Hello Students,

There are a lot of links in this class, but please feel free to look at as many or few as you wish. If time is limited, I would look at the youtube videos at the start and the end of the transcript showing the mussel and the razor clam. This should give you another level of appreciation for how amazing they are!

Seashell Blessings,
Shell

INDEPENDENT STUDY: Module 2, Class 24

Please note: The pictures and comments in the transcript and recording below have been gathered over many years and where possible, I attribute them to their original source. If anyone connected with these photographs or comments would like them removed, please notify me and I will be happy to comply.

The recording for Class 24 is about 36 minutes long.

Class 24: Shell #s 24, 46, 94

In our last few classes, you met several shells representing various love lessons. Among them, you encountered the Blue Mussel. In order for these animals to survive the pounding tides, they anchor themselves to wharves and rocks through the production of filaments called byssus threads.

http://www.youtube.com/watch?v=dPgzSHe9fg8 Video of mussel secreting byssus thread from its foot.

It was noted that in order for a Mussel to relocate, it had to detach the byssus strings and reposition them or produce new threads to anchor the animal in its new abode. Since, literally, every move comes with strings attached, its meaning in Ocean Oracle is "*Indebtedness, having strings attached*."

When it comes to interaction with man, there is new research that I want to share with you regarding Mussel byssus threads. These Mussel byssus threads are incredibly effective anchors. The fact that these lifelines allow the mussels to survive the pounding waves was not lost on scientists. Byssus threads are produced in liquefied form, which quickly harden in their watery environments. Scientists marvel at this mussel marine super glue because water has eventually weakened and destroyed the bonds of every adhesive devised by man. **"***Scientists are studying mussels because man is not able to produce any glue even close to their ability to withstand the degrading effects of water on synthetic bonding agents…This animal is at the cutting edge of marine adhesive technology***."**

They can adhere to every organic and inorganic surface known to man…even to Teflon, a product advertised as "nonstick". As you can see in the picture to the left, apparently the manufacturer never met a Mussel before.

Intense studies are underway hoping to uncover its mystery. This research could yield future applications in other moist environments, such as within the human body. There are hopes for a surgical glue used in dentistry, tissue grafts, sutureless surgery, and even the possibility of gluing nerve endings together.

https://www.wildcoast.co.za/facts-about-mussels
Source of info below:
Mussels affix themselves to substrata such as rocks by their byssal threads or 'beards'. These are produced as a liquid, which sets in contact with seawater. The byssal threads are so adhesive they can even cling to Teflon; scientists are trying to develop a mussel-based adhesive for use in eye surgery.

Below is a history of websites involved with mussel glue research from 2000-2018:

http://www.sciencedaily.com/releases/2000/01/000105045908.htm **Seafood into "Super Glue"** Jan. 5, 2000

http://news.bbc.co.uk/2/hi/science/nature/6904175.stm **Gecko glue exploits mussel power** July 18, 2007

https://www.sciencedaily.com/releases/2007/12/071206230814.htm
Mussels inspire new surgical glue possibilities Dec. 8, 2007
Excerpt: *ScienceDaily (Dec. 8, 2007) — In a few years' time, instead of fiddling with needle and thread, surgeons may simply use glue to connect implants to living tissue. They took their idea from mussels, which can stick to any surface, be it porous rock or the smooth hull of a ship.*
"It sounds like a venturous plan: Implants such as artificial heart valves and vessels are to be welded to the body's own tissue using a special glue, completely obviating the need for bothersome sutures. The bond will be rapidly hardened by UV light, so that only 30 seconds later, the foreign object is firmly implanted in the patient's body."

