



Northern California DX Foundation Newsletter

WINTER 1985

W6SZN, Editor

K6WD, Circulation

MEMBERSHIP DONATIONS

Members have raised questions and indicated confusion regarding the donation required to become a member of the DX Foundation and to continue to be recognized as a member. At their January 1986 meeting, the Directors adopted a policy that will be implemented upon the publication of this Newsletter. The policy is as follows:

- The initial membership donation shall be \$25.00 U.S. or its equivalent in IRC's at the current valuation of IRC's. This donation brings a Membership Certificate and entry on the permanent membership roles of the Foundation.

- A yearly donation in the amount of \$10.00, or its equivalent in IRC's, will be required to keep your name on the active membership roles. The Winter Newsletter will include an envelope to submit your annual donation and your most current address.

- Unless active membership is maintained, the Winter Newsletter will be the last one that you will receive. Your Newsletter mailing label will show the last year in which you donated to or made contact with the Foundation.

- The Board recognizes that there may be cases where prospective new members and old members may find it a hardship to meet the new donation schedule. We do not want anyone to be denied membership because of cost. If you can only handle a lesser amount, please write and let us know the circumstances (currency restrictions, retired, etc.). We will consider each case on an individual basis.

Now, some explanation for these changes in membership donations and procedures. As we have explained in previous Newsletters, the Foundation's

endowment income is down due to falling interest rates. The cost of postage, Newsletter production and mailing, membership processing and certificates, beacon network supplies, etc., continues to rise. Thus, the Foundation must generate more income from its members to continue to provide the minimum of services to members and still have funds available to support DXpeditions, QSL cards, and equipment for rare DX stations.

With our membership records now on computer, we find that we have not received a donation from some members for four or five years -- yet we continue to send the Newsletter. In their defense, until now we have never clearly indicated that a yearly donation was in order. In some cases we do not have current addresses of members and Newsletters are returned undelivered. We believe that the newly-defined donation plan will be fairer to all members in terms of sharing the load and should not be an undue burden to most members.

The Foundation continues to receive generous donations (in excess of \$100 U.S.) from a small number of members. The mailing label on the Winter Newsletter sent to such major donors will be coded with the current year to recognize that their membership remains active whether or not they donate yearly. I urge all of you to give more than the minimums if you can. For U.S. citizens, donations to the NCDXF are tax-deductible: the Foundation has been determined to be a qualifying organization for tax-deductible contributions. The Foundation has also been remembered in the wills of a few Silent Keys. Let me suggest that all members consider mentioning the Foundation in your will -- in that way you can leave a lasting impact on DXing through the Foundation.

Finally, please recruit new members for the Foundation among your DXer friends and in your DX clubs. If each present member would recruit one new member, it would bring the membership to over 5000 DXers -- a goal that I set several years ago and have not yet achieved.

Stan Kaise1, K6UD

CHANGING OF THE GUARD

At the January 1986 meeting of the Foundation's Directors, Jack Troster, W6ISQ, formally announced his resignation as President of the Foundation and patriarch of the Newsletter. Jack's contributions to the Foundation over the years are legendary -- indeed, for many, Jack is the Foundation. Under his able stewardship, the Foundation has grown and prospered and has achieved the enviable worldwide reputation that it now enjoys. I know I speak for all members in expressing hearty thanks to Jack and congratulations on a well-deserved rest from the constant "care and feeding" he has given to Foundation matters.

Bob Ferrero, W6RJ, by unanimous vote, was elected to succeed Jack as Foundation President. Rusty Epps, W6OAT, by a like vote, is the new Vice President. Yours truly has taken over as Newsletter Editor. The Newsletter depends heavily on input from members. I urge each of you to submit items of general interest -- DXpedition activity, beacon articles, antenna tips, etc. -- as well as DX-related newsletters. My address is:

1928 Hillman Avenue,
Belmont, California 94002
U.S.A.

Kip Edwards, W6SZN

END OF THE SUNSPOT CYCLE

by W6RQ

The March 1986 issue of Sky and Telescope magazine carries a most interesting letter by Jean Meeus, the widely-respected Belgian astronomer. Although Mr. Meeus could no doubt care less when ten meters will open, he has developed an interesting formula to calculate the end of this current sunspot cycle. Here's a quote for our scientific-type readers:

"It's true that longer than average solar cycles tend to have fewer spots at maximum than shorter ones, but the correlation is not high. Using the values for the period from 1755 to 1976, which spans 20 cycles of 11 years, I find a coefficient of correlation of only -0.33. The linear regression through the 20 values, using the least-squares method, yields the formula $12.19 - 0.0102M$ for the duration of the solar cycle in years, where M is the maximum value of the smoothed monthly means. For the present cycle this gives a length of 10.5 years, with the predicted minimum in 1986.7."

