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## Club Memorial Call W8KSE

Our **April Meeting** is on Fri. 25th at 7:30 PM at the Perkins Restaurant at SR 73 and I-75.  
Discussion Topics: 10 GHz Activity Day, Hamvention and more.

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**10 GHz Activity Day, May 3rd** (see next page, De N8ZM)

**Dayton Hamvention, May 16/17/18**

**Central States VHF Society – 37<sup>th</sup> Annual Conference**

Tulsa, Oklahoma July 24-27, 2003 Renaissance Hotel and Convention Center  
Society Web Page <http://www.csvhfs.org>

**Achtung ! We will print the roster and e-mail addresses in the next newsletter. Please check your specifics and send corrections and additions per e-mail or postcard to the editors**

## De N8ZM

When I wrote the last edition of this monthly monologue, the war was still just a possibility, and today it is all but over! Regardless of your views in the matter, you have to admit that this certainly is better than having them drag on for years. Sure, we will most likely be there for a while keeping a lid on things, but it should be pretty calm for the most part. It would be great if the rest of the world would begin to figure out that this experiment in democracy actually has proved to be successful and beneficial for everyone. Or maybe they have and just hate to admit it.

On May 3rd, we will be holding our 10 GHz activity day; the brainchild of Brad Totten. Even if you don't have any gear for the 3 cm band, this will be an interesting event. It seems to be the general wisdom that until you have a bit of experience with this band, it is helpful to have two people at each end to manage process. I have a number of suggestions for locations in and around the Dayton area that need to be checked for topo characteristics and ability to see the other proposed sites. If you have coordinates, or crossroads, or whatever that I can work with for a site you think has possibilities, email the info to me at [N8ZM@MVUS.ORG](mailto:N8ZM@MVUS.ORG) before the April meeting. I plan to review all of the site data then, as well as getting all of the other plans settled. Nominal starting time is set for 10:00 A.M. We will have to organize for things like who goes to which sites, liaison frequencies, QSO protocols, antenna polarization, and whatever else. Afterwards, if enough of us have time, we can meet at some appropriate bistro for a sandwich and a cold one while we share experiences. If things go well, everyone should have at least one QSO, and maybe more than one grid square to brag about.

We do have a booth at Hamvention, and we need to get the schedule together for when folks will take their turn holding down the fort. A couple of hours apiece, and some help for Gerd to set it up and take it down are all that is needed. As in past years, if you can put in at least two hours, MVUS will reimburse you for your ticket. That is a very good return on your dues! Which, of course, reminds me to remind you that if you haven't paid yours lately, Gerd would like to hear from you. And since the dues are increasing effective May 1, now is a good time to send yours in. Being very facile at math, Gerd even prorates whatever amount you send him to the nearest month. ( Rumor has it that he will even prorate to the nearest minute, but we haven't been able to verify that via audit yet.) So keep Anomalous Propagation coming to your mailbox and support one of the most fun radio clubs around these parts.

OK, since I brought up sending Anom Prop to your mailbox, and we are trying to keep costs down, we have floated the idea of sending it out via e-mail, to those who would prefer, or are willing, to receive it in electronic format. Being frugal, it would be sent in a Word compatible format (.doc) so that pictures could be included. That is the same format used to produce it today, so it doesn't change anything for the publisher/editor. If there is sufficient interest down the road, we might publish it as a web page and simply send out an email notification that the new edition is available. If you would like to receive Anom Prop via email, please send the address you would like us to use to Steve Coy at [K8UD@ARRL.NET](mailto:K8UD@ARRL.NET) so that he can put it on the list. If you are currently on the MVUS email distribution, you are all set, unless you would prefer not to get the newsletter electronically. In that case, just ask Steve to take you off the list for Anom Prop, but leave you on the distribution for other notifications. Everyone who receives the electronic version will, of course, no longer receive the paper version, although there may be some bugs in that for a month or two.

One other note: there will NOT be a meeting in May in order to allow the survivors of Hamvention time to rest and become reacquainted with their families. Also, there will not be a July meeting due to Central States. Which triggers a light in my head that August will soon be here and we need to start planning our annual picnic. More to come on that shortly.

