Green Side Up: Reveries of Repotting

By judywhite

Repotting: (ri pot' ting) The most dreaded word to a beginning orchidist's ears. Very thought apt to cause severe sweating, trembling hands and major heart palpitations; widespread fear sweeping hobby population in epidemic proportions. Many valiant efforts made to dispel panic; more needed. AOS Editor says make this disheartening topic Part 4 in AOS Bulletin Beginner's Series....

Yikes-Help-Me-Get-This-Thing-Out-Of-This-And-Into-That is the plaintive cry heard from just about every new orchid grower. Repotting seems so scary and so confusing probably because we as beginning growers don't quite trust that orchids aren't as fragile as we tend to think. It's one thing to buy an orchid and have it sit around on a windowsill getting watered every week and flowering every once in a while if we're lucky. It's quite another thing to contemplate actually dumping the thing out of its seemingly secure home and familiar surroundings and exposing its vulnerable-looking roots to vicious scissors and then sticking it in something else strange and new. Handling an orchid in that rough-and-tumble way for the first few times is much like holding a newborn infant and trying not to break the baby. But, by and large, both babies and orchids are fairly resilient little things. Just try not to drop them on the floor..

In an effort to reduce the basics of repotting down to its very simplest, I went around asking various orchid growers what they thought was the most essential bit of repotting advice. My favorite came from Christopher Bailes, eminent English horticulturist who edited The Orchid Review and grew orchids for both Kew Gardens and the very famous Eric Young Orchid Foundation, hefty credentials indeed. His advice? "Green side up." So remember that when you start feeling overwhelmed by repotting. In the end, it's always just green side up.

Why Repot?

If repotting looks and sounds so scary, why on earth do we do it? There are two reasons. Reason Number One: An orchid needs to be repotted if it gets too big for its pot. Some orchids make pretty graphic examples of being too big for the pot by actually crawling out of it and growing over the sides. Cattleyas are great ones for trying to escape in this manner. Orchids will usually have some roots that stick out of the potting mix and wave nonchalantly in the air. This is normal behavior and not usually a clue for repotting. But when the growths start hanging over the sides or new roots can't find their way into the pot at all, take a deep breath of air, because that orchid needs repotting soon. If there is no potting medium around the roots allowing absorption of water and nutrients, new growths will be affected, and flowering can be hurt as well.

Reason Number Two for repotting an orchid is that its potting mix has decomposed. Most potting mixes deteriorate with time if they're made from natural organic materials; that's the way the world works. Why do we care if the mix has deteriorated, particularly if the pot still seems a reasonable size for the size of the plant?

The appearance of new roots is your signal of the plant's readiness for repotting

A very decomposed potting material means that there no longer are large bits of recognizable materials inside that pot providing good drainage and excellent air movement. Instead, the pot is full of fine, closely packed material that closes up the air spaces, creating an environment without decent air flow. No air means (egad) the dreaded Root Rot. And if you remember back to other parts of this series, roots are the key to orchid growing.

When roots die, the plant is doomed, too. Closely packed, decomposed pieces of the medium also mean that water has a real tough time passing through, since fine bits absorb water much more readily than do larger ones. And more water retention in an environment where there is less air flow means (you guessed it) more Root Rot. There's no way around a mushy mix. It's time — actually past time if it's mushy — to repot.

Recognizing Deterioration

How do you know when a mix is deteriorated enough for repotting? One way is by marking the time between repotting, because after using your mix for a few years, you get to know its pattern of breakdown under your own conditions and watering techniques. Beginners don't usually have the luxury of knowing when the last time their plant was repotted, because this is often the first time you're doing it. Brush away the top inch of the mix and take a look at the materials underneath for signs of decomposition; if you can stick your finger in easily up to the second joint, the orchid definitely needs repotting. If you're still not sure, gently knock the plant out of the pot and look at the roots (see "Taking a Look at the Roots").

Which medium the orchid is potted in determines how long it will remain viable. Most people use some sort of bark mix. Usually a mix of medium-sized pieces will be okay for about two years; finer pieces may last half as long. Tree fern may last two and a half to three years; sphagnum moss generally gets mushy after a year. Using a mix that combines both organic and inorganic materials helps lengthen the time before repotting becomes necessary, since the bits that do not deteriorate help keep the mix open and aerated. Decomposition is one reason that some growers prefer to use a mix that does not deteriorate at all, such as expanded shale or lava rock or charcoal or rockwool.

