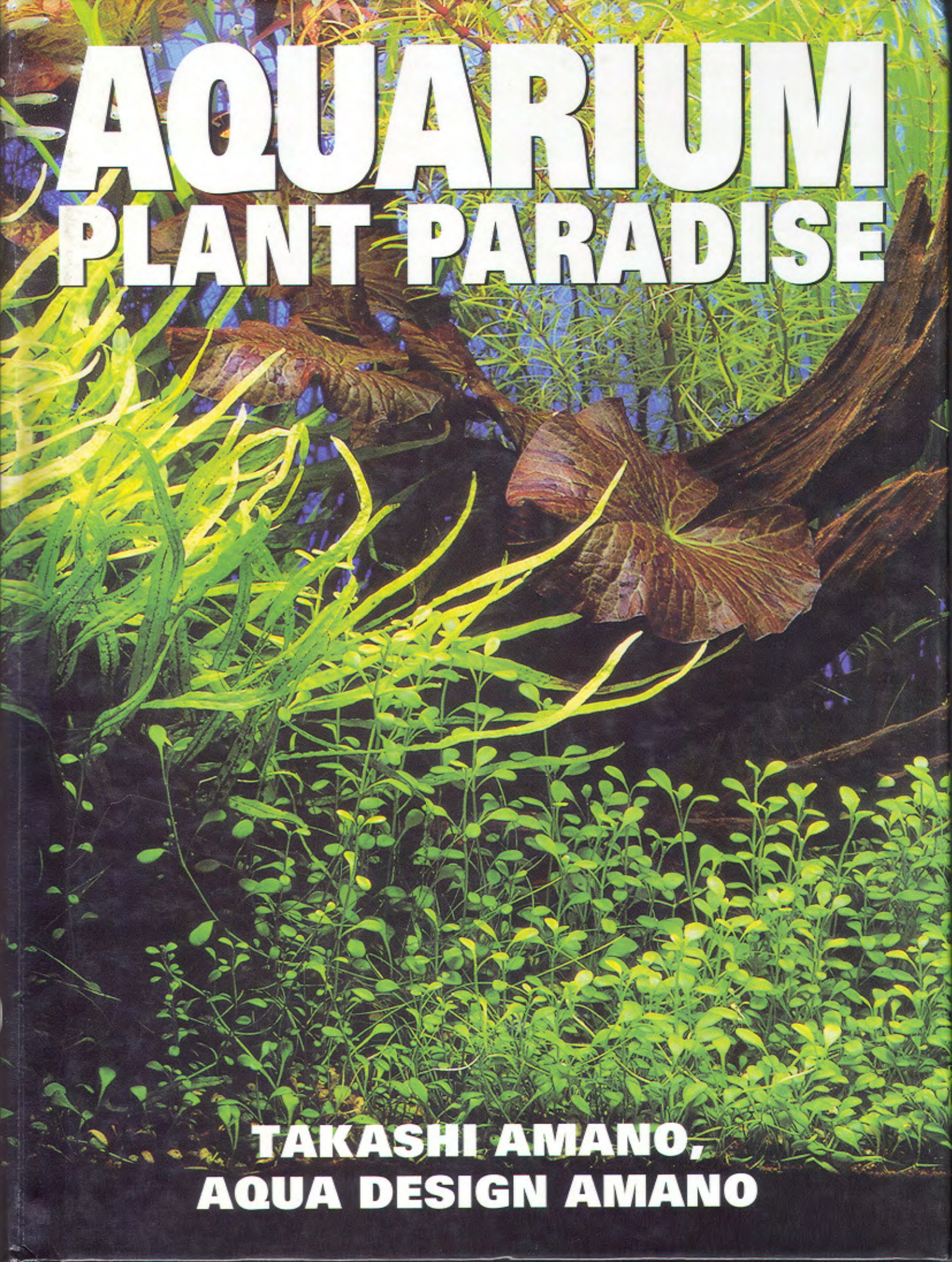
AQUARIUM PLANT PARADISE



TAKASHI AMANO,
AQUA DESIGN AMANO

AQUARIUM PLANT PARADISE

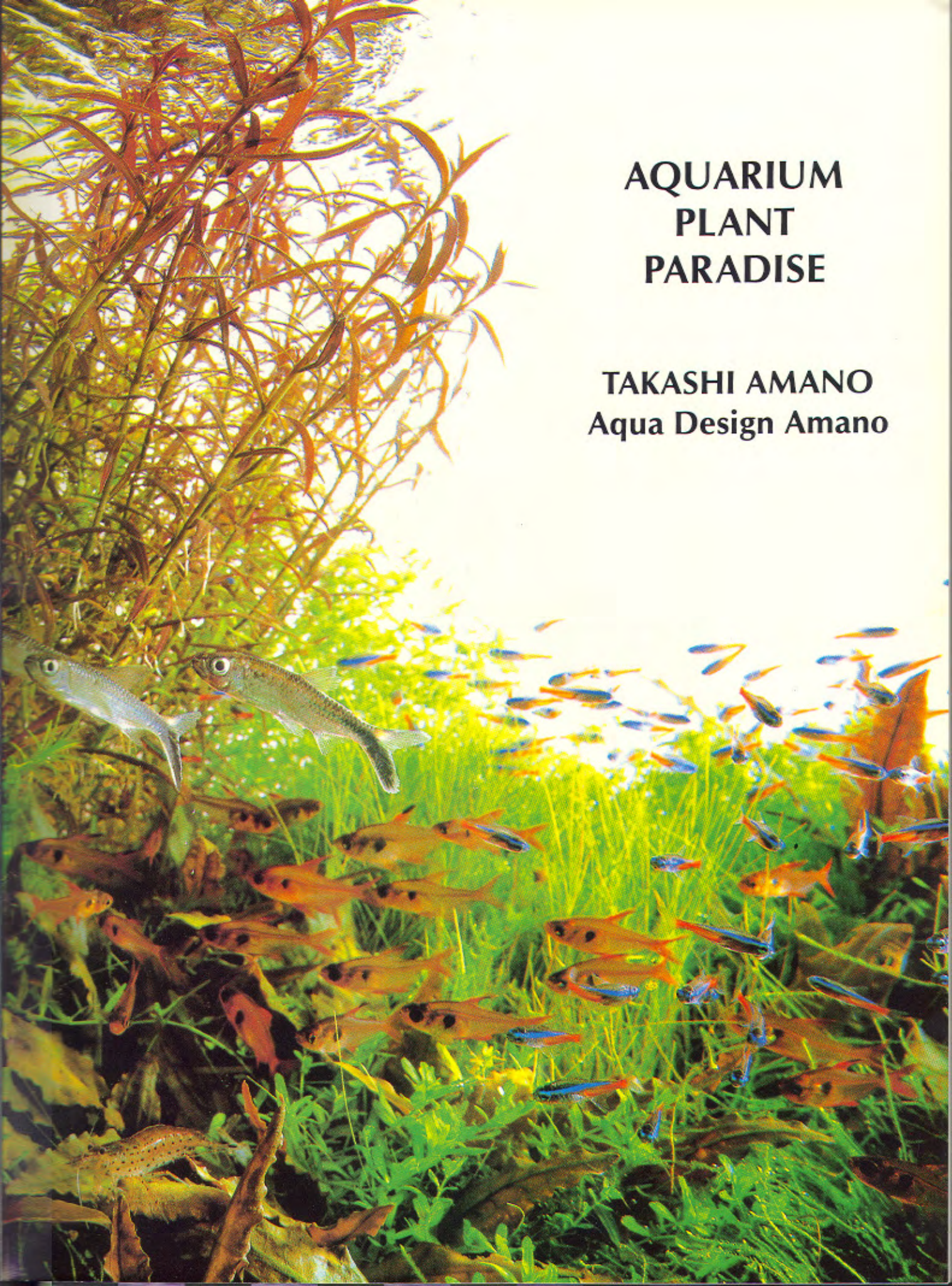
Takashi Amano

Aqua Design Amano

Translator: William Charlton







AQUARIUM PLANT PARADISE

TAKASHI AMANO
Aqua Design Amano

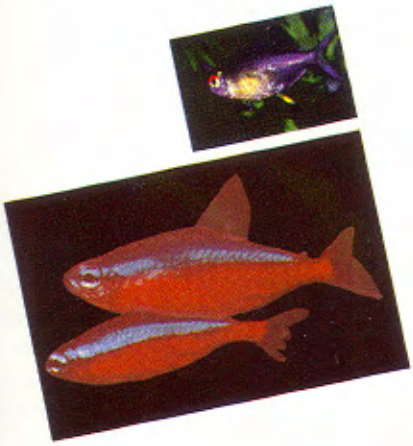
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ADA
aqua design amano



The nature photographer Takashi Amano comes from the Japanese city of Niigata, which is also famous as the stronghold of Koi breeding. Although aquaria furnished attractively with aquatic plants were originally unknown in the Japanese aquarium hobby, this was changed by the fantastic photographs of Takashi Amano. Through his invaluable preliminary work, today in Japan aquatic plant gardens are commonplace in the aquarium hobby.

In his manner of furnishing aquaria, Amano trod completely new paths. In so doing he oriented himself to traditional Japanese horticulture and the principles of Zen Buddhism. In Japan this new trend became so well established because Amano, with his firm Aqua Design Amano Co. Ltd., could not only provide directions for the operation of beautiful aquaria, but could also provide the appropriate products for the practical application of these ideas.

In the meantime aquarium furnishing based on Amano's principles has also gained recognition in the United States and Europe. Many nature lovers in the aquarium hobby have specialized in the design of such aquaria. Amano's natural aquaria differ clearly from the previously known European planted aquaria, as are favored, for example, in the Netherlands. The Japanese aquaria reflect more closely the natural model, although even they cannot be complete copies of the natural landscape.

Artistic focal points are achieved through specifically selected rocks or attractive roots. The operator of a natural aquarium may not constantly interfere with the automatic sequence of ecological processes of such an aquarium. The use of carbon dioxide is essential for the operation of natural aquaria according to Amano's principles. This in fact is often visible through the formation of oxygen bubbles on the aquatic plants. This formation of oxygen bubbles is in part used directly as a decorative medium.

With his method of furnishing aquaria, Takashi Amano has taken completely new paths...

Introduction

Takashi Amano's aquarium philosophy is unique. The increasing enthusiasm for his Japanese natural aquaria has led to nothing short of a new boom in the aquarium hobby.

Despite repeated suggestions for furnishing aquaria and numerous creative tips in his books, most of the attempts to copy his aquaria have failed. The key probably lies precisely in these attempts at imitation. Amano's aquaria are and remain unique. So, what can we do? After all, we also want to have beautiful aquaria in our living rooms, which should not all be constructed according to the nearly standardized model of Dutch aquatic plant gardens.

Nevertheless, the unique Japanese natural aquaria can serve as creative supports for our own realizable ideas.

This certainly is the more realistic idea. Let us therefore study the magnificent photographs in this book and let them serve us as creative models, which we can use for our own creative designs. Even if we only leaf through the book and look at the beautiful photographs, however, we will certainly derive great enjoyment from it.

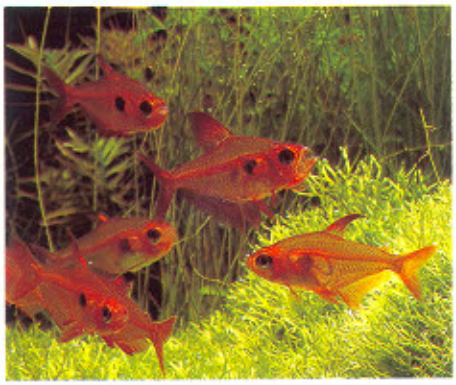
Tetras are popular aquarium fishes which have been particularly popular because of their often splendid colors since the beginnings of the aquarium hobby. Precisely these fishes are particularly well suited for beautiful planted aquaria. To be sure they also include herbivores and species that grow too large. These and other tetras will be presented in another guide on the subject of tetras. In this book, however, the plants come to the fore more so than do the fishes, yet the fishes are just as much a part of an attractively designed aquarium as the plants and the other decorative objects.

The aquaria that were selected are therefore primarily tetra aquaria. The tetras are occasionally kept together with other species, such as dwarf cichlids or small sucker catfishes. In the interest of the possible copying of similar aquaria, species lists of both the aquatic plants and the fishes are included.