73, Tom, N8ZM

## This and That 4/5-03

- **Mass and Weight.** Scientists use just seven basic units to define all other quantities we use. All of those except the kilogram are themselves defined in terms of natural properties that are beyond the reach of human manipulation. The kilogram, however, is simply the mass of a small platinum-iridium alloy cylinder locked away in a vault maintained by the International Bureau of Weights & Measures in Sevres, France, near Paris. There is a copy of this at the National Institute of Standards and Technology (NIST) in the US that stands behind the scale that weighs out your pound of potatoes. [Robert C. Cowen]
- **Epitaph.** “Here lies Alfred Stieglitz. He lived for better or worse, but he is dead for good.” [Alfred Stieglitz].
- **Military QRM.** Our military is trying out a lot of new “high-tech” equipment. Much of this in the area of electromagnetic waves. Airplanes with powerful broadcast transmitters are flying overhead “overriding” the local transmitters. A “high power microwave generator” is carried close to enemy electronic equipment with a missile, burning out sensitive components for a couple of 100 feet around.
- **The Registry.** The (computer) registry is an evil and complicated database inside Windows that keeps track of almost everything. “Norton” said I had errors in 248 registry entries... There’s a way to edit this file yourself. But I shy away from doing that. Just plowing through all the data stored in the registry gives me a headache.  
[Bill Husted, K ]
- **Success.** When asked what success in life meant for him, Einstein answered:” If success is A, then  $A=X+Y+Z$ , where X is effort, Y is play and Z is keeping your mouth shut.”
- **Some Hit.** A couple’s Chevy Monte Carlo was hit by lightning as it was entering I-73 coming from Ohio 73. (That’s where we have our monthly meetings) It blew out the windshield, activated the airbags and melted the antenna. The couple also lost their hearing temporarily. A police car following 5 cars behind saw a blue streak dropping from the sky. The force of the hit also sent the hubcaps flying!  
[From the caption of a picture, blown windshield/passenger side, in the Dayton Daily News]
- **Cheap Rate.** I keep getting these offers with an attractive per minute long distant rates. How cheap are the really? Most of these rates require a monthly minimum. Which could completely change the picture. Let’s assume I make 6 calls lasting 5 minutes each. That adds up to \$3. - at my present rate of 10c/min with no additional charge. Now with the cheap rate of 5c/min plus a monthly charge of \$ 3.- this would be \$ 4.50. Now if I double the amount of my usage with 12 calls at 5 minutes I pay \$ 6.- Only at that point does the cheap rate pull even and begin to save you some money. [Gerd, WB8IFM]
- **Media.** Edward R. Murrow once said that just because you have a microphone doesn’t mean you have anything to say. This is in a way, a growing leadership problem in America - big mike, no message. It is also the modern media problem: fifty-seven channels and nothing on. Funny since we all hunger. This is one area of business in which supply is not equal to demand. [Peggy Noonan]
- **Polls.** And we are polled too often. We are constantly having our temperature taken, like a hypochondriac who is looking for the reassurance no man can have, i.e., that he will not die. [Peggy Noonan]
- **LEDs.** Some cars already use colored LEDs for tail and brake lights, and for turn signals. Within a few years we will see also head light appear on cars consisting of between 10 and 20 white LEDs. The advantage is not so much the higher efficiency but the lifetime of the LEDs. They will last the life of the car, so they never need to be replaced.

## **Preamp Test** (5 April)

I made a little test of the DB6NT 10 GHz preamp and my white box rig yesterday. I stopped at a roadside spot about 5 or 6 miles south of Bruce's place to use the beacon.

With no preamp, I copied the beacon easily from there, but the signal didn't even wiggle the meter on my IF rig, a Yaesu FT-290. With the preamp in line, the signal was clearly stronger, and the meter read about mid-scale, which would be (very) roughly about 25 dB above the no-preamp reading.

The signal faded in and out erratically. It might be very strong for a couple of minutes, then fade to "S1" or so for a few seconds, then come back up.

I also stopped at Otterbein on the way home to try to hear the beacon from there (about 23 miles SW of the beacon). I heard it very faintly for a few moments but not well enough for long enough to copy the call sign.

The good news is: the preamp seemed to work just fine. ... Rich W2RG

## **Michigan Ice Storm** (5 April-03)

By Lloyd J. Ellsworth, NE8I

This morning was microwave activity day. Very little activity!

The area North of Detroit was struck with an ice storm last night, coating everything with a layer of ice. This froze up antennas. There was a lot of tree damage and many power outages. Driving was a mess. Managed to do a few experiments driving around using my 10 GHz beacon, and a small portable 10GHz station. The ice coating seems to be microwave reflective. Making everything a mirror. Experiments run with WW8M and WA8HGX a couple of years ago on 24 GHz found signals bounce all over the place, rather than being attenuated. At that time, we did not try 10GHz. Today's results seems to suggest this is also true at 10GHz. Would have been nice to also try this on 5.7 GHz, 24 GHz and 47 GHz. Thickness of ice varied around my area. Typically 1/8th of an inch. Saw as much as a 1/4 inch. (2 to 5 mm) Temperature a little below freezing, and fairly high humidity. Paths under 10 miles (16 KM). Heard signals in places that normally had no signal. Multipath distortion and interference.

## **Warm up (5 April)**

By Rich, W2RG

K9AYA (Bill), K4EFD (Brad), and W2RG (Rich) warmed up this year's microwave roving season <g> with several successful 10 GHz contacts this past weekend.

K9AYA and W2RG started on Saturday with a shakedown test over the 15+ mile path from K9AYA's home northwest of Hamilton OH to the VOA site west of Mason OH. We used FM, and Bill's signal pinned the meter at my VOA site in spite of (as we later discovered) being cross-polarized.

On Sunday, K9AYA, W2RG, and K4EFD completed the 111+ mile path from near Borden IN (Brad) to Otterbein OH (Bill and Rich). Brad's signal was S9+ using CW, SSB, and FM. I think we three were all delighted with the propagation and signal quality. Oh, the weather was pretty good, too.

## 120 GBytes Hard Drive Capacity

Computer hard drives are now available up to 200 Gbytes, which is just “awesome”, to use a teenage expression. To top this, the prices have steadily come down. I just purchased a 120 Gbyte HD for \$ 100.- which amounts to less than a dollar per GByte.

To get some perspective, what you could do with this drive: you can record, and play back 50 hours of video, or store and view 80,000 quality photos (1.5 Mbytes), or store and play back 30,000 four minute MP3 sound pieces. Compare this to our good old 3.5” floppy which can store just a single photo of this quality.

Compared to our old standby “paper”: you can store six million pages of styled text (8”x11”), or twice as many in plain text. This converted into books would yield numbers between 20 and 50 thousand, a small library! In my house I measured 180 feet of shelf space, which can hold over 2,000 books at 1” thickness each!

So this hard drive, which measures just 4”x 6 “x 1”, can handily store the paper contents of a dozen houses like yours or mine. We wouldn’t need the big houses, now being build and even our 1950 ranch type would look big w/o the paper! The xyl is getting excited!

