

June 22 Mtg Fri 6:30 at the
MCL Cafeteria in Kettering

June/July 2018

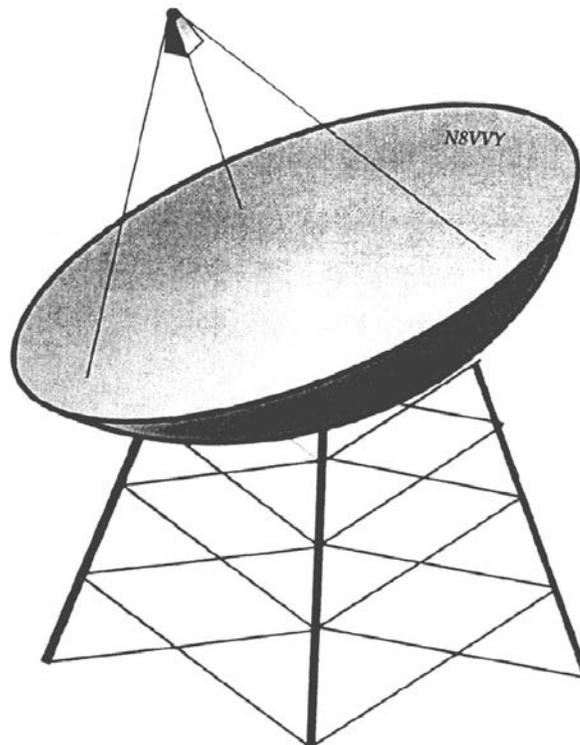
ANOMALOUS PROPAGATION

Newsletter: *The Midwest VHF/UHF Society*

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Annual Society membership is \$ 12.00. Checks
payable to Joe Muchnij. Print copy: add \$4.00



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June/July 2018

Beacons: 1296.079 W8KSE EM79ur Dayton, OH---- 2W to Big Wheel at 800' AGL.

Listen for the **K9AYA Beacons** at EM79qk, 2W @ 10,368.000 MHz
both are copied by K4TO daily. 1W @ 5,760.000 MHz

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No meeting in July... Picnic/Measurements 22 August

**Central States Convention 26 to 29 July 2018
in Wichita KS, Double Tree Hilton**

**Later this year: Microwave Update: Oct 11, 12, 13
In Dayton Oh. Also Pg. 10**

MVUS Officials:

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VHF Contesting Today, Processing the Logs and What to Consider.

De Tom, N8ZM

De N8ZM: Well, the June ARRL VHF Contest has come and gone, and the N8ZM team achieved our third highest score ever in this event. Of course, we won't find out how it stacked up against the other Multi-operator stations that entered for several months, as it takes a while for even a robot to process all of the logs submitted. I suspect that some of the delay is due to their being many contests to score each year, some with thousands of submitted logs and thousands of contacts, and the June VHF contest simply has to wait its turn to be processed.

I don't know if you are aware of this, but the processing includes such things as cross-checking logs against each other to see that if I claim to have worked a station, that both logs show the same time and grid squares exchanged. The robot also looks for duplicate contacts, and simple errors in entering the call sign and grid. Stations that show up in a log who did not submit a log to the robot also get looked over, especially if they only show up in your log and no one else's. Those contacts are not automatically disallowed but if you have quite a few unique calls in your log it does raise a flag.

After the logs are all processed, it is possible to get a report from the robot which will tell you about all of the results of the processing, which can be very useful. One problem that occurs a small percentage of the time is simply typing errors such that the call or grid don't match exactly. The robot, by knowing the time of a claimed contact can actually spot a likely typo where the call or grid logged at a specific time "almost" matched one in another log. This could be an error in your log or the other stations log, and the robot's report will tell you that. Because dupes and errors will hurt your score, they are important to avoid, but sometimes can't be helped if conditions are poor. Phonetics and repeats are always beneficial, but sometimes are just not enough. There are, for examples, many similar call signs that can be problematic, such as WZ8D and WZ8DX. Both are active contesters and good operators, so it's us on the receiving end who have to pay attention.

