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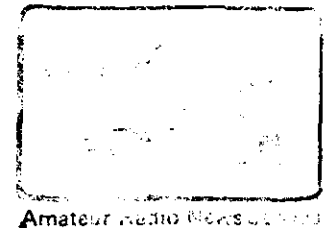
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CLUB NETS

2 METER FM		78/18	SUNDAY	8:00 PM
6 METER AM		50.9	SUNDAY	9:00 PM
10 METER SSB RAG CHEW		28.8	FRIDAY	9:30 PM
15 METER SLOW CW NET.		21.175	FRIDAY	7:30 PM



Amateur Radio News of 1978

NOTE: EDITOR'S CHANGE OF ADDRESS....
 RAY MARTIN WB2LNR,

OSCAR 8 IS UP

The 29.402 Mhz and 435.085 Mhz beacons are working fine. Good Mode J and Mode A performance. The orbit is nearly circular with a 909.583 KM mean altitude; a period of 103.193 minutes; inclination of 99.146°; 25.7983° progression at the equator each orbit. "Oscar 8 is available for general use, operating Mode A weekdays (Wednesday, experimental only) and Mode J Saturday and Sunday (GMT). Both transponders are working so well (20W ERP produces S9 and 1W S6 on Mode A, and Mode J appears to be about 6 db better!) that linears are definitely not needed." (From HR Reports)

OFFICIAL BULLETIN NR 697 FROM ARRL HEADQUARTERS NEWINGTON CT MARCH 9 1978
 TO ALL RADIO AMATEURS BT

This is a modification of Official Bulletin 696 regarding United States and Canadian amateurs seeking to take advantage of reciprocal operating agreements while traveling in the others country. Travelers should request specific application forms from the ARRL through the Membership Services Department, ARRL Headquarters, as soon as possible. Completed forms should be forwarded by the traveler to the DOC or FCC as applicable a minimum of 45 days prior to departure AR

APRIL MEETING will be held at The National Park Municipal Hall, National Park, N.J. at 8:00 PM. Public invited. 78/18 talkin.. see you there. Ray.

P.S. Dont forget DUES.

President's Corner

Since we moved into larger quarters it poses a new problem. I realize we have a lack of seating and many members have to stand, but the big problem is the groups who gather in the rear of the hall; that are talking among themselves. They are disturbing other members that are interested in the Program being presented.

Steve Asay our Program Director and myself asked several members to quietdown but, the conversations still continued.

It is very difficult for the speaker who is conducting a Program to contend with noise of those who show their lack of interest. Remember it is hard for the speaker to capture everybody;s interest. Put yo-urself in the Speaker;s place how would you feel if you were him???

Please let;s try to have a little more respect for others.

Thank you ! Ray WB2BZY

April Program.

The April program should prove to be most interesting. Our guest will be Howard Berlin W3HB (ex K3NEZ, K3WGW, and WB3AIX) who will talk about DX from both sides. Howard has been a licensed ham since the age of 13, He is a Life Member of the ARRL, and a member of the Frankford Radio Club among others. He holds DXCC (over 270 countries) and is finishing up on five band DXCC. He holds CQ Magazine;s first DX award;s endorsement for DXCC from the mobile and presently has over 112 countries worked from his car. Howard has operated from various parts of the world including the calls XE1GGU in Mexico City, VS6DO in Hong Kong, CR9AK Macau, C6ANO in the Bahamas, and K3NEZ/4X4 in Israel,. In addition to all ten US call areas. He has appeared in print in QST, 73, and Ham Radio magazines and has authored four books covering IC timers, active filters, op-amps, and phase-locked loops. For "RELAXATION" ,, Howard enjoys playing guitar, five string banjo, tennis, and blackjack.

NEW LICENCEING CLASS

Bill Helmetag, and more, (I dont know who all is involved) will be starting a new licenceing class soon. If you know anybody who might be interested, please bring them out to get the straight skinny from Bill and to hear our fine program.