[WB8IFM]

**The Missing Printer Cable** I knew from the previous two printers I bought over the years that they require the owner to go out and buy a separate printer cable. I always thought this was “un-American”, but then most printers are made overseas. When I bought the second printer, they had advanced to a “bi-directional” printer cable. The cable looked the same, but an extra wire had been added. So you had to go and buy a new cable, naturally the price also went up for this extra wire! So I was appreciative when the young clerk reminded me of this fact, as I put the printer in the shopping cart. He examined the writing on the box looking for a clue, which cable was needed. Well, the clerk found that two interface cables were included with the printer. Setting up the new printer, I went by the nicely illustrated step-by-step procedure. And there it was, Step 5: connect one end of the USB cable to the printer and the other end to the computer. Of course, the two USB cables provided were special and only suitable to hook up cameras to the printer without involving the computer. I have no idea, why anybody would think that feature would make it easier to print pictures. Just looking at the little LCD display and all the navigation buttons gives me the creeps.



So I had to make another trip to get a cable. After consulting my 2002 Radio Shack catalog, I trotted to my neighborhood store. For some strange reason this particular cable with just four wires comes in lengths of 3, 6, and 10 feet. Of course, the 3’ cable is too short and everybody needs at least a 6’ cable. So I was not surprised that there were umpteen 3’ cables but no 6’ cable. The prices were also out of this world and had more then doubled to over \$20 from the \$ 9.99 in my catalog. This is amazing. I remember having paid about \$ 10 for my old parallel port cable with dozens of wires and very complex, big connectors. The new USB connectors are very simple square (B) or rectangular

(A). You can buy them at fleamarkets for a few bucks.

[WB8IFM]

### **More on Lightning and Thunder** (AP-17-4) (from Web)

**Are thunderstorms the only source of lightning?** Lightning is usually associated with thunderstorms. On a few occasions, lightning has been observed within giant steam and debris clouds from erupting volcanoes. Lightning, and even miniature tornado-like vortices attended the spectacular volcanic birth of the island Surtsey near Iceland. Giant plumes of smoke from large forest fires also have been known to produce lightning, although these smoke clouds were probably in the process of turning into regular thunderstorms. In the western US, most forest fires are started by lightning. Sometimes the heat from the intense fires trigger new thunderstorms ... which in turn can produce more lightning. This is called a feedback loop.

**Can lightning strike twice?** In many ways. As mentioned, in a typical lightning flash, often several strokes hit the same spot in rapid succession. Tall structures and buildings such as the Empire State Building in New York City, the Hancock Building in Chicago and the CN Tower in Toronto are hit many times each year. This fact has actually led to conducting research sites in lightning in using structure like these. In general any object struck by lightning is generally a better candidate to be struck again than something which hasn't been zapped. And then lightning does strike twice...and sometimes with apparent malevolence. On 8 August 1937, three persons were killed by a bolt that struck Jacob Riis Park beach in New York. On 7 August 1938, almost a year to the day later, lightning again struck the same beach, and again killed 3 bathers. Don't tell a homeowner in Arvada, CO that lightning doesn't strike twice. His new house was struck during a summer thunderstorm and sustained considerable damage. Just as they were getting things back in shape six weeks later- shazaam! and \$30,000 more in fire damage.

**Can you make lightning indoors?** Easy, although on a rather small scale. When the indoor relative humidity is very low, which it often is during winter, static electricity builds up on your shoes and clothing can generate notable electrical discharges. It can result in "that annoying static cling" on your dress, and a lot more. In fact, each inch of spark represents a potential difference of 40,000 volts. So a three inch discharge represents a 120,000 volt potential difference. This is why you want to protect your PC from static electricity. Cat fur gives up its electrons easily. So if you need to generate an electrical spark .... just grab that kitty and rub away. **Does lightning give off radiation besides light?** In 1895, William Roentgen discovered X-rays. Much more recently atmospheric scientists were surprised to find that thunderstorms can produce X-rays during lightning discharges. Of course lightning also radiates radio energy over a broad range of frequencies. Some of this energy is with the AM broadcast band, which produces the familiar static heard on many summer afternoons and evenings. Another name for this static is sferics, short for atmospheric.

**Where does lightning like to strike?** Lightning strikes most portions of the globe sooner or later, but it does have its favorite haunts. Weather satellites suggest that the vast majority of lightning strikes to the planet occur over land areas, even though it comprises only about a quarter of the earth's surface. Not too surprisingly, the tropics receive two thirds of the lightning bolts. But some mid-latitude storms, such as those which roam the interior of the U.S., during summer night time hour, can be prodigious producers of lightning.

**Does it need to be raining for lightning to strike?** It is a myth that if it is not raining there is no danger of being struck by lightning. Bolts can and often do strike as much as ten miles outside of the rain area of the parent storm. Recent research on lightning deaths finds that most fatalities occur in the period when the storm appears to be ending. During the height of most thunderstorms, people are inside seeking protection from the rain. For the ten or more minute period after the rain ends, and even after the sun comes out, lightning is still a threat. People leave their shelters and ...wham! People apparently have enough sense to come in out of the rain, but to get out of the way of lightning. Remember, if you can hear thunder, you are close enough to the storm to be struck by lightning. Move at once to a sturdy building or vehicle.

**Do lightning rods work?** Yes. Lightning rods, invented by none other than Ben Franklin, neither attract nor repel lightning bolts. They do, however, provide a safe path to ground for the flash. Indoor plumbing, which includes pipes

buried deep in the ground and vents extending above the roof, have long served as surrogate lightning rods for homes. However with the trend towards using PVC rather than metal pipes, this "free" lightning protection has vanished from many newer homes. But to be effective lightning rods must be properly grounded, and there should be no sharp bends in the cable leading from the air terminal (the pointed rod) to the grounding rod.

