

CROSSTALK IS PUBLISHED MONTHLY BY THE GLOUCESTER COUNTY AMATEUR RADIO CLUB.,ARRL AFFILIATED.

CROSSTALK STAFF

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CLUB NETS

2 METER FM
 6 METER AM
 10 METER SSB RAG CHEW
 15 METER SLOW CW NET.



78/18 SUNDAY 8:00 PM
 50.9 SUNDAY 9:00 PM
 28.8 FRIDAY 9:30 PM
 21.175 FRIDAY 7:30 PM



PROGRAM :

THE PROGRAM FOR THE FEBRUARY MEETING WILL BE PRESENTED BY AL ABERCROMBE, W2GJS. AL WILL TALK ABOUT SATELLITE COMMUNICATIONS AND EQUIPMENT, AS USED BY MILITARY AND COMMERCIAL INTERESTS. THIS PROGRAM SHOULD PROVE EXTREMELY INTERESTING, SO WE ARE LOOKING FOR A BIG TURNOUT. SEE YOU THERE.

NOTICE: CAMDEN COUNTY CIVIL DEFENSE HAS BEEN AUTHORIZED TO OPERATE A 2 METER REPEATER.. FREQUENCY WILL BE 147.87/147.27 FM.

CONGRADULATIONS TO THE FOLLOWING NEW MEMBERS:

NORMAN HARBISON JR. K2NH,
 PHIL MATTISON WA2WQQ

THE NEXT MONTHLY MEETING WILL: WEDNESDAY FEBRUARY 1st., 1978
 AT-THE NATIONAL PARK MUNICIPAL BUILDING, NATIONAL PARK, NEW JERSEY.
 ALL GUEST ARE WELCOMED. 8:00 PM.

ALL ARTICLES FOR CROSSTALK SHOULD BE SENT TO THE EDITOR: RAY MARTIN WB2LNR

IF AT ALL POSSIBLE, PLEASE TYPE.