https://abcnews.go.com/Health/Healthday/story?id=7111280&page=1 **Mussel-Based Glue May Make Surgery Safer** March 18, 2009
Excerpt: *"Using such unlikely partners as marine mussels and printer inkjet technology, researchers say they've come up with medical adhesives that can be used with greater precision, promote faster recovery and reduce scarring."*

https://medicalxpress.com/news/2010-01-mussel-inspired-fetal-membrane-video.html **Mussel-Inspired Glue for Fetal Membrane Repair** January 22, 2010 by **Northwestern University**
Excerpt: *—A sealant inspired by mussels' ability to stick to surfaces under wet conditions has shown promise in the repair of defects in human fetal membranes, according to a recent Northwestern University study.*
(Scroll down on this link to find the video. It is worth watching to see the mussel stick to various surfaces and to learn from the members of the lab who are doing this research.)

https://www.sciencedaily.com/releases/2011/01/110127110656.htm **Mussel power: Universal solvent no match for new self-healing sticky gel -- ScienceDaily** Jan. 31, 2011

Scientists Derive Inspiration from Mussels to Create Synthetic Gel for use as Coatings

https://www.youtube.com/watch?v=4Xjm23u84LY 5:22 **Mussel Power - New Self-Healing Sticky Gel**
(Interesting video describing creation of mussel gel) Jan. 28, 2011
The University of Chicago
Scientists can now manufacture a synthetic version of the self-healing sticky substance that mussels use to anchor themselves to rocks in pounding ocean surf and surging tidal basins. A patent is pending on how to make the substance. Potential applications include use as an adhesive or coating for underwater machinery or in biomedical settings as a surgical adhesive or bonding agent for implants. Inspiring the invention were the hair-thin holdfast fibers that mussels secrete to stick against rocks in lakes, rivers and oceans. "Everything amazingly just self-assembles underwater in a matter of minutes, which is a process that's still not understood that well.

http://news.psu.edu/story/143370/2013/01/09/research/mussels-inspire-innovative-new-adhesive-surgery
January 9, 2013 Penn State News
Mussels inspire innovative new adhesive for surgery
Excerpt: *The bio-adhesives, called iCMBAs, adhere well in wet environments, have controlled degradability, improved biocompatibility and lower manufacturing costs, putting them a step above current products such as fibrin glue and cyanoacrylate adhesives……*
The iCMBAs provided 2.5 to 8.0 times stronger adhesion in wet tissue conditions compared to fibrin glue. They also stopped bleeding instantly, facilitated wound healing, closed wounds without the use of sutures and offered controllable degradation.
"If you want the material to stay there for one week, we can control the polymer to degrade in one week," said Yang. "If you want the material to stay in the wound for more than a month, we can control the synthesis to make the materials degrade in one month."

http://sciencenordic.com/synthetic-mussel-adhesive-sticks-anything
October 2013
Synthetic mussel adhesive sticks to anything
A new type of glue that can make any kind of materials stick together is currently being developed by Danish scientists. The glue can even glue wounds together and make objects stick under water – and if it breaks, the glue can repair itself.
Glue changes its shape
A part of the innovative design of the new glue is its ability to change from being liquid like water into a sticky gel…
"The idea is that we can apply the glue while it's in a liquid state. This will better enable it to get down into all the microscopic gaps and structures in the surface," says the researcher. We then make the surroundings slightly alkaline, which turns the liquid into an adhesive that now has a strong grip on the surface.

https://phys.org/news/2018-10-mussel-inspired-coatings-drug-delivery.html

Mussel-inspired coatings for drug delivery Oct. 11, 2018
This sticking power can be harnessed to improve drug delivery by increasing contact times and allowing greater control over release rates.

Mussels in energy work:

Since you all seem interested in using shells as energy tools, let's look at how Mussels can be used. Are all of you familiar with the term energy cords? Sometimes, you have cords attached to you from other people. This is natural when you love someone, but there can also be unhealthy cords of attachment sent from outside sources that may drain your energy. One useful approach to this is to cut the cords. Many methods have been employed to accomplish this, some with greater success than others. I would like to share what the Mussels showed me in regard to addressing this situation.

