

DINNER SPEECH – John Latham

(honorary member award during the 16th ICCP, 2 August 2012)



Zev Levin (left) and John Latham (right)

I want to preface my talk by saying that I am delighted to have time in this magnificent and venerable city, and to be part of this beautifully organized meeting.

I also wish to reassure you that Zev has told me that my talk should not be technical, and should be no longer than about 15 minutes. I will comply with his rulings.

It is well-known that the so-called facts of history are often false or flawed, or have missing pieces.

It is not so well-known that the history of science and technology is also markedly deficient, particularly in failing to acknowledge who or what first recognized or prompted an idea, a

phenomenon or piece of knowledge. This has even happened in the atmospheric sciences, as I hope to demonstrate in the course of this somewhat miscellaneous talk.

I think we have often been unfair to our predecessors. This is not an original thought - one of the giants of cloud physics, atmospheric electricity & ice nucleation, Bernard Vonnegut [brother of the novelist, Kurt], always referenced (*Lucretius, 50BC*) in his papers, because he thought we should not have neglected the contents of his amazingly insightful book, written 2000 years ago: “De Rerum Natura” , “On the Nature of the Universe”.

I touch first on identification of the moment that a great idea is spawned.

The most famous of these – except perhaps for Eureka – involves Isaac Newton, perhaps the greatest of all scientists, who is said to have formulated the law of gravitation after an apple dropped on his head, and he realized that the apple and the Earth were pulling on each other.

Do you find that story unconvincing? Too convenient. Too easy an explanation? I do.

An alternative one is to be found in one of his schoolboy diaries [Newton museum, Cambridge] He was aged about 13.

His diary entry concerns his Uncle Abraham, who lived with him, and was notoriously over-fond of ale. It reads:-

'He staggered home yesternight, bedraggled, much bruised and muddied about the face, to meet my Aunt's great spleen at his appearance. In response to which, he bowed low to her and quoth: "The ground did leap up and strike me".'

Newton had added a postscript: *'Think well on this'*.

And he certainly did!

Now let us consider the Doppler Effect.

Doppler is perhaps the most famous name in Radar meteorology. (Great man!). But does he deserve all the credit?). I think not.

It is romantic to think of Dr Doppler train-spotting, listening to the change of pitch of the whistle of the express as it whizzed past him in 1842.

But the Doppler Effect had been known for a long time:-

I found a sad story in old book, '*Annalen die Musika*' recounting how Alfred Streichel, Court Musician to the Grand Duke of Luxembourg, 16th century, died for Doppler effect.

He had recognised pitch-change associated with relative motion, and designed a turn-table on which musicians sat and played as it spun. It was rotated by a winch arrangement in which a rope wound round the axle passed through a wall of the banqueting chamber to a room where prisoners were pulling it, while being flogged.

For this special occasion Streichel rearranged a Scarlatti work for lute, mandolin and crumhorn. Prisoners were whipped, the table rotated, the musicians began to play.

One report of this event says:-

'The sound was confusing, but unquestionably different from that made by stationary musicians'.

A second, more detailed report says:-

'The prisoners did pull the rope with such zeal that musicians were flung off in all directions, and a crumhorn did strike the ankle of the Grand Duchess with much violence'.

For which crime poor Streichel was executed.

In fact, the Doppler effect has been known for almost a thousand years:-

Those people here tonight who have friends who are steeplejacks will know about the Annual Banquet, in London, of the Royal Guild of Steeplejacks, which always culminates with entire assembly whispering 'The Lament of Dead Birds Flying'. Whooooooosh!

The origin of this tradition dates from the ferociously cold winter of 1132, over whole of Northern Hemisphere. Birds in panic were migrating in all directions. This was the only time that a flock of pelicans had been seen, flying over England. Many frozen birds lost flight as they flew over Winchester Cathedral, and plummeted past steeplejacks repairing its tower.

A report says:

'Their feathers did wail most mournfully'. Whoooosh!

I think that we have possibly been remiss in not exploring extensively possible *Applications of Atmospheric Effects to quite Disparate Fields, such as (Psychology)*

There seems little doubt that relationships exist between ions or fine powder particles in the air and people's emotional states.

For example:- There exists a well-established high incidence of suicides amongst workers in sugar refineries.

There is an equally well-authenticated propensity for lighthouse-keepers and other near-ocean dwellers to burst into sudden laughter, for no apparent reason. They cannot explain why.

