Liquid

01
2013

Nature Aquarium

All about
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Aquascaper in focus
Norbert**Sabat**

Step by step
Choosing**Tank**

Tests and reviews
Eheim**Skim 350**

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Glass**Pipes**

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Liquid

Word from the editor

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Norbert**Sabat**


Marcin**Wnuk**


Robert**Kujawa**

Following many days of work on the structure and release schedule, we are proud to present the first issue of our magazine, which we hope will become also your magazine. In the magazine we shall present the passion of natural aquariums and the entire scope of creativity initiated and propagated by Takashi Amano. As this trend in the hobby undergoes constant evolution in the search for new formulas and means of expression, we intend to document this process in "Liquid".

Why is it called "Liquid"? We find this name to encapsulate the spirit of natural aquariums and embody our idea for the magazine's formula.

The first issue of "Liquid", which is before your eyes, is our proposal on the magazine's layout. We're open to your suggestions regarding the contents and topics that will enter future issues. We'd like to invite those of you who wish to share the experiences and thoughts about natural aquariums. For our part, we promise to do everything we can in order to make every next issue as special as it takes to make "Liquid" an everyday companion to your aquatic passion.

We're looking forward to your comments, remarks and ideas.

We wish you a pleasant reading.

Editorial office

The Tree Norbert Sabat

Aquarium

Size :
120x60x50cm
Gross volume :
360 l
Glass :
Optiwhite 12mm
Started on :
2012.09.22
Foto taken :
2013.01.03

Lighting

Fixtures :
2x Hagen GLO 2x54W
Tubes :
2 x Narva Biovital 960
Philips 965
Arcadia Freshwater
Lighting period :
7,5 h

Filtration and heating

Filter :
2x Eheim 2228
Media :
Eheim Substrate Pro
gąbka
Eheim Ehfimech
Pipes :
ADA Lily Pipe P-4
ADA Violet Glass VP-2
Heating :
Hydor ETH200

Substrate and deco

Bottom layer :
- Bims
- Akadama miękka
- torf Keto
- pył węgla drzewnego

Substrate :
- Aquatic Nature Pro-Soil

Sand :
- ADA Mekong Sand

Rocks :
- ADA Frodo Stone

Driftwood :
- Red Moor Wood

Fertilisation and CO_2

Liquid ferts :
- Easy-Life Profito
- Easy-Life Nitro
- Easy-Life Fosfo
- Easy-Life Kalium-Potassium
- Eady-Life EasyCarbo

CO_2 :
- CO_2 bottle5kg
- Aqua Medic CO_2 regulator
- Aqua Medic Reactor 1000

Plants and fish

Plants :
- Hemianthus callitrichoides
- Eleocharis parvula
- Hydrocotyle sp. Japan
- Ludwigia arcuata
- Hygrophila pinnatifida
- Ricardia chamedryfolia
- Rotala sp green
- moss sp.

Plants :
- Otocinclus affinis,
- Pterophyllum Scalare Peru,
- Sawbwa resplendens,
- Caridina multidentata

Canon 5DmkII | EF 70-200 F4 L | 87mm | F6.3 | 1/60s| ISO 500 | No extra lights

Canon 5DmkII | EF 24-70 F2.8 L | 38mm | F7.1 | 1/125s| ISO 320 | Flash light 400ws + softbox

Canon 5DmkII | EF 24-70 F2.8 L | 38mm | F7.1 | 1/125s| ISO 320 | Flash light 400ws + softbox

Ludwigia arcuata

Light : moderate to strong
Growth rate : average
Orygin : North America
Requirements : average
Temperatura : 20 to 28 C
Height : to 25-50 cm
CO2 : Tak

This plant gets frequently confused with Didiplis diandra. It has narrow, lanceolate leaves. Ludwigia requires strong light in order to show juicy orange-red hues. The colors are easiest to obtain in soft, slightly acidic water. It can also grow in terrariums.

Rotala sp green

Light : moderate
Growth rate : fast
Origin : Asia
Requirements : average
Temperature : 20 to 28 C
Height : 40-50 cm
CO2 : yes

A plant that is very similar to Rotala rotundifolia, but its leaves remain bright green, even under strong light conditions. Looks best when planted in thick clusters. It grows fast and therefore requires frequent trimming.

Riccardia chamedryfolia

Light : strong
Growth rate : slow
Origin : Asia
Requirements : high
Temperature : 18 to 28 C
Height : 1-3 cm
CO2 : yes

A livewort resembling minature Pelia, which gave it its common name – mini pelia. The plant is perfect for growing on driftwood and rocks. In Poland it is considered an endangered species.

Hydrocotyle sp. Japan

Light : moderate
Growth rate : fast
Origin : Asia, Australia
Requirements : average
Temperature : 20 to 28 C
Height : 5 cm
CO2 : yes

The plant is also known as Hydrocotyle tripartita. Its origin is Southeast Asia. Hydrocotyle is characterized by fast growth and bright green color. It spreads via runners, from which little leaves grow on vertical stems. Under good conditions it forms a carpet. Unchecked growth may lead to Hydrocotyle covering all decoration and stunt other plants' growth.

Hemianthus callitrichoides Cuba

Light : strong
Growth rate : average
Origin : Cuba
Requirements : average
Temperature : 20 to 26 C
Height : 0,5-5 cm
CO2 : yes

One of the smallest plants kept in aquariums. It spreads on the bottom forming a thick carpet consisting of minute, about one millimeter round leaves. It is the perfect foreground plant. It can also be planted on porous rocks.

Eleocharis parvula

Light : low to high
Growth rate : average-fast
Origin : cosmopolitan
Requirements : low-average
Temperature : 10 to 28 C
Height : 3-10 cm
CO2 : no

A perfect choice for a carpet plant. The plant features acicular, slightly bent leaves. It forms dense lawns, which makes it ideal for the front of the tank. It spreads via runners.

Hygrophila pinnatifida

Light : moderate to strong
Growth rate : slow
Origin : India
Requirements : average
Temperature : 22 to 26 C
Height : 15-45 cm
CO2 : yes

Hygrophila pinnatifida looks great planted on rocks and driftwood, as it attaches to it easily. A dense, compact cluster can be achieved through frequent trimming. It spreads easily via side shoots. Strong light contributes to forming a dense cluster.


Aquascaper in focus
NorbertSabat

Aquascaper in focus

Norbert**Sabat**

We're sitting in your studio near „The Tree". We're supposed to talk about you, but we're completely ignoring each other and stare at this ultimate work of aquascaping. I have a feeling that everything I had planned as I prepared for this interview suddenly lost its importance. Well... it's inevitable isn't it?

You work as a building designer, but you were supposed to become an architect. Photography and aquatic gardens are your passions.

Who is Norbert Sabat?

Don't you want to know too much? (laughing). I don't like talking about myself. Anyone that got to know me will tell you that I'm a man of few words. I come through as a distant and serious person, not showing much emotion. I'm often perceived as a withdrawn professor. It's a term I read once when I had a personality test. I like it, it suits me perfectly. Of course, appearances can be misleading, but truth be told, there's a lot in that description that suits me. That's how I've always been and I won't probably change much... Unless my future wife reprograms this processor I carry on my neck (laughing).

I'm usually a man of few words and I tend to keep my opinions to myself. From time to time I like to write something, I find it comes easier than talking.

You're right, I have a master's degree in civil engineering and I design buildings on everyday basis. Unfortunately, many people don't know this profession; they think I'm an architect. It is funny, but also painful, because they're not aware of the responsibilities I carry. Usually, when you see a sky scraper or a bridge, you admire its beauty and think "what glorious architecture". What you fail to see is that people like me came up with this construction, did the math, designed the ceilings, pillars, and foundations; they built it and are legally responsible for the building's integrity. The best part is, I was supposed to become an architect. I took the entry exams at the Faculty of Architecture at Warsaw University of Technology, but I failed and landed on the other side of this business.

Why did you choose architecture?

As far as I can remember, I always loved drawing and got pretty good

2004 | 100x40x45cm

at it at some point. In primary school I took part in close to every art contest there was. I always scored high or won. I was very interested in comic books, especially those from DC and Marvel with Todd McFarlane's amazing drawings. I can recall his version of Spiderman even today. I also tried drawing comic books, but it never got serious – although I did make some drawings. Good old days (sigh).

So it's decided. If we ever choose to include an aquarium-themed comic strip, we know now where to look for the creator.

Nooo... it's out of question... I guess. I haven't drawn anything in a long time and you quickly lose technique. I might have watered down my supposed drawing talent, but on the other hand I use these skills in aquascaping. Artistic leanings, the knowledge of proportions and basic canons sure help designing the underwater gardens. You don't think some things through – you just know them and that's it.