**What sporting activities are prone to lightning danger?** Virtually anything you do outside during spring and summer involves a lightning risk. Swimming, boating, hiking, golfing, soccer...if you are out there, you are a target. Most lightning deaths in the U.S. (in descending order) occur (1) in open fields or ball fields, (2) under trees, (3) while boating and fishing, (4) near tractors and heavy equipment, (5) on golf courses, (6) and on telephones (but not cellular or cordless ones). A young man fishing in Indiana in 1993 caught more than he was planning on. While carrying a fishing rod over his shoulder as he walked away from a pond, it was struck by lightning. He was hospitalized but did recover. Wonder what his bait was. Perhaps Frisbee is joining golf as a dangerous sport? During a Frisbee match in Nashville TN on 10 April 1994, lightning struck. One person was killed and 18 were injured. The safety rules are the same for all outdoor activities. If lightning threatens, get inside - and don't seek shelter under trees. Golfers are generally not significantly more often struck by lightning than most outdoors types, but there are plenty of golf-lightning tales. Golfers Lee Trevino and Jerry Heard were both struck by lightning during the 1975 Western Open in Chicago. Both recovered after hospitalization. Over the years, hundreds of other golfers who failed to leave the course after lightning was spotted have been far less fortunate in their encounters. Thor showed his wrath in the land of Vikings in June, 1991. On 13 June one spectator was killed and 5 others injured while taking shelter under a tree during the US Open Gold Tournament near Minneapolis. Then on 29 June, four were injured when lightning struck nearby at a St. Paul golf course. While the lightning fatality at the 1991 US Open made headlines, 37 year old man was killed by a bolt while golfing near Louisville, KY. Two others were injured. All were standing under a cluster of trees.....The rule still stands...don't stand (or sit) under a tree during a thunderstorm. Get inside. But with all the talk of lightning hits during recreation, those working for a living in outside jobs are equally at risk. Postal employees, construction workers, farmers, and many others need to take care. Five miners were killed in Texas in May of 1985. They were all taking a lunch break while sitting under a 35 foot oak tree. Only the one lightning flash was seen in a classic bolt from the blue scenario. Cowboys and farmers are at risk. Cowboys are a tough breed. One Utah cowboy was literally blown out of his saddle when struck by a lightning bolt in August 1993. He found a hole in his felt hat, his hair was melted in several spots and he had numerous burn marks on his torso. His faithful steed, however, didn't survive. Not everything that happens in an amusement park is funny. Four workers were injured after being struck by a bolt of lightning while they were dismantling a ride in Warrick County, Indiana on 2 September 1991.

**And now a word from Smoky the Bear about lightning.** Lightning is the leading cause of forest fires in Alaska and the western U.S. In the past decade, over 15,000 lightning-induced fires nationwide have burned over 2 million acres of forest. But stupid campers with their camp fires and nut cases who like to see things burn are still a major cause of burns, especially near large cities. But Smoky would like to find some way to help stamp out lightning.

**How close was that lightning bolt you just saw hit the ground?** Count the seconds between the flash and the bang, and divide by 5, and you have the answer in miles. Sound travels about one mile in five seconds, so by timing the interval between seeing the lightning and hearing the thunder is a pretty good indicator of how close you were to "ground zero". Thunderstorm approaching. Where to go? A car or truck (with windows closed) or the inside of a building are your best bets. Where not to go? Avoid standing under trees, near fences, railroad tracks, tents, hilltops, golf carts, or holding onto telephones, electrical appliances or plumbing. And stay out of the water! Open sided rain shelters are not particularly good protection from lightning either.

**Could we harness the power of lightning?** Well, first of all "catching" lightning is not the easiest thing to do. But even if could capture and store a bolt, there is less energy there than you might think. Though very powerful while it lasts, the typical stroke only lasts for millionths of a second. If the total energy of a single lightning flash were captured, it would only run an ordinary household light bulb for several months time. Meanwhile lightning is one reason why U.S. electricity



bills are not lower - lightning strikes destroy more than \$100 million worth of utility power transformers each year.

**Could being struck by lightning be genetic?** Is it in the genes? A midwest woman was struck by lightning in 1995. Nothing odd there, you say. But her nephew had recently been struck and suffered temporary blindness. Her cousin was dazed in the 1970s when lightning struck her unfolded umbrella. The same woman had been struck once before in 1965. Her grandfather was killed by lightning on his farm in 1921. And his brother was killed while standing in the doorway of his house in the 1920s. At this rate that part of gene pool will soon be exhausted.

**What if you are caught outside in a lightning storm?** If you are caught outside in a lightning storm and can't make the shelter of a car or building, then get away from isolated trees, tall objects and hilltops. [Being deep inside a grove of trees is safer than being exposed in the open.] Do not be the highest point around. Avoid direct contact with other persons (in a group, don't hold hands or hug each other!), get into a ditch or shallow depression if possible, crouch down with feet together and with your hands on your knees. Remove metal objects such as belts and golf clubs. And then promise to be more alert to weather signs and not get yourself in such a fix again! Is lightning related to rainfall? Lightning is produced inside thunderstorms as a result of the formation of precipitation particles. For each lightning bolt that hits the ground, on the average about 200,000 pounds of rain are also formed.

**Do we understand everything about atmospheric electricity?** Based on the following story from the truly weird department, apparently not. In 1991, two young girls near Bristol, England were playing frisbee. Suddenly the disk was hurled back at one of the girls by some unseen force. Then both were enveloped in some sort of "yellow bubble". They received slight electric shocks, were thrown to the ground, and had problems breathing. Eventually they freed themselves from their capture and ran home, quite terrified by their experience.

**What is a bolt from the blue?** A bolt from the blue. It is more than just a figure of speech. Lightning bolts can on occasion jump 10 or more miles out from their parent cloud and appear to strike in a region having blue skies overhead. Such was the case on this date in 1995, when lightning struck a ball field near Miami, FL, injuring 10 children and a coach. The skies were clear save for a line of clouds to the distant northwest. Is lightning sexist? Lightning seems to be picky about what it hits. Some studies suggest that it preferentially strikes oak trees over other species. And it certainly is sexist, striking and killing men far more often than women. In Great Britain over a two decade period, 85% of lightning fatalities were men. In a recent study of Florida lightning fatalities, 87% of the persons struck by lightning were males. Before suspecting a plot by radical feminists, note that while 34% of the males struck by lightning were killed, 44% of the females struck died. Take cover immediately..... During severe thunderstorms and tornadoes lashing the Huntsville, AL area in February 1995, National Weather Service staff were on television warning people of the dangerous storm conditions. Just then, the weather office took a direct lightning hit, a fire started, and the weather radar was knocked off the air.