Some types of orchids particularly resent having their roots disturbed by the ordeal of transplanting, and one of the ways to put off repotting is to eliminate one of the two reasons we repot in the first place. If the mix doesn't deteriorate, then repotting is only necessary when the plant outgrows the pot. Some of the plants that fall into this "repotting resentment" category include dendrobiums, angraecums, miltonias, oncidiums, odontoglos-sums and coelogynes.

Timing, Timing, Timing

But just because you discover that the mix is deteriorated doesn't mean you immediately grab that pot and dash to the sink to get your precious plant out of there. This is where most beginners make the biggest mistakes with repotting. Repotting gets its reputation for being scary because more people repot at the wrong times than anything else they might do wrong with repotting, and the orchids are quick to show their resentment of bad timing. TIMING IS THE MOST CRUCIAL PART OF GOOD REPOTTING. If you learn when to spot the right time to repot each orchid, you can make all sorts of other mistakes and the orchid will be much more forgiving; repot at the wrong time and you may not have to do anything else wrong to have the plant sulk and whimper and go down for the count. So get ready for the next paragraph, for it is the most important thing to know about repotting.

In general, the absolute best time to repot an orchid is when you first see new growths and new roots just beginning to form, before those new roots reach even half an inch long. For most plants, this occurs right after flowering. This means the vast majority of all potting should take place between February and June.

Orchids go through cycles of growth. New growths and roots appear and elongate, followed by a rest period after the leading growth is mature. Then flower spikes and sheaths develop, giving rise to buds and finally flowers. Most of the time in a hobby collection, those flowers never fulfill their destiny of setting seed, and they fall off and the basic cycle begins again. Any and every time you repot, you disturb the growth of your orchid. Catching the plant just as it begins the cycle, with its active growth obvious by the new little roots and growths starting, and repotting while those new roots are still under half an inch long, will disturb the plant very minimally and make you a master of repotting. Catching the plant at the absolute beginning of active plant growth means the new roots will have the longest possible time to grow before the next repotting disturbance, and they'll be growing into nice, fresh mix as well. At its most basic, you want those new roots well established before the plant enters the vegetative dormancy period, when the growth rate slows.

Most orchids begin their new growth in the spring, so keep a close watch on the new growths (which are new leaves on orchids like phalaenopsis) and evidence of new roots. That's when to repot. Most new growth will start somewhere between February and June. Some plants will baffle you by starting their new roots while in bud or still in flower, but wait until the flowering is over if the plant looks healthy and repot afterwards, because repotting during flowering will often cause enough trauma to make the flowers drop off. If the plant has a sheath on it, but no buds are evident inside, or if the spike is still very short and budless, and the plant otherwise indicates it needs repotting, feel free to go ahead.

Another reason to delay repotting has to do with the newly acquired plant. Generally, try to give new plants at least a month to acclimate to your growing conditions before repotting them. This gives them a chance to recover a bit from the trauma of a new environment without the added trauma that repotting will inevitably bring.

A plant prime for repotting, in active growth while roots are still short.

What if a Plant Needs Repotting and the Timing is Bad?

Sometimes, of course, you will find an orchid that desperately needs repotting because the mix is so deteriorated or the growths are badly overgrown over the edge. Waiting until the proper cycle to repot these orchids may mean that root rot or lack of water could hurt the plant more than letting it stay in that condition. Actually, most people probably let the plant stay too long before repotting, waiting two cycles instead of repotting at proper times before the mix gets stale. As a general rule, if the plant ideally needs repotting every two years, it's usually better to repot every year (at the proper time) than to wait three years between repotting. If, for whatever reason, a plant's roots are rotten and if it obviously needs repotting during an off season, then pot it into a very small pot after cleaning the roots and wait until the regular repotting time to repot as usual. But be as gentle as possible with plants potted out of time, watching them carefully afterwards and spending extra time on their needs.

For overgrown plants with a mix that is still acceptable, a procedure sometimes called "dropping on" is very useful. Dropping on means you remove the plant from its overgrown pot and drop it carefully, mix and all, into a larger pot, then add fresh mix to fill up the gaps. Dropping on disturbs the plant very little and so can be done just about anytime necessary. It is an acceptable way of repotting even at proper times if the mix is still good. Actually, some orchids, particularly terrestrials such as cymbidiums that like their mix to be somewhat decayed, really prefer to be dropped on, with a full repotting necessary only every other time or so.