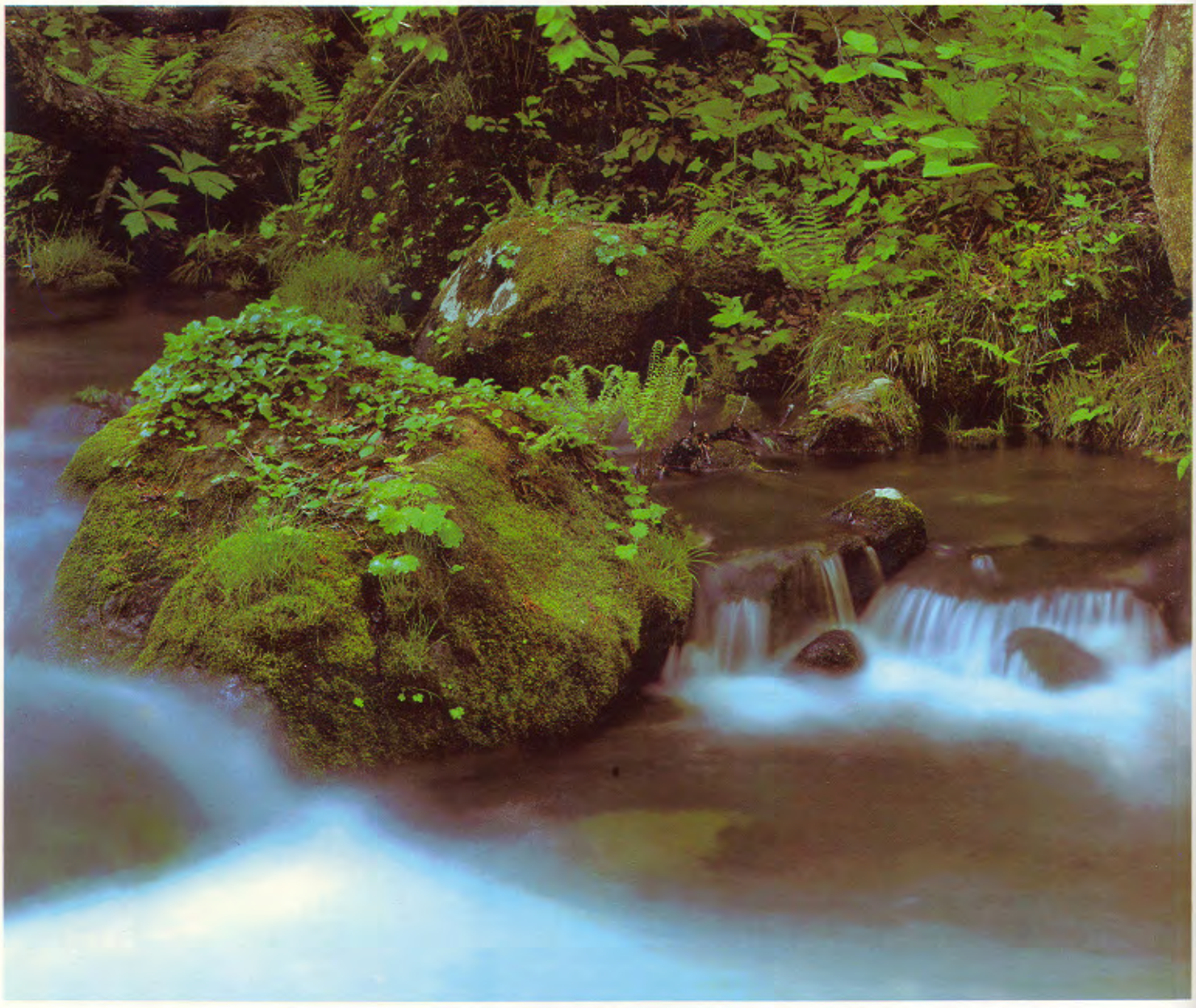
The species lists give both the scientific and common names. The scientific name is the more important, however, because it contributes to a better general understanding and because many species are known under the most diverse common names. Furthermore, the dimensions of the presented aquaria are always given in the measurements length x width x height in centimeters. Additional important data of the aquarium are also given.

Some creative suggestions and tips for furnishing aquaria should make it easier for you to create your own Japanese natural aquarium.





The World of Tetras



Nature and Aquarium

It would be presumptuous to want to recreate impressive biotopes on a small scale in the aquarium. Nevertheless, attractive landscape elements should be an inspiration to the creative hobbyist. . . .

In the Muromachi period (1338—1573), the grandiose Chinese aquatic montane landscapes were recreated even in limited spaces in Japanese horticulture.

The focal point of my work is in creating landscapes based on the natural model. In Zen gardens of the Karesansui style it is attempted to represent the cosmos in the smallest possible space and thus to recreate the great in the small.



A small clearing along the stream in the rainforest. The rocks above the water's surface are covered with moss. Between the giant trees, a few of which have collapsed from age, grow young trees, plants, and ferns.

Noticeable above everything else are the sounds of flowing water, intensified by the rushing noise produced by small rapids.

For the copying of Nature and for the study of the arrangement of rocks and the overall design of a landscape garden in the Karesansui style, the Hojonan Garden in the Daitokuji Temple, the Hojohoku Garden in the Ryugenin Temple, the Hojohoku Garden in the Daisenin Temple, the Hojo Garden in the Ryoanji Temple, the Hojohoku Garden in the Entokuin Temple, and the garden in the Tenryui Temple are particularly instructive examples. Moreover, to depict them under water demands a great deal of sensitivity.



Squalls in the Jungle

Glossostigma elatoides in the foreground and *Hydrocotyle verticillata* in the central part of the aquarium have similar leaf forms but very different sizes. They contrast with the wood with the Java moss and Congo fern growing on it.



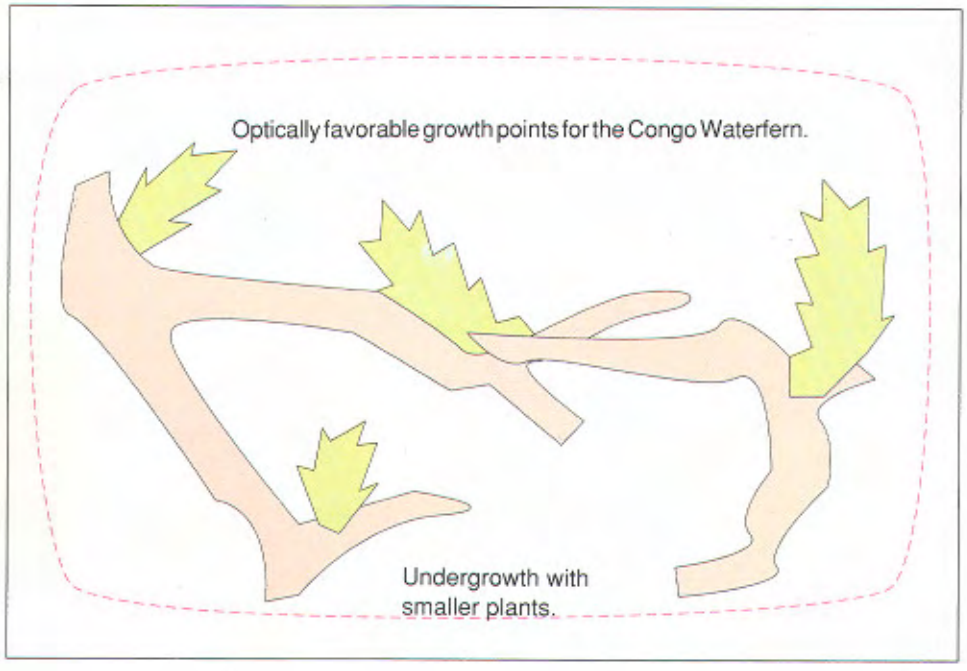
It is essential that harmonious plant species be selected despite their differences.

Plants and fish are identified on page 13.

Furnishing and planting plan for the tetra aquarium "Squalls in the Jungle":

When the wood is used as is, it produces an imbalance in the underwater landscape. Therefore, it is recommended to decorate the wood with Java moss (*Vesicularia dubyana*) and with ferns such as Congo fern (*Bolbitis heudelotii*).

When attaching the carpet of moss, make sure that it is not too thick. After about two months, the cotton threads will have dissolved and the moss in the meantime will have grown onto the wood.





Nematobrycon palmeri, the Emperor Tetra.



Inpaichthys kerri, the Blue Emperor Tetra.



Megalamphodus roseus, the Yellow Phantom Tetra.



Hyphessobrycon herbertaxelrodi, the Black Neon.

Squalls in the Jungle

Emperor Tetra and Congo Waterfern.



Underwater landscapes with the Congo fern make the aquarium look like a summer landscape. The rich green of the plants really allows the observer to sense the power of summer.

Only with proper care will the initially plain *Inpaichthys kerri* turn into a real Blue Emperor Tetra.

With soft lighting and a dark substrate, they are shown to best advantage. These are active and peaceful school fishes, which require an open swimming space. They also need more thickly planted areas, however, into which they can retreat.

External filtration of the aquarium through biological filter material, substrate of fine sand, CO_2 fertilization, about two bubbles per second, and a weekly water change of about 1/2 the volume.

For all dimensions of the following aquaria, length x width x height applies.

Data:

60 x 30 x 36 cm, ADA Cube Garden,
4 x 20 W, 10 hours/day,
24°C, *p*H 7.0, 2°dGH, 7°dKH.

Für alle Größenangaben der folgenden Aquarien gilt: Länge x Tiefe x Höhe

Plants and Animals used in "Sqaulls in the Jungle":

Bolbitis heudelotii	Congo Waterfern
Vesicularia dubyana	Java Moss
Glossostigma elatinoides	Australian Figwort
Hydrocotyle verticillata	American Pennywort
Hydrocotyle maritima	European Pennywort
Riccia fluitans	Crystalwort
Caridinia japonica	Yamatonuma Shrimp
Inpaichthys kerri	Blue Emperor Tetra
Nematobrycon lacortei	Rainbow Tetra
Nematobrycon palmeri	Emperor Tetra
Otocinclus sp.	Dwarf sucker catfish

The Yamatonuma shrimps and dwarf sucker catfishes are found as algae eaters in all aquaria. Yamatonuma shrimps are unobtainable in Europe and can possibly be replaced by other species. There are no results so far on such attempts. Dwarf sucker catfishes stay considerably smaller than the *Ancistrus* species that are commonly used to control algae, but they are also more delicate.



Cryptocoryne species are also suitable for planting the tetra aquarium.



"The Garden of the Muse"



Nannostomus espei.

Data:

All-glass aquarium with plant tubes,
40 x 40 x 40 cm,
3 x 27 W, 10 hours/day,
25°C, pH 7.0, 4°dGH, 5°dKH.

Bolbitis heudelotii	Congo Waterfern
Cryptocoryne wendtii var.	Wendt's Crypto
Cryptocoryne wendtii var.	Wendt's Crypto
Vesicularia dubyana	Java moss
Hydrocotyle verticillata var.	American Pennywort
Lilaeopsis brasiliensis	Brazilian Carpetgrass
Ludwigia arcuata	Ludwigia
Rotala macrandra sp.	Tigerleaf Rotala
Sagittaria subulata form *pusilla*	Dwarf Sag
Caridinia japonica	Yamatonuma shrimp
Nannostomus espei	Espe's Pencilfish
Otocinclus sp.	Dwarf sucker catfish

External filtration of the aquarium through biological filter material (Bio Rio and activated carbon), substrate of fine sand, CO_2 fertilization, about two bubbles per second, and regular water changes of about 1/3 the volume at five-day intervals.

Espe's Pencilfish, *Nannostomus espei*, is relatively demanding in regard to water quality. Under unfavorable conditions these fishes are very shy and hide under roots or plant leaves. They prefer to stay just under the water's surface or in the mid-levels of the aquarium in the open water. In the wild these peaceful school fishes wait until dusk before searching for food and are somewhat more active at this time.



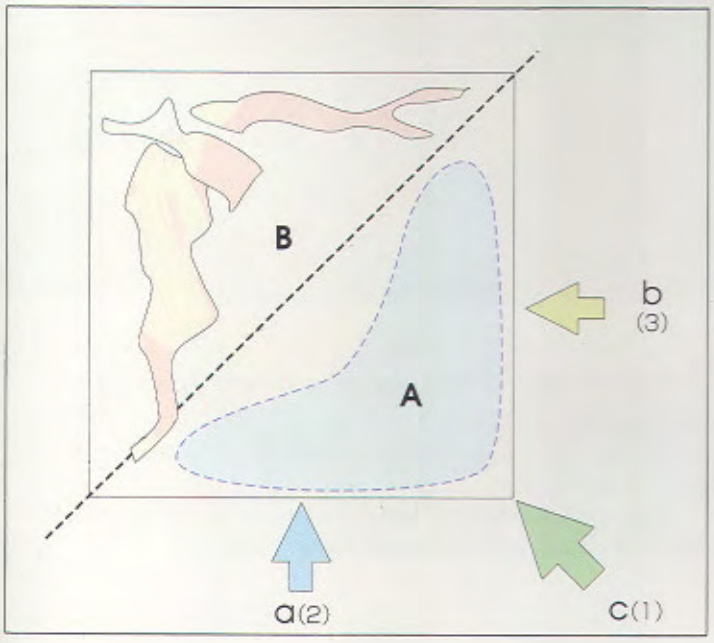
"The Garden of the Muse"

In "the garden of the muse" the observer finds elements of both dense planting, which produces the necessary places in which the fishes can hide, and open swimming space for the pencilfish above the low-growing foreground plants.

This aquarium is a balanced composition based on three triangles, which can be viewed from two sides.

In the background the aquatic plants were planted more thickly, in order to create the impression of a jungle, supported by the wood. The foreground is taken up by a "meadow." In this manner the foreground and background were connected harmoniously with each other.





Planting plan

A - Low-growing plants of the foreground.
B - Resinous bog wood covered with plants.

Views shown in the photos:
a - page 16,
b - page 17 (top),
c - page 14/15.



"The Glow of the Grove"

The left side of this scene is dominated by the Java moss-grown wood and the red plant, the Ludwigia. It is opposite the open swimming space on the right side.

The combination of the plant-covered wood and the red plant produces an interesting tension.