See You There. !!! 73;s Steve WA2AXJ

DX Contest. Be sure to turn in your logs by the meeting as they have to be postmarked by April 17 to count. Looks like another club scoring record has gallen easily. Preliminary estimates of the club score put it in the 4-5 million area. The old record was about 1.2 million. The team competition is very close, and your log could just make the difference to the "Greens". The "Reds", have in the neighborhood of 2.8 million, so everyone who has any points at all should contact Captain of the Green Team, Mark Wilson, WB2OSQ, and turn in your logs at the next meeting. Results will be published next month. N2CQ looks like the leading contender for the W2SUA DX Trophy, from the early returns.

Much prime DX was available, with 10 stations unbelievably hot on the prime weekends especially. Excellent conditions were enjoyed on all four weekends, which is most unusual. Some additional goodies were worked on the second half, they were: A5, 3B8, JY, 7X4, 7P8, 3D6, DU, PYO, HZ, 9K5, and YK.

Novice Roundup. Not too many turned in logs, but we had fun anyhow. Hi.

WB2AOL/T	151 QSO's	41 Sec.	6191	Points
N2CQ	7 QSO's	6 Sec.	42	Points

MEGAPOINT CONTEST CLUB. There appears to be several qualifiers for the award in the first contest season. Perhaps as many as four or five will qualify, with two or three making the two millikn endorsements, and fully twenty five members accumulating some points as of this writing. The most encouraging statistic though, is that the club scoring recordings been smashed for every contest entered this year.

Congratulations to all !

73, N2CQ

FCC TO PROHIBIT PRODUCTION OF 24-35 MHz. AMPLIFIERS.

WASHINGTON, D.C. - The Federal Communications Commission has voted to ban the manufacturing, marketing, importation and use of linear amplifiers that operate in the 24 to 35 MHz bandwidths. The ban, which will be effective in mid-April, results from illegal use of these amplifiers with Citizens Band radio in the 27 MHz range. The FCC claims that CB was responsible for 83 % of the 135,000 complaints of TV and other home entertainment device interference during 1977.

By a 5 to 1 vote, the Commission agreed to require all linear amplifiers that operate at 144 MHz or lower to be type-accepted: power amplifiers that operate in the 24 to 35 MHz range will be rejected. While the FCC does anticipate a black market for illegal linear amplifiers, the Commission feels that by limiting the manufacture of this equipment, it will be easier to enforce the ban on sellers and users.

Retailers will have to hurry to sell as much as possible of their stock of amplifiers that cover the forbidden bandwidths before the end of April. Once the ban goes into effect, retailers can obtain marketing cutoff waivers to avoid being saturated with a supply they cannot sell. The FCC will grant these waivers only for amplifiers that pass type acceptance, regardless of whether they enter into the 24 to 35 MHz range as part of their operation. Amplifiers specifically designed for this range will not receive an acceptance.

Says John Reed, electronic engineer of the technical standards office of the FCC, "The waivers are designed so that dealers do not get stuck with legitimate amplifiers. Those that operate in the 24 to 35 MHz range only were designed for illegal use, and we'd just as soon see the retailers get stuck with them."

The only legal use of amplifiers in the restricted range will be by amateur radio operators who build and use them over the 28 to 29.5 MHz bandwidth. Such amplifiers cannot legally be sold, however. (Electronic Engineering Times 3/6/78)

NOW HEAR THIS ----ADVANCE NOTICE----- B I G WHITE ELEPHANT SALE --- MAY MEETING
Clean out your junk boxes, basements, garages, closets, etc., and bring anything you want to get rid of to the May meeting. In addition to the usual goodies, which are donated to the Club and sold for the advancement of the club treasury, we will be auctioning items on consignment for club members with the Club taking 10 % commission. More details next month. - YOU WONT WANT TO MISS THIS ONE.