This figure agrees well with George Jacobs, W3ASK's, forecast of "late this year" in the March 1986 issue of CQ magazine.

FROM THE EUROPEAN DESK

By Martti Laine, OH2BH

The following letter and interview were originally printed in QTC, journal of the Swedish Amateur Society. The article has been excerpted and translated by W6DU. The subject material is an on-going friendly rivalry situation, as you will appreciate.

The following letter was received from OH2BH.

"I have always followed with interest your efforts to build up SM again in contesting. I can only wish you the very best on the task that is not a small one.

Have you ever thought why Finland has always stood tall in contesting? Surely you have. It is a serious matter to all OH operators -- but not so serious that we can't put some humor into it.

The enclosed may serve you on your efforts to create SISU among your group. SM people will not necessarily love me because of obvious reasons but yet the enclosed write-up may create the "Svensk Sisu" and get everyone to contribute to your mission. That will surely be required since Denmark may turn out to be the 2nd in the 1985 NRAU, and that is no credit to you!"

SSA Editor - "Why do the Finns always win the SAC/NRAU national competitions?" We asked Martti, OH2BH, who probably has had more wins in the NRAU/SAC than anyone else in the northern countries. Martti did not participate in the 1984 competition but his stations OH2BH and OH08H were operated by star guest operators OH2MM and OH6UM. The result was double winners.

OH2BH - "Hmm, it can probably be phrased in a mathematical formula. The SAC battle is likely to be the sum of popularity and field-strength or, in other words, it is also important how much current you can put into antenna terminals throughout the world. That value can then be multiplied by the strength and size of your seat muscles, in that you can not afford to leave your chair. Just sitting, of course, is not enough. One must operate with the utmost energy. There is no question about it being only a listener test. To the equation must be added skill and SISU."

SSA Editor - "What is this 'Finnish SISU' which often drives the Finns to such great and disproportionate results?"

OH2BH - "I am not surprised that you don't know about Finnish 'SISU' in that I first learned about it from my father a little before his death. 'SISU' is the national spirit that was born and fostered on the Karelian Isthmus during the years 1939-40. From those marshes and in minus 40 degree temperatures we inherited 'SISU' the Finnish national spirit."

"P.S. Ville, OH2MM, who is a doctor, has examined the top Finnish contest winners and established that they all have hemorrhoids. They were not inherited from the winter war."

AN OPEN LETTER TO AMATEUR RADIO OPERATORS

FROM THE ASIAN DESK

By JA1BK

We were saddened that USQS is no more. This notice was seen in the November 1985 issue of Worldradio on page 2.

However, someone must try. Therefore, effective immediately, KIQS will pick up the incoming QSL service portion. We have notified Worldradio/CQ/73/USQS/Ham Radio and many others.

Our service is called K.I.Q.S. -- pronounced K-I-C-K-S. K.I.Q.S. stands for -- K4CLA incoming QSL service.

A copy of our operating rules is printed below. We ask that you and others spread the word that KIQS is in place to process incoming QSLs destined to USA hams only. Thanks very much.

We appreciate what USQS did. KIQS now asks your support.

Respectfully,

KIQS/W C Wellborn/K4CLA

----KIQS SIMPLE OPERATING RULES----

1. DX stations may send QSLs to USA hams via K4CLA.
2. US stations may send QSLs to other USA hams via K4CLA.
3. Pre-sort QSLs numerically, then alphabetically by suffix.
4. QSL's dispatched within 90 days if postage on file.
5. QSL's dispatched within 180 days when USA hams must be notified that postage is needed.
6. Notices will be sent as routine traffic via ham radio.
7. Message example // send green stamp for QSL postage // signed / KIQS-K4CLA / 562 Oak Drive / Lexington, SC 29072-9059.
8. One green stamp is exchanged for four stamped envelopes of appropriate size, each bearing one ounce of postage.
9. We do not accept SASE's from USA hams as too often they are too small and/or have incorrect postage or damage QSL's.
10. If QSL's cause overweight envelopes, excess is postage due.
11. KIQS dispatches: January / April / July / October.
12. USA hams may send any number of green stamps at any time.
13. Send QSLs/green stamps/correspondence/comments/criticisms to: KIQS-K4CLA/562 Oak Drive/Lexington, SC 29072-9059/USA