IT WAS MENTIONED PREVIOUSLY THAT AT LOW FREQUENCIES, SUCH AS THOSE EMPLOYED BY MARCONI, PROPAGATION IS BY MEANS OF THE GROUND WAVE AND THE IONOSPHERE, AND THAT AT THE LOWEST FREQUENCIES, IN THE ORDER OF 10 TO 30 KC. THE IONOSPHERE AND THE EARTH ACT AS TWO CONCENTRIC SPHERICAL SHELLS BETWEEN WHICH THE RADIANT ENERGY IS GUIDED. AT HIGHER FREQUENCIES, SUCH -AS FROM 100 KHZ AND UP, THE TRANSMISSION IS SOMEWHAT SEPARATED: THE GROUND WAVE AND THE SPACE WAVE DIRECTED TO THE IONOSPHERE AND REFLECTED FROM IT ACT MORE INDEPENDENTLY OF ONE -ANOTHER. YOU MAY WONDER WHY A SPACE WAVE DIRECTED TOWARD THE IONOSPHERE IS NOT NEGLIGIBLY SMALL AT THE STANDARD BROADCAST FREQUENCIES IN VIEW OF WHAT WAS SAID ABOUT THE CANCELLATION BETWEEN THE DIRECT AND GROUND REFLECTED RAYS IN THIS FREQUENCY RANGE. THE REASON IS THAT -THE REFLECTION OF HIGH ANGLE WAVES IS DIFFERENT FROM THAT OF LOW ANGLE WAVES. THIS HAS BEEN INDICATED PREVIOUSLY, AND WILL BE DISCUSSED IN GREATER DETAIL HERE. IN FIG. 1 IS SHOWN A HIGH ANGLE DIRECT RAY, AND THE ACCOMPANYING GROUND REFLECTED RAY. ACTUALLY THE DISTANCE BETWEEN THE IONOSPHERE AND THE EARTH IS SO GREAT THAT THE ANGLE BETWEEN THE TWO RAYS IS PRACTICALLY ZERO, SO THAT THEY FORM ESSENTIALLY ONE RAY, AND AFTER REFLECTION FROM THE IONOSPHERE CONSTITUTE THE SO CALLED IONOSPHERIC OR SKY WAVE. IT IS CLEAR FROM THE FIGURE THAT $\theta/2$ IS ON THE ORDER OF 15 DEG. OR MORE. FOR SUCH LARGE ANGLES OF INCIDENCE THE ELECTRIC FIELD VECTOR OF THE GROUND REFLECTED RAY IS NOT SHIFTED 180 DEG. IN PHASE WITH RESPECT TO THAT OF THE DIRECT RAY, BUT INSTEAD IS IN PHASE WITH IT. THE DIFFERENCE IN PATH LENGTH AT THE STANDARD BROADCAST FREQUENCIES IS NEGLIGIBLE WHEN MEASURED IN WAVE LENGTHS, SO THAT THE ONLY PHASE ANGLE BETWEEN THE TWO RAYS IS THAT DUE TO REFLECTION, AND -AS JUST STATED, IS ZERO FOR LARGE VALUES OF $\theta/2$... HENCE THE TWO RAYS ADD AT THEIR POINT OF CONTACT WITH THE IONOSPHERE, INSTEAD OF SUBTRACTING, AS THEY DO FOR LOW ANGLE RAYS. MOREOVER, AT SUCH HEIGHTS THE SURFACE WAVE IS OF NEGLIGIBLE INTENSITY AND MAY BE DISREGARDED. HOWEVER, ALONG THE SURFACE OF THE EARTH THE SURFACE WAVE IS NOT NORMALLY NEGLIGIBLE, AND RECEPTION AT THE DISTANT POINT R MAY BE A VECTOR COMBINATION OF THE SURFACE AND SKY WAVES. THE RESULTANT MAY BE GREATER OR LESS THAN THE TWO COMPONENT WAVES, DEPENDING UPON THEIR PHASE AT THIS POINT. IF THE HEIGHT OF THE IONOSPHERE VARIES, THE PATH LENGTH OF THE SKY WAVE WILL VARY, AND THIS IN TURN WILL VARY ITS PHASE AT R. THE RESULT WILL BE FADING AT THAT POINT, AND THIS WILL BE DISCUSSED IN GREATER DETAIL FARTHER ON. ONE FURTHER POINT WILL BE BROUGHT OUT CONCERNING REFLECTION. THE VARIATION IN PHASE OF THE ELECTRIC FIELD IN THE GROUND REFLECTED RAY WITH $\theta/2$ OCCURS ONLY WITH VERTICALLY POLARIZED WAVES. HOWEVER, AT THE LOWER FREQUENCIES ONLY VERTICALLY POLARIZED WAVES CAN BE RADIATED WITH ANY EFFICIENCY, SINCE THE CONDUCTING EARTH TENDS TO SHORT OUT THE HORIZONTAL ELECTRIC FIELD VECTOR OF A HORIZONTALLY POLARIZED WAVE. (YOU 160 BUFFS PLEASE TAKE NOTICE). AS THE ANGLE OF INCIDENCE $\theta/2$ IS VARIED FROM 0 TO 90 DEG., THE PHASE OF THE REFLECTED ELECTRIC FIELD VECTOR VARIES FROM 180 TO 0 DEG.. AT SOME INTERMEDIATE VALUE OF $\theta/2$ THE PHASE ANGLE IS 90 DEG.. THE SPACE ANGLE $\theta/2$ AT WHICH THE PHASE ANGLE IS 90 DEG., IS KNOWN AS THE BREWSTER ANGLE, AFTER THE NAME OF A PHYSICIST WHO DISCOVERED A SIMILAR ANGLE IN OPTICS. AT THIS ANGLE OF INCIDENCE THE DIRECT AND GROUND REFLECTED RAYS NEITHER ADD NOR SUBTRACT ARITHMETICALLY; INSTEAD THEY ADD (GEOMETRICALLY) IN PHASE QUADRATURE (90°) HENCE EVEN IN THE 160 METER BAND THE SPACE WAVE MAY NOT BE NEGLIGIBLE AT THIS PARTICULAR ANGLE OF INCIDENCE. THE RESULT IS THAT IN CALCULATING THE DIRECTIVE PATTERN OF AN ANTENNA ARRAY ON THE BASIS OF A GROUND IMAGE, SOME ERROR WILL BE INVOLVED IN NEGLECTING THIS EFFECT AT AND AROUND THE BREWSTER ANGLE OF INCIDENCE, BUT HIS ERROR IS FORTUNATELY NOT SERIOUS AND NEED BE CONSIDERED ONLY WHEN HIGH PRECISION IS REQUIRED IN THE CALCULATIONS. THE BREWSTER ANGLE DEPENDS UPON THE FREQUENCY AND THE CONDUCTIVITY AND DIELECTRIC CONSTANT OF THE EARTH. FOR AVERAGE VALUES OF EARTH CONDUCTIVITY AND DIELECTRIC CONSTANT, THE BREWSTER ANGLE AT 1900 MHZ. IS ABOUT 6 DEG., AND AT 54 MHZ. IT IS ABOUT 15 DEG.,..... THE SIGNIFICANCE OF THIS IS THAT IN THE 160 METER RANGE, SPACE WAVES DIRECTED TOWARDS THE IONOSPHERE EVEN AT LOW ANGLES (BUT GREATER THAN 6 DEG.) ARE APPRECIABLE IN STRENGTH, AND MAY INTERFERE WITH THE SURFACE WAVE AS DESCRIBED ABOVE. THAT IS ONE REASON WHY SO MUCH EFFORT IS DIRECTED TO HAVING THE BROADCAST AND 160 METER ANTENNA RADIATE AS MUCH ENERGY AS POSSIBLE ALONG THE HORIZONTAL: TO EXTEND THE INTERFERENCE (FADING) EFFECT AS FAR OUT AS POSSIBLE, AS WELL AS TO INCREASE THE SIGNAL STRENGTH ALONG THE SURFACE OF THE EARTH FOR A GIVEN AMOUNT OF RADIATED POWER. IN THE U.H.F. RANGE IT MIGHT AT FIRST APPEAR THAT BY ELEVATING THE TRANSMITTING AND RECEIVING ANTENNAS TO A SUFFICIENT DEGREE, THE ANGLE OF INCIDENCE COULD BE MADE TO EXCEED THE BREWSTER ANGLE, AND THUS CAUSE THE ELECTRIC FIELD VECTOR OF THE GROUND REFLECTED RAY TO MEET THAT OF THE DIRECT RAY IN PHASE INSTEAD OF 180 DEG., OUT OF PHASE. (ADDITIONAL EFFECTS OF THE DIFFERENCE IN PATH LENGTH OF THE TWO RAYS WILL TEND TO COUNTERACT THIS ADDITIVE EFFECT.)