-FOR ZE SALE --

2 meter mobile - Midland 505, with 11 sets of rocks, 5 & 30 watts, touchtone pad & slide mount... \$ 195.00

Regency 10 channel programmable scanner with homebrew s-meter, etc. \$ 175.00

Magnavox 19 inch all solid state color portable with cart \$ 275.00

Regency RR - 2B 2 meter transceiver with 9 sets of rocks \$ 140.00

Viking Valiant -- II with SSB adapter 160-10 meters, all manuals \$ 150.00

Charlie H. Jenkins W2QGZ

Heathkit HR-1630 80 - 10 meter receiver with matching speaker. \$ 150.00

Steve Platt

Hallcrafters SX-110 general coverage receiver, with matching speaker and Heathkit O-110 amplifier. Excellent condition. \$ 180.00 Steve

Heathkit IC-17 3 inch microphone \$ 25.00

Drake RC-100 fully crystallized 100W 11.2-11.8 MHz, touch tone pad, modified for rig, mobile mounting bracket. Mint condition. \$ 210.00 W3NUB Steve.

Drake AA-10 10 watt amp. 1-1.5 in and 10 out. \$ 35.00 Steve W3NUB

The following items are for sale by Mike, W3SYI

ARRL handbook keyer, perfect shape. \$ 35.00

Heathkit deluxe signal tracer \$ 15.00 6 Meter saturn 3 ring halo, \$ 5.00

Quality SQ stereo to quad HI-FI decoder, uses professional motorola chip set. With schematic, documentation, and PC layout. Assembled, with power supply as a stand alone unit. \$ 40.00 Two Radio Shack Nova 7B speakers, perfect shape \$ 40.00

12 inch, diagonal GE portable black and white TV. It works, but Hi Voltage section arcs.- \$ 20.00

144.5-145.5 MHz. Will be the new two meter repeater sub-band, and QR callsigns will become extinct as a result of Commission action on the various petitions for reconsideration on Docket 21033 Wednesday. In addition Technicians will also receive the rest of two meters, while repeaters will not be permitted use of 220.0-220.5, 431-433, or 435-438 MHz., to permit weak signal and satellite communications on those bands. The only petition request not granted was for continuation of repeater licenses, which the Commission considered an unnecessary workload.

FCC'S AMATEUR CALLSIGN structure has been completely overhauled and a new policy, effective March 24, has just been released. No special callsigns or special events callsigns will be issued, and licenses for personal secondary stations will no longer be renewed. Call areas will remain and will determine the prefix of a callsign issued to an address in that area, but an individual can retain his callsign indefinitely if he wishes even if his permanent station location changes call area.

2x1 and Nx3 Callsigns will soon be heard under the new policy which divides callsigns into four "groups". Group A includes 1x2, 2x1, and 2x2 (AA-AL prefixes), available to Extras only. Group B includes 2x2s other than AA-AL, and will be available to advanced class license holders. Group C is 1x3 callsigns, available to Generals and Technicians, while Group D is 2x3s for Novices. In Group A 2x1s will be the first calls issued, while Nx3s will be the initial Group C issue. Also changed will be callsigns for many U.S. Islands.

The New Callsign Assignment Plan will go into effect in three phases, the first of which is already underway. Under Phase 1 and newly licensed licensees will receive a callsign determined by the new system, and any present licensee who upgrades may, if he wishes, receive a new callsign appropriate to his new status. For example, a newly licensed Ham who starts out as a General will receive a Nx3 Callsign, while a Novice with a 2x3 who upgrades to Advanced can trade it in for a 2x2 if he wishes. Requests are made by specifying on line 13A of form 610, "Please assign a Group - callsign" when filing the application. Extras are also eligible in Phase 1, of course, and those who've received 2x2 callsigns can request a change to a 2x1 before October 1. Future Phases will permit Advanced and later General and Technician licensees to change their callsigns as well.

New Prefixes for U.S. Pacific and Caribbean Islands, effective March 24 are: KH1, Canton; KH2 Guam; KH3, Johnston; KH4, Midway; KH5K, Kingman; KH5, Palmyra; KH6, Hawaii; KH7, Kure; KH8, Samoa; and KH9, Wake. Also KP1, Nassau; KP2, Virgin Islands; KP3, Serrana Bank, and KP4, Puerto Rico. Other spots such as the Marshall Islands and Guantanamo Bay are not FCC administered so remain unchanged.