Let me go back to your first question, I don't think I can give you a straight answer. Sometimes I think that this isn't what I'd like to do with my life. Every now and then I fancy the thought of quitting this job and going professional with aquaria. Those are nothing but dreams and my analytical personality gives me a slap on the head: to get back on the ground and stop dreaming. My interests change, sometimes even compete. Sometimes the aquarium wins, sometimes it's photography and every now and then – it's sloth (laughing). You know that the spec-

2005 | 64x30x25cm

2006 | 90x45x45cm

trum of my interests includes aquaria, photography, running, climbing, cycling and, increasingly so, film making. It is hard to balance it out and give each of them equal chances. One thing is certain, if I approach a hobby, I try to do it seriously and achieve something. Not necessarily win anything, but engage in it to the fullest. This happened with photography and running.

Which came first: photography or aquariums?

Definitely aquariums. When I was coming back to this hobby in 2003 it didn't even cross my mind that you can actually take a photo of your aquarium. I wasn't even aware that planted aquariums existed. No to mention Takashi Amano. In 2004 everything changed. That's when I went through an express course from general community aquaria with coarse gravel and coconut shell to fully fledged contest layout. That year I also met Mr. Amano for the first time, which was a huge deal for a young planted aquarium adept. Everything went very fast from there. I had some small aquariums, many layouts in a generally short time, several contests, some share of success, broad Internet activity and so on. It was only natural to find interest in photography, since I wanted my layout to look the best. No doubt, the appearance of a tank on the Internet is based on photography, and increasingly on film. I gradually absorbed the knowledge necessary to capture an image on a digital medium, testing flash (borrowed at first, my own later on), the first DSLR, new lenses, new system, and so on. Photography was supposed to be a helpful means in aquascaping, but it became a fully-fledged hobby, that dethroned aquariums at some point. Frankly speaking, I think it still rules.

At some point you worked as a member of the jury in one of the aquascaping contests. What chances do you think you'd give your own tank in this kind of competition?

I would stand a chance I guess (laughing). But seriously, you can't judge your own work objectively, because you lack the proper perspective. It's like trying to decide which one of your children you love the most. I'm the first and the main critic of my works and I haven't yet made a layout that would satisfy me. There's always something lacking. After some time I just lose interest and the layout gradually collapses. On the current stage of "The Tree's" development I miss some kind of detail on the sandy area and a connection between the sand and the driftwood. The lawn is underdeveloped; stems in the back aren't shaped well. There is some green spot algae on the rocks and the branch on the right shifted slightly (some substrate moved). It shows that the author is not paying the appropriate attention.

Which factor would you call the deci-

2007 | 90x45x45cm

2008 | 90x45x45cm

sive one when it comes to contests? I'm referring to your IAPLC entry from 2005, which was ranked on a distant position but became the audience's favorite: at web portals and thematic webpages. You haven't had much luck with ADA's contest, have you?

I wouldn't say that I haven't had luck with ADA's contest. I think that everyone scoring in the first 200 tanks can be proud of their achievement. Naturally, everyone dreams of entering the TOP100, and scoring in the Winning Works is the dreams coming true. You have to remember though, that the top (first hundred) tanks show very little spread in points. A single point can decide the position. That being said, my works have always been simple. They were never as meticulously shaped as I'd like them to be, they lacked detail. Therefore, I don't suppose they deserved high ranking. The primary selection of entries at ADA's headquarters decides your future in the contest. If you fail to enter the selection, you might as well be ranked on the 300th or 600th

2008 | 90x45x45cm

position. My entry in 2005, in comparison to other Polish tanks at that time, was really top tier. The general level of aquascaping worldwide wasn't as advanced, and when you compare it to today's trends, you can assume that many top tanks from the past wouldn't score highly these days .
I wouldn't call myself a popular person, because what would be the scale of popularity? If you've been online for several years, uploading some photos every now and then, people will start to recognize you, but that's it. We've got some World-class aquadesigners in Poland. Each one of them has got their own style, his likes, and is recognizable. I suppose, in the world of planted aquariums, among the aquarists that know this business, naming several famous designers is not a problem. Well, maybe we are popular after all (laughing).

What made you quit taking part in contests?

Will you be trying to convince me to

enter this year?

Maybe...

Out of the question, I'm not doing this since 2008.
I thought some things through and came to the conclusion that I don't need this; I don't want to be a part of this circus. Planted tanks are fun, they're supposed to be relaxing, creating a piece nature in a glass container full of water. When you have a well-designed layout, you can sit or kneel in front of it and immerse yourself in this water world, like you were watching a film in a cinema. Sometimes you may record the state the tank is in and show it online, on the forums for example, and share the knowledge or seek the knowledge in case of trouble.
Unfortunately, as years pass by, I noticed that layouts aren't designed for the aquarist but strictly for the contest. Even before water gets poured in, there are many questions, such as: "what kind of layout is going to be popular this year?", "do I stand a chance?", "will I meet the deadline for entries?", etc., etc. Those kinds of questions don't necessarily remain in the author's head, but spring up in the forums. By chasing the contest, we've approached some kind of sport rivalry rather than the peaceful hobby that aquascaping is supposed to be. Often times you can read, right before the contest is closed for entries, that this is just for fun... If it's just for fun, why did you invest several months of your time, keeping your tank in secret, and now you get all antsy waiting for the results? And if you don't score well, you pour out your frustrations on the Internet? Taking part in the contest became a part of our calendar. We're making a contest and we live by its cycle. It doesn't sound like fun to me...

Aren't you being too harsh?

I know I might be taking it to the extreme but I really have this impression (perhaps it is a wrong one) that we often declare that contests are just for fun, but deep down we treat them with deadly seriousness ...
I don't need to compete on this level, I'd rather compete with myself. I don't like racing in the peloton, because I derive more pleasure from overcoming my own barriers than winning with other people. I admit there was a time when I became so engrossed in aquascaping and contests that I wanted to get to the top rankings possible... but I calmed down and matured. I realized I was doing something wrong and decided to change that. That's why I quit entering contests. I know many people don't see it this way, they can even say I'm full of it, but that's my position on this topic and I'm not changing it. I want to make this clear: I'm not an enemy of contests and I always support Polish entries. I often congratulate and take pictures of the contestants but nowadays, I just want to stand aside and be the spectator. That is in my nature, as I told you in the beginning, I'm rather distant and withdrawn.

2010 | 90x45x45cm

2012 | 120x60x50cm

Another thing that made me quit contests was the fact that I had mixed impression about some of the tanks. Their rankings seemed random. You can't explain why sometimes no one, be it on the forums or in private conversations, would agree with the jury's decisions.

I can remember Nature Party 2011, when the audience (between 150 and 200 people) was supposed to vote for the best tank out of the top five. The contest winner was among those five tanks. Guess which place he got in the voting? The last one! He got 15 points, while there were two others that got 64 points each. Another top tank, which was very similar to the previous year's winner, got criticized quite harshly by NA Party participants. That tells you something...

I didn't like, and I still hate it to this day, that some of the participants send more than one work, signing them with family members' or friends' names. Most of us know who the author of a given layout is. Since we've got proper contest rules (one author, one entry) it would be fair to play along those rules. I used to layout 3 tanks in a year and I could apply giving my mother's, sister's or a friend's name. I never did that. I always pictured this scenario in my head: I send two layouts to the contest one as myself and one as my sister. My work is placed on the 500th place but my sister's gets on the podium. What now? Will I get a diploma and a badge with my sister's name on it? Shall I send my sister to Japan and

2012 | 120x60x50cm

stay at home myself? How will I be able to look the jury and other contestants in the eye at the NA Party? Winning despite the cost isn't worth pursuing.

I know I'm focusing heavily on the IAPLC, but let's be honest, this is the most important and prestigious contest in the World. No wonder I mean IAPLC when I say "the contest for the best layout".

Let us focus on your works. At some point you clearly moved away from the conventional layout types formulated by the classic Takashi Amano style, and began designing your own.

Did I? Uhh... If I knew what that "classic style" meant I could probably answer your question. (laughing). I never thought about following rules or not, because some rules are as basic as breathing or eating. I mean the rule of thirds and proportions. Perhaps I wasn't paying attention to them due to my artistic predispositions.

I have always admired Takashi Amano's works. Even when you take away the whole mysticism and business side, which the Internet loves to constantly discuss, I still consider him the man that started it all (aquascaping). In my early days in planted aquariums, I used to look at his many tanks. I studied the way the plant groups were arranged, how the sandy areas bordered on the plant-

ed, how the rocks were arranged in the Iwagumi style layout. I learnt a lot this way. I can't tell whether I have a style, which is different than the "classic" one, but I think that one characteristic of my tanks is the simplicity and the use of few plant types. I never enjoyed layout with multiple plant species, because they require a lot of work separating the plants. Surprisingly, when plants grow into each other, you've got to control that closely, so they grow into one another the proper way.

