432 AND ABOVE EME NEWS
MARCH 2013 VOL 41 #3

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CONDITIONS: This issue is mainly to provide a last minute reminder to get on for the 23 and 70 cm EME SSB Contests coming up respectively on 16 and 17 Feb. The complete rules were in the last newsletter (NL). There was not a lot of activity during the Jan 70 cm CW ATP. Part of the problem was WX. Conditions were reported to be good. If we want 70 cm CW activity, WE NEED TO SUPPORT IT. The next ATP is on 17 Feb 1200-1400 and 1930-2130 and coincides with the 70 cm SSB Contest. There will probably be more SSB QSOs than CW. An excellent turnout is expected on 432 and 1296 for both contests. If you have not made an EME SSB QSO, this is your opportunity! There is no ATP in March because of the DUBUS/EU 70 cm EME Contest on 16/17 March. (A list of the remaining 2013 ATP can be found at the end of this NL). There are some dxpedition opportunities coming up in April that you will not want to miss. 9G5EME is now planning to be QRV on both 70 and 23 cm. Bodo, DF8DX, is also working on a dxpedition to a never before operated from country. He does not have all the details worked out, but if he is successful, he will operate on both 432 and 1296 toward the end of April.

SV3AAF & SV1BTR in front of Petros' 4 m dish. Jimmy came by to admire the multi-band feed (23, 13, 6 and 3 cm).

9G5EME: Rene (PE1L) hasperrene@gmail.com sends news that his group (PA3CEE and PE9DX) will activate Ghana in west Africa on not only 144, but also 432 and 1296 in April. Operation on the higher bands will be with a single yagi and only modest power. Operating time will also be limited to one or 2 days, most likely on 19 April or around this date. They will be located in IJ95gb on the beach in the town of Ampenyi near the city of Cape Coast.

CT1HZE: Joe info@dubus.de leaks some early information on a grand EME dxpedition to rare locations throughout Africa. The trip (not by Joe) will start in 2015 and is planned to last up to 2 or 3 years. It will use a special "Dxpedition 4 wheeler" that is currently being fitting for the trip. It may be continued in South America and/or go north depending on xperiences and health. EME equipment for 144 through 10368 will be taken and include a 2.4 m dish with 1 kW on 23 cm, 400 W on 13 cm, 300 W on 9 cm, 100 W on 6 cm, and 50 W on 3 cm!

Grand African dxpedition 4 wheeler

DC9UP: Hermann radio.dc9up@googlemail.com is becoming QRV on EME again – Some time ago I was QRV at 10 GHz EME under the call F5VKQ. Recently I moved to Germany and have my old call sign again, DC9UP. I am rebuilding my 10 GHz EME station, but hope to be QRV first on 23 cm with a 10' dish and about 700 W on the feed. Tests with a 12 el yagi on the balcony show promising signals and copy of I1NDP in JT65C. The full station should be ready in a month or two. [Herman sends his wish wishes for F2TU's speedy recovery and also asks about RW1AW?]

G3LTF: Peter's g3ltf@btinternet.com Jan/Feb report -- WX prevented any EME this month. If it wasn't snow then it was wind and rain or a mixture of all three. I had the 1296 system in place when the Moon was at –13 degs Dec to at least check echoes. They were there! I have to confess I am getting more and more interested in 160 m as I have been working ZL in the mornings. The antenna issues on 160 m are a nice technical challenge. Unfortunately we will be away on holiday, and will be sorry to miss the SSB Contests and Feb 70 cm APT. I hope the WX permits a good turnout and to see you all in March for the DUBUS 70 cm EME Contest.

G4BAO: John john@g4bao.com (JO02cg) says "small is beautiful" and is now QRV on 2320 with 2304 RX capabilities -- I now have the facility to listen crossband to 2304 with a little bit of clever *switchery* and my FT847 tuning down to 128. Transverter performance is not compromised by this "wrong" IF. My system is small with a 1.9 m focus dish, 0.27 dB NF LNA and 180 W at the feed. I struggle a little on receive due to the noise floor of the dish, but I'm continuing to improve it. I typically get echoes around -20 to -23 dB in 2.5kHz on the JT echo mode, so you'll hear me, but please be patient and send your CW slowly because my ears are not yet attuned to EME fading and spreading. I also suffer from some hearing loss due to age and too many rock concerts in my youth! I have to the south and east a tree limited window at low declinations. To give you some numbers, at local Moon elevations below 20 degs, I'm screened from the east all the way round to 198 degrees, but then am clear all the way to at least 290. At 40 degrees elevation, I am screened to around to 186 degs. Above 50 degrees I'm clear. I'm keen to get a few more initials on CW and open to JT65C as well. Please email me to arrange a sked, but PSE no skeds between at 0100 and 0600. Otherwise I'll be on the HB9Q logger when I'm QRV.