APRIL 15-16, NEW YORK HAMFEST, APRIL 15-16, 1977, 10:00 AM - 3:00 PM, NEW YORK STATE COLLEGE, POCONO, N.Y. Roosevelt Blvd., and Southampton Rds, Phila., Pa. Door prizes, food. Bring your own tables. Eight am till three thirty pm. This will be their very first Hamfest, so lets see what we can do. For info. P.O. Box 652, Langhorne, Pa. 19047.

April 15-16, First EBE, ARRL Contest, First Part. See page 89 March QST.

April 16, SEARC, Potomac, N.J. (ATLANTIC COAST AREA) -- their 25th Anniversary, at Stockton State College, Potomac, N.J. Info: SEARC, P.O. Box 112, Atlantic, N.J.

April 22-23, Trenton Computer Festival, Trenton State College, Trenton, N.J.

April 28,29,30,. DAYTON HAMVENTION, DAYTON OHIO.

Editor's Note; At this time everything for me is Go, for Dayton Ohio,. I have been going for the last two years and I hope to continue for some time. And this year, by hook or by crook I'll see Doug Gehring. See you there Doug. Ray.

QRP--Can You Handle It?

By Tony Starr WAFZB

With the recent increase in activity, conditions on the ham bands aren't likely to get much better from a standpoint of QRM. It is most likely that the QRM will get much worse. But there is a way for active hams to cut QRM greatly and have a great time at the same time. This method is referred to as "QRP". The International "Q" signals tell us that "QRP" means "reduce power". QRP operation is just that; hamming under reduced power. Many ops consider anything under 100 or 50 watts to be QRP. People who run QRP generally set the maximum at 5 watts. This is sometimes called "QRPP".

How, you ask, would running low power possibly reduce QRM? The question could only be answered in the true tradition of ham radio. At your station you will not reduce QRM. But to a half million hams across the globe you will reduce the number of interfering signals by a factor of one.

While doing your part to ease the QRM, you will also be developing your skills as an operator. Courtesy is sometimes forgotten on the ham bands, but in the world of micro-power, it is sometimes the foremost factor. This gain in courtesy is one of the benefits of QRP. Another major benefit is that as a QRP'er, the value of your contacts increases greatly. Most 80-meter operators would not get excited about working the state of Minnesota from New Jersey, but when I worked W0PEHN last year on the 80-meter band, I was ecstatic. This was my first 1000 mile contact with my Heath HW-8. Power output was 2 watts.

Just how much can you work with under 5 watts? Many hams ask this question when considering QRP. Although I don't claim to be a super operator, I am proud of my QRP accomplishments to date. At the time of this writing, my best QRP DX is I3EVF near Padova, Italy. I also have worked about 20 states, including California, which was another contact I got excited about. I also have three Canadians, and YESKI in Oaxaca, Mexico. I am not breaking any DX records, but I am having a great time.

What about equipment? QRP equipment varies from homebrew to commercial to putting the mode switch of your rig in the "TUNE" position. On some rigs, this cuts the output power to couple of watts. The rig I use is a Heath HW-8, which can vary output to 5 watts depending on dial. A 5000 ohm tap, of course, is available. The antenna used is a wire antenna. I use a antenna that is 40 through 15. It is apparent that good results can be had with a simple antenna.

Well, are you sold yet? Not everyone wants to operate QRP. This is understandable because ham radio is a matter of choice. But if you feel that you would rather run high power, then please consider this: If you own a kilowatt, you have a device that will allow good communications under the worst possible band conditions. But when the band is good condition, a kilowatt will only generate the worst kind of air pollution; QRM. So think twice before throwing that switch.

I hope you have enjoyed this article. I would like to say 73 to all and especially to Norm, K0NH, for his QRP interest. My endless thanks to John, K0JF, for his propagation reports.

GOOD LUCK AND GOOD DX TO ALL AND 73.