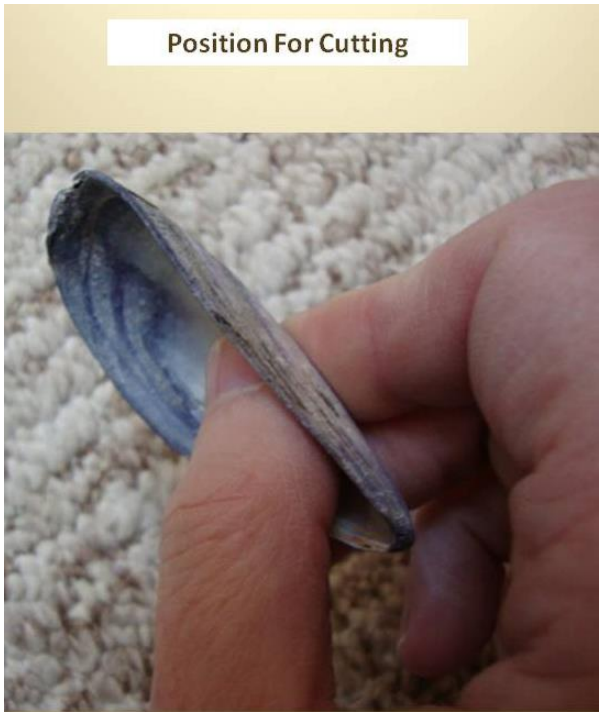
Before we can cut cords, we need to find them. In energy work, since mussels produce byssus fibers, who better to recognize and find cords?

These cords of attachment are wily customers, gaining power from operating behind the scenes. Exposure depletes their power. They will do their best to camouflage themselves to remain unnoticed. Failing that, they will attack any tool trying to loosen them. It is possible that in past attempts to rid ourselves of cords, we were fooled by the cord's capacity to camouflage itself making us think it was gone. Perhaps their ability to weaken or destroy the tool we used to hunt them created the impression we had successfully vanquished those cords. Sadly, we soon discover that they were just biding their time ready to wreak havoc again. As we have just discussed, mussel glue possesses an unrivaled capacity to withstand the destructive forces of water, i.e. emotion…the building blocks of cords. When we consider that in energy work, water equates to emotion, this information is very significant. Since cords are formed from emotional attachment, and every weapon of opposition they use is formed from emotion, it is useful to employ a tool that will not be destroyed by the very thing you seek. Mussels offer a tool that will not be vandalized by the effects of emotion. For the cords, any attempt to resist the Mussel is futile. Mussels cannot be weakened by a full-out attack of emotions, nor can they be fooled by the more subtle approach of a fog of emotions to allow the cords to hide in plain sight. Thus, the Mussel defeats two of the cord's favorite strategies. If the cord is an emotional attachment that is not your truth, the Mussel will be able to locate and expose it.

When seeking cords of attachment, select one half of a Mussel. Since Mussels are bivalves, you will find one side is a better fit if you are left or right-handed. Hold the shell below and against your index finger with the larger portion toward the top of your index finger. Allow your index finger to be cradled inside the interior of the Mussel. At the base of the Mussel, secure the Mussel to your index finger with your thumb. In this way, the Mussel becomes an extension of your finger. Now use your finger with the Mussel attached, to scan the body.

The Mussel will allow you to find the cords instantly. (If you see or sense sticky stringy filaments attach to your Mussel, these are the cords. For me, they had the consistency of hot mozzarella cheese.)

Cutting the cords is a simple matter of repositioning the Mussel. Since mussels sever their own byssus threads when they need to relocate, they will cut the cords of attachment.



Turn the shell so that the interior of the shell faces away from your finger as in the picture to the left. Use a sawing motion to cut the cords. Cords feed on your energy. Once you cut them, they lose their nutrients and wither away.

Some feel that cutting cords can leave the same energy to attract another cord. It helps to transform that energy by sending love, or purity to that space. White light for purification, or pink light for love, or loving thoughts, even sending kisses, can transform the energy to no longer attract the same stuff. I wanted you to have this information because everyone resonates to different paths.