External filtration of the aquarium through biological filter material, substrate of fine sand, CO_2 fertilization, about three bubbles per second, and a weekly water change of about 1/2 the volume.

For data, plants, and animals, see page 20.

Data

60 x 30 x 36 cm, ADA Cube Garden,
4 x 20 W (sodium tubes), 10 hours/day,
24°C, *p*H 7.3, 3°dGH, 6°dKH.

Cryptocoryne beckettii var. *pechii*	Beckett's Crypto
Cryptocoryne walkeri var. *lutea*	Walker's Crypto
Cryptocoryne wendtii var.	Wendt's Crypto
Echinodorus tenellus	Dwarf Swordplant
Vesicularia dubyana	Java moss
Hemianthus micranthemoides var.	Dainty Pearlweed
Micranthemum unbrosum	Pearlweed
Lagarosiphon madagascariensis	Waterpest
Ludwigia arcuata	Ludwigia
Riccia fluitans	Crystalwort
Caridinia japonica	Yamatonuma Shrimp
Megalamphodus sweglesi	Swegle's Tetra
Otocinclus sp.	Dwarf sucker catfish
Paracheirodon innesi	Neon Tetra
Thayeria obliqua	Penguin Tetra





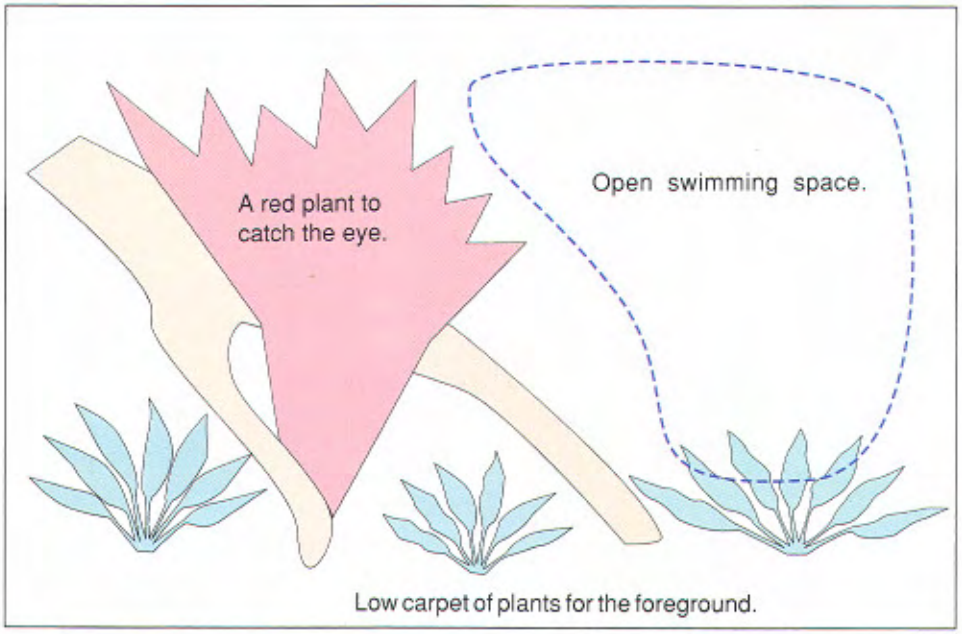
The Glow of the Grove

The Background Determines the Effect of the Aquarium.

The Penguin Tetra, *Thayeria obliqua*, is a plain-looking school fish which is striking because of its peculiar diagonal manner of swimming. By keeping colorful fishes, such as the Neon Tetra and the Phantom Tetra, with less conspicuous species, the coloration of the colorful fishes is additionally accented.

In the community tank the observer will not grow tired of viewing, and ultimately even the less colorful fishes will receive corresponding attention because of their distinctive features. Like other tetras, the Penguin Tetra also prefers a dark substrate, a dense planting, clear water, and as many conspecifics as possible for the care in the school.





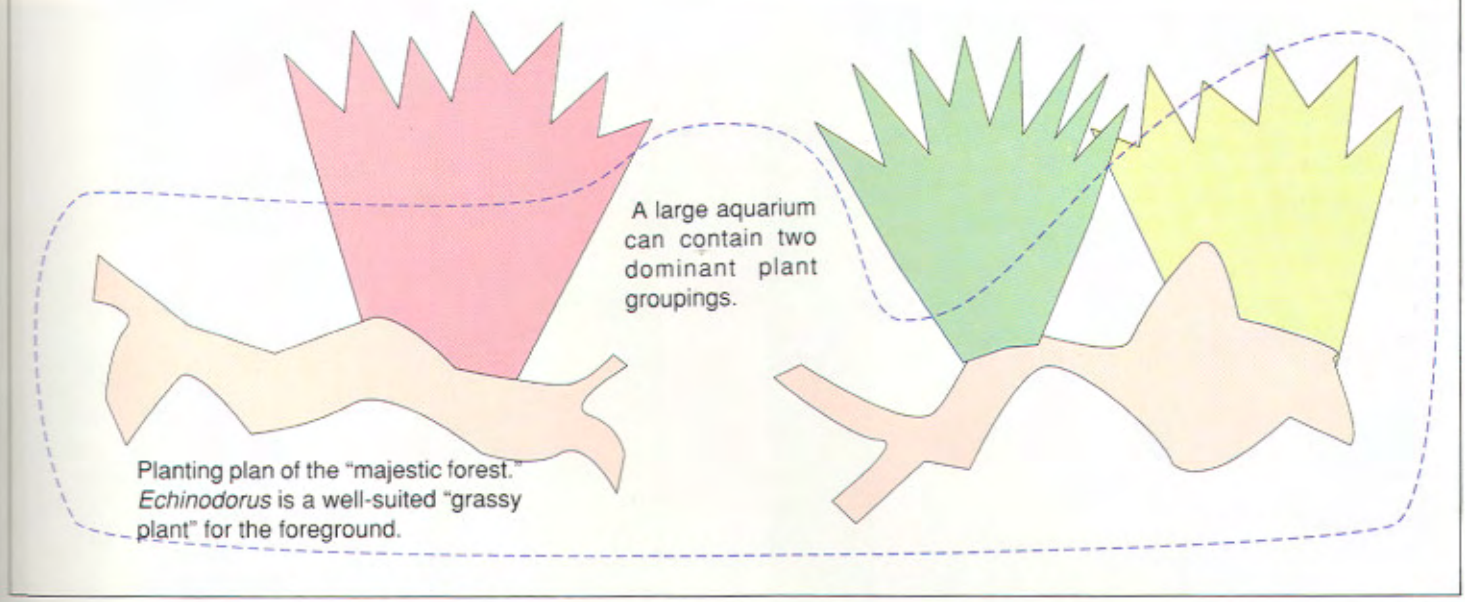
Cloudy water

Cloudy water and algae blooms are often caused by an excess of nutrients. The phenomenon can be remedied through intensive filtration, but its causes must be determined in order to achieve long-term improvement.

Is too much being fed? Is the fertilization of the plants consistent with their growth? Are the measured water parameters in agreement with the desired values?



The light-green growth habit of *Hygrophila corymbosa* animates and introduces some variety into and brightens up the tetra aquarium. The Rummy-nose Tetra, *Hemigrammus rhodostomus,* harmonizes splendidly with the selected plant composition.



Planting plan of the "majestic forest." *Echinodorus* is a well-suited "grassy plant" for the foreground.

"Majestic Forest"

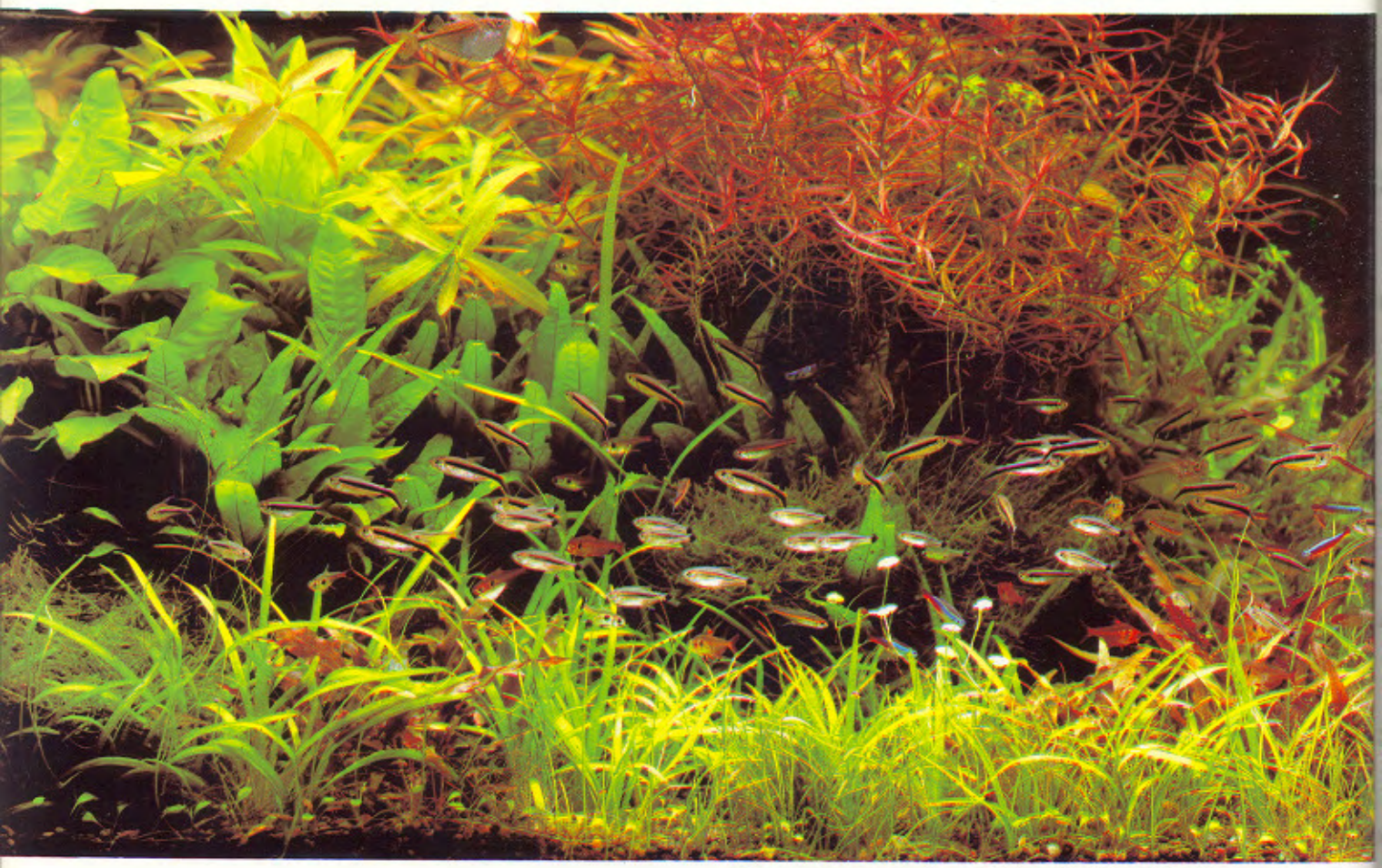
Planting scheme of the Majestic Forest. Aquarium, see pages 24 & 25.

Data

120 x 45 x 45 cm, glass aquarium, 12 x 20 W (sodium tubes), 10 hours/day, 25°C, pH 6.5, 3°dGH, 4°dKH.

External filtration of the aquarium through biological filter material, substrate of fine sand, CO_2 fertilization, about four bubbles per second, and a weekly water change of about 1/3 the volume.

Alternanthera sessilis var. *lilacina*	False Parrotfeather
Anubias barteri var. *nana*	Dwarf Anubias
Cryptocoryne crispatula var. *balansae*	Seersucker Crypto
Cryptocoryne beckettii var. *petchii*	Beckett's Crypto
Cryptocoryne undulata	Wavy Crypto
Cryptocoryne walkeri var. *luteus*	Walker's Crypto
Cryptocoryne X willisii var. *lucens*	Willis's Crypto
Echinodorus tenellus	Dwarf Swordplant
Eleocharis acicularis	Hairgrass
Vesicularia dubyana	Java moss
Glossostigma elatinoides	Australian Figwort
Hydrocotyle maritima	European Pennywort
Hygrophila corymbosa	Dwarf Hygrophila
Hygrophila guianensis	Guyanan Waterstar
Hygrophila polysperma	Indian Waqterstar
Lilaeopsis sp. Mauritius	Mauritius Carpetgrass
Ludwigia arcuata	Ludwigia
Microsorum pteropus	Java fern
Riccia fluitans	Crystalwort
Sagittaria subulata forma *pusilla*	Dwarf Sag



"Majestic Forest"

The aquarium is effectively divided into two halves by the two plant groupings. Placing the red grouping in the middle would make the aquarium easier to take in at a glance but would also make it appear smaller. By dividing the aquarium in two, the observer is induced constantly to look from one side to the other.

