

**LIGHTNING DATA CENTER
MINUTES
JULY 11, 2008
ST. ANTHONY CENTRAL HOSPITAL, DENVER, CO
www.stanthonyldc.org**

Monthly Quote: "This book would not have been possible without the cooperation of lightning survivors and the families of those who did not survive. Like Coleridge's ancient mariner, some felt compelled to tell their stories; most told their experiences as a way to help others." From Out of the Blue: A History of Lightning: Science, Superstition, and Amazing Stories of Survival, written by John S. Friedman. Delacorte Press, 2008.

1. Meeting began at 11:50 AM and adjourned at 1:15 PM.
2. Members present: Cherington, McDonough, Yarnell, Langford, Howard and Clara Wachtel, Gift, Cui-Gift, Collier, Roller, Nibbe, Wells, Weaver, Keen, Wallace, Braun (Jeff – father; and Josh & Jed – sons), and Vanderveen. Steve Clark moderated the meeting.
3. Our meeting was covered by KUSA-TV 9News, Denver's NBC affiliate. Chris Vanderveen was the reporter covering the meeting accompanied by a videographer. The meeting was featured in Friday's 5 PM newscast. Thank you to Chris and the folks at 9News for covering this event. For those of you wanting to see the story or video coverage, go to 9News.com. On their homepage you can search for videos or articles (upper right corner). The next page will show an advanced search box on the right-hand side. Enter "lightning" and your videos or articles will appear, depending on what you chose on the previous webpage.
4. Michael Cherington issued a reminder of the HIPAA law. Do not release any information about a person struck by lightning that would enable the identification of that person.

Michael also brought in a book entitled Out of the Blue: A History of Lightning: Science, Superstition, and Amazing Stories of Survival, written by John S. Friedman. The LDC and in particular, Ken Langford, were noted in the Acknowledgements section.

Oddly enough, after arriving late to the meeting, Robert Gift rested a large framed print on the table near Dr. Michael Cherington as he was speaking about the book. Purchased at a garage sale, the picture was of lightning hitting a lone tree and traveling down its trunk. Dr. Richard Keen then asked Michael to again display his book. Many were amused, and Dr. Cherington exclaimed, "Amazing!" when Gift's print turned out to be a huge version of the cover photo on the book! Cherington looked in his book to discern the name of the photographer. Gift plans to bring the poster to every LDC meeting as an "official banner". Ken Langford challenged the reality of the photograph.

5. Gil McDonough gave quick mention to three newspaper accounts of people hit by lightning found recently in the media. Below are the places and dates, with links to online stories about the strikes. NOTE: Time is of the essence with some of these links as they tend to be disabled after a certain number of days.

Westcliffe, CO: July 3, 2008

<http://www.myfoxcolorado.com/myfox/pages/News/Detail?contentId=6919267&version=1&locale=EN-US&layoutCode=TSTY&pageId=3.2.1>

Aspen, near American Lake Trail: July 6, 2008

<http://www.aspendailynews.com/section/home/127918>

Rocky Mountain National Park, Mills Lake by Longs Peak: July 8, 2008

<http://www.eprail.com/news/2008/jul/11/members-texas-family-injured-lightning-strike/>.

6. Phil Yarnell presented a question for the group, and Dr. Cherington in particular, about a golfer that was struck by lightning. A retirement-aged female was playing golf with her companions when lightning struck about a foot away, causing a hole in the ground. The lightning knocked a nearby bystander to the ground and caused the patient to be thrown to the ground. The patient's two companions, medically trained, found no pulse or blood pressure. They started CPR, and quickly revived the patient so that she sat up but was disoriented. She was subsequently taken to the hospital by paramedics. It was noon on a cloudless day.

The pertinent findings were: bilaterally ruptured tympanic membranes, a cephalhematoma in the frontal region and burns around the bra area, groin and axillary area without ferning and without disruption in her shoes. The patient was wearing soft shoes.

Serial CT scans showed pneumocephalus, some blood on the surface of the hemispheres and increased fluid in one mastoid with a questionable petrous fracture. On day 4 MRI confirmed these findings. There were no infarctions or anoxic changes or parenchymal hemorrhages noted. The patient regained full orientation without focal signs.

The issue raised was: the direct lightning effects versus secondary effects. It was postulated that the patient suffered a direct strike, with singeing of the hair, rupture of the tympanic membranes, surface burns and transient cardiac arrest. It was felt that she had a secondary head injury with suggestive basilar skull fracture causing pneumocephalus and fluid in the mastoid and scalp hematoma and surface subarachnoid bleeding.

We have not known a lightning strike itself without secondary head injury to cause a basilar skull fracture with pneumocephalus. The issue of intracranial hemorrhage, however, has been seen, particularly in the basal ganglia, in conjunction with direct lightning strikes.

7. Our featured speaker was John Weaver, with the Cooperative Institute for Research of the Atmosphere, also known as CIRA, which is based in Fort Collins, CO. I cannot possibly do justice on the amount and quality of the information provided, so my rudimentary notes will have to suffice. His presentation was on the formation of lightning. John gave us a history of our understanding of the charge distribution in clouds, with one of the earliest models being a simple dipole (positive charge on one-half of the cloud and negative charge on the other half of the cloud). He then stated much of our current knowledge is credited to Japanese researchers, who did a lot of lab modeling of charge separation in the 1950s. John also talked about the growth stages of a nascent thunderstorm and how charge separation occurs during the breakup of ice particles when they collide with one another. It turns out that individual ice crystals have a charge distribution, which depends on the shape of the crystal. When the crystals are broken in collisions, the charge distribution is broken also, with some fragments being positively charged and other being negatively charged. Later, when the storm has started to produce an anvil, is when the first strokes of lightning are typically seen. John also said positive lightning flashes, associated mostly with severe thunderstorms seen on the plains, tend to have longer lifetimes due to the amount of time it takes for current to discharge. Because of this, positive strokes are more apt to start fires. Also, the lightning flashes seen to touch ground at some distance away from the main area of lightning activity and those that strike ground directly from the anvil will tend to be positive strokes. For more information on the Internet about lightning formation (and other meteorology topics), go to: <http://rammb.cira.colostate.edu/visit/ts.html>. On this page, click on "Lightning". On the next page, "Lightning Meteorology I" contains the material used in this talk. John, thank you for a very informative presentation.
8. These minutes do not represent official positions of LDC or its members. They simply reflect the comments made at the meeting.
9. Next meeting: Friday, August 8, 2008 at 11:30 AM in the Main Auditorium of St. Anthony Central Hospital. Subject: TBA.

Respectfully Submitted,

Steven E. Clark, Consulting Meteorologist