**What is ball lightning?** Ball lightning is one of nature's most mysterious phenomena. Usually seen during violent thunderstorms, the spheres of glowing light are typically the size of bowling or basketballs. They can last from a few seconds to many minutes. The spheres can simply vanish into thin air but can also pass through windows glass and screens leaving burn marks behind? Not every scientist is convinced the phenomenon even exists. But there are numerous credible reports of "balls" of "fire" floating through the air, often after nearby lightning strikes. They usually do not cause much damage and even seem "playful". They have been known to roll down the aisles of airliners or pass through an open window into a startled resident's bedroom. On 8 June 1972, a hole, 2 inches across, was punched through a window of an empty office in Scotland during a thunderstorm. Since the glass was melted and fused around both the inside and outside of the pane of glass as well as on the circle of glass found on the nearby floor, it is presumed that ball lightning had passed through the window. Even stranger, the office was in the University of Edinburgh's Department of Meteorology. In Wales, on 8 June 1977, a brilliant yellow-green transparent ball bounced down the side of a hillside. It was visible for about 3 seconds but this event appeared to be the size of a bus! In 1996 in Gloucestershire, England ball lightning entered a factory. It traveled along girders and machinery around the building, lightning blue, white and orange and sending off a shower of sparks. The ball then hit a window and disintegrated. The incident lasted only 2 seconds. The only damage was to the company's phone system, and the nerves of the workers.

**How often does lightning strike the ground in the US each year?** Lightning detection networks suggest that bolts blast the ground some 25 to 30 million times per year. The lightning hot spot of the U.S. is central Florida. Disneyworld could be called Lightning world. In a typical year each square mile of central Florida is struck some ten times. Most parts of the country east of the Rockies have 10 to 50% of that lightning frequency.

**How wide is a bolt of lightning?** A big lightning bolt striking the ground might look to the eye that it might be hundreds of feet across, but in actuality the current channel is generally not much thicker than a pencil.

**How far away from the lightning bolt can you hear the thunder?** Generally thunder can not be heard much more than ten miles from its source. In a city where ambient noise levels are high, often thunder is audible only when the lightning strikes a mile or two away.

**Does lightning come from ice?** As strange as that sounds, lightning, with a temperature hotter than the surface of the sun, only forms in clouds with large quantities of ice. Electric charge is generated during freezing and melting processes in the presence of snow and supercooled water droplets. 20 July. During the summer of 1993, not only were torrential rains pelting the Midwest (resulting in great floods), but for the first time since records began, the national lightning "hot spot" was located in Missouri - not Florida.

**Are lightning deaths on the increase?** In the United States, lightning deaths per million citizens have declined some 70% since the 1950s, although the number of serious injuries has only dropped slightly. This is probably the result of several factors, including widespread CPR training which can revive lightning victims. But with more and larger outdoor gatherings and concerts taking place, outdoor crowds during summer pose a special hazard - the chance of a major lightning strike disaster. In July 1991, at least 22 people were injured as lightning struck a crowded beach in Potterville, Michigan. None of the victims were in the water.

**If you are not hit directly by lightning, are you safe?** No. Lightning can travel through the ground for a considerable distance from where it strikes. It can easily enter your body through your feet. Four legged creatures like cows and horses are even worse off because they have four feet which are further apart than ours, which increases the electrical potential difference. If caught in the open during a thunderstorm, seek shelter from lightning - but not under a cow. On 8 June 1993, ten cows were killed by lightning in Trempealeau County, WI. Also lightning might hit a tree nearby, but a phenomenon called side flash can have a streamer jump sideways to a nearby object. There are pictures of one person being hit directly with side flash killer the person standing several feet from them. And you could also be on the telephone telling your friends what a neat thunderstorm you are having -when lightning could strike the phone line and travel into phone, and your head. Several people are killed this way each year.

**Does carrying an umbrella increase your chances of being hit by lightning?** Probably. But even more risky would be standing next to a boat mast, leaning on a metal fence, sitting on a railroad track (why would you anyway?) or swimming. On 31 August 1991, lightning struck two recreational craft in the Gulf of Mexico off Panama City, FL. The toll: 2 killed and 9 injured. Any time you are exposed in a thunderstorm, particular near a tall attractive object such as a tree or a boat mast, there is a real risk of being struck by lightning.

**How long can a lightning discharge be?** If it is a "cloud-to-ground" bolt, then travel distance is limited by the distance from the interior of the cloud to the ground, which is rarely more than 10 miles. But cloud-to-cloud or intracloud flashes may reach for a 100 miles or more in rare cases.

**A billion dollar lightning strike?** In July 1977, a bolt took out a major power line in upstate New York resulting in a massive 24-hour blackout in New York City. The resulting looting losses were estimated at over \$1 billion. There was also a surge in the birth rate nine months later. Maternity costs were not tabulated.

**Do cities affect lightning?** Perhaps. Recent research suggests that lightning frequencies over and downwind of a number of midwestern cities can be 10% - 20% or more higher than surrounding areas.

**Can mountain climbing be risky?** Yes, and falling isn't the only problem. Between 1980 and 1991, lightning killed (at least) 50 people in Colorado - and of these 20 were killed while climbing or hiking. Mountain hikers should plan their climbs early in the day before the storms start. If caught in a thunderstorm don't stay mounted on horseback. If in a group, spread out. Cars (if you can find one) are a safe haven. Taking shelter under an isolated tree can be deadly, but

the cover of a dense forest canopy is relatively safer. **What is keraunophobia?** The irrational fear of lightning is known as keraunophobia. The fear of thunder is termed brontophobia. The fear of tornadoes - sounds pretty smart to us.