I never liked assigning too much lofty philosophy to this hobby. Seeking the hidden meanings, mystical angles and dressing it up with bombastic words; I always took it with a grain of salt. Perhaps it works in Asian countries, where gardening

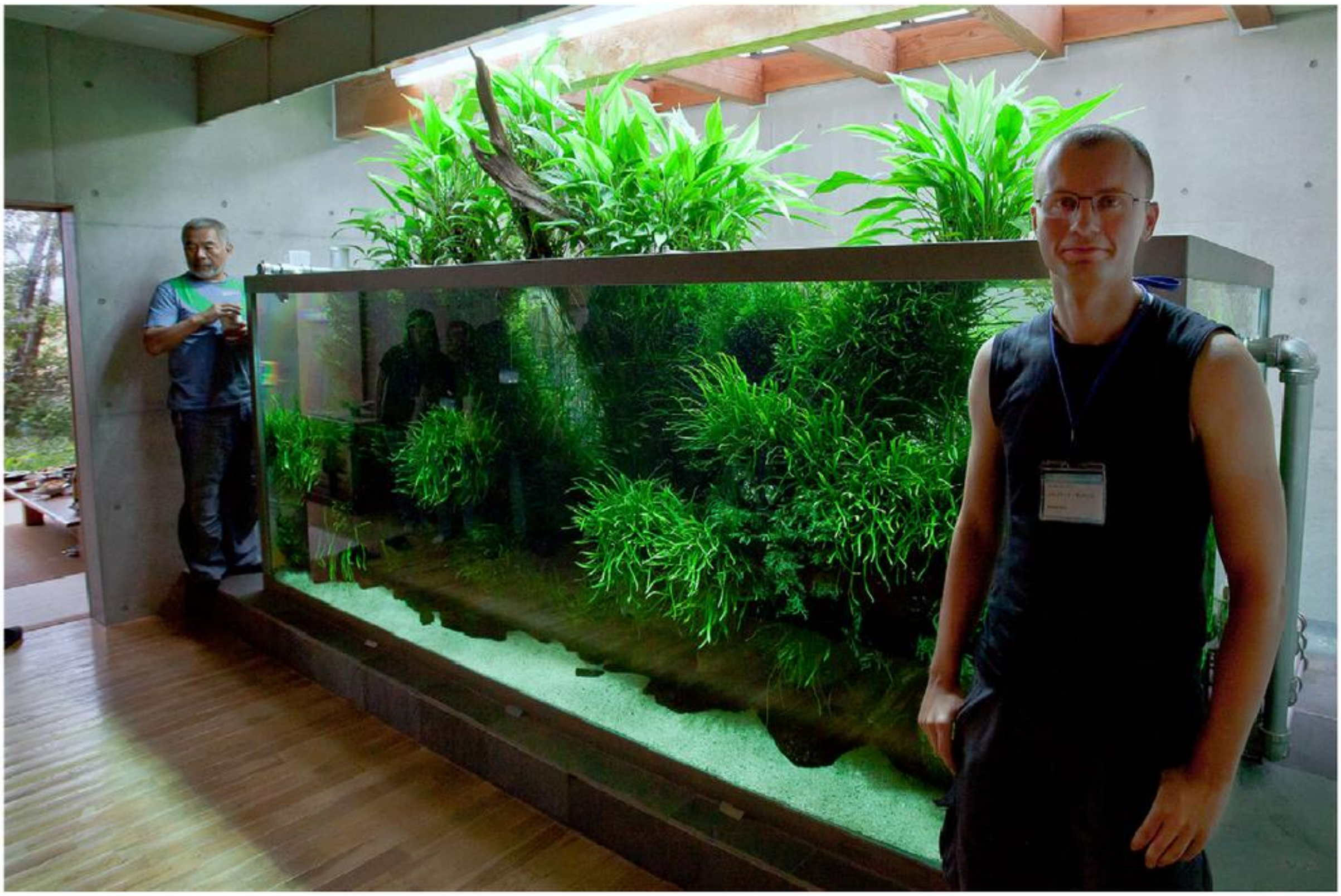
and therefore, aquascaping, are bound to their culture and religion. Europe is different though, Poland too. We need to remember we're Slavs, formed by centuries of warfare, partitions, and uprisings, so let's not press on becoming Asian. That's just artificial.

You have a tendency to create center-based layouts. Is there a reason?

The center-based layouts are the most versatile in my opinion. Seriously though, I just like to have access to the tank's sides. The inlet pipes are usually placed in the corners, so with a triangle-type of layout or twin-island type of layout, they get covered by the plants growing in the back. It gets the plants sucked in, etc. People used to pursue these types of layout in order to cover the pipes, it wasn't a rule of course. But now we've got glass pipes and inline heaters, so it is no longer necessary. In my 90cm long tank it was also necessary due to the type of lighting I used. A single metal-halide failed to illuminate the sides properly and corner-placed stems leaned towards the light. It didn't look nice.

Let's talk about the things that aquascaping adepts find the most interesting. By that I mean sources of inspiration and aquascaping techniques.

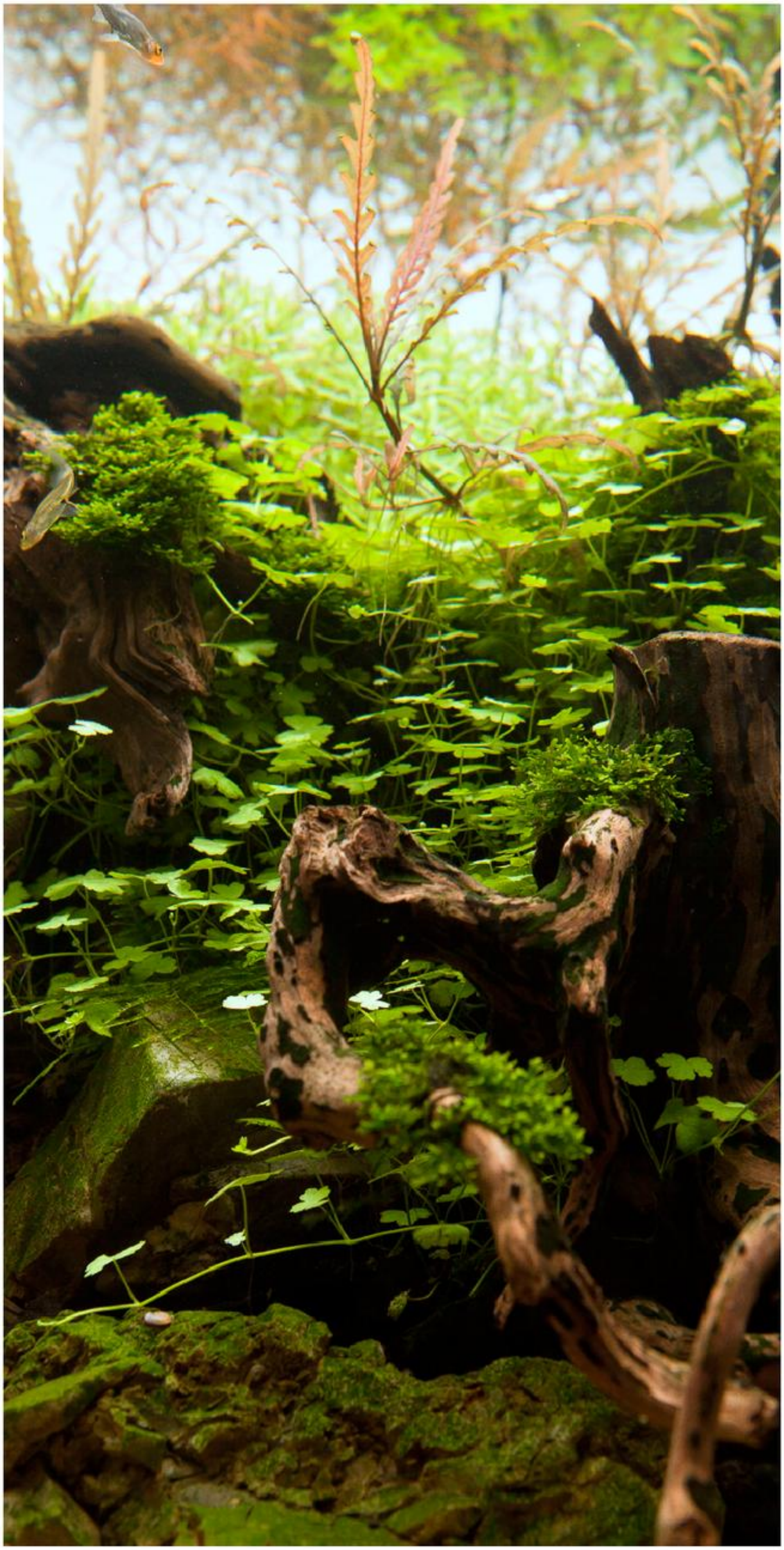
You might find this surprising, but I don't look for inspiration and I don't give this hobby too much thought. I have some drafts of future layouts in my head, but they're so blurry that it is impossible to materialize them. When I sit on a mountain trail's side, watch some stones on a meadow or walk through woods, I don't usually have those "wow!" moments of revelation. Oh look, that bunch of grass looks great, I'll do something like that in my aquarium! No, nothing like that. I watch, I observe, I categorize and if need be, I collate those pieces into a layout. I truly enjoy trekking in the mountains, but I don't suppose it shows in my works. You won't find any mountain ranges, similar to those in the Tatra Mountains, in my tanks. I have never put together a layout that would even half-resemble what I had in mind in the beginning. Making a layout and planting is spontaneous, I can't describe it. You could as well ask a bird to explain the mechanics of his flight. He would've probably said that he just flaps his wings and flies. Designing a layout? Same thing.
The technique is being developed the whole time. By designing subsequent layouts and forming them, I always learnt something new. This way I mastered some techniques that make restarting a tank easier, facilitate weekly maintenance, or allow me to clean the driftwood effectively. Some tricks, such as watering the substrate or keeping it moist with



