

ANDYSEZ 63 - *Lightning and caves.*

Andy Spate

My father had a little aphorism that he trotted out from time to time when circumstances suggested it:

*Lord xxx tried to fix the electric light.
It struck him dead and serve him right!
For it is duty of the wealthy man,
To provide employment for the artisan.*

The Victorian State Electricity Commission had this as a warning in the early 1960s:

*Boy – pliers
Electric wires
Boy ashes!*

Whether these have any relevance to this ANDSEZ maybe doubtful.

But Mary found this in the Manawatu Standard newspaper for 20th December 1883.

So why could lightning and caves be connected, and do we have to worry?

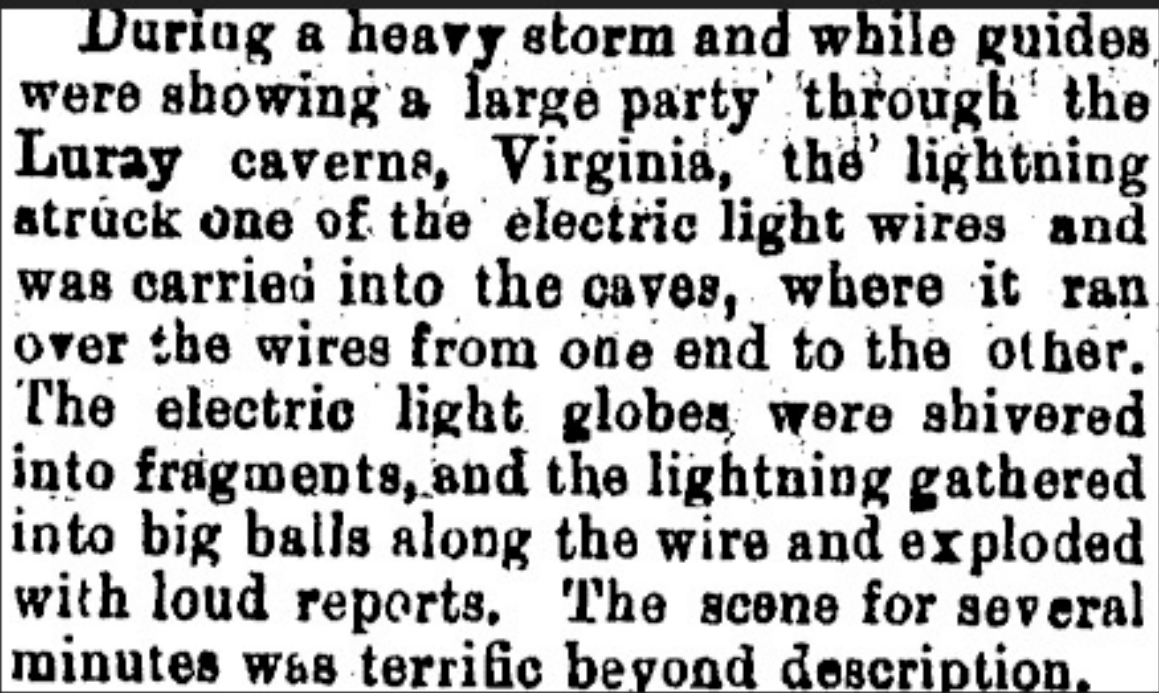
Andy Baker says:

I do teach a little on the electrical properties of rocks, but related to solar flares and coronal mass ejections and their impacts. Limestone has about the highest electrical resistivity of all rocks, so it would seem logical that if there's a strike at show cave entrance, the current would take the most conductive route.

I found this map of lightning strikes / km2 / year which could be interesting to compare to karst areas?

<https://www.weatherzone.com.au/news/where-is-australia-s-stormiest-place/535130>

That would be interesting. Geology doesn't influence the location of lightning strikes, so I would not expect a causal



During a heavy storm and while guides were showing a large party through the Luray caverns, Virginia, the lightning struck one of the electric light wires and was carried into the caves, where it ran over the wires from one end to the other. The electric light globes were shattered into fragments, and the lightning gathered into big balls along the wire and exploded with loud reports. The scene for several minutes was terrific beyond description.

The connection between the gentleman who was in Luray Caverns (USA) and a newspaper in Palmerston North, North Island, New Zealand is very enigmatic.

But it allows us to have an ANDSEZ 63. I write this in a thunderstorm in Tasmania so if it does ever appear uncompleted, I have been thunderstruck!

I seized on Mary's contribution as the idea behind another ANDSEZ as I read somewhere some years ago about the potential risks for visitors to show caves – but no amount of googling and consultation with colleagues here and abroad has led me back to that source or similar observations. So regrettably what I have to present this time is a bit fragmental.

relationship. But it should be possible to identify areas which have higher and lower probability of a lightning strike occurring near a cave entrance. Maybe NSW ranges (Wellington, Wee Jasper, etc.) with about 60 strikes /km2 /yr if I guesstimate from the scale on the map.

Dave Gillieson tells me:

I do recall lightning striking near Henry Shannon and myself on Viator Hill at Texas, as we came out of Russenden Cave to a summer thunderstorm. Warm moist air rising from the entrance? Ground conduction of electrical discharge? Who knows?

There are many climbers' tales of being on ledges and shallow overhangs during lightning storms and having their gear buzzing with static electricity. Rick White and I had ball lightning run along the ground for 50 m near us at the top of a climb at Binna Burra.