Ions produced by waterfalls are known to have a particularly efficacious effect. In the 'Dialogues of Plato'. Pytharos of Crete consults Socrates as to how best to persuade a moneylender to whom he is heavily in debt to be lenient. The sage responds:-

'Waste not thy words on such a man. Rather, take him to the waterfall at Xandria. Sit him at the foot of it. Ensure that he inhaleth the spray therefrom. That mist will be more powerful to persuade him of thy case, than a comely maiden or a harp'.

It seems to me that a lot of research, in areas germane to us, are not reported in the scientific literature.

Electric Machines.

Louis 15 of France, was passionately interested in electric (high voltage) machines, and used to give electric shocks to members of his Court, to groups of monks, and also nuns, in each case making them sit in an arc, an almost complete circle, the two outermost people each holding a terminal of the machine. The King would then turn the handle, the voltage difference rocketed, all victims would convulse uncontrollably, and the King would be greatly amused.

However, as often happens with wielders of great power, he overstepped the mark and these experiments were banned by papal decree after King ordered a mixed group of monks and nuns, alternately spaced, to hold hands, and who - when machine was switched on -

did dance to the electric with mirth and great unseemliness, persisting in so doing long after the machine had been turned off, causing several on the morrow to renounce their holy vows'.

A well-known electrical phenomenon not fully understood for thousands of years is **St Elmo's Fire** – classically described as *an emerald-green electric discharge issuing from protruding objects, like the rigging of sailing-ships, or the horns of cattle located below a thundercloud.*

In cold regions, notably in Northern Norway, in wintertime, before the light-plagued modern world, young couples would go out on very dark nights to watch albatrosses land on frozen lakes.

The birds in flight could not be seen, of course, but when they became electrically charged by sliding across the ice, they went into corona, became ghost-birds, glowing with St Elmo's fire, gliding across the ice and - even if on collision courses - never touching.

Aerosol is of course a crucial word in our vocabularies.

Although not mentioned as such, aerosol figure prominently in an account of a South Sea Island Wedding, 500 years ago. It is described in a ship's log-book by Lemuel Pepys of Tyburn, on a voyage led by Sir Francis Drake:-

'The wedding took place in the early evening, at the bottom of a deep valley, where crouching, hidden, along both sides, were maidens, ten thousand in all, wearing feather boas and carrying bamboo horns filled with lycopodium, cinnamon, and other rare or sweetly smelling powders.

As the ceremony ended, a gong was struck, signalling all the maidens to spring to their feet and blow their horns.

Clouds of fragrant smoke, of myriad subtle hues, issued from the bamboo and made a swirling, drifting gauze across the sun. Throughout the night the scented sky crackled and gasped, bristling from time to time with jagged light. The feather boas glowed. So splendid and exciting an event, our hair stood upright and no-one wished to sleep.

About 25 years ago, a group of us at the University of Manchester – including one or two people present with us today - set out - with some small financial help from the Office of Naval Research – to see if we could reproduce this remarkable display of low-altitude breakdown, from centuries ago. We failed. Whether it was because of the raining, or the dearth of lycopodium powder or maidens I suspect we'll never know.

Little attention has been given, as far as I can tell, of the Superior Sensory Capabilities of Animals, compared with those of humans.

Consider for example, ***Recognition of Lightning's Propensity to strike Protuberant objects.***

Homer (in the Odyssey) writes of:-

'Giraffes humbled by the fear of thunderbolts'.

Lucretius (De Rerum Natura) elaborates:

'Beneath storm-clouds they kneel, lay their necks along the ground until the sky is clear again'.

Or Whales:-

In Herman Melville's 'Essays on Whaling' he describes how a whale surfacing to spout:-

'On perceiving a thundercloud overhead, will roll onto its side, so that its jet just skims the surface of the water'.

Exploitation by insects of thunderstorm electric fields.

Shakespeare, in 'Much ado about Nothing' says:-

'..... and watch the lazy insects glide in curved paths beneath a summer storm'.

They were obviously gliding along the lines of force. Perhaps it is their equivalent of skiing.

I have a former long-term collaborator & friend who, whenever possible, takes off her glasses, not because of vanity, but because, she says:

Blurred objects are more beautiful than clear ones'.

I think so, too, and I think also that there might be a scientific parallel to Marcia's remark.:-

It's true, as scientists, that we need clarity, objectivity. But perhaps, sometimes, if we are too ruthless, too impeccable or implacable, we run the risk of missing truth hidden in confusion.