

# The NewsFuse

The NY Hall of Science Amateur Radio Club Newsletter	March 2005	Next Meeting Tuesday March 8 <sup>th</sup> 8pm
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## Club News

HOSARC membership dues are due. If you have not paid your 2005 dues then please download the applicaton form [here](#) and send your dues to:

HOSARC  
PO Box 150131  
Kew Gardens, NY 11415

Note: Dues received after the March general meeting will be calculated using the new rate.

Come to Our Next Very Special Meeting at the New York Hall of Science Museum cafeteria  
Tuesday, March 8, 2005  
7:30 - 10:00 PM

(please note EARLY start - 7:30 PM)

FEATURING VERY SPECIAL GUEST SPEAKERS:

Bill Moore NC1L  
Norm Fusaro, W3IZ  
Wayne Mills, N7NG

Bill is the ARRL's DXCC Branch Manager. Norm is the ARRL's Club/Mentor Program Coordinator Wayne is the project manager for LoTW. In addition to providing a very informative discussion on the League's numerous (and sometimes-byzantine) DX award programs, Bill has graciously agreed to field-check cards for DXCC at the meeting. If you're an ARRL member and wish to bring your cards and paperwork to the meeting, your latest award is right around the corner!

Please read the constitutional ammendments in this NewsFuse. The ammendments will be voted on at a future general HOSARC meeting.

## President's Corner

Allan Koenigsberg AE2J  
e-mail: [ae2j@earthlink.net](mailto:ae2j@earthlink.net)

The response from the membership as regards the April meeting has been disappointing. I have

only heard from 3 members regarding antenna projects that they would like to pursue. But that won't discourage us from having a great time. There are 3 antenna projects that can be completed for the April meeting, each of which is low cost and high value. We can get the best bang for a buck.

The projects will cost \$15 each for materials, and we have volunteers who will purchase the materials and do the mechanical preparation necessary.

Project # 1 - **Copper J-pole for 144/440**. This is the project that is the subject of the March 2005 QST cover. The test antenna has been built and tested and it works very well. It is mostly identical to the article except for the fact that the article and reality had a few conflicts.. our crack engineering staff has resolved those and added great enhancements to make this a marvel of 21st century technology.

Project # 2 - **Copper 2 meter loop antenna**. This small antenna, about 1 foot square, is a broad band antenna that will cover the entire 2 meter band with a low SWR. Useful for CW, SSB and FM. Orient it one way and its vertically polarized, turn it 90 degrees and its a great horizontal antenna (SSB). Based upon two articles in QST (Dec. 2002, Oct. 2004) it has been constructed and used by Tom Tumino N2YTF.

Project # 3 - **Low band dipole**. Construct a low band dipole for any band from 40 to 10 meters. Center coax connector and end insulators will be supplied along with the wire. Use the tape measure, cut, twist, solder and your set to go with quick, neat dipole.

All three antennas will be on display at the meeting this Tuesday. What we need from you is a commitment and \$15 to purchase the materials. So come to this meeting with the intention of making a decision.. If you need to discuss it with your spouse, telephone connections will be available.

73, Allan AE2J

## Chairmans Report

Hello to all,

Glad to report all is going well with the Board of Directors and the club as a whole. The shack still needs some work but it is improving daily. We are still awaiting new carpet and a new paint job from the museum and hopefully this will happen soon. As reported in the last issue of the newsfuse all the members of the Board have been given committees to chair. If you have any ideas, suggestions, complaints or if you would to join a committee you should address the respective committee chairs at a meeting or via phone/email, so they can bring them up a Board meeting on your behalf. I believe the general meetings are not the appropriate places to begin discussions on club policy, station improvements and outside activities because sometimes these issues require research and additional information which may not be readily at hand in order to make sound decisions. With regard to committee chairs, Pete W2IRT is listed as the website chair but I must apologize to Susan Bernstein KB2TEP for not mentioning her name along with Petes, Susan is our Webmaster and damn good one at that.

I am presently working on name bdes for the club but please don't let that stop you from getting aa badge made up for yourself in the meantime. As Alan AE2J has already put out the word he would like to see members wear a name badge at club meeting, you should also wear a badge when you operate from the club station so visitors have an easy way of identifying and interacting with you. The museum has given us very few official badges for us to wear so we need to take care of this ourselves. Additionally it would be a good idea to make an enlarged photo copy of your membership card to stick in the window of your car when you park in the employee parking lot, so just in case the museum staff has any issues with your car they will know where to find you. Please note this suggestion doesn't take the place on an official permit is just a courtesy to the museum and for your protection.