G100RSGB: Brian (G4NNS) brian-coleman@tiscali.co.uk sends news that the Radio Society of Great Britain (RSGB), founded in 1913, to celebrate its centenary will put the special callsign G100RSGB on EME -- G100RSGB is being aired from points around the UK. As part of these Celebrations the UK Microwave Group has been allocated the call sign G100RSGB for microwave EME operation on 18/19 May (from IO91FF). Operation will mainly be on 10 GHz and the windows available are approximately 1530 - 2230 on the 18th and 1700 - 2300 on the 19th. There will be a special QSL card. The team will

coordinate via the HB9Q 2304 and up logger. 5.7 and 24 GHz operation may also be possible. We will post more details before the event.

K5QE: Marshall k5qe@k5qe.com wants to than the 70 cm EMEers for the contest QSOs -- During the ARRL Jan VHF contest, we set a new record for our station on 432. We worked 16 different stations via EME on 432! This is three better than our previous high. I really do appreciate all the 432 ops working us during the contest and wish to thank you all. I have been running a few schedules with stations that need Texas or my grid on 432 and I am open to schedules with anyone who wants to run with me. Again, thank you all for helping us in our Jan VHF contest.

LZ2US: Marko lz2us@dir.bg is repairing his 12' dish and expects to become QRV again after a few of absence. He says it is very cold at his operating position, so he will probably not be too active until it gets a little warmer.

LZ2US' 12' dish under repair.

KB7F: Gerald geraldjdaily@hotmail.com is now QRV on 70 cm EME -- I logged my very first 70 cm EME QSO with NC1I on JT65C. Yes, he is a big gun, but I am not complaining. During the contest I copied three other stations, but they could not decode me, and a few days later worked K2UYH for #2. I am interested in skeds and can be reached by email or on the HB9Q reflector.

N4PZ: Steve n4pz@live.com reports on his recent EME activity -- I was on 23 cm on 19 Jan and worked OZ4MM (589), I1NDP (589), SM4IVE (579) and S59DCD (559) all on CW. I was not QRV on 20 Jan due to preamp problems combined with bad WX, but will be on for the 1296 portion of the SSB EME Contest.

N6OVP: David n6ovp@pacbell.net is setting up again for 1269 EME. He had previously been on 70 cm with 4x FO yagis and 400 W, and also tried 23 cm with 4 loop yagis. This time he will use an old 2 m TVRO dish with 50 to 75 W. He is interested in suggestions and ideas.