HOWEVER, IN VIEW OF THE LARGE VALUE THAT THE BREWSTER ANGLE HAS AT THESE FREQUENCIES (15 DEG., AT 54 MHZ) IT WILL BE EVIDENT THAT FOR ALL PRACTICAL ANTENNA ELEVATIONS AND ALL BUT THE SHORTEST DISTANCES BETWEEN THE TWO, THE ANGLE OF INCIDENCE WILL BE LESS THAN THE BREWSTER ANGLE, AND HENCE THE TWO RAYS WILL INHERENTLY TEND TO CANCEL, EXCEPT FOR THE EFFECT OF DIFFERENCE IN PATH LENGTH. FURTHERMORE, HIGH ANGLE SPACE WAVES IN THE U.H.F. RANGE (FOR WHICH $\theta/2$ EXCEEDS THE BREWSTER ANGLE) ARE OF NO CONCERN TO THE RADIO AMATEUR BECAUSE THEY ARE NOT REFLECTED BACK TO THE EARTH BY THE IONOSPHERE, BUT INSTEAD PASS THROUGH IT AND ARE LOST INTO SPACE. IN THE YEAR 1902 TWO SCIENTISTS, KENNELLY AND HEAVISIDE, WORKING INDEPENDENTLY, DEVELOPED THE THEORY THAT THE UPPER REGIONS OF THE EARTH'S ATMOSPHERE CONTAIN AN IONIZED STRATUM AND THAT THIS REGION, BEING A BETTER CONDUCTOR THAN FORCING THE ENERGY TO FOLLOW THE CURVATURE OF THE EARTH'S SURFACE. THIS ASSUMED LAYER WAS NAMED THE KENNELLY - HEAVISIDE LAYER. OVER THE YEARS SCIENTISTS OF THE NAVAL RESEARCH LAB ORATORY, THE BUREAU OF STANDARDS, THE CARNEGIE INSTITUTE, RADIO CORPORATION OF AMERICA, BELL TELEPHONE LABORATORIES, AND OTHERS HAVE DONE A VAST AMOUNT OF EXPERIMENTAL WORK TO DETERMINE THE COMPOSITION OF THE IONIZED REGION AND ITS EFFECTS ON RADIO TRANSMISSION. SINCE THE IONIZED REGION HAS BEEN FOUND TO BE VERY DEEP AND TO CONSIST OF SEVERAL CONTINUOUSLY CHANGING LAYERS, THE ENTIRE REGION WHICH AFFECT RADIO TRANSMISSION HAS BEEN NAMED THE "IONOSPHERE." BEFORE CONSIDERING THE EFFECTS OF THE IONOSPHERE IT IS FIRST NECESSARY TO KNOW SOMETHING OF ITS CHARACTERISTICS.

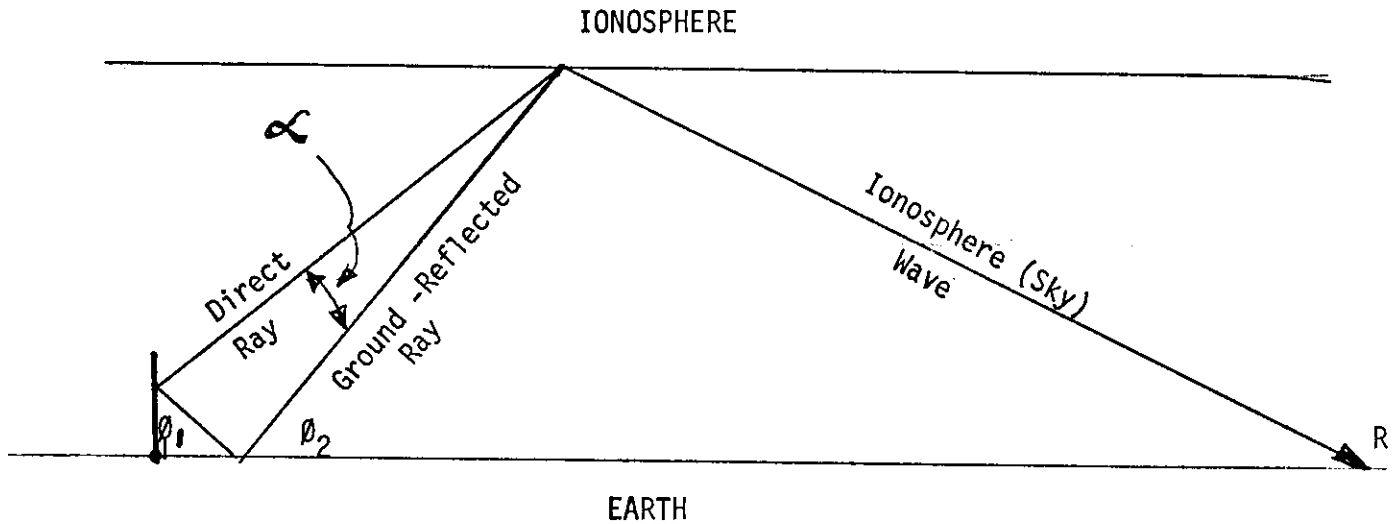


Fig. 1.