On Sunday, February 27, I need three volunteers for a small work party to remove some old cables, patch a few holes and for some general housekeeping. Please be aware this is very dirty work so dress appropriately. See me at the next meeting if you can make it.

Lastly its time again for field day planning again. The field day committee this year is Lenny W2LJM, Pete W2IRT and myself. We need your help to prepare for this activity once again so please speak to any committee member to help out and look for an upcoming meeting

announcement. Hope to see all of you at our next meeting and for those you cannot make it all the best wishes to you.

Thanks  
Tom Golero  
KC2CBA

## Proposed Constitutional Amendments:

Article II {Directors} shall be amended to read:

The affairs of the club shall be governed by a Board of Directors consisting of (12) twelve members, as provided for in the By-Laws. (4) Four directors shall each be elected each year for a term of (3) three years. Election to the Board of Directors shall be as provided for in the By-Laws.

The nominating committee will solicit candidates for office either privately or at the general meetings in September and October and November. Ballots shall be mailed to all members in good standing after the first general meeting of November, as soon as practical for the nominating committee. Ballots should be returned by the third week of December, and counted and the results reported at the January directors meeting (the first Tuesday of the month). The board will certify the results at their meeting and report the results to the membership at the General Meeting in January.

Article II {Officers} shall be amended to read:

The officers shall be elected to a term of (2) years by ballot...

Implementation:

Draw by lot directors to be elected this year, next year and the following year. It will be determined by lot which directors, terms are to expire this year, next year and the following year. Paragraph 19 shall be amended to read:

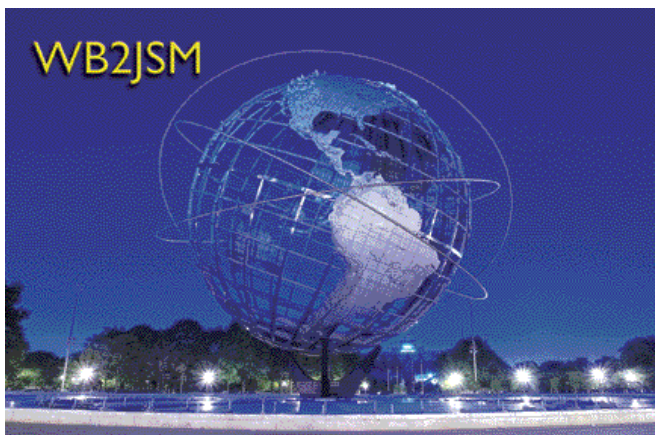
**19. ELECTIONS:** In an Election year, A Nominating Committee consisting of any three (3) Members in good standing, who are not officers or directors, will be appointed by a majority vote of the Directors excluding the Officers, meeting in a properly called Directors meeting in September. The Nominating Committee will prepare a Slate of Officers and/or Directors for the coming year and cause the Secretary to publish the Slate as per the sample ballot enclosed in the By-Laws.

The nominating committee will solicit candidates for office either privately or at the general meetings in September and October and November. Ballots shall be prepared and mailed to all members in good standing after the general meeting of November of each election year, as

soon as practical for the nominating committee. Ballots should be returned by the third week of December, and counted and the results reported at the January directors meeting (the first Tuesday of the month). The board will certify the results at their meeting and report the results to the membership at the General Meeting in January.

### Shack News

This winter has been a great start for our station on 40 and 80 metres with the club picking up about 30 countries on 80 and just under 40 on 40. But as sunset gets later and later, the focus is once again shifting back to the upper bands, and late afternoon has been very interesting and rewarding on both 15 to the Pacific and 20 metres to Africa, the South Atlantic and long-path into VK. Our country count has ballooned to 208 in the last few weeks, with Somalia, Antarctica, Rotuma, Nauru and Papua New Guinea being some of the most recent countries worked from the station, both on CW and SSB. The only bad news is that the planned 3Y0X DXPedition to Peter the First island has been postponed until next January, so it will be a while before we have a crack at one of the world's most needed entities -- and it will occur at a time of very dubious propagation.