pressure washer, I learnt in workshops in Japan.
As you try to form the layout, sooner or later you'll need to trim something with scissors. Rookie aquarists are afraid of scissors and usually have no idea about trimming. It's not that difficult, is it? Unfortunately, until you get your hands wet in your tank and give your plants some trims, you won't know how it's done. Sometimes you'll get it right, sometimes you'll get it wrong, but you've got to always watch the plants and draw conclusions.

You are an artistic type and it shows that you enjoy aesthetically pleasing technical equipment. Is it important to you?

Undoubtedly, a nicely designed lamp, glass pipes or some other pieces of equipment are important and pleasing to look at, but many aquarists forget that it's not the point. They show you pictures of empty tanks, filters, fertilizers and other gadgets, instead of focusing on what's inside the aquarium. A layout is not designed by the equipment, but by the human. I personally think that what really needs a lot of attention is the hardscape material, technical stuff is secondary. These days you can buy everything you need with a single click and the parcel will be at your door the next day. Long gone are the days when the only source of substrate that is capable of exchanging ions was an obscure Japanese company. Or pet stores that offered only anubias, echinodorus and egeria plants. Or the majority of CO2 canisters being modified fire extinguishers.
Good rocks and driftwood are the basis of every layout. It doesn't matter what label they carry, or if they cost 5 cents or 20 Euro, as long as they fit your vision. You sometimes need to spend months looking and going through tons of material in order to find what fits your taste.
Someone can say it's easy for me to talk about rocks that are 20 Euro a piece. But is it? Good material can get reused and it is a long-time in-



vestment. The rocks I bought in 2006 are still being used and I'll continue to use them in my layouts.

All our readers and your admirers would surely love to learn how they can make their own "The Tree".

Look for something new and unique. On the one hand, imitating is good as it teaches you new things. As you try to reproduce something, you face a challenge that needs to be taken – finding out "how did he do that?" or "how did he got it to grow on driftwood? It is similar to the early days in school, where you reproduce what teachers have shown you. This is how your skill gets developed. On the other hand, being imitative and using the same templates over and over again will get you stuck artistically. No one wants that. I have no ready-made recipe for a good layout, you've got to keep trying and keep doing your thing.

To conclude this interview, I'd like to say how happy I am that you joined us in creating this magazine and will manage one of its sections.

I'm also very happy but worried as well whether I'm up for the challenge. The readiness is here, but everyday life has a way of complicating our plans.
It is a great challenge, as I mentioned I always engage in my projects to the fullest and I would like Liquid to keep high standards both graphically and scientifically. Due to my interests, I will probably focus on the section on photography (inspirations, sessions), but I will wander into other fields occasionally.

http://aquadesign.pl
http://sabat.aquadesign.pl
http://youtube.com/user/SuperAquadesign

Norbert Sabat

Fertilising The**Tree**

Fertilizing is like a mountain stream – changing, Winding, rapid and dangerous. And just like in a mountain stream, you can never be sure if there's no rock underwater that will hit you. And then you drown, your body will get consumed by white waters and will float towards the sea, where it disappears forever. In that stream, you can walk in the shallow waters near the bank and be safe, but that's not really exciting. You can also swim and dive, but it's easy to get carried away by the current. You can also bravely swim with the flow and avoid all obstacles, but few can actually do that. Unfortunately, many young aquascapers jump into deep waters, avoiding the shallow water or a swimming course.

Where am I? Well, I'm walking around, with water to my waist, sometimes I swim, but avoid farther destinations, because they always resulted in gulping a lot of water.

Why all the metaphors? I guess they are useful to show the readers that fertilization in a planted tank is not that simple and nothing can really be taken for granted. Naturally, there are some popular rules, canons, or whatever you call it, but you can't ever follow them strictly, The river's bed varies, and the conditions change.

When you read the forums, private websites and other, similar sources on planted tanks, you'll undoubtedly find hundreds or even thousands of tips about fertilizing a tank. There's bound to be something written about the immortal ratios of nitrogen, phosphate and potassium (N:P:K – 10:1:20), the recommended weekly doses of iron (0,3ppm Fe/week), recommended magnesium to calcium ratio, phosphate limiting methods or pouring buckets of it, macro and micronutrient limitation as well as keeping them in abundance. Of course all those methods will be based on the amount of light, carbon dioxide concentration, type of substrate, etc.
I won't give any such tips. Quite simply, I will describe how I fertilize this issue's featured tank "The Tree".
I've based my fertilization regime on EasyLife products.

Profito (traces)
Kalium-Potassium (potassium)
Fosfo (phosphate)
Nitro (nitrate)
EasyCarbo (bio-carbon)

I used those ferts in my previous layout and two office tanks, and they always worked very well. I find this line of ferts affordable. Single fertilizers are available in 100ml, 250ml, 500ml bottles,

a some of them in 1000ml and 2000ml bottles. EasyCarbo and Profito are even available in 5l canisters, so you can adjust the volume to your needs. The labels tell you how much you need to add to your tank in order to rise NO3, PO4, K and Fe by a given number of ppms. This facilitates fertilizing and makes you capable of controlling the amount of given nutrients in the water. The majority of fertilizer producers only gives you the recommended dosage, but keep the fertilizer's percentage composition in secret. This really doesn't tell you much and makes you blindly follow the recommendation. Luckily, EasyLife did it differently and gave us some control on the amount of nitrogen, phosphate and potassium added to the tank. What I dislike about this set of ferts is Profito. It gathers some kind of sediment on the bottom of the bottle and you need to shake the bottle vigorously before dosing.

The layout is based on the previous one, which was 9 months old when I decided to restart, so the substrate has been mostly exhausted. This is why is started early with fertilization. In the first week, I supplied only potassium in 2ppm/day doses, and then I added Profito (2ml/day) and some macronutrients (about 0,7ppm NO3 and 0,05ppm PO4 daily).