SECTION 2 NEXT MONTH OF THIS STIRRING EXCITING (HI HI HI) EPISLE ON WHY THE LITTLE ELECTRONS GET TO WHERE THEY ARE GOING. 73's K2JF JOHN FISHER.

WELL GANG, THANKS TO JOHN FISHER HERE IS THE SUGGESTED CB/10 METER FREQ. ALLOTMENT PLAN.

CB CHANNEL	TEN METER FREQUENCY MHZ	
1	28.760	
2	28.770	
3	28.780	QRP ONLY
4	28.800	INTERNATIONAL 10/10 AM NET.
5	28.810	
6	28.820	
7	28.830	
8	28.850	
9	28.860	EMERGENCY DISTRESS
10	28.870	
11	28.880	
12	28.900	
13	28.910	
14	28.920	

15 28.930
 16 28.950 EMERGENCY TRAFFIC
 17 28.960 INTER CLUB RAG CHEW
 18 28.970 INTER CLUB RAG CHEW
 19 28.980 HIGHWAY/MOBIL INFORMATION
 20 29.000 LOCAL DISTRICT CLUB. RAG CHEW & INFORMATION.
 21 29.010 "
 22 29.020 "
 23 29.030 MARINE TO MARINE
 THANKS JOHN FOR ALL YOUR EFFORTS IN COMPILING THIS INFORMATION.. YE ED.....

PAY _ _ _ _ YOUR _ _ _ _ DUES _ _ _ _ _ _ _ _ _ _ NOW !!!!!

Contest Corner

Feb. 4-12 Novice Roundup. (Tech's also eligible)
 Feb. 4-5 ARRL DX Contest, Phone
 Feb. 18-19 ARRL DX Contest, CW.
 March 4-5 ARRL DX Contest, Phone.
 March 18-19 ARRL DX Contest, CW.

Novice Roundup. This is an excellent opportunity to make progress on your operating goals such as WAS and WAC. It is also a good time to take the plunge into contest operating. Every Novice and Tech has a chance to win a nice certificate from ARRL if they make 200 or more QSO's. That may sound like a lot, but considering that you have 30 hours over a period of a week to make them, it shouldn't be too bad. That's an average of 7 QSO's per hour. In any case, we're sure that it will be a lot of fun for all. General and higher class op's can participate by working Tech's and Novices. They will be signing /T or /N. (as WB2ABC/T). Rules and log forms will be available at the February meeting or from Ken, N2CQ. Mail the completed logs as indicated in the rules, or turn them in to Ken at the March meeting for mailing. In any case let him know your score for Crosstalk. If you need any additional info or instructions on how to do it, see any contest committee member. (Mark, WB2OSQ, John, W2KI, or Ken, N2CQ.) Hope to work many of you.

ARRL DX Contest. This is the prime opportunity of the year to fatten your DX totals and to help the club turn in a better standing. To help the more serious DX chasers get excited about it, The W2SUA Trophy will be awarded to the station (single op) having the highest score on a single mode. (phone/CW). This handsome cup which was donated by Wayne Wood to encourage club members to improve their DX operating abilities and station capabilities, has been awarded to the top DX getter in this contest since 1971 on a rotating basis. It will be on display at the February meeting.

Even if you don't expect to be a serious factor for the cup, you can still help the club score, and pile up points for the Megapoint Contest Club award. It is almost certain that one or more members will score enough points in this one to qualify for the Megapoint.

We would appreciate your help in breaking the club record for this contest as we did in the Sweepstakes. The record has stood for a long time. It was set in 1971, at 1,241,325 points. Last year we had only 185,847 points and were in 45th place.

Logs, rules, and more information if you need it, will be available at the meeting. Just see a member of the contest committee. Good Hunting!

73, Ken N2CQ

P.S. Don't forget to turn in your VHF Sweepstakes logs at the February meeting for mailing, as the deadline is Feb. 20.