The final details of our new QSL cards have been sent to the print shop in the Czech Republic and the proofs have been approved. Our box of 1000 cards should be back to us by the middle of March with any luck. As of now, we have at least 125 to send out (most through the buro system and about 25 of so to go direct). If anybody wants to lend a hand in getting this backlog cleared up, please call or e-mail me and we'll set up a time to come down to the station and get the cards done up. This isn't hard, and will take 2 or 3 people

about 2 hours, start to finish. It's also a great opportunity to learn how to use our logging software's extremely powerful QSL management features.

Thanks to Peter Penta's interesting presentation at last month's general meeting, the idea of getting our satellite array working again is starting to pick up steam. We'll need about eight to ten strong people in a work party within the next few weeks to get these back up. If you're interested in helping us with this project, please call or e-mail Peter, Tom Golero or Tom Tumino and we'll get in contact with you as a weekend of good weather approaches. Ideally, we're looking for a Saturday and Sunday that are forecast to be in the 50s or 60s with no wind and no threat of rain. Remember that satellite communications are open to all licensed hams, technician-class included, so if you'd like to try your hand at more than just repeaters on 70cm, here's your chance!

We have some great plans ahead in terms of the repeater. Most notably, by May of this year we expect to be connected to the world-wide IRLP network. Stay tuned for more details in the weeks and months to come, but this is a significant development for our club which will enable us to call out to hundreds of different cities in dozens of countries just by accessing the repeater and inputting the appropriate node numbers. Amateurs in those cities can also call back into us just as easily.

Peterr Dougherty W2IRT

### SATERN History The Origins of SATERN



SATERN started as a result of my desire to build an amateur radio presence for the Salvation Army. I had thought of it for years, however, the catalyst was leaving command of Dubuque, IA, where I had an established EDS team with amateurs and feeling perhaps they would be lost without support, since I was gone.

I had been appointed as the Disaster Services Coordinator for Heartland Division (Central Illinois and Eastern Iowa) and had decided to start an amateur radio network that would include the fellows on the Dubuque team and build a system for the entire division and solicit

help from others on the amateur radio bands. The date of the first net was June 26, 1988, and we had about four people on the net, VE3BIX, VE3NKU and KA9KLZ, Art who is the National Net Director for SATERN now.

Providentially, then Major Robert Bonfield, the Territorial Community Relations and Development Secretary, asked me a couple weeks later to develop a system that would help the Army in off the continent and national disasters for Central Territory. Captain Herbert Fuqua, was one of the primary people supporting the effort in the early days and presently Major Steven Harper has run very hard for the program at Metropolitan Headquarters. The Program exploded after the Plainfield Tornado disaster in which we used approximately 60 operators per day to provide communications for the Army's effort in a catastrophe that claimed 29 lives. The communication effort lasted 11 days with nine of those days running 24 hours.

Amateurs realized that the Army needed their help and ran to assist. In succeeding years, SATERN has assisted in numerous disasters including:

- Hurricane Andrew
- the Midwest Flood
- the Lemont Tornado
- the Kobi Earthquake
- Hurricane Marilyn
- the Rose Lawn Air Crash
- the Yucca Valley/Big Bear Earthquakes
- the Northridge Earthquake
- the Fort Smith, AR Tornado
- the US Air Crash in Pittsburgh
- the TWA Flight 800 Air Crash
- the Grand Forks Flood
- New York City Ground Zero
- and the list continues.

SATERN has provided the most consistent disaster training for The Salvation Army the past few years and it has now been sanctioned as an official program of The Salvation Army.

SATERN spans the North American Continent, and has spread to other countries including, South America, Great Britain and Russia.

Major Patrick McPherson WW9E

## **A Few Facts Concerning GMT, UT, and the RGO**

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original version: 3 February 1990  
this version: 20 January 1999

In answer to the question "Does anyone know the exact difference between GMT and UTC?" here are a few facts concerning Greenwich Mean Time, Universal Time, and the Royal Greenwich Observatory. Various versions of this document have been posted to Usenet newsgroups and made available on Web sites over the years under the original title "A Few Facts Concerning RGO, GMT, and UT". The current title has been in use since the 23 December 1995 version.

### The Royal Greenwich Observatory

Prior to 1948, the observatory at Greenwich (located on a hill back from the Thames River with a view of the London Docks) was known as the Royal Observatory.

In 1948, the observatory moved to Herstmonceux Castle in Sussex, becoming the Royal Greenwich Observatory (yes, even though it wasn't at Greenwich any more!).