Tony WAFZB

APRIL PROPAGATION FORECAST: 80 Meters: Static-some possible DX early in the month. If you want to try it-fair openings during the hours of late darkness 2300-0230 then again at sunrise. It will get worse as the month progresses. 40 Meters: Now here is your nighttime band. It is going to be good. Western Europe, No. Africa 2100-0000, So. Amer. Cen. Amer. Carib. 2100-0400. So. Pacific, New Zealand, 0400-0600. Get your real good licks in an hour before sunset Europe and the east, then at sunrise towards the west. 20 Meters: You can't go wrong on this band this month. You turn your rig on and you can't help work 1500-2300 miles just about anytime during the day and early night. LOOK AT THIS: West. Europe, No. Africa, 1400-2100. USSR 1500-1700, Middle East 1900-2300, West. Africa 1700-2200, So. Africa, Short opening to Indian Ocean 1700-1800, So. Pacific 0800-1000, then Australasia 2300-0100, Carib. So Amer. 0700-1200, then again at 1500-0000, try the other side Peru, Chile, 1700-0100, Antarctica 2000-2200. Boy you guys with beams are in "Fat-City" this month. 15 & 10 Meters: No too good. Flat F2 layer and unhappy high index layers will not give us too great results. There will be days-Above & High Normal, but not like last month; but, don't dispare June is coming. Western Africa, So. Amer. 1500-1800, possible Antarctica 1500-1700. 6 Meters: I should write a column on VHF propagation this month but I won't--Ray you better get that 6 meter beam up fast, and Tony, your 333 boys are coming on now for T.E. contact. Well now- this is the month it starts major meteor shower, the Lyrids, April 21-23, noon April 22; good T.E. openings- Look for your DX here- do it between 1930 and 2330. North-South. Oh yes, now also starts sporadic-E ionization, this will start giving our sporadic-E propagation 700-1200 miles. It will appear from 0900 to 1200 and then 1700-2030. Here you want to look for BELOW normal and DISTURBED times. Just the opposite of the M.F. boys. 2 METERS: Not quite up to 6 meters for propagation goodies. Now I start yelling again: LOOK FOR THE STORM FRONTS. When they are coming get your licks in before the "sparks" get to you. North-South. There will definitely be some good T.E. for you guys on 145.1 in a month or month and a half, just have patience. = Good days for the M.F. 10, 12, 13, 14, 18-20, Good days for V.H.F. 3, 7, 16, 21, 22, 23, 30. The 13th for an above normal M.F., the 22nd for a good V.H.F. day, above normal for you. Well ole sole is really kicking up his sun-spots. It looks like a smooth April around 76. Boy that is great. You know we are going to break 100 about Oct.-Nov. What a time we are going to have from now until May 1982. The only problem is, around February and March of 1980, we may be having a ball on "Ham" radio, but the communication industry is going to suffer- high geomagnetic effects. "Chicken Banders" boys are going to go out of their "grasser" minds. Enjoy it while you can-The CB/10 group should have a ball Good Luck K2JF. John

NEW PRODUCTS OF INTEREST

1. RF ANTENNA: Bird's new antenna for 145.1 Mhz. and 250 Mhz. This is rare, at 145.1 Mhz. it is the only antenna with a choice of BNC, N-type or N-type connectors. It is a very compact well shielded item. Price \$102 - \$109.95; 100-25 Jamaica Ave. Hollis, N.Y. 11423.
2. VHF, UHF ANTENNAS: A group of Tonna antennas are being marketed by Texas RF Distributors, Inc. The Tonna antennas have a good reputation in Europe, where they are used on 2 and 75 CM. (220 Mhz not a band in use over there. Both 9 and 16 element yagi types are available for 2 meters, while a 21 element yagi is sold for 432 Mhz. An Oscar special has a 9 element 2 meter and 19 element 432 mounted on one boom. Price - Oscar \$51.2 m \$26 & \$54. 432-\$44. 4800 West 34th Street Suite D 12A, Houston, Texas 77092.
3. THRU-LINE WATTMETERS: Bird has a set of new wattmeters available which cover 1.8-30 Mhz on the model #4360, and 140-180 Mhz on the model 4362. Two power ranges are switch selected. The low band ranges are 200 and 2000 watts, forward and reflected, and the 2 meter job is set up for 25 and 250 watts, forward and reflected. Accuracy is 8% of full scale, and impedance is 50 ohms. Size 6" x 4" x 1.2". Price \$94 both models.