NC1I: Frank frank@nc1i.com reports on his Jan 70 cm activity -- We have everything working 100% again and were very pleased with the station's performance in Jan. W1QA and I put a lot of work into getting the station repaired and updated and we believe our receive capabilities are better than ever. We were active two weekends in Jan including the ARRL VHS contest on 19/20 Jan. We exchanged both signal reports and grid squares with most stations over the contest weekend but I have only included signal reports here. We worked on 19 Jan at 0230 VK4EME (13DB/14DB), 0257 VK4CDI (19DB/20DB), 0345 KD3UY (15DB/16DB), 0434 KB7F (25DB/18DB), 1902 OK1TEH (18DB/22DB), 1907 UN6PD (19DB/O), 1911 ES3RF (20DB/14DB), 1918 OH6UW (16DB/14DB), 1925 YL2OK (15DB/15DB), 1930 YO8RHI (21DB/25DB), 1937 DF3RL (16DB/12DB), 1950 K5DOG (14DB/15DB), 1955 W7MEM (7DB/0), 2000 K0CIY (22DB/O), 2009 K5QE (16DB/O), 2035 YL2GD (15DB/O), 2120 DF3RU (7DB/O) and 2133 K7XQ (15DB/O), on 20 Jan at 0046 PA2V (14DB/O), 0303 W7AMI (11DB/O), 0314 VK4EME (22DB/12DB), 0342 JE1TNL (22DB/24DB) and 0434 JA6AHB (14DB/12DB), and on 27 Jan at 0016 K0CIY (13DB/18DB), 0108 W7IUV (21DB/13DB), 0140 WC7V (19DB/14DB), 0233 OH6UW 22DB/8DB), 0327 VE3ELE (23DB/20DB) and 0555 DL8DAU (17DB/17DB) - all on JT65B, and on CW for the ATP at 2106 N4GJV (569/579), 2114 DF3RU (559/559), 2128 SM7GVF (O/O) and 2145 SM4IVE (589/589). We added 9 initials and I believe the first 432 EME QSO for at least 3 different stations. Activity during the CW ATP was very disappointing even though conditions were very good. SM7GVF (random) was a solid (539) using his single 28 el yagi and 1 KW. SM4IVE and my own echoes were peaking better than S9! On the days between the two weekends our echoes were also incredibly loud. I called CQ on CW a few weeknights, but as expected nothing was heard. Unfortunately I will not be available during Feb, so there will most likely be no CW activity from NC1I this month. W1QA will try and activate the station in Feb but will primarily operate WSJT (Bob does all of the WSJT operating at NC1I). I should be available in March, so the station will be active again in both modes. In addition to EME equipped stations, we would be interested in working horizon only stations in any mode. Single yagi 100 W stations can easily be worked on WSJT and single yagi stations running a couple 100 W should be workable on CW. I don't mind getting on in the middle of the night (even week days) if I know someone will be on looking for us. WSJT will need to be on weekends, since W1QA lives 35 minutes away. We are still using (48) 15 el yagis with mechanical polarity rotation. This array has been in use since 1994. We recently installed a very low NF preamp, which seems to have improved our receive capabilities. As I write this report on 7 Feb there are blizzard warnings here in New England for the next two days. Some forecasts for our area are reporting that we could receive nearly 1 m of snow and have winds reaching 50-60 mph. Hopefully both the EME array and my HF antennas survive the storm!

ON0EME: Eddy (ON7UN) ejespers@on7un.net reports that there were some problems with the 23 cm EME Beacon -- We noticed from the beacon's telemetry that the GPS unit had lost its 3D fix. The GPS receiver is used to start the beacon at the 00 second of the minute. Without the 3D fix of there is no PTT to key the beacon. Unfortunately I was traveling at the time of this failure and thus was not able to fix it immediately. We ended up replacing the GPS receiver and the beacon was back to normal again.

ON5TA: Eric eric.vanoffelen@skynet.be writes -- During the month of Jan, I concentrated on 23 cm with about 200 W at the feed of my 3.6 m mesh dish and found good activity. I also tried the WSJT software for the first time. Stations worked were DF3RU, G4CBW for an initial (#), G4CCH, GM4PMK (#), I1NDP, II5ISS (same as IK5EHI) (#), IK3COJ, IK5QLO (#), IK5VLS (#), JA6AHB (#), OE5JFL (#), OH2DG, OZ4MM, OZ6OL, PA3FXB, PA0BAT (#), RD3DA (#), RW3TY (#), S59DCD, SM4DHN, SM4IVE, SM7FWZ, SM7SJR (#), TI2AEB (#), UA3TCF (#), UA4HTS (#), W3HMS (#), W6YX, YO3DDZ (#) and ZS5Y (#). Some of these stations were contacted on CW and others with JT65C, and many of them using both modes. For some time, I have been puzzled by my Sun noise measurements on 23 cm. They are consistently 1 or 2 dB better than the VK3UM EME Calc predictions for some specific Sun AZ and EL coordinates. My dish is installed on the roof of the house and a plastic/aluminum sheet has been placed under the tiles for thermal insulation. This conductive foil seems to reflect the cold sky into the antenna backlobes and nicely lowers the overall system noise temperature. This could explain why I often hear better than I am heard by similar small stations.

OZ4MM: Stig vestergaard@os.dk reports on his problems during the Jan 70 cm ATP -- I had planned to be quite active on 432 in the CW ATP, but I ran into family problems because of TVI. The kids are following a football match on TV, and unfortunately my dish near moonrise is blocking path to DVB-T site and overloading TV sets at my QTH, so I stay OFF for family peace. Sorry to all.