LES BELLES

By-Rose Ellen -- N2RE

Whether it's called ground round, ground beef, ground chuck, or hamburger steak; ground meat in some form is almost everybody's favorite. Ground beef can be used as a substitute for almost any meat at almost any meal. It can be dressed up or dressed down and it's always easy to fit into your menu plans. Sometimes we like things a little different. Here's a good example:

FROSTED MEAT LOAF

- | | |
|------------------------------|-------------------------------------|
| 1-1/2 pounds ground beef | 1/4 teaspoon oregano (optional) |
| 2/3 cup quick oats, uncooked | 1/4 tablespoon Worcestershire Sauce |
| 1 teaspoon salt | 1 cup milk |
| 1/4 teaspoon pepper | 2 cups mashed potatoes |

Heat oven to moderate (350°F). Thoroughly combine all ingredients except mashed potatoes. Shape to form rectangle 9 x 4 inches. Place in a shallow baking pan. Bake in preheated oven about one hour; drain off excess fat. Place in broiler pan or on broiler rack. Frost loaf by spreading mashed potatoes over top. Place under broiler 5 to 7 inches from source of heat for 2 to 3 minutes or until browned. Makes 8 servings.

CONTRATULATIONS TO MY READERS----I GOT A FEW RESPONSES! Several requests for this recipie and I'm delighted to share it and hope you will find it enjoyable. These are especially good for broiled, baked or fried fish:

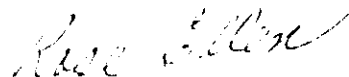
HUSH PUPPIES

- | | |
|----------------------------------|------------------------------|
| 1 cup enriched corn meal | 1/2 teaspoon soda |
| 1/3 cup sifted all-purpose flour | 1/3 cup finely-chopped onion |
| 1 teaspoon salt | 3/4 cup milk |
| 1 teaspoon baking powder | |

Sift together corn meal, flour, salt, baking powder and onion. Stir in onion. Add milk, mixing well. Drop batter by teaspoonfuls into HOT, DEEP FAT and fry only a few at a time. Fry until golden brown. Drain on paper towel or any absorbent paper.

Another reminder about dues: They are DUE. Dues are \$7.50 until after the March meeting. After that time they will be \$9.00. Pay up early and save money. Some have even paid for 1979. HOW ABOUT YOU? Your Treasurer is ready to take money any time.

73's



N2RE

JANUARY SCUTTLEBUTT:

See W2YZ, Barry, for any questions concerning third party traffic with other countries.

Herb, H2HPV, claims that his pipe does a good job modulating his two meter rig.

Fred, WB2GFK, has taken up pipe smoking and I understand that he has set himself afire only three (3) times this month!

Wonder if W2KI got his RCA pen and pencil set yet? Maybe K2JF knows.

Hear that W2SUA, WA2OMY and N2SI have their reservations for Dayton already!

Paul Callaghan, former WB2WAK, was in the area recently. He plans to move back ASAP. Hope he doesn't put up another quad!

Doug, WA2NPD/5 is back on the air again. Currently on 14.240 Mhz. at 10 AM Sundays. W2SUA is in charge of keeping the frequency open.

Ask WA2USI whose address is listed with the FCC as "300 feet from the intersection of Mantua Boulevard and Sewell Road". Talk about being out in the sticks!

I can't believe it, but I heard that Mark, WB2OSQ, is considering flying to Dayton with Jeff, WA2LWC. Parachute is \$5.00 extra!

Ray, WB2LNR, stayed up all night studying for his blood test! It tested out at 90 proof.

Somebody said that WA2GFK is planning to see Joe Welch in 60 days. Wonder what that's for?

WB2BZY seems to have a good grip on the President's job. Sorry that I can't say the same about his grip on the gravel! Seems he lost it after Herb gave it to him.

I found the secret of John's (JF) forecast for the frequency usage. Ask about the Batwings and spider webs?

How about the prospective 2nd Class with no audio that tried all morning to get into a QSO. Found a loose connector. Ask GFK about it.

Who besides K2JF has TVI problems in the neighborhood on the West side of Pitman. Ask John about it!

Well that about it this month, gang, we will be listening and waiting for next month's happenings, so hang in there.

FOR SALE:

HEATH HW 101 TRANSCEIVER, IN MINT CONDITION. HP-23 POWER SUPPLY, CW FILTER, WITH A COMPLETE SET OF EXTRA TUBES INCLUDING FINALS \$ 290.00 W2YZ,

POTTER MODEL 850 FREQUENCY TIME COUNTER \$ 10.00

VIKING $\frac{1}{2}$ TRACK MONO AUDIO TAPE RECORDER \$ 15.00

20 WATT DUMONT 2 METER FM MOBILE WITH ANTENNA SPECIALIST 5/8 MOBILE ANTENNA. CRYSTALS FOR 146.34/146.94 146.16/146.76 WITH CABLES \$ 30.00 BOB SPAIN WB2RVE.

F.C.C. NEWS.

THE F.C.C. HAS LAUNCHED AN INQUIRY INTO THE ILLEGAL PURCHASING OF CALL SIGNS AND AMATEUR LICENSES FROM UNSCUPULOUS F.C.C. EMPLOYEES. DOCKET 21418 ALSO INVESTIGATES LICENSE UPGRADES BY THE PAYOFF METHOD. THE NEW F.C.C. CHAIRMAN WANTS TO MAKE OFFICE HOURS 9 am TO 5:30 pm, BUT MANY F.C.C. EMPLOYEES ARE COMPLAINING ABOUT THE PROPOSED CHANGE, AND THE F.C.C. HAS INTRODUCED TELETYPE TERMINALS IN WASHINGTON AND GETTYSBURG TO ALLOW THE DEAF TO COMMUNICATE WITH THE STAFF. THE PHONE NUMBERS ARE: IN GETTYSBURG 717 334 9235 & IN WASHINGTON, 202 632 6999

AVAILABLE FOR FREE---JOURNAL OF I R E COMPLETE SET, EARLY 1950's.... WB2RVE AS ABOVE.