TO ALL RADIO AMATEURS.

The following is a motion made by Wayne B. Wood, W2CWA, at the monthly meeting of the Gloucester County Amateur Radio Club on March 1, 1978. The motion passed by unanimous vote. Gloucester County Amateur Radio Club represents 100 members of all ages and licenses. Their activities embrace all phases of amateur radio and are not singularly directed to any one phase of the hobby.

THE MOTION BY MR. WOOD

A letter shall be written to Mr. Harry J. Daniels, President, American Radio Relay League, Mr. Harry S. McConaghy, Director, ARRL Atlantic Division, and The Federal Communications Commission opposing the ARRL petition to the FCC requesting 14.175 to 14.200 MHz., be made an exclusive Extra Class phone band. END OF MOTION.

It should be quite obvious to all that the ARRL sponsored training program is producing a tremendous increase in activity on our frequencies. The ARRL estimates there will be 500,000 licenses by WARC Conference time in September 1979. By the latest count we now have 355,000 hams while only 16,000 of these are Extra Class license holders. How, can we afford to segregate frequencies for a minority group representing only $\frac{1}{2}\%$ of our ham population?? At the present rate of licensing the $\frac{1}{2}\%$ figure will represent an even smaller percentage in years to come.

We don't need more segregated frequencies for small groups; We do need maximum use of all available frequencies, we can't afford otherwise !!!

The Gloucester County Amateur Radio Club Urges all Hams to Petition the FCC for shared use of the new 14.175 to 14.200 MHz., phone sub-band by both Extra Class and Advanced Class licensees if our WARC representatives feel it will cause no problems during the WARC proceedings, OR If our position at the WARC conferences will be in doubt, withdraw the petition (docket 20282) to the FCC and wait until the WARC conference is completed.

RADIO WAVE PROPAGATION, ART OR SCIENCE, BY JOHN FISHER, K2JF PART 5. CRITICAL FREQ. SEC 1. This frequency, also called the "penetration frequency," is that at which the virtual height for a wave component at vertical incidence has a maximum value caused by penetration of the wave through the layer. At any given time of day under conditions of ionization, as the frequency is increased the measured virtual height will increase rapidly and reflections may cease for a short frequency interval, then again appear from the next higher layer. Atypical frequency run is shown in Figure 1.

The E layer has a virtual height of approximately 115 KM until a frequency of about 3.3 MHz. is reached, at which point it rises sharply and reflections disappear, apparently owing to complete absorption at that frequency; a strong reflection is resumed from the F1 layer at about 3.6 MHz., the virtual height of this layer being approximately 200 KM. At about 4.2 MHz. the F1 reflections rise sharply reaching about 450 KM at 4.4 MHz., this being the critical frequency. The F2 virtual height is about 415 KM until the F2 critical frequency is reached at 10.1 MHz. The critical frequencies of the E, F1 and F2 layers are denoted respectively by f_E , f_{F1} and f_{F2} .

The critical frequency is a function of the layer height and the degree of ionization, and hence is affected by all the factors which control the conditions in the ionosphere. The intense bombardment of the upper atmosphere by the ultraviolet radiations of the sun produce strongly ionized layers. These layers reflect radio waves of high frequency that would easily pass through the weakly ionized layers of summer months when the earth swings past the orbital range farthest from the sun. Because of the axis of the earth is tilted from the perpendicular to its orbit the winter nights are long compared to the twilight hours of summertime. The extended winter periods of darkness allow greater time for the various layers of the ionosphere to de-ionize and to pass larger chunks of the radio spectrum into outer space. The effect of these seasonal and daily fluctuations in the ionosphere are illustrated in the MUF chart. Fig. 2.