Another useful trick for overgrown plants, particularly cattleyas and others that climb out over the side of the pot, is to take another pot, usually of the same height, and cut away a section of the rim (easiest to use a plastic pot for this). That new pot is then slipped under the new growths and roots hanging over the side of the other pot, and new mix is added all around. The two pots are fastened together by a large band of tape around both rims to prevent the new pot from moving. The plant can be allowed to establish itself in the new pot without too much disturbance, and when the proper time arrives, the plant can either be repotted into an entirely new, bigger pot, or can be easily divided, with a natural break at the point between the two pots.

Other Ramifications of Repotting

Several more thoughts should be uppermost in your mind as you go to repot. First of all, because of all the handling and cutting that goes on during the procedure, and because most people usually repot more than one plant at a time, the question of passing disease and pests between plants has to be carefully considered. Some orchid plants will be infested with bugs, rot, disease and quite possibly viruses as well, and which plants these are will probably not be terribly apparent to you. The best thing to do is simply assume that every plant is infested and/or virused. Then you will be inordinately careful between each plant, trying not to infect one from the other.

How do you keep from spreading infection? First of all, use plastic disposable gloves when repotting, preferably changing them between plants or at least washing them. The temptation is simply to use bare hands, perhaps washing them in between plants. But, frankly, most of us get sloppy and don't even think of washing, so gloves are a great precaution. During repotting most of us use our fingers to tear away rotten roots or break off an old pseudobulb, and even with washing, some pieces of the plant may remain under your fingernails, ready to infect the next plant. So gloves eliminate many variables. Gloves also protect your hands from anything that may be in the medium such as possible fungi in sphagnum moss that can enter your body through small cuts.

The other great source of infection between plants is in the instruments you use to cut away rotted parts or to divide the plant. There is good advice about sterilizing scissors or knives between repottings by flaming them with a torch or soaking them in trisodium phosphate solution. For the home hobbyist, that's a lot of trouble. Much easier is simply to buy packs of single-edged razor blades, usually found in paint stores, and use one for each plant, discarding them after use. They can be later cleaned and baked in the oven at 375 degrees F for an hour to sterilize them. If you keep several packs on hand, you won't be tempted to reuse old ones waiting to be sterilized. If you do use scissors or knives, realize that dipping them in chlorine or alcohol WILL NOT sterilize them enough to kill viruses. But whatever you use, make sure you do not ever use a cutting instrument on one plant and then reuse it on another without sterilizing it first.

Even if your plants are not virused, this is always excellent procedure to follow. But if you do have a plant that you really suspect, or that is full of pests, repot that one last. This will help keep down the possibility of transfer even more.

Nuts and Bolts of Repotting

So now that you understand the why and when of repotting, let's move on to the how. It helps incredibly to get yourself all set up before actually taking the plant out of the pot, so you don't find yourself wandering around looking for equipment and potting materials and pots while carrying an uprooted plant in one hand and dropping bits of bark everywhere you go (I speak from experience, you see). A spot near a sink and a trash basket is ideal, for running water and a place to throw stuff are indeed handy. If there's not counter space near the sink, make some by bringing a table near, or else cut a piece of board that can be placed across the sink. Put layers of newspaper down on the counter or board; if you 're doing more than a couple of pots at a time, use lots of newspaper layers. That way, in between each repotting, you can simply bundle up some of the newspaper and neatly dispose of the most recent mess, leaving a clean layer on which to proceed. Also have on hand new or sterile single-edged razor blades, a box of disposable plastic gloves, knife, plant la-

bels, a marking pen or pencil, various sizes of clean pots (and if they're clay, have them soaking in water for at least a few hours beforehand), plant stakes and ties, rhizome clips and some way to clean the knife between plants (trisodium phosphate solution or flame — NOT just a bleach dip). Also handy is a toothbrush. On the floor should be a bucket of potting mix soaking in warm water, preferably overnight. Remember that potting materials should always be soaked in water to help them take up water initially, to remove debris and fine dust, and give a moist environment for newly potted plants rather than drawing water away from them by a dry mix.