The inimitable Bill Halliday has this to say:

PROTECTION AGAINST LIGHTNING

To the Editor

In the April 17, 1954, issue of *The Journal* (page 1353) the "Code for Protection Against Lightning," compiled by the National Bureau of Standards suggested in part that shelter from lightning should be sought in a cave. Despite the recognized reliability of the Bureau of Standards, it appears that, in this case, it has been misled by the scarcity of physical studies in North American caves — a deplorable situation that the National Speleological Society is attempting to correct. Studies by European speleologists have revealed that conductivity and degree of ionization of cave air generally exceed that of outside air (British Caving, Cullingford, C.H.D., editor, London, Routledge & Hegan Paul, Ltd., 1953, p. 151), and it is their belief that this creates a potential lightning hazard. It is an empirical observation that trees near the mouths of caves in certain French forests are more frequently struck by lightning than those elsewhere in the woods (Norbert Casteret, quoted by Myers, J. O., in *British Caving*). Furthermore, a noted French speleologist was knocked from the steel cable ladder on which he was descending in the cave of the Hennemorte several years ago when lightning struck a tree at the edge of the cave entrance. Fortunately, he was tied to a safety rope at the time and suffered no severe injury (Trombe, F.: *Lc Mysicrc de la Hennemorte*, Paris. Susse, 1948, pp. 60-61).

In North America, newspaper reports in recent years have told of the death of a girl scout and injury of several others when lightning struck the entrance of Wind Cave.

Wyoming. In addition, one mountaineer was reported killed and at least one was injured while climbing in the Bugaboo range of British Columbia when the rock shelter in which they were resting was similarly struck. As a result of these observations, it appears that caves, and even mere rock shelters, are actually very unsafe refuges during thunderstorms.

William R. Halliday, M.D.

Member, Board of Governors

National Speleological Society

270 G St., Salt Lake City.

Journal of the American Medical Association, vol 155 1956.

Following NSS article is anecdotally useful regarding lightning safety:

<http://forums.caves.org/viewtopic.php?f=13&t=3691>

This link tells you more about the science of lightning — and about amazing mega flashes. Can you imagine a horizontal lightning flash of 17 seconds duration stretching many hundreds of kilometres!!

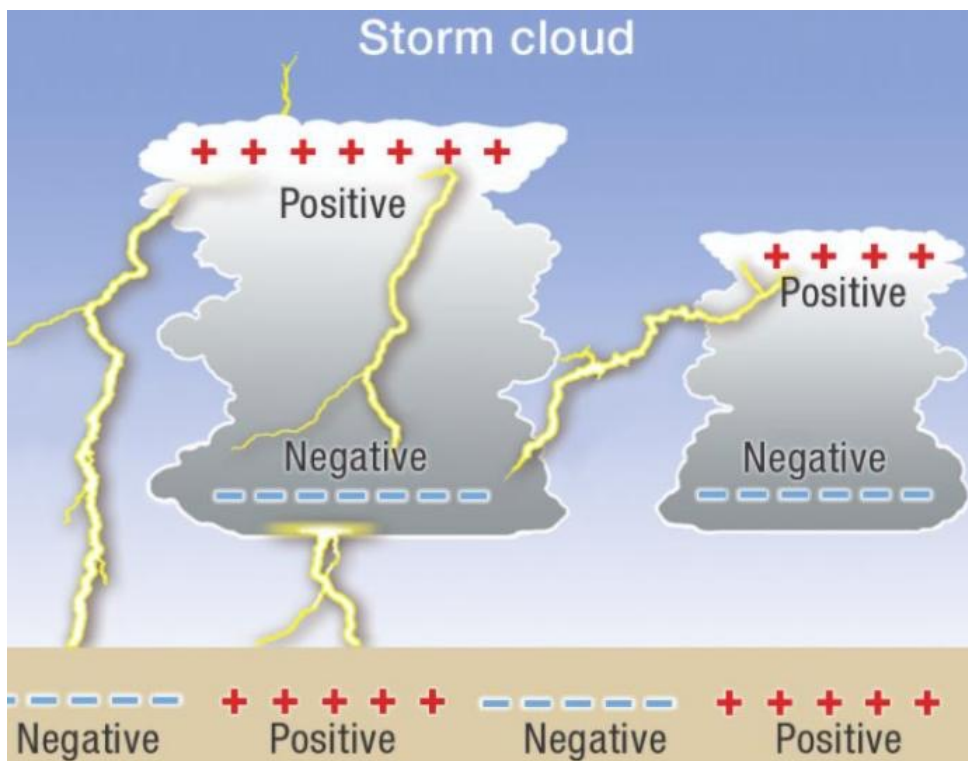
Read the link ...

Anyway? what relevance has this to ACKMA? Firstly, stay away from cave entrances during thunderstorms — go deeper!

Secondly, the article that stimulated my interest in this many years ago — that I cannot find again — discussed the dangers of lightning in show caves as evidenced by Mary's article. It suggested, if I remember correctly, that show caves should have a metre gap close to the entrance to avoid electric shocks deeper in the cave — I doubt whether it would be enough if lightning strikes close to the entrance.

I would love to hear if anyone has better information than this.

Thanks to Mary, Andy, and Dave.



The image above comes from <https://www.abc.net.au/news/science/2022-02-03/megaflash-lightning-what-is-it-and-do-we-see-it-in-australia/100798672>