Note: For shamanic work. You can use the Mussel to seek cords for soul retrieval. By setting the intention to do so, they will send out cords to retrieve the pieces of your truth. Again, the Mussel is unaffected by emotions, so it allows you to seek from a place of purity.

I want to speak a bit more about byssus threads. Mussels are not the only bivalves producing byssus threads.

Jingle mollusks are bivalves possessing a shell comprised of an upper valve, and a lower valve. In this picture, the lower valve on the right contains a hole enabling the byssus plug to protrude through the shell to secure the jingle to a stable foundation. The upper valve has no hole. The orange shell is the upper valve of one Jingle, while the yellow shell is the bottom valve of a different Jingle.

When the animal dies, the exposed upper valve washes up on shore in advance of the lower valve that is still anchored. That is why, if you encounter Jingle Shells on a beach, you rarely find both halves of the same shell, and the number of Jingle Shells without holes far exceeds those with them.

In *Ocean Oracle*, Jingle Shell is #24 and its meaning reflects this imbalance. *"Having a focus that is too one-sided; need for balance (with time, money, energy)."*

In Class 12 we came across another mollusk who created massive amounts of byssus threads. You may remember the Delicate File Clam, or Lima Clam that was able to produce enough byssus threads to form a nest. This was the clam that had sticky tentacles that break off in a fish's mouth effectively sealing the mouth shut. This ability bought precious time for the clam to burrow into a hastily constructed nest.

We concluded this lesson with the story of the cracked pot and redefined our flaws as the thing that makes us different…our means to make a contribution to the planet.

The clam's behavior contributed to its meaning "*Desiring privacy over personal matters; Discomfort over exposure of personal information*". The person selecting this shell would attempt to keep information from being revealed, sealing people's lips, because the potential for embarrassment, or discomfort would result in seeking refuge in one's quarters. This is equivalent to the clam burrowing into its nest.

The fact that they can fashion a nest is an indication that Lima Clams produce more byssus threads than any other mollusks.

In addition to the jingle, lima clam, and mussels, there is another family of bivalve mollusks that create byssus threads as well. This is the Pen family. While the lima clam may produce the largest *quantity* of byssus threads, species of pens produce the finest *quality*. The fibers are like silk. One member of the Pen family, the Noble Pen, has golden colored byssus threads. Some believe that this is the Golden Fleece sought by Jason in Greek mythology. I leave that to your imagination, but it is true that the Pen byssus has been harvested and spun into cloth. Do you recall royalty wearing purple clothing dyed from the secretions from murex mollusks?

The murex interacted with man by providing the coloring agent for his wardrobe. Pen mollusks provided the actual material from which clothing was manufactured. This "sea silk" pen cloth is so fine, many sources report that a pair of sea silk gloves can be folded and packed inside a walnut shell. Once again, in Rome these garments were reserved for royalty. In Egypt, clothing from the byssus of Noble Pen shells has been found in the tombs of pharaohs.

http://www.bbc.com/travel/story/20170906-the-last-surviving-sea-silk-seamstress Fascinating account of the process for creating byssus silk.

http://everything2.com/?node_id=1888319 One more bit of trading history for byssus… source of information below.

The fan mussel, also known as the noble pen shell (*Pinna nobilis*) is a bivalve shellfish indigenous to the Mediterranean Sea. It is an ordinary animal, with no remarkable traits, with the exception of its unique byssus gland.

The byssus gland produces an extremely fine filament that the fan mussel uses to fasten itself to the sea floor. Because this filament's source is exclusively the byssus gland, it is an especially rare material, and its fineness, lightness and deep golden coloration make it a luxury material in the production of textiles. People have been harvesting this material -- simply referred to as byssus -- for the last 3000 years, and civilizations such as ancient Rome, Chaldea, Persia and China produced and traded in it.

Most byssus trade, at least that taking place in western Europe, died down in the late Middle Ages. There are few remnant examples of byssus cloth from this period, but the few that do exist are mostly women's gloves, woven so fine that they could be packed into an evacuated walnut shell. Byssus trade resumed in Sicily in the last century, but its trade is irregular, and it has no common market price.