Caridinia japonica	Yamatonuma Shrimp
Carnegiella marthae marthae	Black-winged Hatchetfish
Gasteropelecus sternicla	Silver Hatchetfish
Hemigrammus rodwayi var. *armstrongi*	Gold Tetra
Hemigrammus bleheri	Red-nose Tetra
Hemigrammus erythrozonus	Glow-light Tetra
Hyphessobrycon callistus	Jewel Tetra
Hyphessobrycon herbertaxelrodi	Black Neon Tetra
Hyphessobrycon scholzei	Black-lined Tetra
Megalamphodus roseus	Red Phantom Tetra
Megalamphodus sweglesi	Swegles's Tetra
Otocinclus sp.	Dwarf sucker catfish
Paracheirodon axelrodi	Cardinal Tetra
Paracheirodon simulans	False Neon Tetra
Thayeria boehlkei	Hockeystick Tetra

Tetra community. The colorful community makes a somewhat confusing impression. Limiting the number of species can often be more effective.

Left to Right: Various tetras show up well against the greenery.









Optical impression of the tetra community tank.

"Majestic Forest"









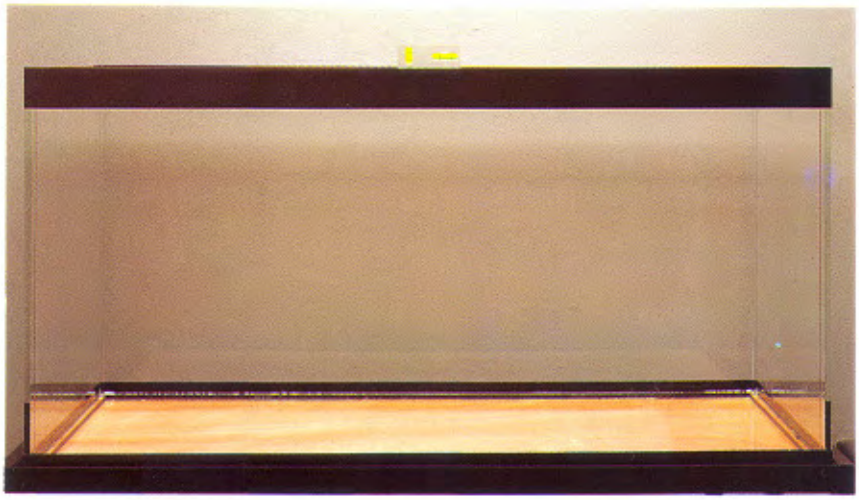




For the aquarist who likes a lively community, a tetra community tank is ideal.

Furnishing the Aquarium

Using the example of a 90-centimeter-long aquarium, the furnishing of a beautiful planted aquarium for American tetras will be presented.



The location must be level and the aquarium provided with a pressure-resistant pad, which levels out any unevenness that may be present and which could be overlooked despite the careful inspection of the surface upon which the aquarium rests.

The aquarium must not be too near a window, because sunlight promotes the growth of algae. Furthermore, the light of the aquarium lighting competes with the sunlight, making the aquarium appear washed out.

The location of the aquarium must be well planned and must not be chosen on a whim, because this usually leads to a bad choice.

The fertilizer and the substrate material are prepared and placed ready outside the aquarium, of course in the sequence in which they will be put in the aquarium.

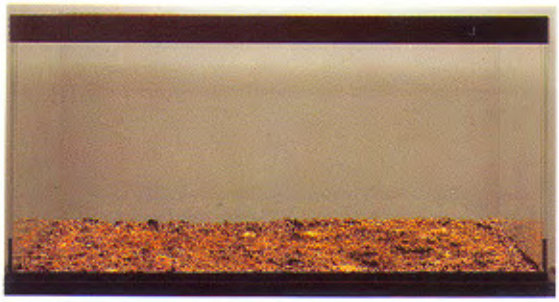
The gravel or absorbent clay is washed thoroughly under running water to limit the introduction of unknown clouding agents and foreign substances.

Some types of absorbent clay float in water and must be boiled before use so that the air it holds and that clings to it can escape.





The plant fertilizer is spread evenly. It can also be mixed with a lower layer of the substrate material. This makes it easier to distribute the fertilizer uniformly, without stirring it up too quickly.



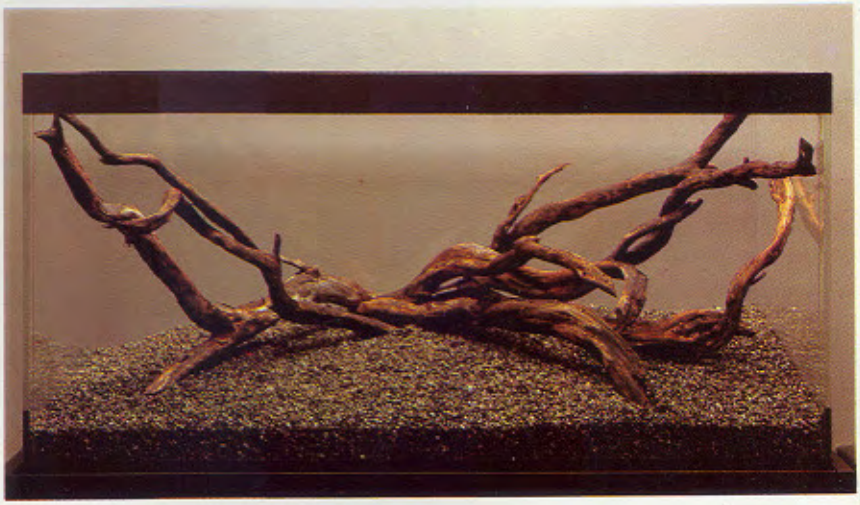
The slow-release plant fertilizer is distributed uniformly. Coarse substrate material makes it easier for the water to flow through to provide oxygen.

4





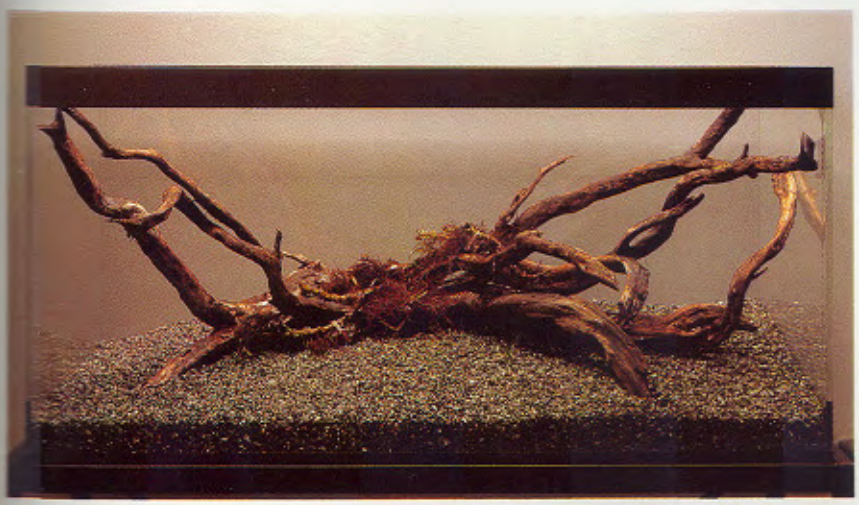
The dark substrate is layered over the fertilizer. The back left corner remains somewhat lower so that the mulm collects here and can be siphoned off easily.



5

The wood, preferably bog oak, is placed in the intended locations.

The Java and Congo fern and the Java moss are tied to the rocks and also placed in their intended positions.



6

Tying on the plants. The cotton threads decompose after awhile. By then, however, the plants are already firmly rooted. This method of growing *Anubias* and water ferns makes it easier to redecorate later, since the entire decoration can be removed.





7

Some water is added to a depth of 5 to 10 cm. To prevent the substrate from being stirred up, a pad is placed under the entering stream of water.





The plants are inserted.



After planting, the location of the individual groups is inspected.

The foreground is characterized by various *Cryptocoryne* species.

Subsequently, the small *Anubias barteri* var. *nana* which are tied to rocks are placed behind the wood. They form an attractive central background, which later will be bordered by red plants.



The aquarium is inspected again and the furnishings and planting are brought into line with the planting plan (see below, left frontal view, right top view).

1 — Wood with Congo fern.
2 — Cryptocorynes.
3 — Hairgrass
4 — Rock with Anubias.



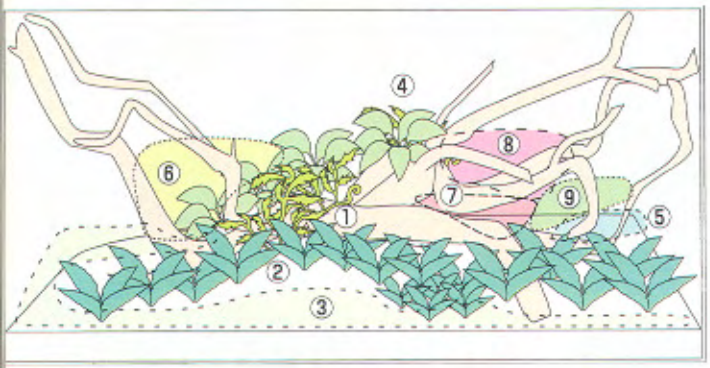


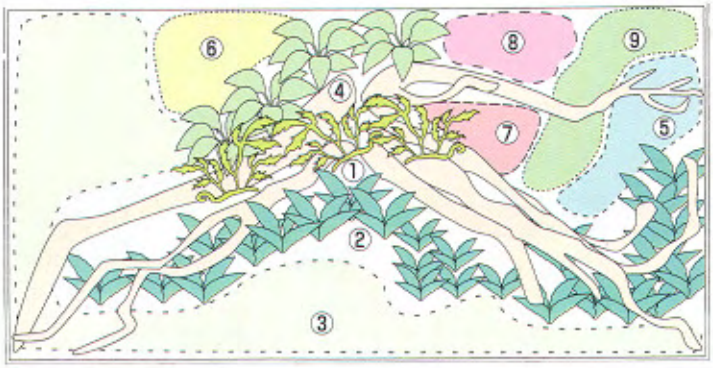


5 — *Sagittaria* sp.
6 — Pearlweed.
7 — *Ludwigia*.
8 — *Rotala*.
9 — Roundleaf Pearlweed.

Individual plant stalks can be inserted later with long forceps. In this way the appearance of the plant groupings can still be corrected later without any problem.

The grouping of the plants is essentially complete. Additions and corrections are made after the plants have taken root.





11





The Hairgrass and Pearlweed are well suited for covering extensive areas.

After the aquarium is furnished completely, it can finally be filled with water.

When adding the water, the stream of water is directed at the decorative objects to break it up, to avoid stirring up the substrate.



The completely furnished and filled aquarium is still not particularly attractive. The water is cloudy at first and numerous air bubbles cling to the decorative objects and the aquarium glass. These manifestations, however, disappear after only a few hours. An intensive filtration naturally increases the speed at which the water clears. Now the aquarium should be left alone for about two weeks, so that the plants can take root and the cultures of microorganisms can develop. Algae-eating animals can already be introduced after two to three days.





"Shadows in the Rainforest"



External filtration of the aquarium through biological filter material, substrate of fine sand, CO_2 fertilization, about three bubbles per second, and a weekly water change of about 1/3 the volume.

Data

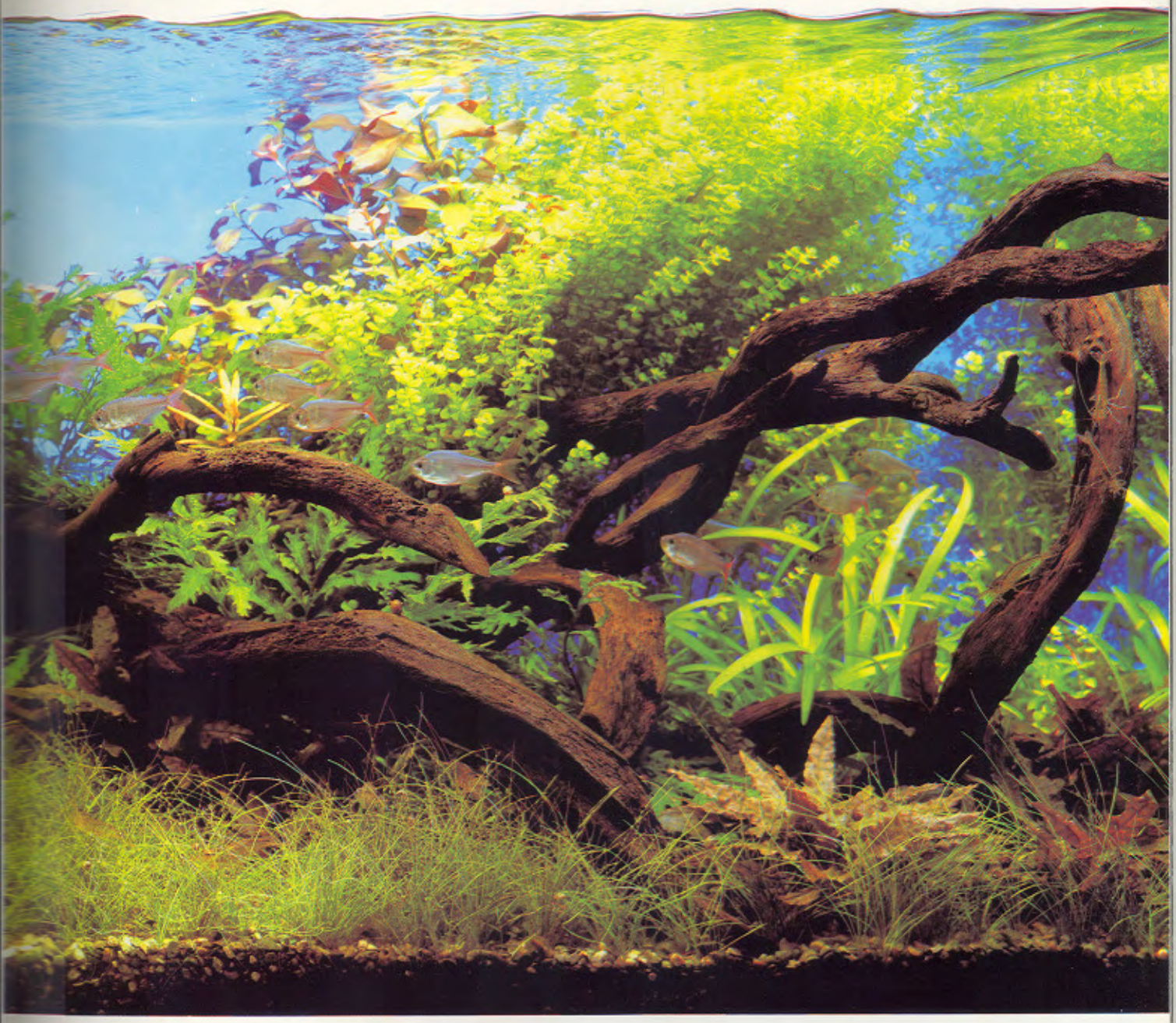
90 x 45 x 45 cm, glass aquarium,
6 x 32 W (sodium tubes), 10 hours/day,
26°C, *p*H 6.8, 4°dGH,
0 mg/l NH_4^+, 0.02 mg/l NO_2^-, <1 mg/l NO_3^-,
0.2 mg/l PO_4^-.