The MUF is relatively constant during the summer months. DX on lower frequency amateur bands is now limited by static and by high signal absorption in the ionosphere. The 20 and 40 meter bands may be open 24 hours a day during the higher portion

of the sunspot cycle. In the winter months, the MUF drops to a low value throughout the night hours, and tends to reach a broad maximum about noon. The graph shows the maximum usable frequency for an east-west path across the US is shown for the summer and winter conditions. During the long summer days when the earth is at the outermost reaches of its orbit, ionization of the upper air is relatively constant over a 24 hour period and the MUF varies over a restricted range of frequencies. These variations of the ionosphere are particularly noticeable on the 40 and 20 meter bands. During the daylight hours the amateur bands are alive. The MUF advances during the morning and the fifteen and ten meter bands are open for DX contacts. As the afternoon progresses and the sun starts to set, the ten meter band will see the MUF drop first. Shortly thereafter the fifteen meter band will become quiet, followed by the 20 meter band. If the MUF drops to a low enough value during the evening hours (indicating a low level of ionization of the layers) even the 40 meter band will grow quiet, except for occasional long-skip signals that have been reflected back to earth by some unusual layer discontinuity. During the summer months however the shorter hours of night-time prevent a complete de-ionization of the reflector and consequently the MUF does not drop to the low levels noticed during the winter months. The 20 and 40 meter bands will remain usable for DX work-during the hours of night, and on occasion the DX-man, who returns from the Club meeting will find the ten and fifteen meter bands alive with signals late into the night. It particularly should be noted that the most rapid variations of ionization in all major layers take place around sunrise and sunset: hence the variations in the medium of propagation are the most rapid at those times. The effects of those variations on the transmission of a radio signal will be discussed in another article. It should be pointed out that the curves of virtual height and critical frequency are simply typical and deviations from the values shown may be considerable under varying conditions of season, sunspot cycle and solar activity. The critical or penetration frequency is a criterion of the height and degree of ionization of the layer under consideration, an as such is important in that it permits the determination of more valuable effects of the layers desired to propagate the signal not vertically but from point to point along the surface of the earth. Next month section 2, of this stirring epic of the critical frequency.

73 K2JF.

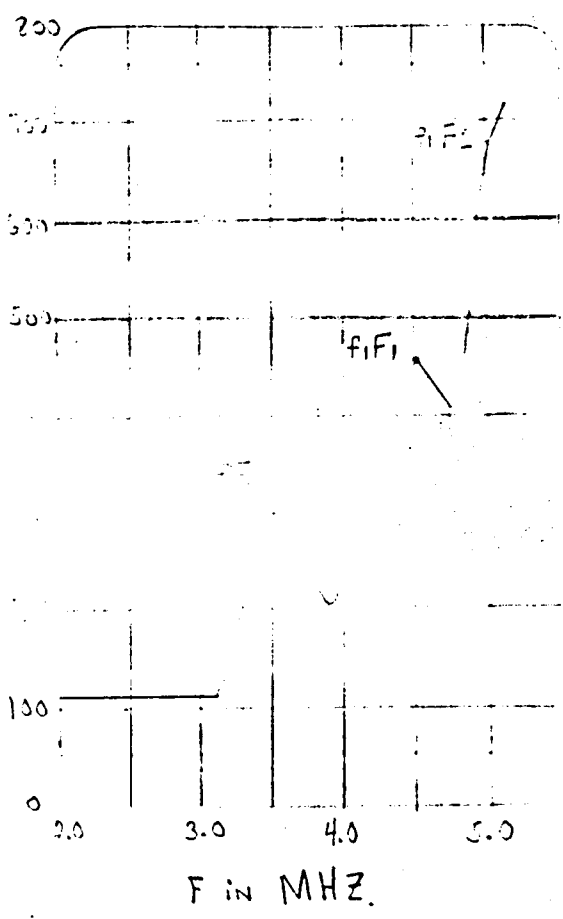


FIG. 1.