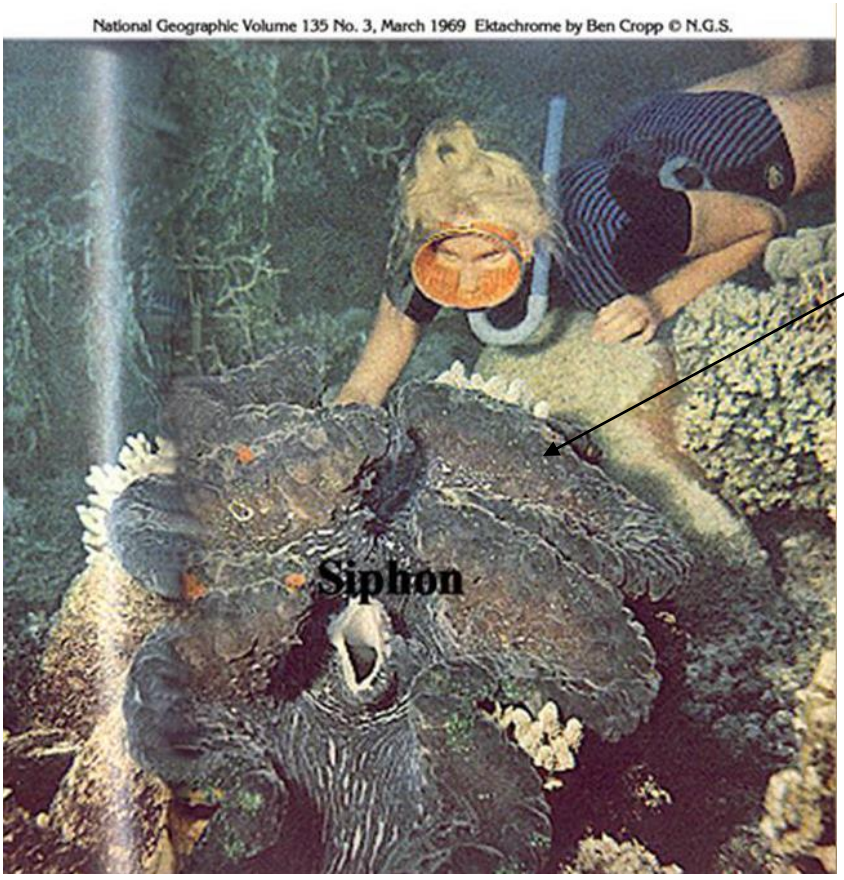
The word "byssus" comes from the word used in the Vulgate books Genesis and Exodus to describe fine Egyptian linen. It is understood that the fabric referenced in the Vulgate was not in fact the fabric of the fan mussel; the material now called "byssus" is actually named for the cotton product.

On the beaches of Florida, there is another species of Pen, called the Stiff Pen Shell. This is shell #46 in *Ocean Oracle*.

Before we continue, take a look at the picture to the left and see if any of you have feelings of like or dislike? Or no feelings at all?

Since other mollusks also create byssus of varying qualities, (we already have the Mussel’s meaning based upon its byssus threads, and the File Clam using its nest to contribute to its meaning) I am always looking for something unique. I want to tell you about another characteristic of pen mollusks that these other bivalves don’t share. Small crabs have been found inside the two large valves of the Pen Shell sharing living quarters with the pen mollusk. The crabs gain protection and shelter, but scientists can’t find any benefit for the pen in doing this.

http://www.wildsingapore.com/wildfacts/mollusca/bivalvia/pinnidae/pinnidae.htm Note the different common name of “Fan Shell” but they are still talking about Pinna (Pen) shells.
“All manner of seaweeds and encrusting animals often settle on the portions of the fan clam that sticks out above the sand, even when the clam is still alive. These provide food and shelter for small animals. The tiny Pea crab (Pinnotheres sp.) and small snapping shrimps are sometimes found living inside these clams. The crab not only gains shelter but also eats some of the food gathered by the fan shell host.”