I know this all sounds so exhausting already that it' s no wonder most people tend to put off repotting until far too late. But if you get in the habit of having potting supplies ready, in one place, and a bucket of mix soaking the night before, you'll find that this bit of forethought and initial setup will make the job infinitely easier.

Another way to plan ahead is to soak the plant and pot in a bucket of water for a few minutes. This makes it much easier to convince the plant to leave the pot. Roots will be softer and more pliable (and thus less apt to break) and will release somewhat their death grip on the inside of the pot.

Once the plant has soaked, it's time to take it out of the pot. Before you go any further, remove the plant label and put it somewhere where you know you won't lose it, preferably not on the work area where it can too easily get wrapped up with debris and thrown away. (I've done that, too.)

Some blessed plants slip easily out by holding one hand over the top of the mix and simply turning the pot upside down, allowing the plant to slide gently onto the newspaper layers. If the plant resists slipping out, first try tapping all around the sides and on the bottom of the pot; gently squeezing a plastic pot in various places can help loosen the root mass as well. If the plant really clings to the inside of a plastic pot, take a sharp (sterile) knife and run it around the inside wall of the pot to separate the root system from the plastic. Roots can really cling to a clay pot, and you may ultimately have to break the pot by turning it on its side and tapping gently with a hammer in various spots.

Once the plant is out, if it is being repotted because the mix has deteriorated rather than because the plant has overgrown the pot, you can reuse that pot for that plant, but otherwise set the used pot well away and certainly don't use it for any other plant until it has been cleaned and sterilized by overnight soaking in a 10% bleach solution.

Taking a Look at the Roots

Now is an excellent time to pause and take a good look at the potting material and learn how well it has responded to your watering techniques and environment. What shape is it in? Has it decomposed more than you would have expected, or less? Even more importantly, take a look at the roots. Live roots are usually white, glistening, sometimes with nice green tips. They are also firm to the touch. Dead roots are gray or brown or black, soft, mushy or dry to the touch. Decaying roots can be something in between the two. If the center portion of the rootball is dead and roots at the edge of the pot seem fine, then too much water is staying in the mix. Either the potting material itself holds too much water, or else you are watering too often. If you don't think you can change your watering techniques, then fine-tune the new mix and add something extra to it, such as charcoal, perlite, tree fern or stone, to let water drain more freely. If the old roots seem shriveled, then

Dead roots are often brown, dried and shriveled. The velamen (spongy outer layer) can Be pulled away revealing the root's now woody core.

they may not be getting enough water; you might add sphagnum moss or finer bark to keep more water around.

Once you've gathered useful information by looking at the mix and the roots, then clean away all of the old potting material, but try not to break any good roots. The stuff in the center will be the most decayed part, so be diligent in removing this. Shake off the mix, pull gently, and run the plant under tepid water. Make sure there is something over the sink hole to catch bits of bark or you will see the Rotor Rooter man far more than you will find pleasant.

Cut away all dead roots up to the base of the plant. If you're not sure if the roots are dead, hold them one at a time and pull gently; if the outer portion slips off easily and a wiry core thread is left, the root is dead. Partially decayed roots should also be cut away to a place where fresh tissue starts. If the roots are dead, soft and mushy, suspect a root rotting fungus in the mix and after cutting away rotted parts, treat what's left with a fungicide such as Benlate (read the label directions for application). Obviously, try to keep as much of the good root system as you possibly can. If some of the roots are extremely long, and will make getting them in a proper sized pot too difficult, they may have to be trimmed.

While you have the instrument of destruction still in your hand, trim off dead or yellowed leaves, old flower spikes, old sheaths and dried or rotten pseudobulbs. If an otherwise alive-looking pseudobulb has no leaf, you may want to leave it on, particularly if there are good roots still attached, for it still stores some reserves of food for the plant. Wherever you have removed rotted roots, dust with a fungicide to help keep any residual rot from spreading.

Take another look at the plant itself and search for insects such as scale or mealybugs, which can hide on roots, under sheaths on pseudobulbs and in the crown of the plant. Using a toothbrush and tepid water, very gently clean the plant. Be gentle because new growths in particular will be very soft and vulnerable; even rubbing a new leaf gently can bruise it.