To segue slightly, the battle still seems to be raging about having a third choice of operation mode in contests, namely digital and specifically, FT8. If you follow the various reflectors, there are good arguments for both sides, and I have been looking at how it has affected our operating practices. I can certainly say that we achieved the score we did thanks to digital as there was not a lot in the way of band openings, so grids had to be pulled out via digital. But at the same time, there were a lot of QSO's to be had working SSB, if you remembered to step away from the keyboard and look for them. And CW certainly played a role as well this time out, thanks to W8BFT and W8AJS, who are both experienced CW guys and who spent time haunting the CW portion of the bands. I should also mention that 2m and up were also useful, although June tends to be mainly a 6m contest, IF the propagation is favorable.

All that being said, please remember to register for Microwave Update, and soon! Details at microwaveupdate.org.

de Tom, N8ZM

This and That. June/July 2018

Happiness. I am more and more convinced that our happiness or unhappiness depends more on the way we meet the events of life than on the nature of those events themselves. [Alexander v. Humboldt]

Charging the Cellphone. The cellphone charges faster when turned off. Try it! [Heloise]

Another Wrinkle. Excess heat in Phoenix grounded 40 flights in recent days. It could make air travel more turbulent & costly in the future. [N.Y.T. 6-22-17]

The Artist... is nothing without the gift, but the gift is nothing without work. [Emile Zola]

Coincidences... are god's way of remaining anonymous. [Albert Einstein]

Iceland... has the largest gun ownership in the world and yet it has the lowest crime rate also. [BBC News]

The Far Future.the Moon will fall to Earth creating immense heat! At that time Earth will be winding its way towards the sun. For the sun just like a pebble falling into its vast glorious mass... [Wikipedia...there is "a lot"more!]

Language... is an instrument we shape for our own purpose. [Alduous Huxley]

Hell. Maybe this world is another planet's hell. [Alduous Huxley]

Marlon Brando,1924-2004. Known to hams worldwide as KE6PZH and FO5GJ, Brando was listed on the FCC database as Martin Brandeaux. He was on the air occasionally through the years with his FO5 call sign from his private island in French Polynesia. [Wikipedia]

The Shipping Industry... is the worlds 6th biggest emitter of greenhouse gases. Cargo Ships now emit more CO-2 than the entire nation of Germany. These are, of course, all powered by big Diesels, as are trucks, many pick-ups and other smaller vehicles. [Newspaper Report]

Close Shave. An asteroid nearly four times the size of the one that leveled 500,000 acres of Siberian forest in 1908 missed Earth, Sunday, April 15, by only 119,000 miles (one half the distance to the Moon). [News]

A Cynic. There is nothing quite so tragic as a young cynic, because it means the person has gone from knowing nothing to believing nothing. [Maya Angelou]

Scientist. Every child starts out as a scientist, as an explorer, as someone who is infinitely curious. [Richard Powers]

Government. Mankind, it seems, makes a poorer performance of government than of almost any other human activity. [Barbara Tuchman]

Spinning in his Grave. Reports now confirm that Abraham Lincoln has stopped turning over in his grave and is now angrily burrowing his way to the White House. [Bliss by Harry Bliss, 5-29-2018]

Thought for Today. The greater the number of laws and enactments, the more thieves and robbers there will be. [Lao-tzu AP]

Hamvention 2018 Balloon Flight

Joe Muchnij N8QOD

I was the committee chair responsible for launching balloons from the Fairgrounds. The technical details were performed by Bill Brown WB8ELK, including developing the Skytracker payload and inflating the balloon.

The Skytracker payload only weighs 13 grams, less than 1/2 oz. it contains a GPS receiver, an ARM microcomputer, a 25 mW VHF transmitter, and a 1/2 Farad super capacitor mounted on an ultrathin PC card. There is no battery - only two solar panels to charge the super cap. The transmitter puts out an APRS position report every two minutes whenever the balloon is in sunlight.

To reach our target altitude of 30,000 feet we had to inflate the balloon so it had about 3 grams of excess lift at ground level. A US penny weighs just over 2 grams, so we taped one to the payload and added Helium until it just lifted off the table, then added a second and verified the balloon dropped back down.