In a symbiotic relationship, two species interact. If both benefit from the relationship, it is called "mutualism." Do you recall the algae garden that grows inside the mantle tissue of the Giant Tridacna clam?

The algae receive protection from predators and changing water conditions, while the clam receives nutrition and carbon dioxide removal.

When a symbiotic relationship only benefits one partner, such as the relationship of the pen and the crab, the technical term for this is "commensal" where one organism receives a benefit, and the other is unaffected.

Note: The third possibility for symbiotic relationships is parasitic where one member of the relationship benefits and the other is harmed.

http://www.wetwebmedia.com/clngsymbfshs.htm Site that gave me the idea to use the Tridacna in the example above.

Mutualistic Relationships. *An example here of the endosymbiotic zooxanthellae of Giant Clams... the Algae get a home of relative protection from predators, changing water conditions... and the tridacnids receive some sugar nutrition and oxygen, removal of carbon dioxide...*

http://en.wikipedia.org/wiki/Symbiosis Detailed information on variety of symbiotic relationships

In this commensal relationship, the Pen receives no benefit. That is why the meaning of the Stiff Pen Shell in *Ocean Oracle* is "*Altruism; concern for the welfare of others; selflessness*". This captures the concept of giving without receiving anything in return.

In shell reading, clients usually don't like this shell. In fact, I can only recall two clients who did. One was a Peace Corps volunteer, and one was a doctor who was leaving to work in a third world country. You might conclude that disliking a shell that values altruism would mean that someone is stingy, or does not share. However, the clients who dislike the Pen describe themselves as willing to give while needing nothing in return.

Does this fit any of you who disliked the Pen shell?

If that were true, they would not feel bothered by the Pen Shell which represents altruism. Their dislike of the shell reveals a hidden feeling that may not be in line with their conscious thoughts. Upon deeper probing, it turns out that they are not fully prepared for what altruism means. Asking for nothing in return is not just confined to no financial reward.

Pen shell means you may not receive anything, including gratitude, appreciation, respect, or love. When these clients who dislike the Pen are not appreciated for what they give, they often feel hurt. The Pen shell is suggesting that if you do require respect or gratitude in return, that is OK. Just be honest with yourself. The shells are trying to connect you with your hidden beliefs. In this client's attempt to ask for nothing back, the client is not being truthful. If lack of appreciation generates pain, then this client needs to receive gratitude and that does not make him a bad person. The shells never sit in judgment; they just want to bring subconscious thoughts to conscious awareness. This client has been burying pain because he thought he required nothing in return. When pain is unacknowledged and internalized, it can affect us physically. The Pen Shell is saying that it is OK to ask for emotional rewards that come from statements of love and gratitude in exchange for what was given. In other words, the client was trying to be in a commensal relationship (only one person benefits). Disliking the Pen shell says the client actually prefers to be in a mutual relationship (both people benefit). The client does not require repayment to feed his bank account, but the external validation that comes from appreciation feeds his sense of self-worth.

Since we are discussing what shells have to teach about altruism, let's move on to what they have to say about compassion.

This is the message connected to the Razor Clam, shell #94 in *Ocean Oracle*. Its meaning is "*Compassion, sympathy, mercy*." You can see a picture of the Razor Clam to the left. Note that a portion of the bottom of this shell is broken off.

Sometimes, it is not the shells we find, but those we can't find, that teach important lessons. A few years before *Ocean Oracle* was published, when I wrote a seashell divination column for a metaphysical magazine, many people were telling me that they couldn't find Razor Clams. Shell divination translation…they can't find compassion. This troubled me greatly. To understand why, I must explain that the meaning of compassion was based upon intuition, not book knowledge. With these random comments about futile searches for Razor Clams beginning to escalate, I knew this was vital in importance.