‘Shadows in the Rainforest’

Above: This is how the aquarium presented in the furnishing example looks after two months.



A new, as yet undescribed tetra from Amazonia.

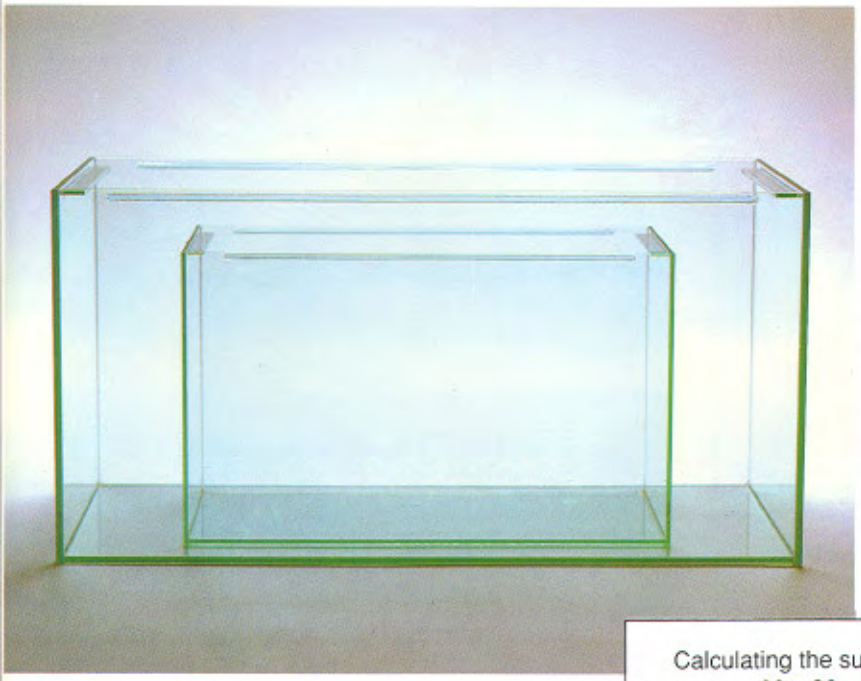


Data see page 33.

By using only one tetra species, the tank population produces an especially harmonious effect and the composition of plants and woods is displayed to good effect.

Hyphessobrycon sp.





"60 and 90"

The furnishing of a 90-centimeter glass aquarium and the technical accessories.

Also, a comparison with a small aquarium with a frontal length of 60 centimeters.

Dimensions:

60 cm: 60 x 30 x 35 cm,
90 cm: 90 x 45 x 45 cm.

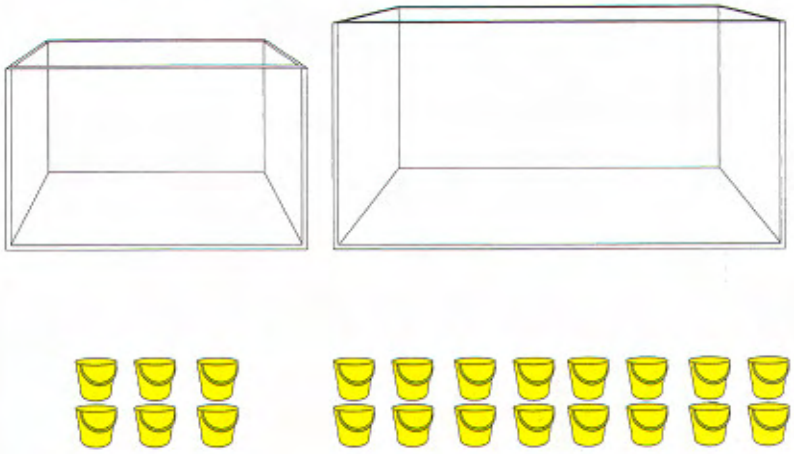
Because tastes and sensibilities vary from person to person, it is scarcely possible to say which planting or which combination of plants and decorative objects is good or bad. Yet an aquarium, no matter how artfully and tastefully decorated, can make an inartistic impression when the higher plants do not grow but algae do instead. If the aquatic plants are not arranged optimally, but grow well, then an impressive underwater landscape develops all on its own.

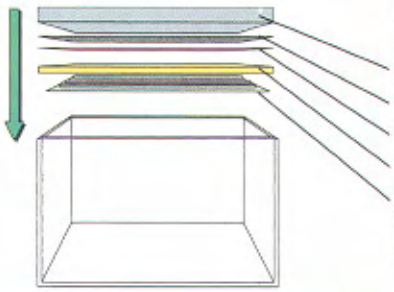
If there should be only one rule for the hobbyist, then it should be that the plants and animals must be healthy.

Basically, Japanese aquaria can be furnished in two different ways.

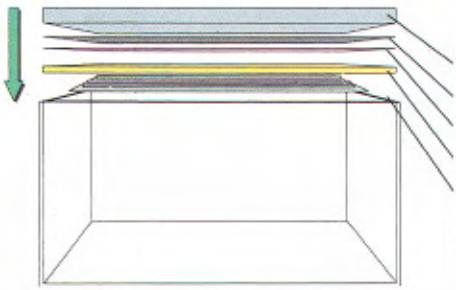
Calculating the substrate:

60 x 30 = 1800sq. cm, 80 kg,
90 x 45 = 4050 sq. cm, 250 kg.





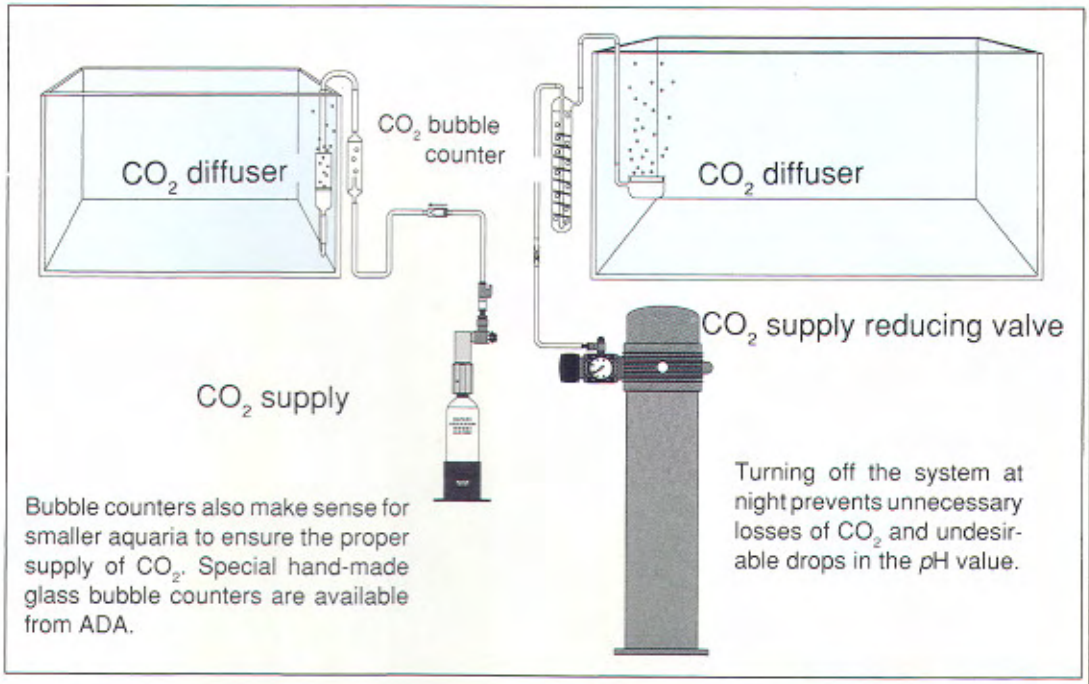
The lowermost layer consists of coarse Styrofoam. A finer material, such as polyurethane foam, is placed on top of it to provide a uniform surface to support the aquarium. Next comes a heating pad, if one is used. Finally a tile is placed on top to protect the heating pad. Now the aquarium can be positioned.



Porous volcanic material has proved particularly effective as a substrate. To start the bacterial cultures, an inoculation with Bacter 100 (contains 100 different bacterial cultures) and a water clarifier (for example,a good grade of activated carbon) are recommended.

One possibility is oriented toward a design that is characteristic of artificially arranged flower beds. The other way is to learn from Nature and to create underwater landscapes according to her model.

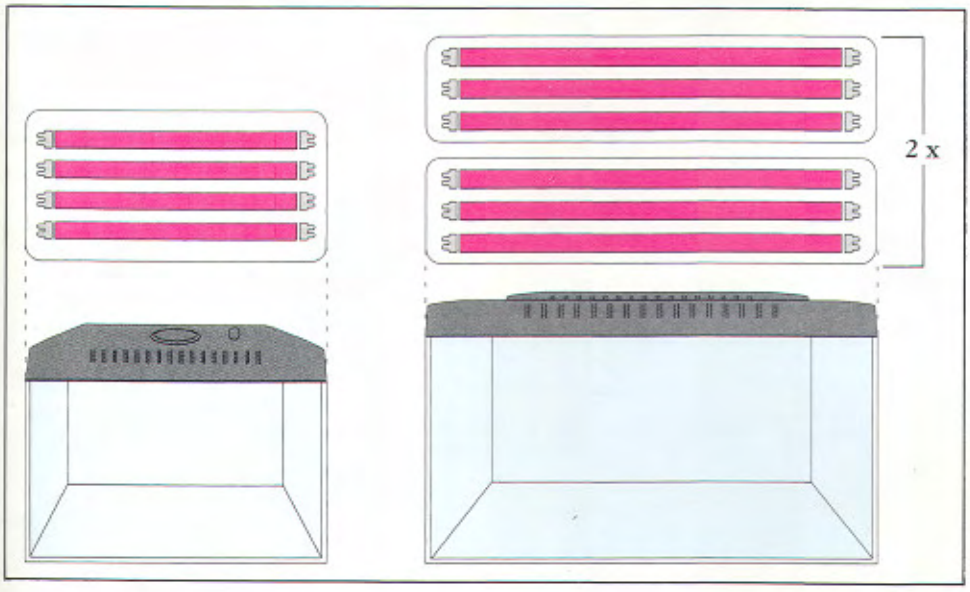
Underlayments for the aquarium (left) and substrate materials (below).



Bubble counters also make sense for smaller aquaria to ensure the proper supply of CO_2. Special hand-made glass bubble counters are available from ADA.

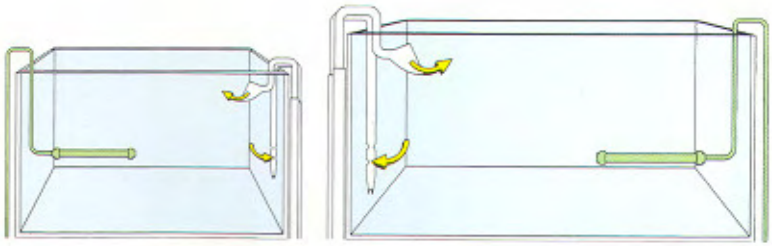
Turning off the system at night prevents unnecessary losses of CO_2 and undesirable drops in the *p*H value.

Under the influence of light, the green plants take in carbon dioxide and water and release oxygen. In the process, with the aid of light energy, carbon dioxide (CO_2) and water are transformed into energy-rich sugar compounds. This process is called photosynthesis. In biology class we learned that the photosynthesis of plants is the basis for all life on earth.



In their natural environment, plants as a rule are constantly supplied with sufficient carbon dioxide. In the aquarium, on the other hand, the amount of carbon dioxide respired by the fishes is too small to ensure a lasting CO_2 supply for the plants. The available carbon dioxide is used up in the process of photosynthesis. As a consequence the *p*H rises and the water becomes alkaline, which is not tolerated by the plants and most animals. In this situation it is necessary to install an apparatus for the artificial production of carbon dioxide. Numerous devices for this purpose are available from various manufacturers. For the magnificently planted aquarium a device for producing a controlled supply of CO_2 is almost a necessity. Otherwise the aquarium water would have a permanent CO_2 deficiency.