SATELLITES & GLOBAL COMMUNICATION:

THE FIRST COMMUNICATIONS SATELLITE USED FOR GLOBAL BROADCAST WAS TELSTAR, RELAYING THE FIRST LIVE TELEVISION BROADCAST FROM EUROPE TO THE U.S. SINCE THEN, WE'VE COME A LONG WAY, WITH MORE POWERFUL SATELLITE TRANSMITTERS AND BETTER SOLAR CELLS WHICH ENABLE ALMOST UNINTERRUPTED WORLDWIDE COMMUNICATIONS. ALSO, WHILE TELSTAR WAS LIMITED IN TRANSMISSION TIME BY ITS LOW ORBIT, TODAY'S SATELLITES HAVE SYNCHROUS ORBITS BETWEEN 22,000 AND 23,000 MILES ABOVE THE EQUATOR. THE SATELLITE APPEARS TO BE IMMOBILE FROM THE GROUND BECAUSE THE SATELLITE'S SPEED OF REVOLUTION AROUND THE EARTH EQUALS THAT OF THE EARTH'S ROTATION. SATELLITE'S FLYING IN THESE ORBITS ARE OVERLOOKING ALMOST A THIRD OF THE EARTH, SO ONLY THREE SATELLITES ARE NEEDED TO COVER THE ENTIRE PLANET, EXCEPT THE POLAR REGIONS. THE FIRST COMMERCIAL SATELLITE COMMUNICATIONS SYSTEM FOR WORLDWIDE USE WAS DEVELOPED BY THE INTERNATIONAL TELECOMMUNICATIONS SATELLITE ORGANIZATION (INTELSAT), OF WHICH THE U.S. IS A 30% OWNER. THE PRESENT INTELSAT IV SYSTEM HAS AN AVERAGE CAPACITY OF 6250 VOICE OR DATA CIRCUITS PLUS TWO COLOR TELEVISION CHANNELS. INFORMATION IS BEAMED UP TO THE SATELLITE IN THE 6 GHZ., BAND, WHICH IS SHARED WITH DOMESTIC COMMON CARRIERS (A T & T) IN THE U.S. FOR TERRESTRIAL MICROWAVE SERVICES. A 100 FT. DIAMETER PARABOLIC DISH IS POINTED AT THE SATELLITE AND HELD WITHIN .02 DEGREE OF THE TARGET. THE SATELLITE RECEIVES THE INFORMATION, AND RELAYS THE INFORMATION DOWN TO EARTH ON THE 4 GHZ., BAND. WHILE THE EARLY SATELLITES USED LOW POWER TRANSMITTERS, REQUIRING LARGE (100 FOOT DIAMETER) RECEIVING ANTENNAS WITH LOW NOISE CRYOGENIC RECEIVERS, THE NEWER, HIGH POWER SATELLITES OF THE ATS SERVICE CAN BE RECEIVED WITH 10 FOOT DISHES AND RELATIVELY INEXPENSIVE RECEIVERS. EVEN PRIVATE INDUSTRY IN THE U.S. IS FLYING SATELLITES,, WESTERN UNION'S WESTAR I WAS PLACED IN ORBIT IN 1974.... OF COURSE, HAMS HAVE BEEN IN THE SATELLITE COMMUNICATION BUSINESS FOR YEARS, USING THE OSCAR SATELLITES, AS WELL AS OUR LOCAL PASSIVE REFLECTOR SATELLITE, THE MOON. THE ANTENNAS ON THE SATELLITE ARE MOUNTED ON A MOTOR DRIVEN PLATFORM, FOR AS THE SATELLITE IS ORBITED, IT IS GIVEN A SPIN TO STABILIZE IT'S ATTITUDE. WITHOUT THIS SPIN, THE SATELLITE WOULD WABBLE IN ITS ORBIT, MAKING THE RADIATION PATTERN BOUNCE AROUND & VERY DIFFICULT TO TRACK. THE ANTENNAS ARE ROTATED AT THE SAME RATE AS THE SATELLITE SPIN, BUT IN OPPOSITE DIRECTION. THE SATELLITE CONSISTS OF THE VEHICLE, A 6 GHZ., RECEIVER, A DOWN CONVERTER AND A TRAVELING WAVE TUBE TRANSMITTER. ON A GIVEN SATELLITE, THERE MAY BE SEVERAL SUCH REPEATING SYSTEMS, OR TRANSPONDERS, AS THEY ARE COMMONLY CALLED. ALL SATELLITE USERS, WHETHER THEY BE HAMS, COMMON CARRIERS, OR THE GOVERNMENT, SHARE A COMMON PROBLEM- THE SUN. TWICE A YEAR THE SUN IS IN A DIRECT PATH (ECLIPSE-LIKE) WITH THE SATELLITE AND THE GROUND STATION, CAUSING THE SATELLITE'S WEAK SIGNAL TO BE BURIED IN THE SUN'S QRN. ADDITIONALLY, THE COMMERCIAL COMMUNICATIONS SATELLITES TRANSMIT DOWN TO EARTH IN THE 4 GHZ., BAND, WHICH IS ALSO USED BY TERRESTRIAL COMMON CARRIERS.