**The most dangerous part of a lightning storm?** Near the end. A study of Florida lightning strike casualties found that the largest number occurred just as the storm was ending, not during its most intense part. Seems people were too quick to declare the storm over and wandered outside from their protective shelters to get nailed by the storm's last flashes. Ugly Luck Department: Lightning struck a Waterford, WI barn on July 10, 1992. Inside the barn was 6000 bales of hay. During the 1990s, roast chicken became a staple of fast food restaurants. But in July 1995 in Miller City, OH nature joined the trend when lightning struck a poultry farm and 68,000 chickens were roasted. In 1926, the Navy's largest ammunition depot was located in Lake Denmark, NY. The storage buildings were sturdy, and equipped with lightning rods. On 10 July, lightning struck. BLAM. Depth charges and TNT bombs went off. Sometimes you just can't argue with Mother Nature. On July 2, 1992 in the Chicago area the fireworks started early. Five people were killed by lightning. Then thousands were left in the dark for up to two days due to widespread, storm-caused power outages. Strike 1: Lightning strikes a chemical plant in Texas. Strike 2: The building catches fire. Strike 3: The fire department finds there isn't sufficient water available to put out the fire and the place goes up in flames. The summer of 1980 was a rough one for lightning strikes in Ohio. In Wickliffe, OH the entire high school football team was knocked down by a bolt during practice, with one player being injured. Then 26 people were injured in Tuscora Park, OK, with one fatality. And a lone man was struck and killed - while digging a grave in a cemetery. Lightning struck near a house in upstate New York on 17 July 1988. Among the unusual results: the tires on cars parked in the driveway were flat. The hubcaps were blown off. And the home owner's contact lens also popped out of his eye.

**What is heat lightning?** Heat lightning is not a special form of lightning. It is simply the reflection of regular lightning off atmospheric dust layers from distant thunderstorms below the horizon.

**Can you outrace lightning?** The electrical breakdown of the atmosphere during a lightning strike takes place at speeds on the order of 100,000 miles per second. You can hide but you can't run from Zeus.

**What if your hair stands on end?** If you are outside when a thunderstorm is near by and your hair stands on end, or a fishing line literally hangs in the air after casting....that is a sign of dangerously high electrical fields in the atmosphere. Lightning may be about to strike. Seek shelter immediately.

**What is triggered lightning?** On March 26, 1987, the Air Force launched a rocket from the Kennedy Space Center carrying a communication satellite into low-hanging rain clouds. At 48 seconds after launch, the rocket was "struck" by lightning - apparently triggered by the ionized exhaust plume trailing behind the rocket. The cost: \$162 million dollars (which was not insured except by the taxpayers). A similar thing happened to the Apollo moon landing launch vehicle during lift off, although the mission continued without incident. Scientists also routinely fire small rockets trailing copper wires into electrically charged clouds which often triggers a lightning bolt to strike in a predetermined location. This capability is being used to study the effects of lightning on electrical equipment and materials, as well as conduct atmospheric research.

**Can you get paid to be struck by lightning?** Some research pilots actually did. Their job was to fly heavily instrumented F106 aircraft through thunderstorms, deliberately trying to be struck by lightning. And they were really good at their job, getting nailed many times. This seemingly odd occupation was pursued to improve aircraft lightning safety features and to develop better forecasting tools for in-route lightning avoidance. Too bad the old TV show "What's My Line" still isn't on the air. These guys would be shoo ins.

**Can you sit under a tree that grows in Brooklyn?** Yes, but not during a thunderstorm. On 9 July 1988, one man was killed and ten were injured during a thunderstorm in Prospect Park, Brooklyn, NY, while seeking "shelter" under a tree. Standing under or near a tree during a thunderstorm is truly dangerous. Nationwide, dozens of people are killed and injured each year as a result.

**Does thunder make milk go sour?** An "old wives tale" says that thunder causes milk to go sour. Neither thunder nor lightning can have that effect. Although, thunderstorm season comes with high humidity, and if not properly refrigerated, milk will "turn" sooner than usual, thunderstorms or no.

**Want to try an electrifying new experience?** Take a vacation. Go hiking in the Colorado Rockies. Climb to near the top of a tall peak to admire the view, and stand there during a thunderstorm. A Massachusetts woman did just that in the summer of 1991. She also had the good sense to be struck by a lightning bolt right in the presence of a doctor and a nurse. They revived her stopped heart with cardiopulmonary resuscitation. Somehow this makes bungee jumping seem perfectly tame by comparison. For those less adventurous, heed the signs posted by the Forest Service, which suggests, among other things to do one's mountain climbing early in the day before the afternoon thunder (lightning) storms get going.

**How loud is thunder?** Sound intensity can be expressed in decibels (sometimes abbreviated dBA). A clap of thunder can typically register about 120 dBA, or ten times louder than a garbage truck, chain saw or pneumatic drill. On the other hand, sitting in front of the speakers at a rock concert can expose you to a continuous 120 dBA, which can seriously harm your hearing.

**Things that go boom at the beach?** One enduring mystery has been the reports by coastal residents of "water guns", loud thunder-like booms that seem to emanate from somewhere out over the sea. The reports have been made for centuries, so sonic booms seem to be ruled out. Natural gas explosions are one possibility.

**What are the Arkansas booms?** In the winter of 1983, residents of Hope, Arkansas, home of President Clinton, heard numerous loud booms during a period of cold weather. No explanation ever surfaced. But recently Senator D'Amato has been trying to link them to the Whitewater Affair.