PA2V: Peter peter@pa2v.com reports on his recent 432 activity -- On 20 Jan I was able to work two new stations with my single 24 el LFA yagi. I worked NC1I and K5QE. NC1I was very loud and speaker copy. It is interesting to experience the difference in signal behavior between 144 and 432. I thought it would be easy to work the other big gun K5QE. After I saw his traces, he disappeared and it took about ten minutes before his signal build up again to a (24DB) level. I guess Faraday introduced some difficulties. Even with lots of snow and ice on the antenna, the LFA keeps performing. I see minor differences

in return loss, but even with all the snow it still is -27 dB as measured with a VNA. So it seems to be a good choice. I am now up to initial #11 and 12 contacts on EME in less than three months. So 432 MHz doesn't behave as a bad EME band at all. It is a pity that there is not that many active stations on this band.

SK6OSO: Ulf (SM6GXV) sends early news that The West Coast Microwave Group is once again planning to use the 25 m dish of Onsala Space Observatory for 23 cm EME on the weekend of 13/14 July. Activity is planned for CW/SSB and JT.

SM4IVE: Lars sm4ive@telia.com reports on his 1296 CW activity on 27 Jan -- The activity from Sweden was good tonight with the following stations showing up: SM4DHN, SM4IVE, SM7FWZ and SM7SJR. Others active were OZ6OL, ON5TA and IK5OLQ. Unfortunately I had to QRT due to a snowstorm and heavy winds.

SM7SJR: Bjorn sm7sjr@gmail.com has been active on 1296 EME –- I worked on the weekend of 19/20 Jan OK1CS on CW and YO3DDZ on JT to bring me to mixed initial #45*. I following weekend conditions were moist strange with levels up and down, but mostly down. I added two new ones, rare DX for me (hi), SM4DHN #46* and SM4IVE #47* as well as IK5QLO and SM7FWZ. All were on CW. Due to family reasons I was only QRV for a short while. All my QSLs for my 23 cm and my few 70 cm EME QSOs are now written and will be posted shortly. I am running a 5 m dish with 200 W at the feed and a G4DDK LNA with a TS2000X. I am interested in skeds, and can and often am QRV during weekdays; sometimes the activity can be quite good on some weekdays.

VE3KRP: Eddie eddie@tbaytel.net reports generally poor band conditions on 1296 -- I did work N4PZ, DF3RU and IK1MTZ during the 2/3 Feb weekend.

TI2AEB: Armando ti2aeb@gmail.com is starting to really appreciate 1296 EME despite some frustration with his local WX -- I had a FB QSO with ON5TA with a very similar station to my own. I also worked RD3RA, another 3.65 m dish and 200 W station. On 432 where I run 2 x 28 el (9 Wl) yagis plus 100 W, I can't have a QSO with a station like mine! I also worked W6YX with a powerful signal, G4CCH, G4CBW and W3HMS, and very near moonset JA6AHB. By the time I received his 73, the signal had drooped 10 dB. I have noticed that I receive much better reports than what I sent for the same sized stations. I am working to change this situation. I have already gained 2 dB, as I found that I had the RX running into saturation. I have also lowered the feed line loss after my preamp to the shack. Next I want to add a scalar ring to my feed horn. I have to mention my appreciation of the 1296 EME beacon. It is a great advantage to have ON0EME. It delivers free, a signal generator so you can adjust things to improve the S/N, and also it's a frequency standard!

VA3ELE: Peter maximumthreshold@yahoo.com has the 70 cm EME bug. He has now completed at least 2 QSO (NC1I and K2UYH) on JT65B using a temporary setup in his back yard consisting of a single 19 el yagi fed by 50'of LMR400 to a 100 W brick. He does have a TV rotor for AZ and a G500 for elevation.

VA3ELE's 19 el yagi is between the two bigger 2 m yagis.

W2LPL: Les llistwa@gmail.com write that he is starting to put together a portable 1296 EME station using a 2.2 m dish, TS-2000X, and ODO preamp -- A PE1RKI 250 W SSPA (with circulatory) is on order. Initial RX tests using Sun noise has been unsuccessful, partly because it was just too cold to stay outside. More testing will be done once Spring arrives and my fingers thaw.

W2LPL with his 2.2 m dish.