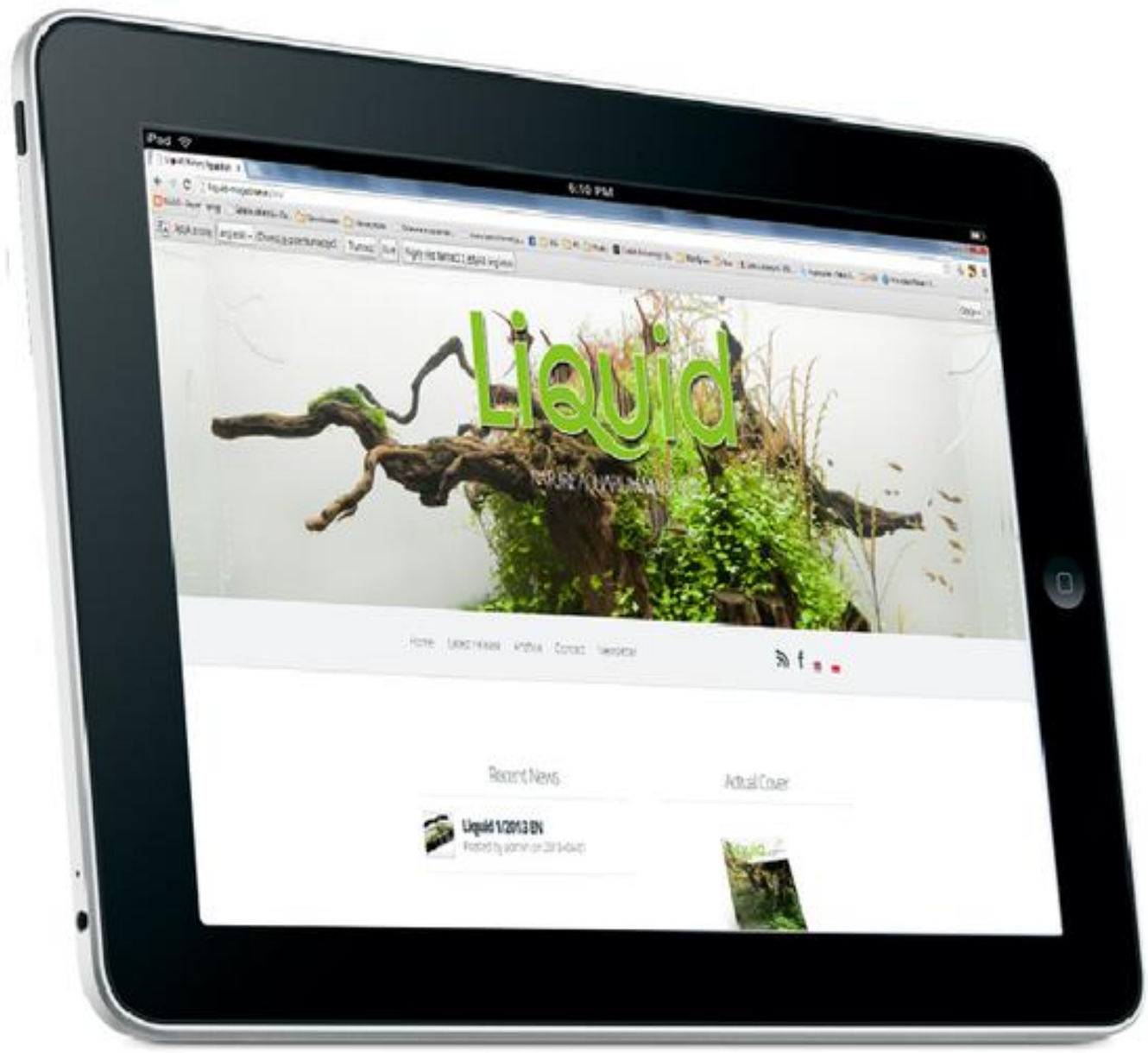
I must have done something wrong, perhaps too few plants, and staghorn algae and green spot algae showed up on decoration. I had to endure this algae outburst but when I compare it to what other aquarists show on the Internet, I must admit my prob-

lems were minute.
I fought staghorn algae on the rocks and driftwood with Easy-Carbo. Spot treatment using a needle and syringe during every water change or applying it with a brush on the driftwood did the trick. It is a good method to fight the symptoms but I wanted to find the cause. In the subsequent weeks I tried limiting micronutrients and macronutrients, but without luck. The last step was to increase macronutrient dosage (keeping the NO3 to PO4 ratio at 5:1) in order to make the weekly dose of phosphate closer to 3ppm while keeping iron at 0,25-0,3ppm. So far, this dosing routine gives me the best results both in terms of plant health and green algae growth on the rocks. It's still too early to decisively declare anything, since I haven't been using this method long enough. Only after 4 to 5 weeks with no negative effects I'll be able to decide whether this dosing is effective. Of course, I keep the weekly water changes at 40%.

I wouldn't like anyone to think that such dosing regime will grant him the perfect condition of plants and no algae. As I said in the beginning, fertilization is unpredictable. I've started may tanks and every time the process took a different course. A pattern that worked in one tank, not necessarily worked in the other, and I've been doing this since quite a few years. I have no idea why it's like that... An aquarium is a living organism that reacts differently every time, laughing to our faces.
I'm always skeptical about theses where the authors describe their dosing in terms of dogmas. More than once I confirmed that whatever works for other people, may not work in my tank. I guess over the years I've established some ground rules I always apply in the early days of every tank.

Those are the following:
Potassium supplementation since day one, 2-3ppm daily.
Nitrate and phosphate starting in the second or third week, as the plants start to grow. I start from about 1ppm of NO3 and 0.05-0.2ppm PO4 daily. I increase the dosage by 20-30% every week.
Micronutrients start on the third week in doses of 0.05-0.15ppm of Fe weekly. I increase the dosage by 0.05-0.1ppm biweekly.
I use a biostarter from the beginning and during each water change. I supplement CO2 at maximum levels right from the start.
Of course, one needs to remember that I mean an aquarium with substrate dedicated for plant growth, such as Pro-Soil or Amazonia (I haven't used gravel in the last 6 or 7 years).
It is nothing groundbreaking and everyone that earns some experience in keeping a tank will reach similar, general conclusions... The rest is sweat and tears ;) I have never investigated into fertilization or study it in depth, because I've always been more interested by creating the layout. It may be a mistake. Perhaps, with some inclination towards "plant chemistry" I could achieve better overall tank condition. Unfortunately you can't have everything, that's just life that flows in its own mountain stream.

Liquid



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GlassPipes

Are they all the same?

The use of glass makes the inflow and outflow pipes blend in, and the aquarium's interior looks more harmonious without the technical disruption.
The market brings you solutions, some of them are cheap, and some are expensive. We are going to show you what needs to be kept in mind when choosing glass pipes.

Outflows

Jet Pipe

Depending on the size of the tank, the layout and the effect we want to achieve, we can use one of the commonly available outflows. Canister filter producers usually supply an outflow, which is round in profile and directs the flow right beneath the water's surface towards the opposite side of the aquarium. Some bundles include a nozzle to disperse the stream of water. Such an outflow can be replaced with a glass counterpart. Installation on a side wall of the tank, several centimeters from the front pane will improve circulation. Water that flows from the pipe will be directed towards the bottom and the back. Further along the bottom and the back pane it will flow towards the inflow. Of course, on its way it encounters all kinds of decoration and plants, but the circulation pattern is kept. In this case, changing the outflow pipe to a glass one improves aesthetics only.

Ball Pipe

A return pipe that ends with a sphere with a part cut off. This kind of outflow is designed to reduce flow velocity and direct it towards water surface, where it loses its speed and creates ripples. This type of outflow is often badly executed. Misaligned cut on the sphere will make the jet of water flow parallel to the surface, instead of disrupting it.

Lily Pipe

An outflow that flares toward the end, round in profile and cut at an angle. The lower part of the end cup is longer. If the outflow is high quality, it is able to create a vortex that sucks water from the surface and into the cup. Water gets mixed and thrown with the stream immediately under the surface. One of the most common types of outflow pipes.

Lily Pipe Spin

Lily Pipe Spin is ADA's new product, designed for small tanks. It's characterized by innovatory construction and interesting design. Water flowing from the filter is caught in a glass loop, where it loses its velocity and pours out in broad streams to the sides.

Violet Glass

An outflow type similar to Lily Pipe, by flattened laterally. The angle of the cut is different than it was the case with Lily Pipes. The flattening and a different angle direct the flow towards the tank's bottom. The flow can move debris and, thanks to circulation, carry it towards the inflow pipe, where it gets sucked into the filter.

No matter which type of outflow you choose, you should pay attention to the curves. They shouldn't be too tight, to facilitate cleaning with a wire brush. Bends that are too sharp may cause the pipe to snap during cleaning.

Inflow pipes

Inflow pipes are not as differentiated as the return pipes. Here are some tips about choosing an inflow pipe.

Pipe length

If possible, the pipe should reach as closely to the bottom as possible, but it shouldn't be obstructed by plants or decoration.

Slits

The slits should be numerous, and their depth approximate 1/4th of the tube's profile. A large number of slits slows the current, which gives the fish and shrimp some chance of survival, if they find themselves in the stream. The pipe's finish is also important. Pipes that were finished in a thermal process are smooth and have no sharp edges. Evenly spaced slits are aesthetically pleasing. Some producers leave the end of the pipe open, to promote suction from the bottom of the tank.

Profile

The pipe's curve radius is even more important than it was the case with outflow pipes. Inflow pipes can only be cleaned from one of the ends, so the curves should be broad and round in order for the wire brush to reach the other end easily.

Suction cups

If the pipes' curve radius is too small, the distance from the tank's wall on the outside and the inside will be so small that there will be no space for a suction cup. In that case, the hose can sway a freely hanging pipe to one side or the other.

fot. Viktor Lantos | greenaqua.hu

Aquarium**Size**
and glass pipes

Choosing glass pipes based on the tank size

Obviously, the size of glass pipes will be dictated by the hoses used in the filter. Check whether the inflow and outflow diameter are the same. Outflow and inflow pipes are usually sold separately, but sets of the same diameter are available. They are also usually cheaper. On a medium sized tank, for example 60cm long, using a classic 13mm outflow can make the pipe reach even 1/3 of the tank's length. In that case it is advisable to use a mini outflow of the same diameter. Of course, in the case of inflow pipes we need to pay attention to their length.