**Can you hear meteors?** Things that go boom in the night. And the daytime, too. Sonic booms are routinely produced by supersonic jet aircraft. The Space Shuttle also lays down a path of booms as it descends for landing. But nature, not wanting to be upstaged by humans, knows the trick too. Extremely sensitive networks often pick up sonic booms made by meteorites. But there have long been reports of people "hearing" meteors as they sweep across the sky long before any sonic boom could have reach their ears. Dismissed by most scientists, the mystery was recently complicated by reports of observers "hearing" a swishing sound while watching the Space Shuttle begin its descent from orbit over Texas. This was long before the sonic boom arrived. One explanation is that both objects give off electromagnetic waves to which some people are sensitive.

**What is the Sausalito hum?** New Age types have long discussed the mysterious hum said to be audible (to some) around Taos, NM. However, houseboat residents in trendy Sausalito, CA are highly aggravated by a quite loud and irritating humming noise that is often heard from 8 PM till sunrise from late September through mid-April. Acoustical engineers have been unable to pinpoint the source of the sound. But biologists believe the noise originates from mating habits of the singing toadfish which lives in the bay. Let's hope the toadfish don't get into rap.

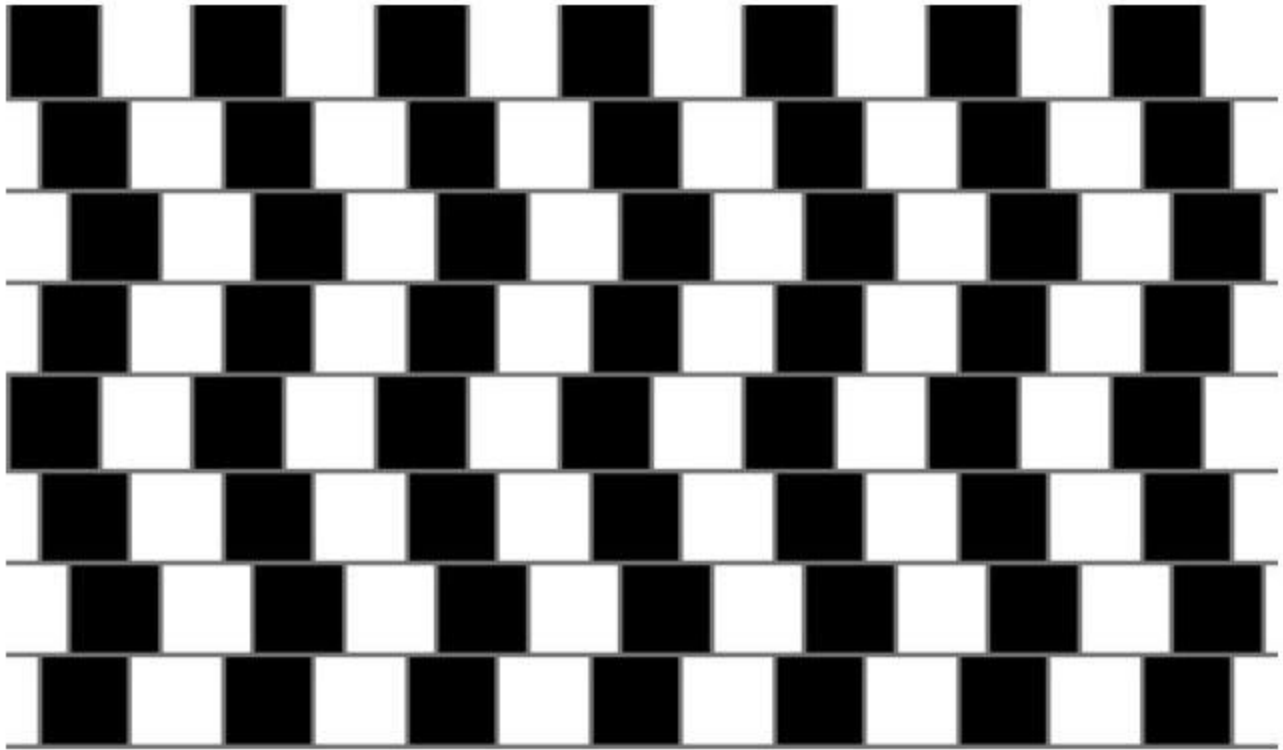
**What are Mistpouffers?** We don't know. One of the great mysteries of 19th century science. And still unexplained. Mistpouffer? One of the many names given to strange, dull, distant, explosion-like sounds that were heard sporadically along the coasts of Europe and elsewhere, with no apparent cause.

**Is lightning a sign from God?** We'll continue to avoid theological discourse, but we do note that many cultures have believed this. Ancient Romans saw Jove's thunderbolts as a sign of condemnation and denied burial rites to those killed by lightning. Some cultures have made medicines from stones struck by lightning., Roman, Hindu and Mayan cultures all held the belief that mushrooms arise from spots where lightning has hit the ground. In ancient Greek mythology, Zeus was the great bearer of rain, thunder and lightning. Spots struck by lightning were frequently fenced in by Athenians and consecrated to Zeus.

**What is a fulgerite?** OK, you're digging out in the back yard garden. You strike something hard. You keep digging...and unearth a 15 foot long, hard lumpy tubular "thing" that is white/green/gray in color. Quiz: What have you found? (1) Part of a UFO (2) A giant dinosaur leg bone? (3) fossilized lightning. Number 3 is the winner. Called a "fulgerite" it forms when a powerful lightning bolt melts the soil into a glass-like state. Such a record large specimen was found several years ago in Michigan. Visitors to the Great Sand Dunes National Park in Colorado get to see example of fulgerites extracted from the/ he nearby sand mountains. And in order to make point to the many hikers who take off for a days stroll through the dunes, the last sign they see warns them to take cover in thunderstorms and not to become

fulgerites.