BECAUSE OF THIS, A RECEIVE TERMINAL CAN'T BE LOCATED UNDER AN AT & T COMMON CARRIER PATH, AS THE 15 WATT SATELLITE TRANSMITTER IS NO MATCH FOR THE 100 WATT AT & T UNIT. SINCE THE AT & T NETWORK IS VERY COMPLEX, FINDING A QRM FREE LOCATION IS OFTEN A PROBLEM.

SOURCE CREDITS FOR THE ABOVE: RAYMOND MEYERS, BROADCAST ENGINEERING 12-77. CARL HEYDEMAN, VIDEO SYSTEMS, 10-77..

NEW PUBLICITY CHAIRMAN:::: STEVE OWENS ,, WA200S (GUD LUCK STEVE)
FIELD DAY CHARIMAN:::::::::: MARK WILSON ,, WB20SQ (GUD LUCK MARK.)

FEBRUARY PROPAGATION FORECAST: ALL TIMES, ARE GIVEN IN EASTERN TIME.

1.8-2.0 MHz. WELL GANG YOUR BEST MONTH, JANUARY, COMPLETED ITS GOODIES, AND NOW THE STATIC LEVELS ARE GOING TO START INCREASING. DON'T GIVE UP HOPE ON W3NWA, THERE WILL STILL BE SOME GOOD DX POSSIBLE DURING THE DARK HOURS. STAY UP SOME NIGHT BETWEEN MIDNIGHT AND 0200, EUROPE WILL BE IN. IF YOU WANT TO GET UP EARLY TRY 0500 TO 0600, GOOD BET ON OCEANIA. YOU BETTER GET IT THIS MONTH, FOR STATIC WILL BE TOO HIGH BY THIS TIME.. NEXT MONTH. EUROPE 0000-0200. S.AMERICA 2200-0300. WEST COAST 0200-0300. OCEANIA 0500-0600.

3.5-4.0 MHz. STILL GOOD LOW FREQUENCY BAND DX FOR YOU FELLOWS. STATIC LEVELS ARE BEGINNING TO INCREASE, BUT NOT ENOUGH TO CAUSE ANY MAJOR PROBLEMS. GOOD SKIP FOR 2500 MILES DURING MOST OF THE MONTH. YOUR BEST BET IS BETWEEN 2100 AND 0500 EUROPE WILL BE GOOD AROUND MIDNIGHT TO 0200, SOUTH AMERICA THIS MONTH WILL BE POPPING IN AND OUT FROM 2100-0500. AROUND 0500-0600, CAREFUL LISTENING AND YOU MAY BE ABLE TO HEAR OCEANIA. IT WON'T LAST LONG BECAUSE OUR SUN WILL BE ON US, BUT IT WILL BE THERE AROUND FEBRUARY 7-9, & 16-19. EUROPE & N.AFRICA 1900-0200. CARIBBEAN & N.&S. AMERICA 2000-0300. WESTERN S. AMERICA 2100-0200. S. PACIFIC & NEW ZEALAND 0200-0630.

7.0-7.35 MHz. HERE IS A NICE CW BAND. YOU EXTRA BOYS, TRY THE LOWER END AND GIVE YOURSELF A BREAK FROM THE 20 METER MOB. MY SUGGESTION TO YOU 40 METER PHONE FELLOWS FOR OPERATING AFTER 2000 FORGET IT FOR THIS MONTH. THE EUROPEAN COMMERCIALS ARE GOING TO BE MURDER. FROM 1900-0200 IT IS GOING TO BE WILD TO AND FROM EUROPE. GOOD CHANCE FOR MIDDLE RUSSIA, THE STEPPES. WANT A CRACK AT AFRICA? THE WHOLE CONTINENT WILL BE WIDE OPEN, 0200-0500, ALSO, LOOK FOR A SURPRISE, INDIAN OCEAN 0400-0600. EUROPE & AFRICA 1900-0500. CARIBBEAN & S. AMERICA 2000-0300. W. USA, & PACIFIC 2100-0300. ASIA 0400-0600. S. PACIFIC & NEW ZEALAND 0200-0500.