Glass pipe maintenance

Glass pipes will look fantastic if properly maintained. Everyday maintenance includes clearing the inflow of leaves and debris that got sucked. You can use a toothbrush or pincers for that purpose. Cleaning glass pipes of algae is best done during the weekly water change. Take them off and place in a bucket of water for 30 minutes (water should only cover the pipes) and add three capfuls of bleach or dedicated aquarium glassware cleaner. The pipes need to be thoroughly rinsed and cleaned inside with a wire brush and a paper towel on the outside. If costs are not an issue, you can also have a second set of glass pipes. This will shorten maintenance time and protect you against possible filter inactivity caused by a broken glass pipe.

Step by step

Choosing The Tank

Step by Step

Choosing **The** Tank

Choosing the tank is the first step towards your own aquatic garden. Any mistake made at this stage will require additional and unnecessary expenses. We should be looking at this from the natural aquarium perspective, where the tank is a part of the interior, a decoration to please the eye.

Dimensions

The tank's size should be chosen carefully and thoughtfully. Large tanks may be beautiful, but they also need more money to start and maintain. A large tank is also more time consuming. You might want to ask yourself the question: what do you value more? The time spent sitting in front of the tank, or the time you spend running around with buckets of water?

When choosing the tank's size, it is important to consider popular lighting solutions and choose the tank's length accordingly. The most commonly encountered aquarium lamps are based on T5 fluorescent tubes and are dedicated to tanks that are 60, 90, 120 and 150cm long. It stems from the standardized tube lengths.

The width and height of a tank should also be chosen properly. A tank that is too tall or too wide is not comfortable to work with. Tall tanks also increase the initial costs, because they require the use of thicker panes of glass. Higher tanks may need to be lit with HQI lights, which are more expensive to buy and run.

It is important to leave the right amount of free space by the tank's sides, so you can route hoses and wires comfortably, and clean them with ease.

A smaller tank will also require less decoration materials, less substrate, fertilizers and filters. Many people buy large tanks and face the problems of providing adequate lighting, proper filtration, good quality substrate and planting the correct number of plants (which is crucial when you start the tank). Many aquarists, having played with a small tank, plunge into tanks that are 300, 450 or 600 liters. They don't take the above problems into consideration.

You can order a tank made to your order, but we would advise for choosing a standard one, as they tend to be cheaper.

We recommend tanks in the following sizes:

- 30x30x30cm
- 36x22x26cm
- 60x30x36cm
- 90x45x45cm
- 120x60x50cm

Before you choose a tank, it is worth looking up some layouts in the Internet and remembering the sizes of the tanks that you liked most. Are those layouts spacious and open, in Iwagumi style, or are those dense forests, with plants overflowing the top of the tank? Such a short analysis may show that we prefer panoramic tanks, with the front pane ratio 1:2.5-1:4 (ratio of height to length), and this criterion should be used in further search. The most universal tanks have a ratio of 1:2 (for example: 90x45x45), because they are visually pleasing and offer broad design possibilities. You can use them for a wide Iwagumi, but also for a thick jungle, or a Mizube with driftwood poking out. It may be less suited to the twin island type of layout, because the islands need to be squeezed together to minimize the space between them. It may also be a good idea to broaden a standard tank by 5, 10 or even 15cm, which will give us more design opportunities.

If you designed at least several layouts, you undoubtedly had this thought: "oh, if only I had 5cm more, I could make the beach broader or enlarge the bunch of stems in the back". Sounds familiar? We bet it does. Of course, don't take this to the extreme, the standard sizes given above have been proven to work for many years and many winning works were designed in such shaped tanks.

Glass

There are two types of glass commonly used these days. The cheapest and most commonly used are the aquariums made of float glass. You can find them in large chain stores and small local pet shops. They're available in sets or separately. Float glass can be recognized by the green tint.

The second contender is Pilkington's OptiWhite glass. OptiWhite is a type of glass with low iron content, which boosts light permeability and looks almost per-

fectly colorless. What is more, this type of glass offers better transparency and better color rendition. These features make it the perfect choice for aquariums, where transparency and color clarity are required. It has a faint blue tint, visible only on the sides.
There are more low-iron glass producers. Guardian offers Extra Clear, Extra Clear Plus and Ultra Clear glass, which give you 100% accurate color rendition. A less know Japanese producer, AGC, offers Planibel Clearvision glass, which is almost perfectly colorless.

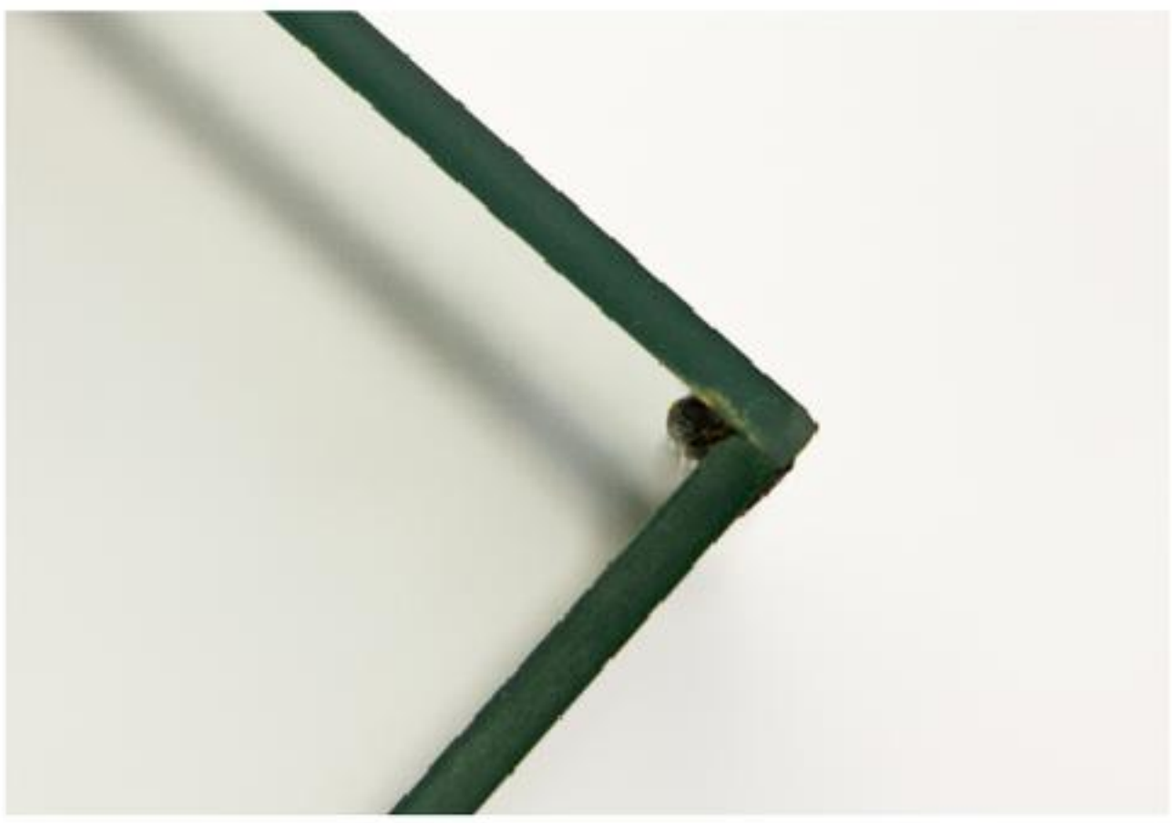
Braces

Cheap tanks, especially larger ones, tend to gave long reinforcing braces glued to the longer walls several millimeters from the top. Sometimes, in long and tall tanks, those braces are additionally joined with a cross beam in one or two places. This is supposed to make the aquariums safer and more resilient to snapping under pressure. Unfortunately, every now and then, you can read in the forums that someone's braced aquarium broke. That's because some producers started to use thinner panes in order to cut costs.
Braces have more detrimental effects. One of them is the visual one. If the aquarium is supposed to be open top, without the hood, braces ruin the aesthetics. Limestone collecting on the braces isn't easy to remove. The braces impede cleaning and placing large objects in the tank.
All in all, it is more advisable to pick a more expensive tank, made of thicker glass and therefore without braces. Even if the current tank has a canopy, it may as well be placed in a different spot sometime in the future and be lit and presented differently.