The site at Greenwich became known as the Old Greenwich Observatory and the historic buildings and instruments were progressively incorporated into the National Maritime Museum, the main buildings of which are located at the foot of Observatory Hill, close to the river. Highly recommended for a visit if you're in London!

Following the closing of the RGO in the fall of 1998, the Old Greenwich Observatory was renamed the Royal Observatory Greenwich (see "Where's the RGO Now?" below).

### Greenwich Mean Time

Greenwich Mean Time is a time scale based on the apparent motion of the "mean" sun with respect to the meridian through the Old Greenwich Observatory (zero degrees longitude). The "mean" sun is used because time based on the actual or true apparent motion of the sun doesn't "tick" at a constant rate. The earth's orbit is slightly eccentric and the plane of the earth's orbit is inclined with respect to the equator (about 23-1/2 degrees) hence at different times of the

year the sun appears to move faster or slower in the sky. That's why an uncorrected sundial can be "wrong" (if it is supposed to be telling mean time) by up to 16 minutes. So if the mean (i.e. corrected) sun is directly over the meridian through Greenwich, it is exactly 12 noon GMT or 12:00 GMT (Prior to 1925, astronomers reckoned mean solar time from noon so that when the mean sun was on the meridian, it was actually 00:00 GMT. This practice arose so that astronomers wouldn't have a change in date during a night's observing. Some in the astronomical community still use the pre-1925 definition of GMT in the analysis of old data although it is recommended that the term Greenwich Mean Astronomical Time now be used to refer to time reckoned from noon.)

Mean time on selected meridians 15 degrees apart is generally known as standard time. For example, Eastern Standard Time (EST) is the mean solar time of the meridian at 75 degrees W.

#### Universal Time

In 1928, the International Astronomical Union recommended that the time used in the compilation of astronomical almanacs, essentially GMT, or what was also sometimes called Greenwich Civil Time, be referred to as Universal Time (UT). The terms "Universal Time" and "Universal Day" were introduced at the various conferences in the 1800's held to set up the standard time system. There are actually a couple of variants of UT. UT as determined by actual astronomical observations at a particular observatory is known as UT0 ("UT-zero"). It is affected by the motion of the earth's rotation pole with respect to the crust of the earth. If UT0 is corrected for this effect, we get UT1 which is a measure of the true angular orientation of the earth in space. However, because the earth does not spin at exactly a constant rate, UT1 is not a uniform time scale. The variation in UT1 is dominated by seasonal oscillations due primarily to the exchange of angular momentum between the atmosphere and the solid earth and seasonal tides. In an effort to derive a more uniform time scale, scientists established UT2. UT2 is obtained from UT1 by applying an adopted formula that approximates the seasonal oscillations in the earth's rotation. However, due to other variations including those associated with the secular effects of tidal friction (the earth's spin is continually but gradually slowing down), high frequency tides and winds, and the exchange of angular momentum between the earth's core and its shell, UT2 is also not a uniform time scale.

So rather than base our civil time keeping on the

rotation of the earth we now use Atomic Time, time based on the extremely constant frequency of a radio emission from cesium atoms when they change between two particular energy states. The unit of Atomic Time is the atomic second. 86,400 atomic seconds define the length of a nominal "reference" day -- the length of the day as given by the earth's rotation around the year 1900. But because of the variations in the earth's spin the length of the actual day can be shorter or longer than the nominal day of 86,400 seconds. The time scale based on the atomic second but corrected every now and again to keep it in approximate sync with the earth's rotation is known as UTC or Coordinated Universal Time. The corrections show up as the leap seconds put into UTC from time to time - usually on New Year's Eve. With these leap second adjustments, UTC is kept within 0.9 seconds of UT1. Currently, the need for leap seconds is primarily due to the effects of tidal friction. The earth's rotation in space is monitored by the International Earth Rotation Service (IERS) in Paris, France, using a global network of satellite and lunar laser ranging, very long baseline interferometry, and Navstar Global Positioning System (GPS) stations. The IERS, in consultation with the Bureau International des Poids et Mesures in Sèvres, France, determine when a leap second is needed.