14.0-14.3 MHz. SLEEP WELL TILL 0830 THEN GET YOUR "#%&'()*" OUT OF BED AND START WORKING DX. EUROPE 1100-1500 AND AFRICA IN LATER AFTERNOON. LONG PATH MONTH. RISE WITH THE SUN, TAKE YOUR SHOWER, EAT A GOOD BREAKFAST, TALK TO US POOR SOULS GOING TO WORK ON 78/18 THEN, GET SET. POINT YOUR BEAMS NORTHERLY. THE SIGNALS WILL BE THERE, STRONG--PARALLEL THE MAGNETIC LINES AS MUCH AS POSSIBLE. WANT SOME ASIANS? HOW ABOUT SINKIANG, OR THE MONGOLIAN REPUBLIC, OR INDIA. LOOK FOR SOME GOOD SIGNALS FROM PART BLAIR, ANDAMAN AND NICOBAR ISLANDS. GOOD SIGNALS FROM CEYLON AND THE AMSTERDAM ISLANDS. MID INDIAN OCEAN. REMEMBER THEY ARE IN MID-SUMMER AND THEIR F LAYERS ARE CHURNING AWAY LIKE MAD. WESTERN & CEN. EUROPE 1100-1150. MID EAST 1500-1600. W.S.AMERICA 1600-2100. CARIBBEAN NO. SO. AMERICA 1300-1600. S. PACIFIC, NEW ZEALAND, FAR EAST, INDIAN OCEAN -0700-0900.

21.0-21.45 MHz. HERE IS A BAND THAT WILL LOCK LIKE TWENTY. IT WILL START AN HOUR LATER AND CLOSE ABOUT AN HOUR AND A HALF SOONER. USE THE 20 METER RUN OUT FOR YOUR TIMES. ONE EXTRA, ANTARCTICA WILL BE GOOD AROUND 1600-1900.

28.0-29.5 MHz. STILL TRYING TO WORK THE WEST COAST WITH MY CB/10 .. JACK, W2GQK, WITH HIS BEAM WORKS THE COAST, AND W7's SO THEY ARE THERE. MAYBE AN ANTENNA WILL HELP MY CAUSE. THIS BAND IS GETTING BETTER, AND WHEN THE SUMMER COMES THIS YEAR, IT WILL BE IN GOOD SHAPE FOR SOME REAL HOT DX. HEY WOODY, OCEANIA WILL BE BOILING IN BETWEEN 1400-1600. W. AFRICA 1100-1300. S. AFRICA 1000-1200. CARIBBEAN, S. AMERICA 1200-1600. WESTERN S. AMERICA, & PACIFIC 1400-1600.

50.0-54.0 MHz. S.O.P. BUT T.E. (TRANS-EQUATORIAL) CAN START AROUND THE 18th. HAY TONY, RAY WON'T BE WORTH A DARN THIS MONTH SO HERE IS YOUR CHANCE TO GET IN A COUPLE OF GOOD CONTACTS. LOOK FOR 1300-1500 MILE CONTACTS ON THESE DAYS AND TIMES. 4th, 15th, 23rd, & 25th. YOUR T.E. ON THE 23rd & 25th FROM 1900-2200. MAYBE YOU NEED TO "STEAL" JOE'S BEAM. BE CAREFUL SOME GUY DOESN'T TRY TO BURN YOUR FRONT END OUT WHY HE TRIES TO BE THE FIRST T.E. CONTACT IN OUR CLUB. I KNOW A GUY OR 2 WHO WILL TRY IT. (HELLO FJE) SEE YOU ON 50.9 MHz., SUNDAY AT 2030.

144-148 MHz. SAME OLE RECORDING AS LAST MONTH. JUST PLAIN OLE LINE OF SIGHT STUFF THIS MONTH. FJE, THERE IS JUST A CHANCE ON THE 4th AND THE 24th YOU MAY HEAR A VERY FUNNY WOBBLE SIGNAL. GET IT, IT WILL BE A ONE SHOT T.E. FROM BRAZIL OR VENEZUELA DOWN AROUND 145. CYCLE 21 WILL GIVE US A NICE SHOT THIS MONTH. WE ARE IN OUR LAST LOW STATIC MONTHS. 160 METERS WILL START TO GET NOISY AND THEN AFTER EASTER 80 METERS WILL START GETTING QRN. 40 & 20 ARE STILL THE BEST DX BANDS, BUT AS OUR DAYS GET LONGER 15 WILL PICK-UP. WAIT TILL SPRING BEFORE WE REALLY SEE ANY REAL ACTION ON 10. HERE ARE SOME GOOD DAYS FOR DX ON HF 8, 9, 12, 18, & 27 YOU VHF BOYS LOOK FOR YOUR STUFF ON THE 4, 23, & 25th.
GOOD LUCK K2JF JOHN.

EDITOR....

WELL GANG THATS ABOUT IT FOR THIS MONTH. HOPE YOU ALL ENJOY IT, I DID. I'VE BEEN TYPING FOR THE LAST FIVE HOURS AND ITS NOW 1 AM. GUD GRIEF ! BY-THE-WAY, MYSELF AND GINNY WOULD LIKE TO THANK EVERYONE FOR THE MANY WELL WISHES THAT HAVE BEEN SENT TO US FROM THE CLUB MEMBERS, ON OUR UP COMING WEDDING. SEE YOU ALL AT THE NEXT MEETING.

P.S. GINNY DON'T KNOW IT YET, BUT,, IF THE BAND OPENS ON 2 METERS LOOK FOR ME ON ONE OF THE SAN JUAN REPEATERS ON FEB. 13,14,&15th. (HONEYMOON)

73's Ray Martin
W B 2 L N R