When aquarium plants do not flourish despite the addition of CO_2, this means either that the lighting is too weak or that the amount of carbon dioxide added is insufficient.



Filtration and heating.



Paracheirodon, Hemigrammus, Hyphessobrycon, Megalamphodus, Thayeria...all at home in the beatiful greenery.



Paracheirodon simulans, False Neon Tetras.

Plants that Produce Runners

Glossostigma elatinoides

This is a dainty, carpet-forming plant that grows well. It requires a great deal of light and prefers soft, slightly acidic water.



Echinodorus tenellus

This the smallest Amazon sword plant, is among the most popular and decorative foreground plants. Under suitable conditions, especially intensive lighting, within a short time it forms a dense, low carpet through runners, which is ideally suited for the foreground planting. Adequate lighting absolutely must be provided.



Lilaeopsis sp. Mauritius

This Carpetgrass unfortunately is rarely offered on the market. It is comparable in its cultivation to *Lilaeopsis brasiliensis* and *Lilaeopsis carolinensis*. The three species are not easily distinguished from one another. Flowers are required for reliable identification. Flowers and fruits develop, however, only under bog cultivation. This plant also requires a great deal of light for the foreground planting.



Sagittaria subulata

This dwarf Sagittaria is available somewhat more frequently. Under sufficient lighting it is fast growing and productive. With an adequate CO_2 supply and fertilization, within a few weeks it forms a dense, solid carpet about seven centimeters high. This plant prefers medium-hard to hard water and *p*H values in the neutral range.





Plants that produce runners are ideal for the foreground. They propagate through runners, without the keeper's having to intervene for the purposes of systematic propagation.

Vallisneria americana

This tapegrass develops highly variable growth types, which also differ in size. The plant is suitable for the foreground only in very large aquaria.



Hydrocotyle maritima

This Pennywort is extremely demanding with respect to both the fertilization and the light and CO_2 supply. It can only be recommended to the advanced hobbyist. Under very intense illumination the plant remains compact and displays a low growth habit, which appears to make the plant suitable for the front and middle parts of the aquarium.



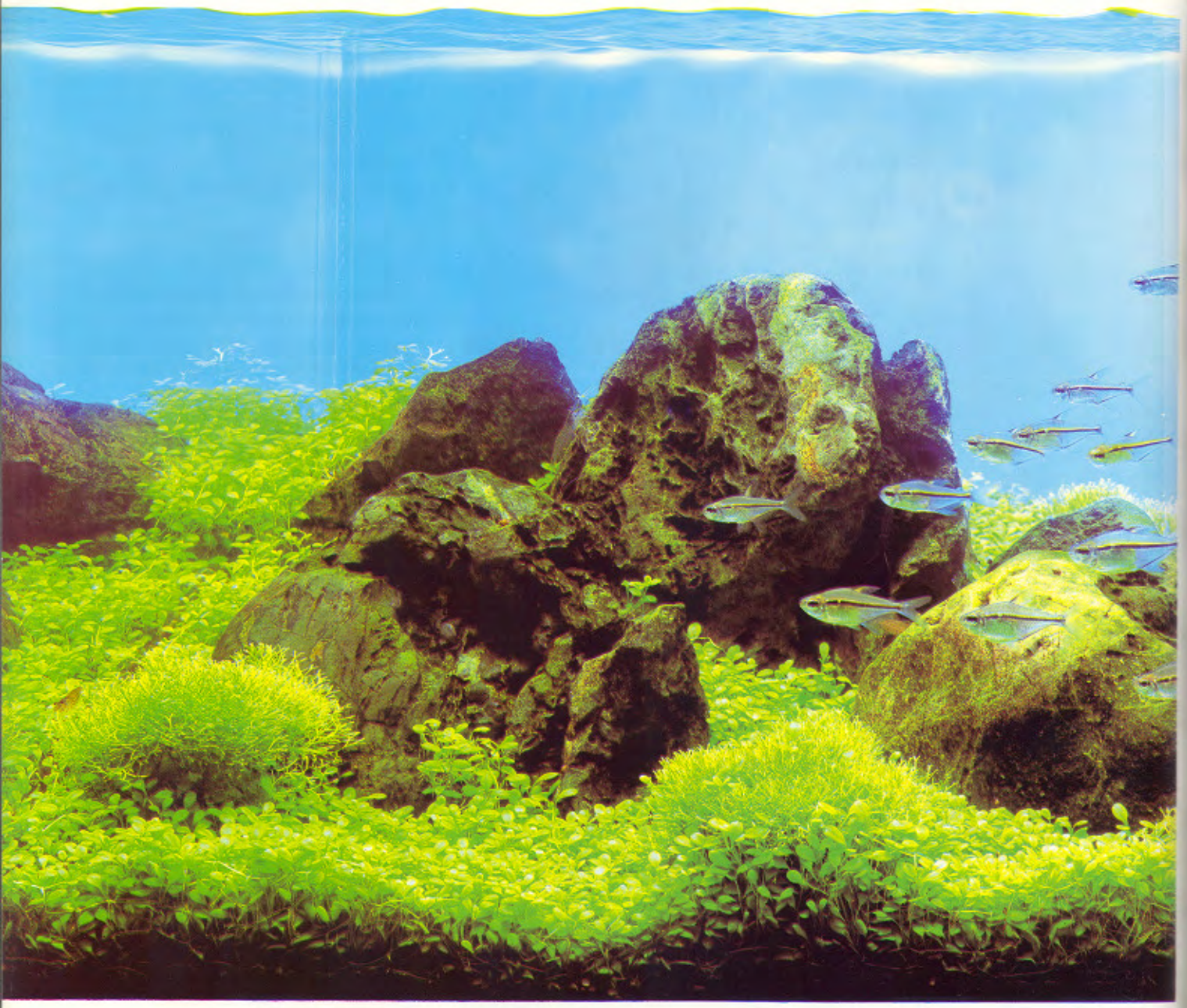
Cryptocoryne wendtii var.

Of Wendt's Crypto there are several growth and color forms, all of which at present are classified in this species. In the larger forms the plant reaches a height of up to 25 cm and is thus less suited for the foreground and more for the middle region of the aquarium. This species is not as demanding and gets by with less light. Then, however, the brown-red colors do not develop as well.



Cryptocoryne crispatula

This Crypto is better known under the synonym *Cryptocoryne balansae*. It is comparable in size to the previous species. The plant is striking because of the bumpy leaves and is well suited for the middle portions of the aquarium. For cryptocorynes the water should be soft and slightly acidic. These two species, however, also flourish in medium-hard water.



"The Wind Comes"

Example of another 90-cm aquarium for tetras, planted exclusively with *Micranthemum umbrosum*. As for the fishes, *Hemigrammus ulreyi*, the Flag Tetra, was used in an exemplary fashion.

The furnishing followed according to the principle of the previously shown aquarium, except that here the creative element rock was used in place of the element wood. It is important here that only one type of rock be used and that the individual rocks harmonize with both one another and the plants. Naturally, the fishes must also be chosen carefully. This aquarium shows once more that species aquaria produce a special effect.

Hemigrammus ulreyi.



Data

90 x 45 x 45 cm, glass aquarium,
5 x 30 W (sodium tubes), 10 hours/day,
24.5°C, *p*H 6.8, 2°dGH, 0 mg/l NH_4^+,
<0.02 mg/l NO_2^-, <1 mg/l NO_3^-, 0.2 mg/l PO_4^{3-}.

External filtration of the aquarium through biological filter material, substrate of fine sand, CO_2 fertilization, about two bubbles per second, and a weekly water change of about 1/3 the volume.

Feeding the Fishes

The feeding of the fishes is a very special problem. The water is fouled by the food and the products excreted by the fishes. These metabolic products of the fishes and the other organisms are the reason for the necessary regular water changes, which have the goal of diluting these substances.

There are no hard and fast rules for the times and frequencies of feeding. Feeding must always be based individually on the fish population. The kinds of foods chosen also depend on the animals being cared for. The only important thing is never to feed too much, since excess organic fouling of the water leads to an increase in the metabolic end products and these in turn promote the growth of bacteria and algae.

An aquarium infested with algae is an extremely unattractive sight, and such an aquarium will in no way do justice to the requirements of a beautiful exhibition aquarium. Since the majority of hobbyists tend to overfeed their fishes, the advice to feed sparingly is particularly important. For many fishes one fasting day a week can make sense. For a well developed aquarium a vacation for the hobbyist is no problem either.



Flake foods and granules.



"A Serenade of the Wind"

There are many species of algae. Most appear when too much nitrate is dissolved in the water, the aquarium is overcrowded with fishes, the filter is dirty or overloaded, an imbalance between carbon dioxide and light exists, or the water is not changed regularly in sufficient quantity.

External filtration of the aquarium through biological filter material, substrate of fine sand, CO_2 fertilization, about four bubbles per second, and a weekly water change of about 2/3 the volume.

See page 58 for data on another beautiful aquascape in the "Serenade" style.

"Sunspot Melody"





Data

36 x 22 x 26 cm, glass aquarium, 2 x 27 W (plant tubes), 10 h/day, 25°C, pH 6.8, 2°dGH, 0 mg/L NH_4^+, <0.02 mg/L NO_2^-, <1 mg/L NO_3^-, <0.2 mg/L PO_4^-.

External filtration of the aquarium through biological filter material, substrate of fine sand, CO_2 fertilization, about one bubble per second, and a daily water change of about 1/3 the volume.

Blyxa japonica
– Japanese Threadweed
Eleocharis acicularis
– Hairgrass
Hemianthus micranthemoides
– Dainty Pearlweed
Ludwigia arcuata
– Narrowleaf Ludwigia
Marsilea angustifolia
– Dwarf Cloverfern
Micranthemum umbrosum
– Roundleaf Pearlweed

Caridinia japonica
– Yamatonuma shrimp
Ladigesia roloffi
– Orange Dwarf Tetra
Nannostomus marginatus
– Dwarf pencil fish
***Otocinclus* sp.**
– Dwarf sucker catfish

"A sunbeam symphony"





External filtration of the aquarium through biological filter material, substrate of fine sand, CO_2 fertilization, about one bubble per second, and a daily water change of about 1/3 the volume.

Blyxa japonica
– Japanese Threadweed
Eleocharis acicularis
– Hairgrass
Hemianthus micranthemoides
– Dainty Pearlweed
Ludwigia arcuata
– Narrow-leaf Ludwigia
Marsilea angustifolia
– Dwarf Cloverfern
Micranthemum umbrosum
– Roundleaf Pearlweed

Caridinia japonica
– Yamatonuma shrimp
Hemigrammus amandae
Hemigrammus rodwayi
– Gold tetra
Megalamphodus roseus
– Yellow phantom tetra
***Otocinclus* sp.**
– Dwarf sucker catfish

45 x 24 x 30 cm, glass aquarium, 4 x 15 W (sodium tubes), 10 h/day, 25°C, pH 6.6, 5°dGH, 0 mg/l NH_4^+, <0.02 mg/l NO_2^-, <1 mg/l NO_3^-, <0.2 mg/l PO_4^-.

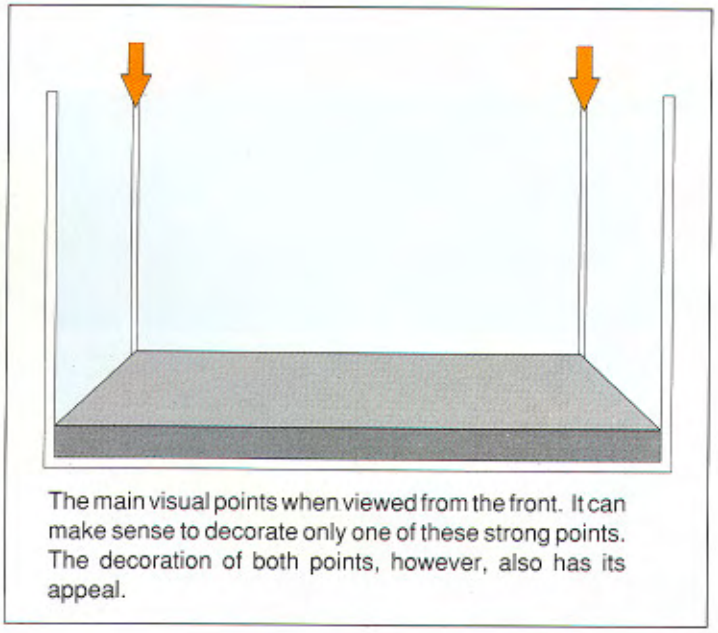
Furnishings

The back corners are particularly conspicuous to the observer and thus represent "strong points" for the planning of the decoration in relation to the view directly from the front. For a beautiful aquarium, however, exactly those points should not be emphasized. For the planning of attractive planted aquaria the sensible division of space in the aquarium is of special significance. At the same time the actual midpoint of the aquarium, which is the existing central focal point anyway, is not additionally emphasized through conspicuous decorative elements.

