

WINE HIKE PLANNED FOR OCTOBER 17

Wooldridge Winery has graciously OK'd walking through their vineyard and enjoying their wine on their wonderful patio. This is a 3-1/2 mile hike, easy to moderate through the Enchanted Forest to Wooldridge Winery.

Donations to me for the guided hike will go to the *Applegater*.

More information by calling or e-mailing

Janeen Sathre 899-1443

or djsathre@jeffnet.org

Tuffy and the miracle of vision

BY KURT WILKENING, O. D.

I have a dog named Tuffy. He's a Miniature Schnauser and true to his Applegate namesake, he is four times the dog that his small size would suggest. Tuffy is my partner in the woods where I depend on him to alert me to everything happening in the forest. He's amazing. Not only because he's entirely aware of every creature within 100 yards, but because his perception is apparently achieved without the benefit of sight. Characteristic of his breed, his eyebrows hang down over his eyes and, in true Emo style, completely obliterate his vision. This doesn't appear to interfere with his navigational skills however, as he rockets up and down precipitous slopes, dodging every obstacle at full speed and chasing every rich, irresistible smell. From the perspective of a human being so dependent on my sense of sight, this is unbelievable.

It has been estimated that a dog's olfactory sense is 10,000 times as acute as ours. This is particularly remarkable when you consider the extremely smelly places that dogs love to stick their noses. Canines can not only smell things close by, but can project this awareness dozens of yards away and know the direction, movement and location of the source. Incredible.

Human beings would not have survived long as a species if we were not able to somehow ascertain the same information about our surroundings. While we have developed decent senses of smell and hearing, our sight is undeniably dominant in the ability to interact with our environment.

Maybe you've tried this. Tie a scarf securely around your eyes and stand in one corner of your living room. Make a mental note of the familiar environment around you and attempt to make your way to the opposite corner of the room. Even in a room that you navigate successfully dozens of times every day, the task is daunting, intimidating and often painful. You can sniff around all you want, but your shin still feels the agony of forgetting the exact placement of that coffee table that you could not see.

Sight is arguably the most miraculous of the senses. It allows us to be aware of objects, conditions and situations far away from our physical location. It's dynamic; the information changes every millisecond. It's incomprehensible to consider what needs to happen in a continuous innumerable series of instants in order to receive the uninterrupted stream of information necessary to interact with our surroundings.

Imagine that you are standing in your backyard early on a glorious Southern Oregon morning (with the exception of my kids who don't get up until noon). Photons are projected 93 million miles by the sun and arrive at your address in about a half a second. Trillions of them at once are reflected off of the innumerable surfaces in your yard and bounce off in every direction. Millions of these particles enter each eye and the amazing process of sight begins.

First, photons must pass through the cornea, the tough, clear covering over the front of the eye. The cornea is the interface between the outside world and the interior of the globe and is responsible for providing 80% of the focusing power of the eye. It is necessary for the cornea to be a smooth, pure optical surface. Anything which disrupts this surface will scatter the photons entering the eye and the image formed will be blurred. Which is exactly what happens when your husband comes riding by on his new mower and spews grass and clouds of dust all over you and your peaceful morning



scene. Irritants of every variety enter the tear film and cause an immediate reaction. Your eyes are flooded with buckets of tears and mucous and you can't see a thing. Your aggravation is effectively communicated, your well-meaning husband leaves, the tearing subsides and you return to the tranquility of your lovely back yard.

All this time, our photon friends have been continuing their journey, passing through the aqueous humor, the clear fluid in the front half of the eye, entering the crystalline lens, and continuing through the vitreous humor to finally reach the retina, lining the back of the eyeball.

It would be generous to say that we understand 10% of the function of the retina. The transformation of photons to electrical impulses, the analysis of these impulses, and the organization of the infinite number of variables which make up every scene is unimaginably complex. Think about this. The bazillions of photons reflected off of the countless surfaces in your yard enter the eye from hundreds of different angles. Some of the objects are stationary, some are moving. Some are closer to your line of sight and demand more of your attention. Some are more in the periphery. Some are near and others far away. Some are in shadows and some are illuminated. In addition, not only is the scene constantly changing; (flowers are moving, butterflies are flying, your husband's returning apologetically to bring you a cold drink with an umbrella in it) but your eyes are constantly shifting direction as different things attract your attention and a whole new scene needs to be analyzed. The retina does all this thousands of times per second. Wow.

Finally, all of this input has to be perceived accurately, transported to a central processing center (the occipital cortex at the base of your skull), combined with other sensory stimuli like smell, touch and hearing, and responded to appropriately. It's exhausting just thinking about it, yet we do this continually every waking second. Our ability to see is truly a miracle, so simple yet so incredibly complex.

It has been my privilege to work in the field of optometry for 28 years, helping to improve and retain this amazing, miraculous sense of sight on which we so very much depend. I'm especially grateful to have had the blessing of living in Southern Oregon, one of the most visually stimulating places on the planet.

Gotta go. I think I see Tuffy dragging something particularly smelly down the hill. I swear he can find this stuff with his eyes closed!

Kurt Wilkening, O.D. • 541-846-7805

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