Bezel and finish

A well processed pane of glass used for high quality aquariums, has milled and polished edges. This kind of finish is absent from mass produced aquariums. The process is expensive and it is the main reason OptiWhite tanks are so expensive, when compared to ordinary float glass tanks, where the edges are only roughly filed so they are safe.
Bonding
The kind of the bond, the way it was made, influences the tank's aesthetics. It is yet another feature of a quality tank. The bond

shouldn't be too thin or too thick. The thickness should be equal along the entire length. The bond should not protrude outside or inside. In Poland it is fashionable to use transparent silicone sealant. When you receive the ordered tank, however, you might find the bond to be slightly milky, matte, not perfectly colorless and crystal clear – look through the producer's specification. The bond should have no visible defects, such as air bubbles or tiny impu-



rities, as they lead to the loss of durability and safety. In marine tanks, the black sealant is commonly chosen.

Pane fit

The production of a perfect aquarium requires extraordinary skill and experience. The quality of pane fit is easy to assess during the first visual inspection. Just by touching you can tell whether the panes are on the same level. The second thing to check is whether one of the panes is not pushed too far inside. To check that, slide your finger along the bonding on the outside of the aquarium.

Mixing different glass types

When choosing a tank with mixed types of glass, bear in mind some drawbacks of this design. For example, if OptiWhite was used only for the front pane and transparent sealant was used, the different tint of cheaper glass will be visible. The only advantage this solution offers is the slight reduction of cost and better color rendition, but only in one of the walls. However, if the front pane gets scratched, and sooner or later they all do, you won't be able to rotate the tank by 180 degrees.

Summary

A tank is something you buy for many years. It is advisable to choose properly the size and the finish, according to your needs and abilities. If you buy from unpopular vendor, lured by the seller's promises, you might find that a single irritating detail will keep infuriating you for months to come. Compromise isn't worth it. It is better to choose a smaller tank, but buy better quality equipment, better substrate and fertilizers, so the aquarium spoils you with its beauty as a whole.

Technical details

Aquarium
60x40x40cm Optiwhite 8mm

Lighting
Hagen GLO 2x24W T5,
Aqua Medic Reef White 10K
Aqua Medic Plant Pro 6500K

Filtration
Eheim 2213

Substrate
ADA Power Sand Special S
ADA Amazonia New

Fertilisation
Tropica Plant Nutrition Liquid+

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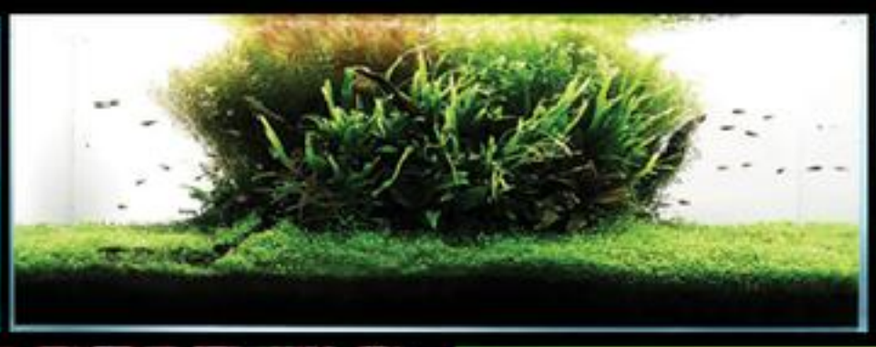


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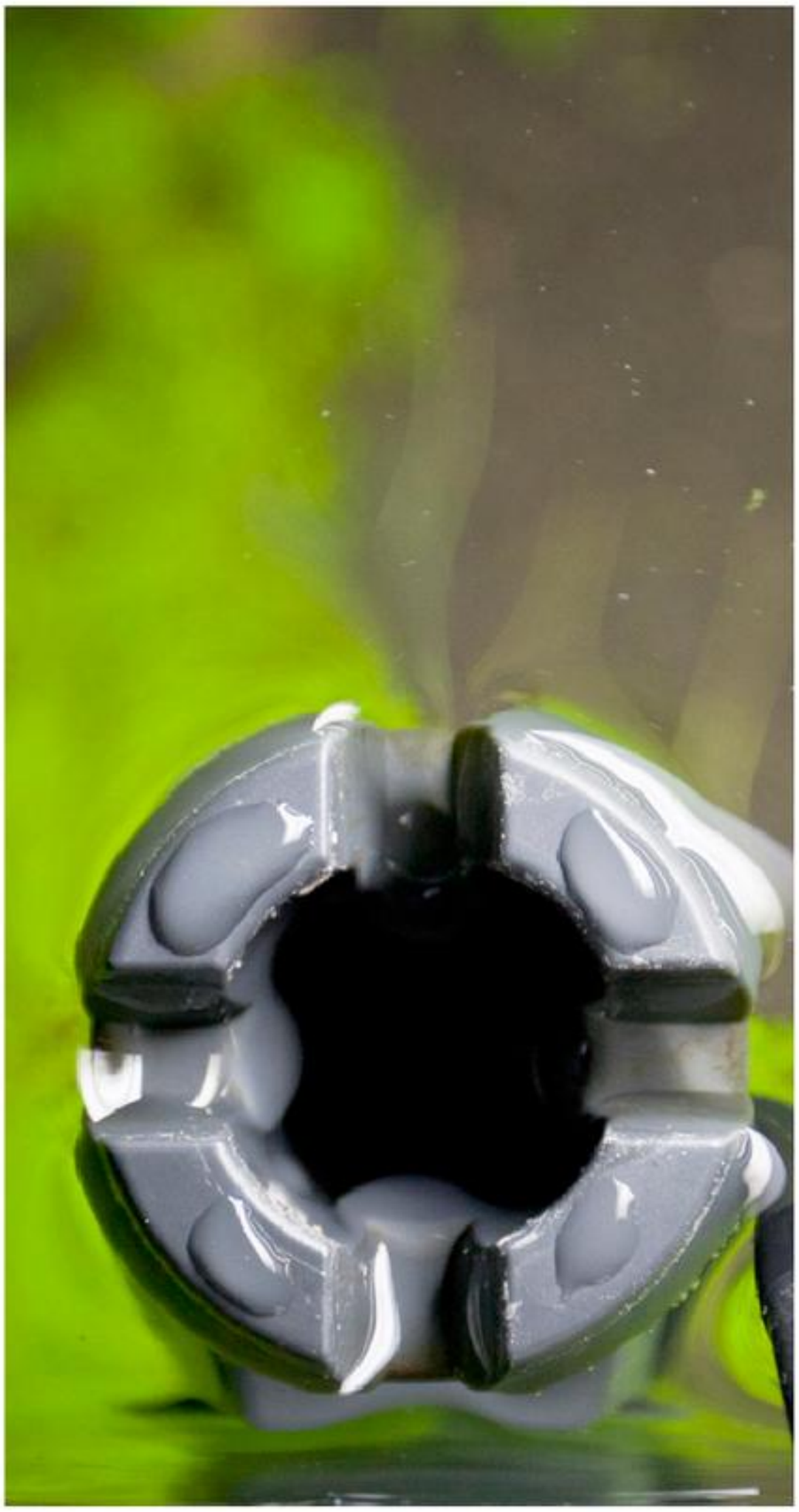
Test and reviews

Eheim**Skim 350**



Have you had enough with the protein film that covers water surface in your tank? Do you hate netting leaves out after a big trim? Eheim Skim350 is just for you!

The appliance is dedicated to aquariums up to 350 liters, maximum output is rated at 300l/h, which can be adjusted as necessary. In our 243l test tank, the skimmer worked with minimum output. The unit is very mobile and easy to use. Energy consumption is no higher than 5W. The bundle includes the unit, suction cups and user's manual in several language versions. If the skimmer is bought from a Polish supplier, the manual will feature the distributor's stamp. The skimmer's design is very simple and anyone could jump start it without consulting the manual. The unit has a head which floats freely on the surface. Slits in the float enable water suction from the four sides. Surface scum and pollution gather on a small sponge, which is relatively easy to access. The sponge needs to be rinsed every few days, because any leaves that get sucked in might reduce the skimmer's throughput.

A comparison of skimmers

The most frequently used skimmers are Fluvals or Eheim's mounted on the inflow tube of a canister filter. They have several basic flaws:
The filter sucked air in if water level dropped, and any organic material that got inside had to decompose inside the filter, thus increasing the level of unwanted substances in the water.
They also didn't look very attractive, especially given their size.
Skimmers of that type weren't easy to install and take down, as they required the filter to be shut down. The disassembly partially had to take place in the tank.
Eheim's Skim 350 has none of those flaws.