We had planned to launch Friday afternoon, but the rains precluded a successful flight (just a few raindrops would bring it down), so we delayed to Saturday afternoon; now we had strong winds to contend with. We inflated a second, test balloon without payload, and watched it disappear into the cloud bank; when it didn't reappear we decided to launch one with a Skytracker. I released it and watched it soar over the nearby building, then descend out of sight. When it didn't reappear several of us went searching, and found it entangled in the Special Event Station antenna at the top of a portable tower. We got it freed and watched it then hit nearby power lines, but it continued on its flight disappearing over a patch of trees.

Now, all we could do was to track it via APRS. We were hopeful of some distance, but knew that in 2017 we launched three, and none traveled beyond the Ohio state line. A large number of hams run APRS monitoring stations and forward received reports to a computer in Finland, so I got my laptop on-line and went to that site (aprs.fi) and searched for any reports from W8Bi-13, the balloon's call sign. There it was, heading due east at 30,500 feet. Overnight it flew over New York City and left US airspace off the tip of Long Island. When it got out of range of the nearest US receiver it was picked up by a ham in Nova Scotia Canada, but soon was out of range again so no further reports while crossing the Atlantic - or maybe ever.

A complication: stations in different parts of the world monitor different frequencies for APRS transmissions, so the transmitter has to be retuned. And airborne ham transmissions are prohibited over the UK. The Skytracker is programmed with a world map to adjust to local rules, but if it didn't switch at the correct times, nobody might be listening.

Tuesday morning arrived, and a station in the Azores reported it was just west, still at 30,500 feet. Later that day a station in the Canary Islands followed it to Morocco, then again nothing for two days when stations in Turkey reported it overhead and over the Black Sea. Then no further reports. But it traveled over 6,000 miles!

Last report copied:

Comment: 06 3.26 2 8327 2
Location: 42°30.15' N 39°10.76' E - locator [KN92OM10MO](#) - [show map](#) - [static map](#)
74.2 miles Southwest bearing 211° from [Adler, Krasnodarskiy, Russia](#) [?]
74.4 miles Southwest bearing 233° from [Bichvint'a, Abkhazia, Georgia](#)
78.1 miles Southwest bearing 207° from [Khosta, Krasnodarskiy, Russia](#)
Last position: 2018-05-30 11:31:43 EDT (20d 11h37m ago)
2018-05-30 18:31:43 MSK local time at Adler, Russia [?]
Altitude: 27320 ft
Course: 324°
Speed: 15 MPH
Last telemetry: 2018-05-30 11:31:43 EDT (20d 11h37m ago) – [show telemetry](#)
Solar: 3.260 V, Temp: 2 C, Sats: 6, Lock: 1
Device: Telemetry devices
Last path: W8BI-13>APELKO via [YM7KGR](#), WIDE2*, qAR, [YM7KK](#) **Seriously bad path.**
This station appears to be flying at high altitude and using digipeaters, which causes serious congestion in the APRS network. The tracker should be configured to only use digipeaters when at low altitude.
Positions stored: 747
From: <https://aprs.fi/info/a/W8BI-13>



Joe, N8QOD, presenting a report on the 2018 hamvention balloon Launch, holding a replica Balloon transmitter, at the post Hamvention DARA meeting on 1 June, 2018. {Picture by Jim, WB8VSU}

Today's Cars (Short Take)

A New Term. For a number of years now “new cars” have been labeled “**Computers on Wheels**” to describe their complexity in operating simple functions, like the volume on the radio etc... Distractions created by the cell phone or the now more used computer tablets are blamed for unsafe driving and accidents. Now, even with older experienced drivers, there is no escape controlling a lot of functions in a new car with pushbuttons. What the manufacturer do by installing their “computer control” is turning people off. Car Guru Ray Maggliozi just coined a new name for this practice which I like; he said they are “Reinventing the wheel.” As you get older, you have seen a lot in your lifetime: Look at shoes. They all come with laces, shoe laces: I had to scratch my head... We were so lucky when Velcro, a Space Age invention came up, and I still have some 20+ years age old Velcro Shoes that I use. But now they are very hard to find and expensive!