Pot Sizes

Next, choose your pot. If it's a plant that likes to dry out quite a bit, perhaps a cattleya or dendrobium, a clay pot might work best; plants that like to be wetter, such as phal-aenopsis, cymbidiums, paphiopedilums and angraecums, might do better with a plastic pot. (Remember, if you fine-tune your potting materials, you can keep a mix wetter or drier that way also.) Pot size is anotherplace where beginners often go wrong. Most people overpot their orchids. Orchids, however, prefer being in small pots, so if you have to make a mistake on the pot size, always go smaller than larger. A smaller pot will make the mix dry out sooner, while a larger pot will hold water much longer. If you recall a previous article in this series, you will remember that more orchids are killed by overwatering than anything else. So think small when it comes to pots.

As a general rule, you want to choose a pot that will have room for two years of growth. If the plant has a rhizome (cattleyas for instance), then you want a pot that will allow for two new growths, since they usually make one new growth a year. How much room does that mean? It's easy to figure by looking at the space between previous growths. Generally you'll want a pot two inches wider than the previous one, larger if the plant is a large one. If a plant grows upward, as a phalaenopsis does, then you want a pot that will hold the roots and leave half an inch to three-fourths of an inch around the outside of the rootball for future growth. If you want to repot every year, especially for younger plants, then adjust the pot size down accordingly for just one year's growth.

If you like to put something at the bottom of the pot for extra drainage, such as Styrofoam or stones or crockery, do so now. Stir up the mix in the bucket of water, too, because it tends to settle.

Left, correct height for a Phalaenopsis in the pot.
Right, a phalaenopsis resting too high in the pot above the mix, whichpromotes dessication of the roots.

Positioning the Plant

Plants with rhizomes such as cattleyas need to be placed in the pot so that the back end touches the wall of the pot, with a space in front of the newest growth for future spread. Orchids that grow upwards, like phalaenopsis and vandas, should be positioned right in the center of the pot.

Position the plant in the pot before you put in any mix so that the rhizome or crown will eventually sit about half an inch below the rim of the pot. Remember, green side up. Don't feel you have to stuff all the aerial roots back into the pot but spread out the roots in the pot as much as possible. Then hold the plant in place with one hand and start adding mix. Tap the pot gently on the work surface as you proceed, so that mix can settle in without huge gaps and can also reach the center. For potting materials such as sphagnum moss or rockwool, which don' t really settle, use your gloved fingers to push the medium around. Just make sure not to pack either one of these too tightly; a loose arrangement will allow in far more air and keep the roots much happier. The rhizome of the plant should not be covered by the mix; it's actually part of the stem rather than a root, so it doesn't get buried. It should lie half in and half out of the mix. The crown of leaves in plants such as phalaenopsis should also not be covered; it should be just on the mix. Positioning it too low, below the mix, will just invite rot; positioning it too far above the mix will cause it to dry out too quickly.

Once the plant is potted, it may need something to keep it from moving around in the pot until it becomes established. If the plant wobbles, the new root tips can be damaged or broken off, expending valuable energy in remaking roots that would otherwise go into strong growths and subsequent flowering. One way to add steadiness is to place stones on top of the mix. Even better is to learn how to stake the plants upright. Any number of plant stakes are available, from wood to wire. One particularly recommended staking material is a bamboo skewer, sold cheaply in Oriental import stores, usually as skewers for a barbecue or shish kabob. They come in packs in different diameters; the 1/8-inch diameter size, 10-12 inches long, works well. These skewers are ideal because they have a pointed tip that can be inserted through the mix and into a bottom layer of Styrofoam, a combination that is great for providing good support. Bamboo chopsticks are also a plant-staking alternative. Whatever you use, insert the stake through the mix, being careful not to skewer any roots, down as far as possible. You may need several stakes on either side of a growth to keep it upright. Stakes should be tied with something that won't damage the growth; stay away from wire if you can, and use a soft materials such as corsage wrapping tape or thread or pieces of old pantyhose.

Another very useful way to keep the plant from wobbling is by using a rhizome clip. These wire clips are attached to one end of the pot rim and lie across the top of the medium, on top of the rhizome, holding it down. Rhizome clips used to be made just for use on clay pots with their thick rims. The clips were too large to use on the rims of plastic pots, but finally rhizome clips for plastic pots are now available also. They are invaluable aids in repotting. Those of you who are good with wire benders can, of course, make your own clips and stakes, but fortunately a wide variety of pre-made things is available. A good trick with rhizome clips is to cut a plastic straw to its length and slip it over. This will protect the growth from any possible abrasion from the clips.