The impact heightened when I received an email from someone asking me how I would interpret his recent pain from an old Razor Clam cut on his foot. I felt awkward responding. With nothing else to go on, I thought his cut meant that he was wounded by compassion. Perhaps, in his desire to be kind, he might have made inappropriate sacrifices. He could have been taken advantage of, or even been treated as a doormat. He may believe that compassion leads to pain and has hardened his heart in protection. The pain is his body's method to allow his emotions around this to surface. Uncertain if my intuitive interpretation was an adequate reason to make these conclusions, I informed him of this and invited him to share more of what was happening at this time in his life. To my regret, I never heard back. This was unsettling because I felt a tremendous responsibility to the razor clams to do them justice. They were obviously trying to reach out to many people. I continued to discuss compassion, but it was personally difficult to only have intuition as a basis for my comments.

At Thanksgiving that year, my brother gifted me with an old library book that had been discarded by his library. It is called Strange Seashells and was published in 1936. As I sat down to devour its contents, I found a section devoted to razor clams. The razor clam's streamlined shape enables it to dig 5-6 feet underground at a pace exceeding a man with a shovel. In England, these clams were desirable for eating. Recognizing the futility of digging these clams out of their burrows, the Englishmen employed an alternative tactic. They sprinkled coarse salt on the ground over the clams' holes. This forced the clams to surface because their systems could not tolerate the bitter salt.

http://www.youtube.com/watch?v=XDEHn4fBPhA&feature=related 0:50 Video of salt and razor clams

My mouth dropped open in awe. Even though it placed them in danger, the overriding need to cleanse themselves of bitterness took priority. Here was the connection to compassion! When we rid ourselves of all bitterness, we are able to display compassion. The ultimate sign of compassion enables us to treat an enemy with mercy and kindness.

With the constant potential for war affecting us all, people live in fear. To alleviate this fear, we search for ways to obtain feelings of power and strength. When compassion is condemned as weakness, it becomes something to avoid; no wonder it can't be found. Anger and hatred serve to separate us from accessing the compassion within us.

As advocates of compassion, the razor clams teach us the importance of eliminating bitterness from our hearts. The salt on the surface of the clam's abode equates anger and resentment to the "salt" we rub into our own wounds. As Robin Casarjian states in *Houses of Healing*, anger allows us to create distance in relationships and prevents us from investigating the genuine feelings that dwell beneath. Whether in personal battles or massive conflicts, surface anger or resentment masks underlying fear or insecurities and separates us from claiming our true power. Bitter feelings are used to justify violent responses. Looking upon another as an opponent to conquer perpetuates the violence. Just as Einstein asserted that a problem cannot be solved at the level at which it is created, violence inevitably reproduces violence. People become trapped in a vicious cycle based upon fear. How can we create a loving, peaceful world for our children using this recipe? The simple answer is that we can't.

We often hear that everything boils down to a choice of fear or love. We need a bridge to transport us from our world of fear to a new world vision of love. I attended a seminar entitled "Relating Beyond Conditions," which explains that compassion and forgiveness are the components from which this bridge is assembled. Compassion enables us to treat an enemy with mercy and kindness, rather than as an opponent to conquer. For those who believe that compassion might become a source of weakness and lead to pain due to inappropriate sacrifices, the razor clams offer a new comprehension of the liberating strength inherent in compassion. Far from being a weakness, compassion will lead us to the true power we seek.

When man tries to introduce bitterness to the razor clams, they risk death attempting to rid their systems of that poison. They are instructing us that danger is relative. Living with bitterness harbored inside us is another form of, or even a fate worse than, death. If forgiveness (ridding ourselves of bitterness) is required to access compassion, these clams sacrifice their lives to make us aware of its importance. They are educating us that holding on to those bitter feelings places us all in peril.

I can’t improve upon this beautiful quote from Dr. Christiane Northrup: “Imagine all the angels and non-physical beings who are working on the other side to protect and uplift all of us. Know that they can only do their work in an atmosphere of compassion, not condemnation. The energy of condemnation will prevent them from connecting with the hearts of those who most need their inspiration and love.”

http://www.fredandsarah.plus.com/ukseashells/ensis.html Pictures of intact Razor Clam shells