A comparison of Skim350 and ADA's Vuppa-I

The two units are similarly sized. The Skim350's plastic casing isn't as pretty as ADA's beautiful metal body, but that's the only field in which Eheim is inferior. Thanks to the floating head, Skim350 is immune to changing water level (for example due to evaporation), which isn't the case with Vuppa-I. The latter requires precise regulation in order to prevent sucking air in. Skim350 collects water surface layer from all 4 directions, whereas Vuppa-I does it only at the front. Skim350's throughput can be adjusted according to your needs, while Vuppa-I doesn't give you any choice. During cleaning, Eheim's unit can be disassembled and put together with just one hand. Its Japanese counterpart is more difficult to maintain, as its two metal sieves have a slit for the power cord and need to be precisely aligned in order to assemble the unit. As it is the case with all appliances that require 110V, Vuppa-I requires an additional transformer in order to work in Poland, where the standard mains voltage is 230-240V. There were some accounts in the Internet about Skim350 sucking in shrimp and otocinclus but we observed no such incidents. Perhaps they meant small cherry shrimp, but Amano shrimp are safe. There is also one final argument to the Skim350's advantage: the price.

Summary

To put it simply: design-wise Vuppa-I wins. Eheim Skim350 wins in terms of functionality.

Technical details

- Power consumption 5W
- Max aquarium volume 350l
- Power consumption: 300l/h
- Fresh and saltwater aquariums
- Float's effective range 3cm
- Dimensions 4x5,4x13,2cm

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How do a
FinalShot

How do a

Final**Shot**

Norbert**Sabat**

The Internet is a huge medium, which lets us present aquariums to a broad audience through websites, portals and forums, as well as social networks. The basic means of communication in that medium is digital photography, which puts what we want to show to the World in a definite form. We define this form and it's up to us to determine the audience's impressions.

These days almost everyone has a smartphone equipped with a 2-5MPix or even bigger camera. Anyone can take a photo anywhere and whenever they want. It's worth to take a while a think how this photo should be taken. As we want to focus on the professional take on photography, we're rejecting right away everything phones have to offer. We'll focus on the professional equipment and general aquarium photography.

To take a good photo of an aquarium all you need is good light, a tripod, a camera, some extra gadgets and a touch of luck.
It is worth to remember that pressing the trigger in a camera is only one of the actions that contribute to your success, and it's not even the most important one. Before we start shooting, we need to prepare the tank and its surroundings.

We have to remember that a camera "sees" the object differently than a human eye. What we find bright and contrasting, the machine can see as dark and grey. We need to force the camera to work the way we want, not the other way around. The majority of modern cameras offer such features as thematic mode, for example a portrait or landscape mode, sports, the automatic mode and so on. The automatic mode takes the burden of dealing with presets such as ISO (sensitivity), aperture (F), white balance (WB) or shutter speed, but it also takes the control from you. I personally think that this mode should be avoided, and the manual or aperture mode (A) should be used instead. By choosing one of the above modes we retain full control over what our camera does, but they require some skill and only after taking a couple hundred photos one can begin to understand the gist of it.

fot. Viktor Lantos | greenaqua.hu

What we should start with is picking the right camera. As trivial as it sounds, the more expensive the better, but we don't want our readers to mistakenly think that it takes a camera worth four thousands Euro to take a photo on a contest-level.

For many years, we've been able to find a great number of different compact and DSLR cameras designed for various target groups (amateurs, professionals). We don't want to point to any models, because new products get released every few months. The producers are eager to call them breakthrough technology. It is mostly untrue, but many young photographers get fooled by marketing tricks.

Firstly, we need to be aware that despite comparable sensor resolutions, the actual size and quality of sensors differ considerably. In the case of compact cameras, which are the simplest to use pocket units, sometimes called idiot-cameras, the standard sensor size is 1/2.3" or 6.16x4.62mm, which gives you the area of 28.5mm2. In DSLR cameras that use the APSc format, such as Nikon D7000, D90, D300, Canon 600D, 60D, 7D) the standard sensor size is 22.7x15.1mm, which gives you the area of 342.8mm2. As you can see, a compact and a DSLR camera both can feature 16-18Mpix, but in the former the density of pixels is much higher. For the sake of comparison, let's have a look at full frame cameras, where the sensor's size is 36x24mm, which gives you the area of 864mm2, so it's thirty times the size of a compact camera's sensor. This class of cameras is represented by Canon 5D, 1D and Nikons D700, D800 and D3. The density of pixels in a sensor poses a challenge to the compact camera's optics. The result is poorer quality pictures, when compared to those taken with a DSLR. Inferior quality results in narrower tonal range (the difference between the brightest and the darkest place in the picture), more noise (especially in dark areas), color degradation and weaker sharpness (details get blurred).

Of course, the above is a generalized statement and may not apply to all compact cameras. Technological advancement removed some compact cameras' weaknesses, but so far, the DSLR still offers superior capabilities and quality. When you're deciding on which camera to buy, ask around your friends and see what equipment they use. In a given segment the differences between leading producers (Canon, Nikon) are minute, but the equipment such as lenses and flash lamps can be shared (it is cheaper to borrow a high quality lens from a friend just for the photo shoot than buy a new one specifically for this purpose).

When taking photos of a tank,

fot. Viktor Lantos | greenaqua.hu

many of the camera's features are not needed, and what may be decisive to a camera's quality may well be unnecessary when photographing an aquarium. I mean such features as the camera's body's quality (the plastic, the rubber, alloy body, sealing, waterproofing, etc.), optical stabilization (not necessary since we'll be shooting from a tripod), the speed and reliability of the AF system (adjusting the focus to a point is not necessary, we may as well use manual focus), or whether or not we'll be using the camera for other purposes. You need to ask yourself if shooting aquarium is all you need the camera for, or will you be using it for other purposes. Generally speaking, the majority of cameras that you use outdoors can be used for aquarium photography. The quality of pictures is a different thing when shooting with natural or artificial light. It's good if the camera features a hot shoe mount (for the external flash) or some other socket that enables external flash support. The camera should also feature a tripod mount (threaded hole on the bottom) and self-timer (ideally with cable release as an option).

The camera itself isn't everything. It would be good to have something to put it on, ideally a stand. As it is the case with the camera, we also have broad spectrum of choice here, both in terms of quality and price. We can have a product made of aluminum, carbon fiber, with a ball head, 3D, video, with various plates, clutches, bearings, etc. If the stand is going to be used outside, it is worth going for a high end model (such as Manfrotto or Velbon), that will last years and we'll be sure that it won't fail under any conditions. If that's not the case, buying the entire set (legs+head) doesn't make any sense. The tripod is not a vital part of the set, so even the most basic one will do, as long as it meets the following three criteria: the camera can be leveled on the head, the tripod has proper height required to work comfortably (at least 150-160cm, but the aquarium is usually placed on a cabinet about 70-80cm high, so the tripod will remain folded), and the tripod is able to support the kit's (camera+lens) weight. Choosing the head is an individual thing, everyone has their own preferences. Cheap kits usually have a head bundled, so we have no choice. If you don't want to spend on the tripod you can as well use some chairs or a pile of books to support the camera. Such a construction will serve its purpose, but making the camera level or at an angle towards the aquarium's front may pose a challenge.

This covers the basic equipment. In the next issue we'll discuss using it.

In focus

The**Colombian**Tetra

Marcin Wnuk | Canon 40D | EF-S 17-55 F2.8 IS USM | 21mm | F3.2 | 1/100s | ISO 400 | No extra light

The Colombian tetra

Hyphessobrycon columbianus

A fish that has silver colored scales and red fins. From the tail's base and towards the head runs a blue, glittery stripe.
A peaceful and easy to keep fish, best kept in a group of at least 8. The aquarium should be densely planted. In nature, it is usually found in the Colombian river of Acanti (South America).

Grows up to 6-7cm. Recommended temperature is 24C to 28C, pH 6.0-7.5. General hardness should fall between 5 and 15 degrees. The tank shouldn't be smaller than 100 liters. The Colombian tetra will accept all types of food.

In focus

The**Colombian**Tetra

Marcin Wnuk | Canon 40D | EF-S 17-55 F2.8 IS USM | 55mm | F2.8 | 1/100s | ISO 400 | No extra light

JapanGarden

Canon 5D mk II | EF 24-70L 2.8 | f4, 40mm, 1/50s, ISO 400

Terra**Natural** **Black**Medium

ELOS Terra gives you for the first time, the ability to recreate without problems, the typical conditions normally found in the natural tropical ground.

ELOS Terra is a pure, natural product especially treated for aquaristic use.
It is hand-selected, sieved and sterilised using a unique process that preserves its natural characteristics. Because of its natural consistency and the gentle processing, the nutrients have been preserved completely, so that aquarium plants will immediately find the optimal conditions in the ground which are necessary to encourage the formation of roots, and growth of the plants.
In addition, ELOS Terra modifies the water conditions. It absorbs floating particles and cloudiness from the water, decreases excess KH and total hardness, and neutralises the ph level.
The use of RO or ion exhange resin will in general no longer be necessary!

ELOS Terra is available in two different grain sizes and therefore is useful for small, medium-sized, and large aquariums.

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