**Does lightning every do any good?** Well, its very pretty and makes for some really neat pictures. It also fixes the nitrogen in the air which is used by plants. And every once in while it does some good deeds. According to an article published in Scientific American in 1856, an intense lightning discharge hit the ground in Kensington, N.H. and made a hole about a foot wide and 30 feet deep, forming a well which soon filled with good water. A Greenwood, SC man (by profession an electrician) survived a direct strike by lightning 28 years ago. But since then he has never been cold. He can stay outside in sub-zero temperatures wearing summer clothing for hours without discomfort. About 600 people per year are injured by lightning, and sometimes (albeit rarely) come out aheadÑthere are several stories of blind people regaining their sight after a tangle with a bolt. Talk about shock treatments! It is reported that lightning once struck a house in Minnesota, setting it afire. But this bolt must have had a conscience, as it then leaped across the street, striking a fire alarm box. The power surge resulted in an alarm being sounded, and the fire department responded promptly and put out the house fire. A woman living in Kansas was once talking on the phone with her husband (who had called to find out if she was OK during a storm) when the line was zapped. She was knocked unconscious, and ever since has been absolutely unable to tolerate any alcoholic beverages. There is a published claim of improved intelligence on psychological testing after a lightning strike. A woman in southern Illinois claims to have become psychic after being zapped. She claims to help police agencies in locating missing persons. An then there was a gentlemen who believed he had become "hypersexual" after his lightning injury because he could not get enough sex. (Do I see the potential for a new health fad here.....)



Are the horizontal lines parallel or do they slope?

## More Rover Sites

**Bills Super Site: K9AYA, QTH** 39 25.804 / 84 37.616 elevation 960' located at the corner of Ohio 130 (Old Oxford Rd.) and Boyle Rd, Visibility from to the South, from **1070 to 2100**

From ground level you can see the Kings Island tower, the WLW tower and the smokestacks of the Fernald plant (South of Ross)

There should be a clear shot to the VOA tower if there wasn't a water tower in the way near I-75.

There is a 13 mile LOS shot at groundlevel (verified) to the parking lot at the Target Store on Kemper Road, East of the Tricounty Shopping center.

Another 10 mile LOS shot is to a small business park on the North side of Mack Rd. just West of Gilmore Rd. there is a nice parking lot which is vacant on weekends.

There is also visibility to the North & NW to Oxford and up towards Richmond,IN.

I am working on getting permission from my neighbor across Boyle Rd, to the West to use their backyard. This would give us a great shot to the SW to Borden, which would make it possible to QSO Brad (near Louisville)

Bill's yard is open to anyone who wants to use it. Just call ahead: 513-893-0933.

**Steve's, K8UD, site. Consolidated Rooftop.** 390 43.876' & 840 8.565' elevation abt.900'. EM79wr. Going East on Rt.35 (from I-75) turn south on Smithville about 1.25 miles, turn right on Watervliet (light) and go about 250'.

Consolidated Electronics is on the left. Go left around the corner and park. There is an entrance in the back. Good visibility from 650 to 900 and at 1350. Call ahead, (937) 252-5662.

**Twin creek Park.** Red's, W8ULC, choice. From Rt.4, just South of Germantown, turn SE on Eby Rd. Go about ¼ mile. Excellent View towards Dayton. More to come!

**Anomalous Propagation (AP), now in its 17th year** is the monthly newsletter of 'The Midwest VHF/UHF Society', and subscription is part of the annual dues of the Society which is **\$10.-** payable by check or money order to: Gerd Schrick (WB8IFM), 4741 Harlou Dr. Dayton. OH 45432.

Besides news directly relating to the Society's activities, 'Anomalous Propagation' carries technical articles written by experimenters in the frequency range from VHF through light. Featuring reprints of work being done in other parts of the country with publications that we have exchange agreements with. Occasionally we have commercially produced equipment reviews, but the overwhelming majority of our equipment articles concern work done by hard core home-brewers.

Many articles are tutorial in nature, and occasionally there are results of various operating or construction competitions that many of the Society's members engage in.

The Newsletter appears monthly except for May, July and December.

**Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

Tel: \_\_\_\_\_ Gridsquare: \_\_\_\_\_

E-Mail: \_\_\_\_\_

**2003 Dayton Hamvention VHF/UHF Microwave Forum Schedule** (by K8UD)  
Saturday May 17, 1:00 - 4:00 PM

**Antenna Design** - Kent Britian, WA5VJB

He is very anxious to give an update on new Yagi designs covering 144-1296MHz and still keep the costs down. These were featured in CQ-VHF a few years ago. He will have a couple of dozen handouts to pass out. About 40 designs in all shown in the handouts.

(Everyone should like this one)

**UK Microwave Group** Sam Jewel, G4DDK

The headline should be enough, however, for those who don't know, Sam is the co-founder of the UK Microwave Group and has written many articles which are in the RSGB Microwave Group, and is also very active operator/builder in Microwave. This presentation will cover the microwave activity in the UK and hopefully give us an update on his 10 GHz EME station.

**EME** - Al Ward, W5LUA

If you are interested in EME, Al promises to give us a good presentation laying out good points in operation and all of the equipment required for a successful EME system.

**Microwave Antenna Systems** - Tom Whitted, WA8WZG

Tom has for us techniques for mounting microwave antennas on your tower. Several examples and suggestions to help you with your installation. Great ideas and thoughts.

Note: If we have time remaining or any cancellations, our own Gerd, WB8IFM will be giving a talk on the following.

**10 GHz White Box** - Gerd Schrick, WB8IFM

Gerd will cover some of the steps taken on converting the Macom whitebox to operate on 10GHz SSB. Also hope to have a "live" demonstration as well.

Thanks to Red Dakin, W8ULC, for getting all the Presentions lined up for this years Forum.



**MVUS Membership Information on Page 14**