In 1928, when the term Universal Time was introduced, variations in the earth's spin were not yet known. So the term GMT was, in essence, replaced by UT1. Despite the official adoption of the term UT, the navigational publications of English-speaking countries retained the term GMT as a synonym for UT1 for some time. So, even today, in astronavigation, GMT can imply UT1. But in general usage (including that of shortwave broadcasters such as the BBC, for example), GMT now usually means the civil (atomic-second-based) time kept in the United Kingdom which is the standard time of the time zone centred on the 0 degree meridian. In this (the most common) usage, the terms GMT and UTC are identical. But because there are two possible meanings for GMT differing by up to 0.9 seconds, the term GMT should not be used for precise purposes -- particularly not in reference to GPS observations!

#### The Origin of UTC

The concept of a coordinated universal time was introduced in 1960 when the British and American national time services initiated a program to coordinate the offsets of the frequencies and epochs (phases) of transmitted time service radio signals from Atomic Time in approximating UT2. Subsequently, other national



time services joined the program. The BIH was charged with the task of monitoring and maintaining the program and introduced the term Temps Universel Coordinné or Coordinated Universal Time for the coordinated time scale in 1964. Initially, the time scale was derived by offsetting its rate from that of Atomic Time to agree with the average rate of UT2 over the past year and was held fixed at that rate for the following year. If the rate of UT2 changed significantly during the year, then an offset (from 1962, in multiples of 100 milliseconds) could be introduced on the first day of a month. This system of frequency and epoch offsets was continued until 1972 when the current practice was adopted of keeping the rate of UTC equal to that of Atomic Time and introducing leap seconds when needed to keep UTC to within 0.9 seconds (it was 0.7 seconds until January 1975) of UT1.

Sometimes the term "World Time" is used to denote UTC. This strange and potentially confusing term ("UTC for dummies"?) should be avoided. Similarly, there is no clear need for the Swatch watch company's recently introduced "Internet Time" (Central European Time measured in 1/1000 of a day (a "beat")).

#### GMT and the BBC

The BBC began transmitting time signals in 1924. The chimes of Big Ben were first broadcast at midnight beginning 1 January and on 5 February, at the recommendation of the then Astronomer Royal, Frank Dyson, the six pips time signal (officially known as the Greenwich Time Signal) was inaugurated.

Control of the BBC's six pips was taken over by the Royal Observatory in 1949 from Abinger to where the time service had moved during the war. The time service moved to Herstmonceux in 1957.

The time service at Herstmonceux closed down during February 1990 when the BBC took over the generation of the six pips. Since 5 February 1990, the 66th anniversary of the start of the Greenwich Time Service, the six pips have been synchronised to UTC by using the GPS satellite signals which are picked up by a pair of GPS

receivers atop Broadcasting House in London.

#### Where's the RGO Now?

In March 1990, RGO officially moved from Herstmonceux Castle to the grounds of Cambridge University's Institute of Astronomy. On 31 October 1998, the RGO was closed by the U.K. Particle Physics and Astronomy Research Council as a cost-saving measure. Some of its research activities have been transferred to the Royal Observatory Edinburgh. Her Majesty's Nautical Almanac Office was transferred to the Rutherford Appleton Laboratory at Chilton in Oxfordshire. With the closure of the RGO, the Old Greenwich Observatory has been renamed the Royal Observatory Greenwich. A laser ranging station and a GPS tracking station still operate at Herstmonceux but the castle and estate is now owned by Queen's University in Kingston, Ontario, Canada, who use it as a satellite campus for their International Study Centre. Queen's purchased the castle in early 1993 for about \$8 million (CDN). This money, and an additional \$4 million for renovations were gifts from Dr. Alfred and Mrs. Isabel Bader of Milwaukee, WI. Dr. Bader is a Queen's alumnus.

#### To Learn More

If you'd like to learn more about time you might look for the book "Greenwich Time and the Discovery of Longitude" by Derek Howse originally published in 1980 by the Oxford University Press. A second edition, titled "Greenwich Time and the Longitude: Official Millennium Guide" was published by the National Maritime Museum and Philip Wilson Publishers in 1997 (ISBN 0-85667-468-0). A special paperback edition is available exclusively from the museum. An excellent reference on all matters concerning time is the "Explanatory Supplement to the Astronomical Almanac" edited by P. Kenneth Seidelmann of the U.S. Naval Observatory (USNO) and published by University Science Books, Mill Valley, CA (ISBN 0-935702-68-7). There is also a wealth of information on time at USNO's Directorate of Time Web site. For information on Queen's University's International Study Centre at Herstmonceux Castle, visit their Web site