W3HMS: John W3HMS@aol.com reports on his recent EME activity – I have noticed that the winter performance of my 23 cm 500 W SSPA is improved by the low temp. I see about 30 watts more when temp is -10 C or below. The thermometer on the amp often shows about 10 C. It also seems RX levels from JT65C are improved as well. I was pleased to work the following stations on JT65C on 1 or more occasions since mid Jan: PA3FXB, IK5VLS, DF3RU, ZS5Y, G4CCH, and GM4PMK. I was also delighted to make initial contacts with the following stations: UA4HTS (21DB/24DB), G4CBW (17DB/O), ON5TA (18DB/12DB), SM7JSR (15DB/14DB and YO3DDZ (14DB/13DB). My QSO count on 23 cm is now: QSOs 414, mixed initials (mainly JT) is up to #110*, and my DXCC is 29.

W5UBW: John W5UWB2@aol.com who has been active for some time on 6 and 2 m EME, is giving 70 cm a try – On 25 Jan I turned my 23 el (K1FO 25 el with last two directors cut off to allow rotor rotation) to my expected moonrise bearing and set out calling CQ on 432.070 JT65B. Shortly after, I was called by DL5FN and we completed a QSO in short order. My yagi is at 25' above ground and may have some ground gain as I am running only 130 W. I was quite pleased to make my EME initial #7 on 432.

K2UYH: I a.katz@ieee.org have very little report because of a combination of travel during the prime Jan EME weekend and generally poor WX. I did work KB7F and VA3ELE on 432 JT65B to bring me to mixed initial #850*.

NETNEWS – TNX N4PZ & WB2BYP: YO3DDZ is a new station on 23 cm using a 5 m dish and 500 W. **AA0L** reports that a group in CO has acquired a 50' (18 m) dish and will be activating it on 432 and up. **R3BM** is working on a 5 m dish for 23 cm with RA3AQ septum feed. **VE5KKZ** now has 150 W out on 1296. **W5LUA** was active on 24 GHz EME in Jan. **W8RJF** plans to be on for the EME SSB contest. **CT1DMK** plans to be on 432 and 1296 in the SSB contest. **SM4IVE** will be QRV in the SSB contest on both 1296 and 432. **LX1DB** should also be on 1296 for the SSB contest. Willie has had some ice problems, which may not permit him to change feeds. WA3QXP reports that his

12’ dish and 23 cm septum feed should be on the way from N4QH. Paul is getting an Ras2 AZ/EL rotator to use with the dish.

FOR SALE: K4EME is now offering for sale a Super 432 LNA that he believes is the best available. It has an **NF around 0.3 dB with a** gain of **~ 22 dB for $125. If you are interested contact Cowles at** candrus@mgwnet.com **or call** (540) 294-4590. He has units ready for delivery. **WW2R** has for sale a PA4TA 432 GS35B amplifier cavity, unused with a spare GS35B for $500. He also has a TH328 1296 PA using KB2AH made cavity, fitted on chassis with G3SEK Triode Power supply board available. It comes with Vortex blower that can be remotely mounted. With 20 W in, it gives 400 W output. It just needs HV supply for $600. Also a 9 cm 100 W PA, ~10 mW input for 100 W output using a pair of Toshiba modules. With remote LCD status display and 12 V PSU for $750. 432 EME array with 4 x 25 el K1FO yagis, with cables, combiner and H frame for $250 (pickup only). All other items plus shipping. For more information with photos (and some other interesting stuff for sale) see http://g4fre.com/sale.htm. **KB7F** is looking for a 432 high PA. Contact Gerald at geraldjdaily @hotmail.com. **LZ2US** has for sale QRO 23 cm TH327 amplifiers, complete units plug & play, ready for use, more info on request. For more info contact Marko at lz2us@dir.bg. **SV1BTR** has a brand new circular pol feed with a scalar choke and Kuhne preamp with SMA low loss coax relay for sale. Contact Jimmy at jimmyv@hol.gr for further details.