[The term “Computers on Wheels, I first heard from friend Fritz, DK8JK, years ago, Gerd]

Thousands watch CubeSat deployment May 11, 2018

Three CubeSats were deployed on Friday from the Japanese Experiment Module *Kibo* aboard the International Space Station.

The satellites were *Irazu* from Costa Rica, *IKUNS-PF* from Kenya and *UBAKUSAT* from Turkey.

All of them carry amateur radio telemetry payloads; *UBAKUSAT* also carries a linear transponder for SSB and CW.

Details of the beacon and transponder frequencies can be found via amsat-uk.org.

The deployment was broadcast live from the ISS via YouTube and was watched by thousands of people.

Submitted by Joe – WA8OGS

Scientific American (S A)

This month's, **June 2018 S A**, has an 8-page article: The secret life of the Sun, which I recommend for reading. (it should be in your library)

“Our closest star has a much more exiting biography than scientists once assumed. New research illuminates the sun's past and potential future.”

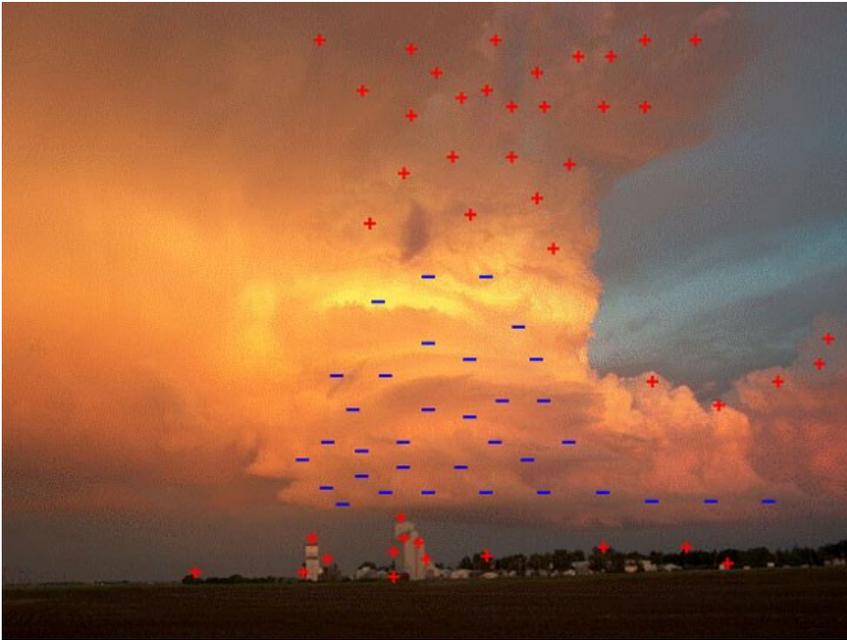
Rebecca Boyle

How lightning works

Although there is still some debate in the scientific community about how the electrification of clouds actually occurs, it is agreed that the separation of positive and negative charges must occur within a cloud for lightning to take place. It is also generally agreed that ice must be present within a developing storm for it to eventually form lightning.

The turbulent wind environment of a thunderstorm with its updrafts and downdrafts is an ideal environment to separate electric charges: negative charges generally gather near the base of the cloud, while positive charges build in the upper reaches of the cloud. This allows electric fields to form and grow between the cloud and the ground and within the cloud itself - all necessary conditions for lightning to occur.

Since similar-charged objects repel each other and opposite-charged objects attract each other, negative charges then begin to spread out near the base of the cloud. At the same time, positive charges start to build underneath the storm. This region of positive charges travels underneath the cloud, almost like a shadow. The positive charges tend to concentrate on tall objects, like trees, poles and buildings.



A **cloud-to-ground lightning strike** starts as a channel of negative charges makes its path towards the ground. This occurrence is known as a stepped leader. The stepped leader continues towards the ground in a series of steps that are each about 50 to 100 meters in length. This stepped leader can branch out in many directions.

In response to the discharge of negative charges coming from the cloud base, currents of positive charges start moving upward from the ground, usually along elevated objects; these are called streamers or upward leaders.