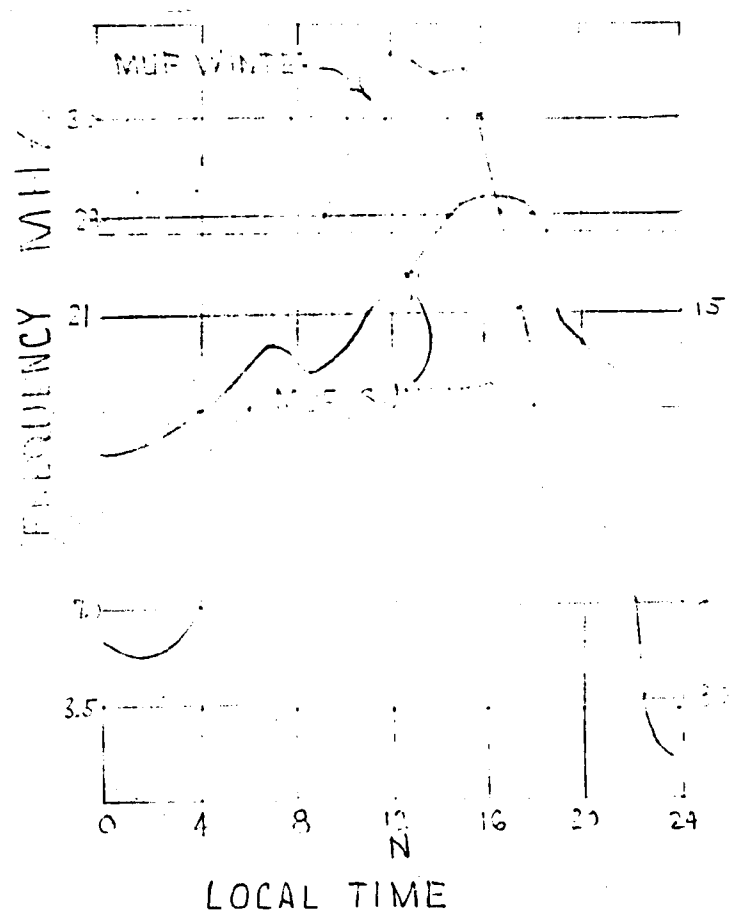
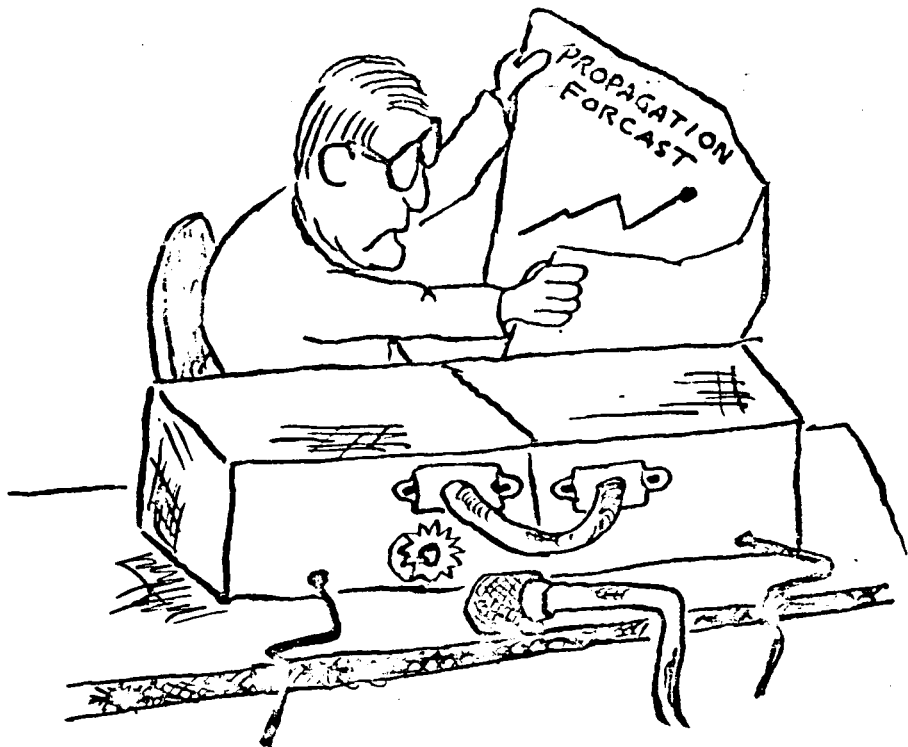


FIG. 2.



THATS FUNNY , TO DAY IS SUPPOSED
TO BE A GOOD DAY TOO!!