Before you put the plant aside, put the label back into the pot or make a new label immediately if the old one is broken or faded. Plant labels can be made of styrene or vinyl (vinyl lasts longer, although costs more), wood or metal, such as aluminum, which is engraved with a special marker. The plastic types seem to work fine, but make sure you write on them with a waterproof marker. I've tried all sorts of markers only to find that a pencil actually works best. It doesn't wash off and can be erased for changing or adding to names. Also on the label write the month and year so you know when the plant was repotted. Some labels are sold with places to

make records right on them; they can be useful if you're the type who actually keeps good records. I confess I am not, so I use regular plain tags.

Repotting Aftercare

There is a fair amount of disagreement as to whether you should water a plant immediately after repotting. My own opinion echoes that of the growers at the Eric Young Orchid Foundation. Water the plant immediately after repotting. This helps settle the mix and firm it. I also add five or six drops of SuperThrive (a hormonal additive) to the water to help give the plant a good start. But then do not water it thoroughly for several weeks. Instead, give it light misting, perhaps every day Just to stimulate root growth. Plants with root systems that have been badly decayed or damaged won't be able to take up much water through the roots, so they are dependent on what the leaves can gather; light misting helps them immeasurably. The larger pot with more mix will be holding more water than usual anyway, so it's better to keep the plant on the dry side for a while to avoid rot and to allow cut edges to heal. As the roots grow longer, eventually going into the mix, you can begin regular, thorough waterings again. It also may be beneficial to put the plant in a slightly more shaded place for the next week or so, although opinion differs as to whether it's really necessary. In any event, it probably helps to keep the plant out of direct sunlight at first, moving it back in gradually. Also avoid putting a newly repotted plant in a cold, damp place, especially one with poor air movement, or you are condemning it to rot at its most vulnerable time.

Dividing an Orchid

Dividing an orchid is sort of an offshoot of repotting, since it usually occurs at the same time, when the plant will be stressed the least by it. You divide an orchid in order to have more plants or to keep a busy plant to a reasonable size. Usually, however, the biggest and most flowers will be found on a plant that is allowed to keep on growing, being moved to a larger and larger pot with each repotting. A plant like that is often called a "specimen plant," and some of the best of these win cultural awards from the American Orchid Society. So first decide if you want to divide the orchid; it may not be necessary.

If dividing the plant is the goal, there are several tricks that help reduce the trauma to the plant. Some orchids are not really divisible; the ones that grow upright — phalaenopsis is a prime example — can't be cut into pieces unless they have produced an offshoot, or "keiki," that usually grows off the flower spike or sometimes at the base of the original plant. But the orchids with rhizomes are excellent candidates for division. The plant has to be large enough for division, preferably with at least six pseudobulbs or leads so that each resulting piece can have at least three. The piece with the newer and larger growths will bloom before the piece with the old growths.

After unpotting the plant and cleaning off mix and dead roots, look at the plant to see where a natural break may want to occur; this is usually the best place for dividing if it leaves the plant with enough pseudobulbs or leads for each new piece. Continue as usual with repotting. For the back pieces with fewer leaves and roots, you may want to try putting them in a very humid environment for a few weeks to help get them better started. Instead of potting them, I place backbulbs in a clear plastic "sweater box" lined with moist sphagnum moss, leaving the clear plastic top slightly open. When new roots start to appear, I pot up as usual. This, in fact, is a good way to save most orchids that have lost most of their roots.

Even better for the plant is to divide it while the plant is still potted, six months before repotting, usually in the autumn. By this I mean taking a knife and cutting through the rhizome at the proper place, but then doing nothing else, just leaving the plant in the pot while it gets used to the surgery. Sometimes the back part of the plant may even start new growths after this severing. At regular repotting time, the plant can be easily divided, each piece of it stronger than if both repotting and cutting had occurred at the same time.

Summing Up

So there you have it — the who, what, when, where and how of repotting. Always keep in mind that timing is everything: pay attention to what the plant is telling you and then read the roots. Actually, timing isn't everything. The roots are. Now that the pot is full of our plant, how do we water and fertilize it? We'll find out next month in "Confessions of an Overwaterer."