

Watery Delights

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What manifold delights water can provide! The first night we were in Jamaica we drove to the eastern end of the island, found a deserted spot, and went swimming; the warm water was refreshing on that hot August night. We didn't swim long because the weather was threatening, and as I started walking back across the beach, the clouds let loose with a warm body-drenching tropical rain.

Another night in Jamaica, on that same and only trip, we happened on a very ritzy place, Frenchman's cove; it was off-season, so they let us stay. We got there just before sundown and went swimming. There again was the warm water, but this time the warm water was coated on the surface with an icing of cool

fresh water from a stream that fanned out onto the sea water of the cove, so that although our bodies were in this warm salt water, our faces rested on the cool fresh water. We swam out beyond the cliffs that protected the cove and there, waiting for us to the east, was a most incredibly brilliant double rainbow. We swam and bathed in these delightful warm and cool layers of water, looking at the beautiful display of colors. The arcs were a full 180° because the sun had almost set. In fact, as we swam around, we watched the legs of the rainbows rise up in the shadow of the earth as the sun finally set. Once before I had seen such a rising rainbow, but that other time it had been cast by the moon. The moon rainbow had no

colors; it was an eerie glowing arc against a clear black sky.

I learned about the delights of water as a child. Some very ingenious and playful architect had designed the showers in our apartment house in New York City. The shower in my bathroom not only had the normal shower head on top, it had two little aimable shower heads on the



Solar halo and “sun dogs” caused by high altitude ice crystals refracting light.

side. In addition, it had a nozzle that shot water up from the bottom. And finally, wonder of wonders, each of the six circular rings that formed the brass structure of the shower was drilled with myriads of little holes so that when one opened the appropriate valve the entire shower structure would add a gentle spray to the more forceful ones from the top, sides and bottom.

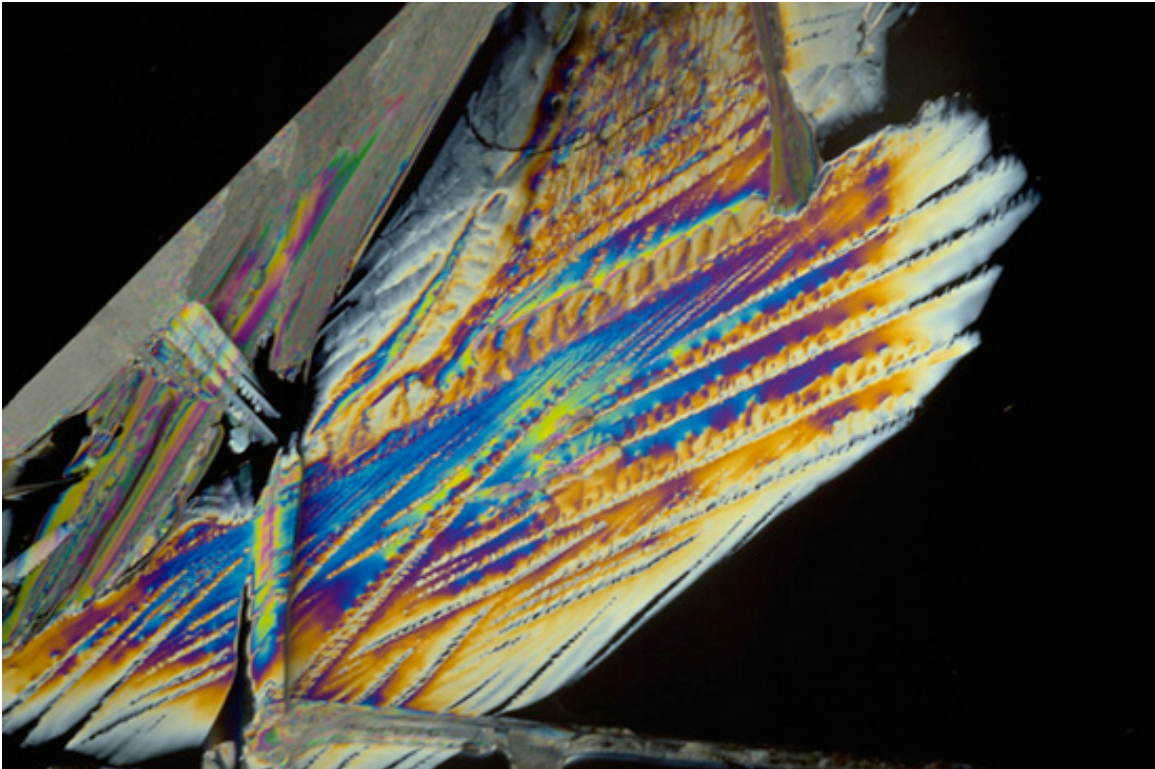
It is not just the ability to luxuriate in watery environments that captivates and addicts us. What a beauty it is to see a misty waterfall or a powerful cascade. How fine it is on a bright sunny day to hose one's garden and have a



Inside ice caves, sunlight is filtered to a beautiful blue color by tons of frozen water.

rainbow appear in the fine droplets right at one's feet. There are also the brilliantly colored rings in the sky whose pieces are called sun dogs, and also the larger diameter rings around the sun or the moon that are created by ice crystals very high up in the sky.

So many effects of ice crystals are beautiful: the frost that occurs on the windows, the large snowflakes that fall and rest on a black woolen coat. And then there is ice, the kind that we can skate on. (In New York when I grew up the trolley cars all used to carry a little triangular flag whenever the ice on Central Park lake was thick enough to be safe for skating.) Also, spectacular things happen with glaciers; the ice at the mouths of glaciers is always brilliant blue and green, with water pouring out from underneath. In sub-zero weather tiny ice crystals of frost make brilliant sparkles on the



Ice crystals form as frost on a cold window. Here the beautiful colors are brought out by viewing through crossed polarizers. Different thicknesses become different colors.

road and make it appear to be covered with jewels. There are all the wonderful forms that clouds take. I have flown over clouds when I was so exhausted that the only thing I wanted to do was get out of the airplane and lie down on their soft, billowy surfaces.

Although rain and snow and ice and oceans can, of course, also fill us with terror and do us in, water in its various forms probably defines pleasure and beauty for us more than any other thing we know. It is the rushing of water that formed the castles in the Grand Canyon. It is the whitecaps on the sea and on the breakers. It is the broad reflected path of the moonlight that follows us. These are the images that set the stage for romance. There is no mountain range in the country that doesn't have at least one blue lake.

Of course, every one of the beauties provided by water is connected with the very special properties of water that enable it to evaporate and freeze and refract light, and cool and warm and condense. I have read that in the heyday of the Moorish civilization in Spain they had fountains of quicksilver (mercury) which must also have been very beautiful, and it is true

that mercury has special properties that make it fun to play with. But mercury is a poison and water provides the cradle of life. Water's strong surface tension makes possible the large tropical raindrops. Its large latent heat of vaporization releases the warmth that keeps the clouds on high. Its ability to dissolve minerals accounts in part for the Grand Canyon, and also for stalactites and caves. The fact that it swells on freezing accounts for our ability to skate on the surface of a frozen pond. And its low index of refraction, at least compared to glass, accounts for the fact that there can be two concentric rainbows rather than just one. The shape and the index of refraction of ice crystals dictates the large size of the rings around the sun and the moon. Finally, the fact that we ourselves are so largely made of water enables us to stay afloat and enjoy swimming, especially in the salty (and therefore more dense) waters of the ocean.