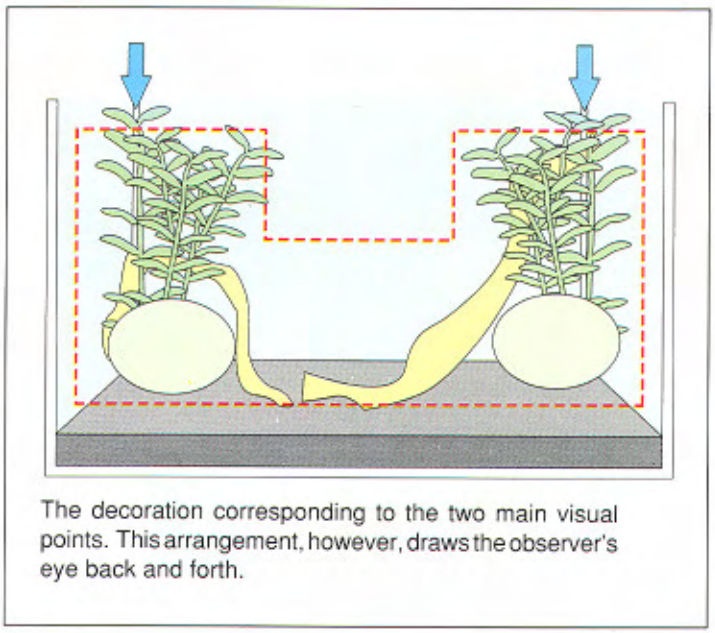
The simplest creative element thus takes the "strong points" into account. If both points are stressed here, then two preferential focal points result in the aquarium and the eye is drawn back and forth and never comes to rest. In many cases it is therefore better to create only one strong point in the aquarium. As long as the aquarium is not located exactly in the middle of a wall or in the middle of the room, the best area for the strong point as a rule is on the side opposite the observer. If the main visual point is not created with a plant grouping, but from wood or rocks, then those elements are arranged to ascend from front to back along the line of sight. This kind of division of the aquarium exaggerates the impression of depth and makes it appear larger than it actually is. Through such furnishing tricks the aquarium gets its special touch.

If the aquarium is standing in a corner and is viewed from the right side, the left side is the stronger point and accordingly will receive the dominant decoration. Groups of plants can also be used in different ways as creative elements. On the one hand, the group can be allowed to grow as it would in the wild, and on the other the group can be planted as with the decorative objects ascending from front to back. Particularly with the fast-growing stemmed plants, however, the care of a group planted in this way is very time-consuming, since the tips have to be pruned and replanted repeatedly. As beautiful as such a creation is, it naturally does not work.

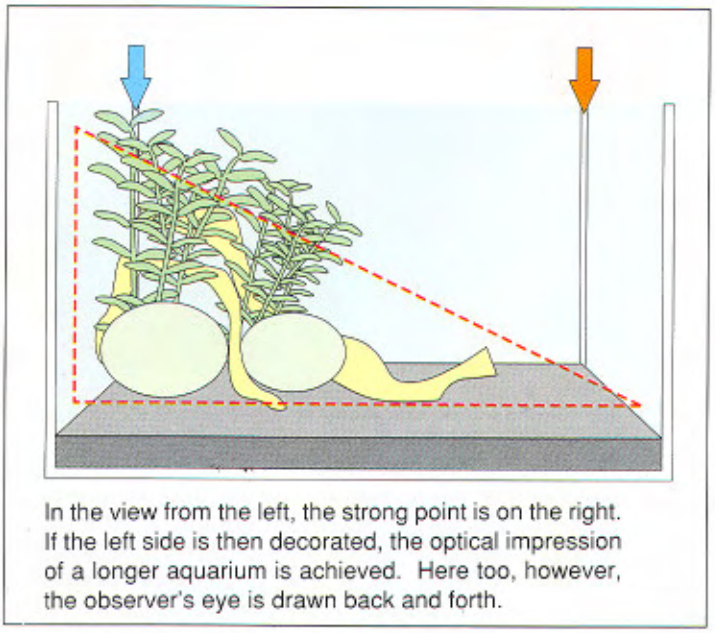
In order to produce the impression of a larger aquarium, the dominant decorative elements are not pushed directly in the corner, but rather are displaced somewhat to the side.



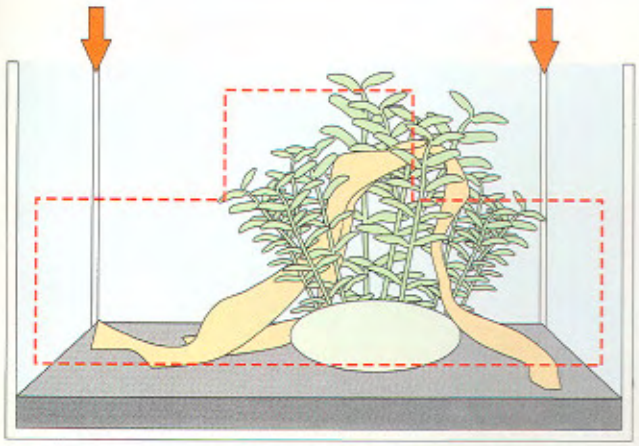
The main visual points when viewed from the front. It can make sense to decorate only one of these strong points. The decoration of both points, however, also has its appeal.



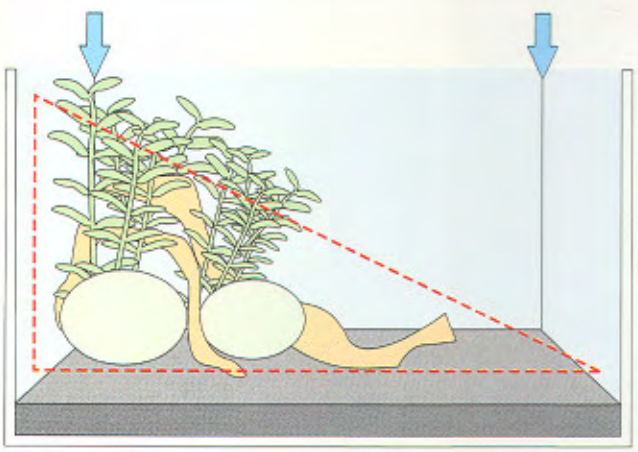
The decoration corresponding to the two main visual points. This arrangement, however, draws the observer's eye back and forth.



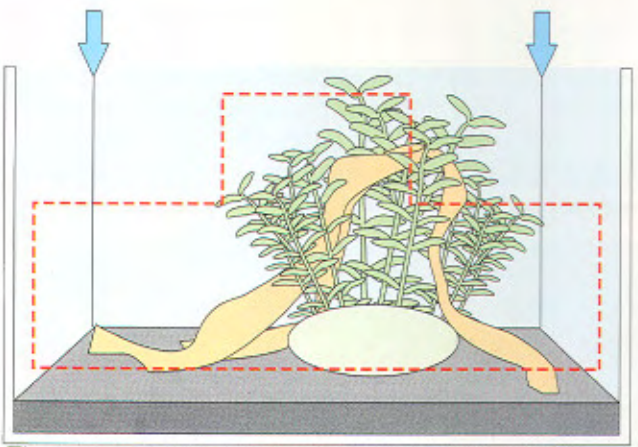
In the view from the left, the strong point is on the right. If the left side is then decorated, the optical impression of a longer aquarium is achieved. Here too, however, the observer's eye is drawn back and forth.



In order to draw away the main visual point from the corner of the aquarium, the focal point is displaced somewhat to the side. This also makes the aquarium appear to be more "amply" decorated.



When viewed from the front, as well, shifting the decorative focal point to the left produces the impression of a longer aquarium.



The most favorable solution with the frontal view as well, however, is probably the displacement of the main decorative elements to the side. It is always better when the corners of the aquarium are not additionally emphasized.

Furthermore, it can make sense to place the strong point on the other side (opposite the main viewing direction). Then the eye as in the aquarium with two strong decorative points is drawn from the main viewing direction to the decorative element. In this manner the favorable impression of a greater length of the aquarium can be produced, with the disadvantage that the eye is again drawn to and fro.

A very good depth effect is achieved by producing contrasting light and dark areas using the plant groupings. In this case views with lower-growing plants remain open at the strong points, which act as clearings or openings and accordingly grab the eye. In such open-water zones near cover, most of the expressions of life of the fishes are also played out.

Paracheirodon simulans would work very well in the aquarium planned here.





"Shimmering shoreline"

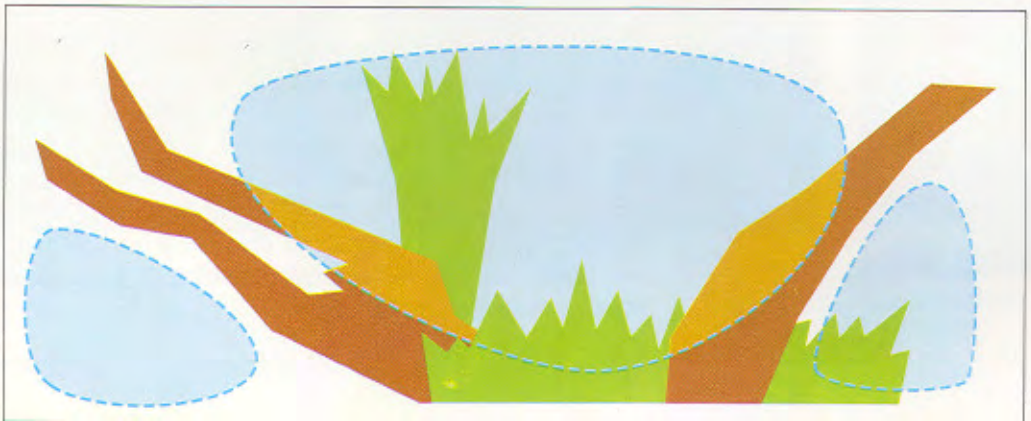
Data

90 x 45 x 45 cm, glass aquarium,
10 x 20 W (sodium tubes), 10 hours/day.

External filtration of the aquarium through biological filter material, substrate of fine sand, CO_2 fertilization, about four bubbles per second, and a weekly water change of about 1/3 the volume.

Bacopa caroliniana	Carolina Bacopa
Eleocharis acicularis	Hairgrass
Eusteralis stellata	Starplant
Lagarosiphon madagascariensis	Madagascar Waterpest
Limnophila aquatica	Limnophila
Riccia fluitans	Crystalwort

Caridinia japonica	Yamatonuma shrimp
Colisa lalia var.	Neon dwarf gourami
Hemigrammus erythrozonus	Glowlight tetra
Hemigrammus hyanuary	Costello's tetra
Hyphessobrycon erythrostigma	Bleedingheart Tetra
Otocinclus sp.	Dwarf sucker catfish
Thoracocharax securis	Hatchetfish



Planting plan.



Red plants, but red-brown and other non-green plants as well, are popular decorative elements as focal points for the strong points in the aquarium. It is important here that the red color does not dominate unnaturally, but rather is accented by a green border. The leaf forms should also differ clearly from those of the neighboring plants. There are sufficient red plants to choose from for this purpose, though all of them without exception require a great deal of light.



Rotala macrandra.

Red plants are an important

The fact that especially the tips of the plants develop the most intensive red colors already shows that the development of the colors is dependent on light. On the one hand the red colors are produced as a protective pigment against intense light; on the other some plants produce the red colors as complementary colors to blue light, so as to make better use of this part of the spectrum. Unfortunately, under blue light the red colors do not look particularly attractive. Moreover, frequently changing the colors of light injures the plants and can even kill them.



Alternanthera reineckii forma *lilacina.*



Cabomba furcata.



Rotala wallichii.



Nesaea sp.



Ludwigia arcuata.



The reason for this is that besides chlorophyll, the green leaf pigment, additional plant pigments corresponding to the spectrum of light provided are produced, which can occur unproblematically only in young leaves. Therefore, when the light is changed the old leaves are dropped and new leaves are formed.

Shimmering Shoreline



The aquarium presented here shows that interesting effects can be achieved with only a few plants on the basis of their different growth forms. Above all with the aid of the mosses, which gradually overgrow the decorative elements, interesting and attractive effects arise, to transform the aquarium into a mysterious landscape.

The decorative objects wood and rock in the aquarium

Rocks are important components of the aquarium furnishing. They influence the character of the underwater landscape that is created. It is up to the hobbyist to decide whether the rocks will be used according to models from Nature or based on the rules of Japanese gardens. The type and composition of the rocks that are used thus have a considerable influence on whether an aquarium ultimately will be attractive or not. Since shipping by sea is not too expensive, rocks as creative materials are available today from virtually anywhere in the world. The petrified wood from America or Malaysia has proved to be particularly beautiful, but expensive. Its light color resembles that of fresh wood and has a very stimulating effect among the green and red plants. Therefore, petrified wood is particularly well suited for aquarium landscapes that are arranged according to the model of Japanese gardens.

For the overall impression of the aquarium, it is not the form of the individual rock that is significant; rather, the effect achieved through the combination of several rocks in a group is what matters. Therefore, individual less attractive rocks absolutely can still be used as an element of a group. Some rocks depending on their form are most charming when upright or standing somewhat diagonally, while others are more attractive when reclining. Particularly striking rocks should then stand upright to catch the eye, or stand diagonally toward the preferred line of sight achieved through the planting.

As with the plants, with the rocks as well what matters is the desired definition of the visual focal point. If the main rock is placed in the middle of the aquarium, the aquarium is divided into two areas, which if necessary can even represent two different landscapes. This arrangement, however, usually is effective only with large aquaria.