When the stepped leader and the upward leader meet, usually between 30 to 100 meters above the ground, the negative charges begin to flow downward. Almost instantaneously, a much larger and luminous electric current shoots up to the cloud, following the path taken by the stepped leader. This is known as the return stroke, and it is also what we see in the sky that is known as lightning. This whole process occurs so quickly (in less than one second!) that the lightning appears to travel from the cloud to the ground, when in fact, the opposite is true.

To see this process in action, [you can watch the slow motion video which shows a single lightning strike](#). In the video you can see the many paths that the lightning wants to take, but it finds only one. The duration of the video is less than one second. No wonder the naked eye cannot see all the steps involved!



A lightning strike, or what Environment Canada refers to as a lightning flash, is usually made up of more than one stroke of lightning. After the initial strongest stroke, subsequent weaker strokes can follow which usually (but not always) follow the same path of the initial stroke. When the lightning follows the same path, you'll notice that it appears to flicker. If it takes a bit of a different path, it can appear to dance. On average, there are usually three to four subsequent strokes but the number can be as high as over twenty.

Examine above the photo of lightning hitting a tree. The stepped leader has obviously connected with the upward leader that came from the tree. But if you look closely, you can also see an upward leader coming from the tree that did not connect (indicated by the red arrow). There is also a very faint upward leader visible, coming up from a telephone pole just to the left of the tree (marked by the yellow arrow). These occur too fast and are often too faint for our eyes to see, other than when they are caught on film like this photographer managed. This photo also clearly demonstrates why it is not wise to seek shelter under a tree during a thunderstorm!

Cloud-to-ground lightning is the most dangerous and damaging form of lightning. Despite this, lightning within a cloud or that goes from **cloud-to-cloud** is the most common type of lightning. This type of lightning looks like a bright flicker in a cloud. For every cloud-to-ground strike, there can be three to five cloud-to-cloud strikes.

Another type of lightning occurs when some strokes actually emit from the ground into the sky. In this case, the stepped leader proceeds from the ground towards the cloud. The photo below shows this phenomenon well.

Rømer's determination of the speed of light

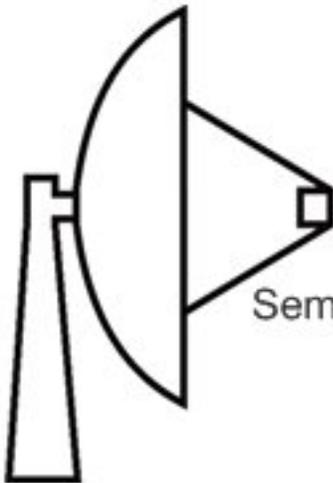
From Wikipedia, the free encyclopedia 4-25-2018



Ole Rømer (1644–1710) was already a [statesman](#) in his native [Denmark](#) some time after his discovery of the [speed of light](#) (1676). The engraving is probably posthumous. **Rømer's determination of the speed of light** was the demonstration in 1676 that [light has a finite speed](#), and so does not travel instantaneously. The discovery is usually attributed to [Danish](#) astronomer [Ole Rømer](#) (1644–1710),[\[note 1\]](#) who was working at the [Royal Observatory](#) in [Paris](#) at the time.

By timing the [eclipses](#) of the [Jupiter](#) moon [Io](#), Rømer estimated that light would take about 22 minutes to travel a distance equal to the [diameter](#) of [Earth's orbit](#) around the Sun. This would give light a velocity of about 220,000 [kilometres per second](#) in SI units, about 26% lower than the true value of [299,792.458 km/s](#).

Rømer's theory was controversial at the time he announced it, and he never convinced the director of the Paris Observatory, [Giovanni Domenico Cassini](#), to fully accept it. However, it quickly gained support among other [natural philosophers](#) of the period, such as [Christiaan Huygens](#) and [Isaac Newton](#). It was finally confirmed nearly two decades after Rømer's death, with the explanation in 1729 of [stellar aberration](#) by the English astronomer [James Bradley](#).



Microwave Update 2018

October 11-14, Dayton OH

An International ARRL Technical Conference

Seminar Presentations * Test & Measurement Lab
Antenna Gain Measurements

Banquet & Door Prizes
Thursday Tour: Voice of America
Sunday Tour: US Air Force Museum

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