K4EME’s Super 432 LNA

VK3UM SOFTWARE UPDATES: EME Calculator EMECalc Ver 9.00 now has: 1) A significantly enhanced yagi data base/yagi selection option. With the assistance of VE7BQH, his yagi data base of some 490+ antennas have been included and replaces my previous limited selection. The program has been modified to reflect Lionel’s method of comparing antenna Ta (antenna temperature) and G/T where provided. This is a long established reference based methodology developed over the years, which Lionel (and many others) has developed. This will allow the user a means of direct comparison between antenna. Sky and ground temperatures now used for yagis, reflect those adopted by the VE7BQH data base. Please read the updated Help file to understand the methodology, however those already familiar with Lionel’s data base will find little difficulty in its application into EMECalc. 2) Antenna Beam factor, previous beam fill calculations for both Sun and Moon Noise have been refined based on the work of PE1NUT. Paul points out that his work assumes that the source has even brightness distribution across its face. It is believed that this is a reasonable assumption for the Sun, but there is some evidence that the radiation from the moon will drop off due to lower emissivity once one moves away from vertical incidence towards the limbs of the Moon. In addition the actual temperature with respect to Moon phase and frequency can vary between differing authors. Thus the Moon noise calculated cannot be assumed as totally accurate, however it is the best that can be done with currently available data. 3) At this stage no attempt has been made to allow for Beam Fill factors in determining the S/N of echoes or that of the other station. The reason being that there is strong evidence (e.g. Hagfors and Evans) that most of the energy is reflected from the central part of the Moon and thus any beam fill factor would need to be applied to this smaller effective diameter of the Moon. Evans and Hagfors explain this as due to specular reflection, which is greatest at lower frequencies and tends to drop off with frequency. In practical terms it is unlikely that amateur antennas will have beam widths significantly smaller than the Moon at VHF, so this is not an issue. It is not until one has at least a 6 m dish on 10 GHz or a 3 m dish on 24 GHz that the errors caused by deleting Beam fill will be significant and in fact unless Beam fill were able to be applied by integrating over the pattern of reflection from the Moon, its use would likely lead to even larger errors. Most of the investigatory work on this has been done by VK7MO (on 10 and 24 GHz) and measurements by him and OK1KIR, W5LUA and others have identified changes that needed to be made to the program. It was Rex whose measurements that highlighted the inaccuracies used previously in the software. 4) I am still looking for Moon phase/Moon Noise data on 10 GHz and above as I discussed during the Cambridge 2012 forum. There is much conflicting data circulating from 'respectable sources'. Rex and I would welcome comments and any information you may – please send directly to me. The EME Planner Ver 1.78 also has some minor improvements and enhancements. I want to express my big thank you to Lionel, VE7BQH and Rex, VK7MO for their considerable help and suggestions that has spanned many weeks of intensive investigative work.

FINAL: I noticed that the 70 cm CW ATPs were not included in the 2013 Moon Calendar that appeared in the Jan NL. I have thus list the date/time for the remaining 2013 ATPs: 21 **April 1430-1630 and 2230-0030, 19 May 1300-1500 and 2130-2330, 29 Jun 2330-0130 and 30 Jun 0800-1000, 27 Jul 2200-0000 and 28 Jul 0630-0830, 24 Aug 2100-2300 and 25 Aug 0530-0730, and 15 Dec 0000-0200 and 1700-1900.**

There seems to be some confusion by some of the new comers to 23 cm and above EME regarding septum and scalar ring feeds. The septum part of the feed is the *polarizer*. It provides the circular polarization. It is one of a number of methods to generate circular polarization and is independent of any rings that may surround the horn. The beauty of the septum polarizer is that it requires little or no adjustment to achieve excellent circularity. The scalar part of the feed are the ring (or rings) added around the horn. These ring(s) (by reflecting back energy lost at ends of the horn) shape the beam pattern of the horn to more efficiently illuminate a dish reflector. Generally a single ring is sufficient. You control the optimum f/d of the feed by sliding the position of the ring(s) relative to the mouth of the horn. This can be done experimentally, then the ring secure in place. The contact of the ring(s) to the tube of the horn is not critical. W1GHZ covers all this stuff in his excellent Antenna Handbook available at http://www.w1ghz.org/antbook/contents.htm.

I hope all of you have fun during the SSB Contests. I will be on looking for you. Please keep the information and reports coming. 73 – Al, K2UYH

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W1GHZ found the following amazing picture of W1FZJ. Sam was my idol when I was a teenager just staring out on VHF and EME. The caption reads “Sam Harris, of Medfield, MA, trims his beard with electronic scissors controlled by moon bounce signals.” The location was a Hudson Division ARRL Convention.