It is also important not to place rocks of approximately the same size or form next to each other, since they would compete for the observer's focal point. Furthermore, rocks of different colors and origin may not be used together, because they will make the aquarium decoration appear too busy.

In principle, each rock should be evaluated individually and incorporated based on its character into the overall concept of the aquarium composition. This requires some experience and the beginner should not be too disappointed when the first attempts do not fully achieve the desired effect. Rocks, wood, substrate, animals, and plants are part of an overall concept, which should be transformed into a beautiful scene. This requires as with other craftwork a good portion of skill and an additional portion of experience.

As with the rocks, each piece of wood also has its unique character. One piece is never exactly the same as another, and it is therefore difficult to give universally valid rules for the use of wood as a decorative object. . . .

"A serenade of the wind"



Data

**60 x 30 x 36 cm, ADA cube garden,
4 x 20 W (sodium tubes), 10 hours/day,
25°C, *p*H 6.6, 3°dGH, 0 mg/l NH_4^+, <0.02 mg/l NO_2^-,
<5 mg/l NO_3^-, <0.2 mg/l PO_4^-.**



Echinodorus tenellus	Dwarf Swordplant
Eleocharis acicularis	Hairgrass
Eusteralis stellata	Sarplant
Hemianthus micranthemoides	Dainty Pearlweed
Hemianthus micranthemoides var.	Narrowleaf Hemianthus
Marsilea angustifolia	Cloverfern
Micranthemum umbrosum	Roundleaf Pearlweed
Rotala macrandra var.	Tightleaf Rotala
Caridinia japonica	Yamatonuma shrimp
Inpaichthys kerri	Blue Emperor Tetra
Otocinclus sp.	Dwarf sucker catfish

The care of the plants

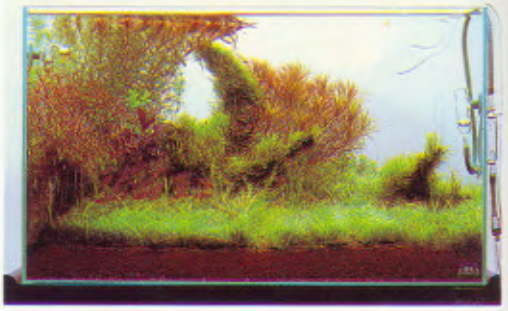
Well-nourished stemmed plants, which receive the required nutrients and light which we regard as a given with our aquarium modeled on Nature, develop an enormous longitudinal growth. Accordingly, regular care is necessary. Ideally, this should be done weekly, but no less frequently than bi-weekly.

Stemmed plants take in the majority of the fertilizer directly from the water through the leaf surfaces. For this reason even short sections of stem with healthy leaves are usually still viable and can be used as cuttings. This is even possible with many species when the actual tip of the shoot is removed or is broken off.



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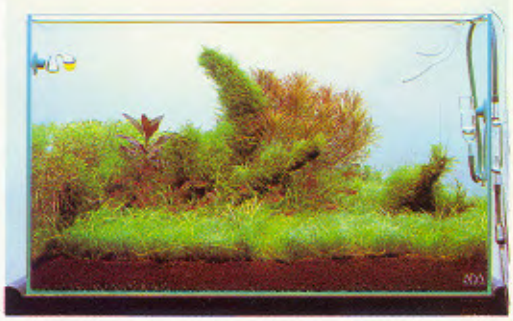






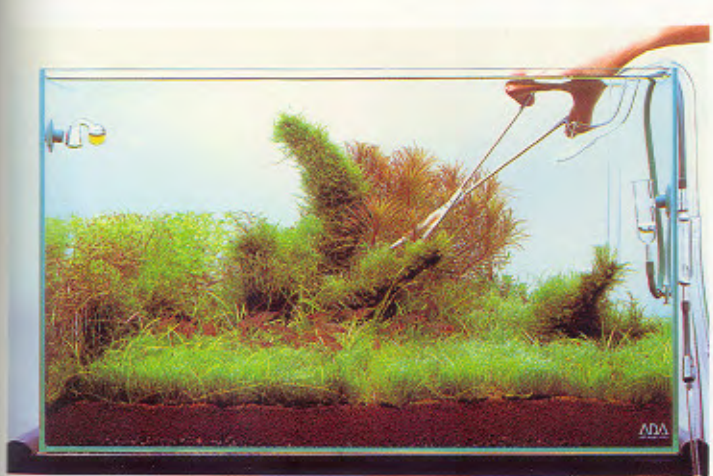
Naturally, the lower parts of the stalk can remain in the aquarium, even if they have relatively few leaves or the leaves that are still present have already been badly damaged because they were too heavily shaded from above. Depending on the plant species, new shoot tips develop in two to eight days, and after about an additional week the aquarium is even more beautiful than it was before the rigorous pruning. In the aquarium shown here with dimensions of 60 x 36 x 36, only wood was used for the furnishing. Rocks were not used, because such a small aquarium must not be overloaded. The devices used came from "Aquarium Design Amano," abbreviated ADA. On the left is the long-term *p*H tester for controlling the CO_2 supply. On the right is the filter intake opening, the water return, and the CO_2 supply installation. The special long plant shears also come from ADA. With these shears it is possible to ensure a clean cut on the plant stem without nicking the stem unnecessarily.











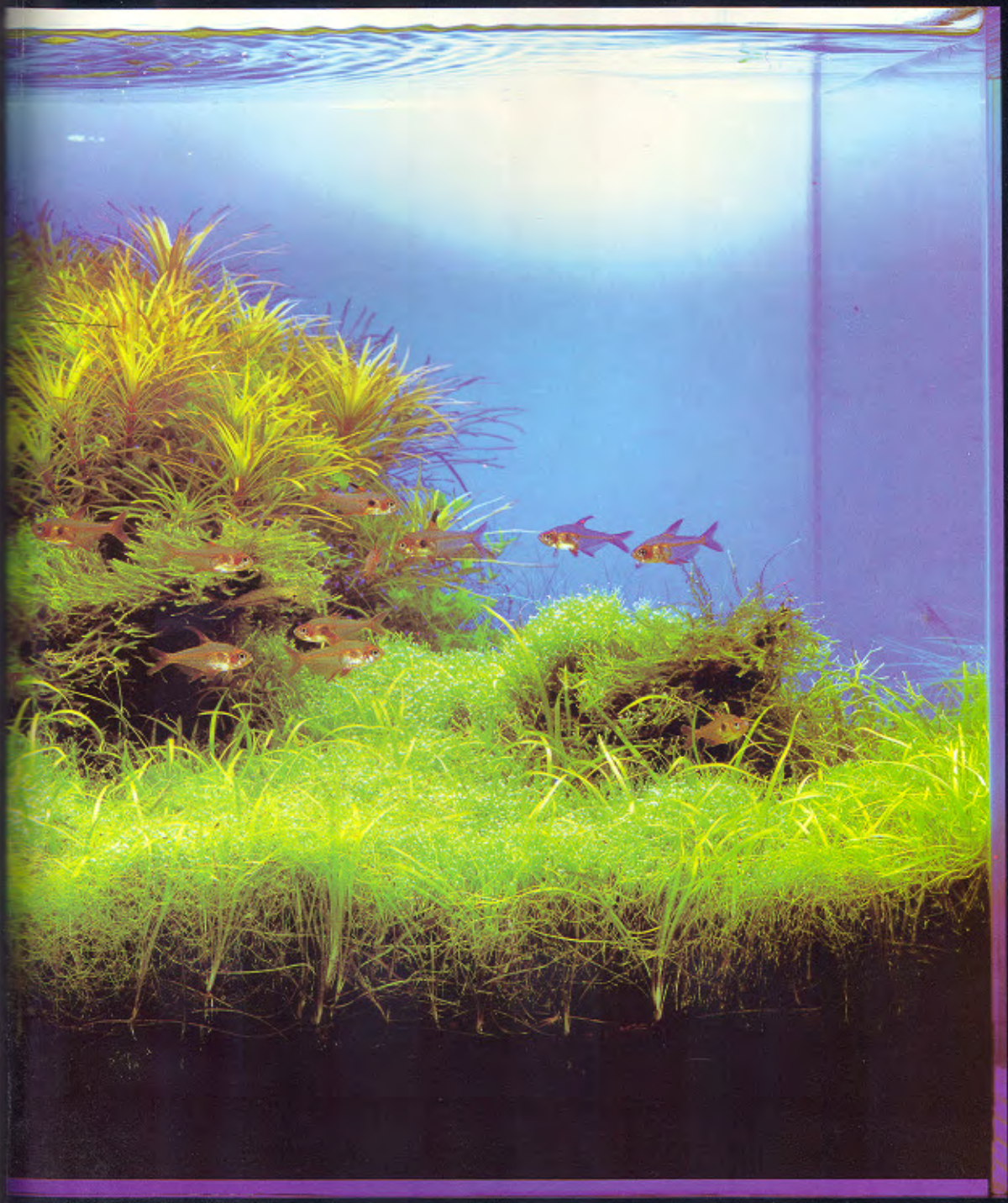


"Melody in color"



Data

60 x 30 x 36 cm, ADA cube garden,
4 x 20 W (sodium tubes), 10 hours/day,
25°C, *p*H 6.6, 2°dGH, 0 mg/l NH_4^+, >0.02 mg/l NO_2^-,
<2 mg/l NO_3^-, <0.2 mg/l PO_4^-.



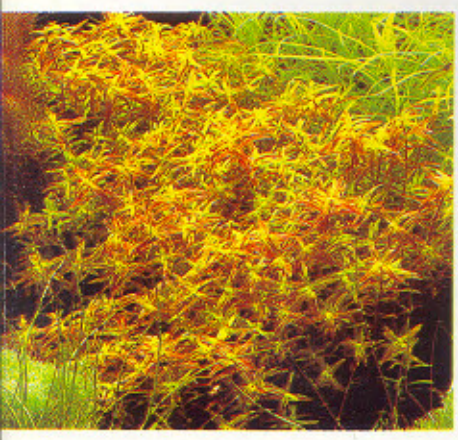
Echinodorus tenellus
– Dwarf Swordplant
Eusteralis stellata
– Starplant
Fontinalis antipyretica
– Water Moss
Hemianthus micranthemoides
– Dainty Pearlweed
Ludwigia arcuata
– Narrowleaf Ludwigia
Ludwigia peruensis
– Peruvian Ludwigia
Micranthemum umbrosum
– Roundleaf Pearlweed
Riccia fluitans
– Crystalwort
Rotala indica
– Indian *Rotala*
Rotala macrandra var.
– Thickleaf *Rotala*

Caridinia japonica
– Yamatonuma shrimp
Megalamphodus sweglesi
– Swegles's Phantom Tetra
Otocinclus sp.
– Dwarf sucker catfish

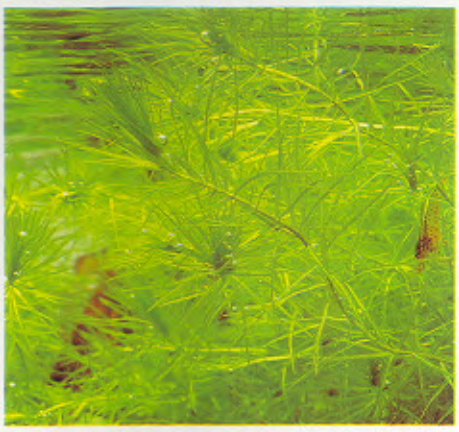
External filtration of the aquarium through biological filter material, substrate of fine sand, CO_2 fertilization, about three bubbles per second, and a weekly water change of about 1/3 the volume.

Eusteralis stellata.

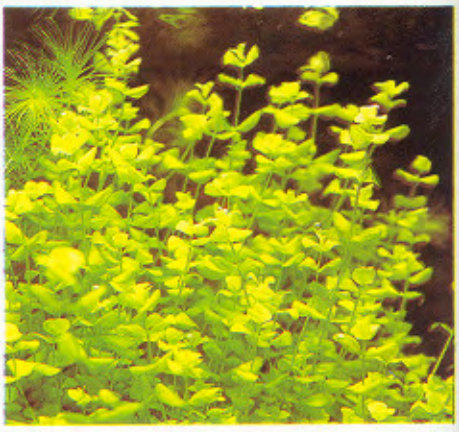
Rotala indica.



Lagarosiphon madagascariensis.



Micranthemum umbrosum.



AQUARIUM PLANT PARADISE

TAKASHI AMANO, AQUA DESIGN AMANO

Japanese photographer/artist Takashi Amano's uniquely creative aquarium designs have taken the aquarium world by storm, as witnessed by the success of his three other much larger books published by T.F.H. Publications and the response to the presentation of his articles and photos of his beautifully planted aquaria in *Tropical Fish Hobbyist* magazine. The Amano planted aquarium creations shown inside this book will beckon readers to try their own hands at making aquaria as vibrant and attractive as his, so the author has provided plenty of detailed information about each of his creations, from the names of the plants used right through such considerations as the exact size of their tanks, the amount and duration of the lighting, and pH and hardness factors. The information and photos are presented not so that they can be imitated detail for detail but so that they can serve as inspirations for readers to create aquascapes of their own that rival Amano's in beauty and feeling.

Photos in this book coated with FOTO-GLAZE®, U.S. Patent No. 5,249,828.

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