Since the first BY1PK went QRT in the spring of 1966 (the station master at that time is shown in the photograph), there was no QRV in BY land for many long years. In 1980, Mr. Cheng Ping and Mr. Wang visited Japan in time for JARL HAM FAIR to see amateur radio activities firsthand for the first time. After their visit, a rapid growth was made in BY, including the first contact (CW by Tong) in the restarting of BY1PK in March 1982 and operation modes of SSB, satellites, RTTY, 50MHz operation, permission of ham activity by foreign operators, etc. But our long-time dream, joining CQ WW contest with BY stations, hardly came true. I visited China four times as the guest operator of BY1PK. I visited Peking in time for the CQ WW contest (two times out of four) but could not join the contest. Many reasons are thought for this. One of them is that there were several apartment buildings for citizens near BY1PK, and TVI occurred in one of them frequently (most TV sets are used with indoor antennas). Second, CRSA is the sports association. It is absolutely necessary to master the rules of the race before joining it, and worthy scores must be obtained once they join the race.

By the way, as we noted in the latest NCDXF news, personal call signs were issued in China. With this as a start, we tapped Chinese authorities about the possibilities of a call allocation for BT1BK and joining CQ WW Phone with this call sign. These requests were OK'd in September 1985 with a remaining problem of permission for 48-hour operation. Nevertheless, we started action with the problem left unsolved.

In the meanwhile, Tong came over to Japan from CRSA with his staff to join the foxteering race. We asked to get permission for a 48-hour operation, and this request was accepted.

We arrived in Peking on the 25th of October, replaced the 3-500Z of the linear with a new one brought from Japan, and finished testing by the day the contest began. In so-called camp pitching before the contest, BT1BK continued to work JA's on 14195. The first QSO in the contest was N7TT.

The facilities of BT1BK (BY1PK) were not always perfect. The antenna rotator broke in the middle of the contest. TVI was checked around the station with a portable TV set. JA operators instructed the contest operation at the site (in fact, JA operators spent only about half of the contest hours operating). Still, we worked 3,200 stations and 250 multipliers.

Our lectures in China in the past dealt mainly with the CQ WW contest. This time, however, we actually joined the contest with Chinese operators to give them real experience and we gave another lecture on the second day of the contest. For the contest and the lecture, one operator from Shanghai, one operator from BY1QH, and several operators from BY1SK took the trouble to visit BY1PK.

SOUTH AMERICAN REPORT

(Excerpted and translated by Sam Rodriguez, KD6S)

The measure of their comprehension concerning the contest is their operation in the actual contest. Readers who joined the contest will remember the operation of the Chinese YL operators. Another evidence of their growth is the question they asked at the end of the lecture. Tong asked us; "How can a VK9 country be distinguished from other VK9s? How can an extraordinary prefix be judged as that of a specific country?"

I am writing this in the first part of November, with a firm belief that BY1PK, BY4AA and other stations will be sure to join the CQ WW CW with Chinese operators. This will exhibit the result of all our effort.

Finally, here is the comment of Mr. Cheng Ping. "Japan has 600,000 ham stations in its population of 100,000,000 while China has 10 ham stations in its population of 1,000,000,000, that is only one station out of 100,000,000 people. But China is making effort to increase the rate." I was impressed by this comment.



Kan, JA1BK, Stationmaster of old BY1PK, and JK10PL

ARGENTINA - from RADIOFRECUENCIA (formerly the GACW newsletter)

The Argentine CW Group has renamed its excellent club newsletter "RADIOFRECUENCIA." This is coincident with the club's eighth anniversary. Best wishes to all that have made the GACW club the fine organization that it is.

The GACW has honored a highly deserving young radio amateur with its award of Novice of the Year. The recipient is Mario, LU8EHW. Mario is a secondary school student. With just a year's experience as a Novice, he has worked 50 countries on 40M CW. The GACW has provided Mario with an electronic keyer. Recent proficiency tests in CW reception have clocked Mario at 50 WPM. Mario is only 13 years old!

A new CW award is now available from the GACW. This award, available to all amateurs, is called the FIVE ARGENTINE ISLANDS AWARD. This award is issued by the Argentine CW Group to all radio amateurs who have worked five (5) different Argentine amateur stations located in Argentine islands. All QSOs must be on CW. For additional details, write with SAE/IRC to Grupo Argentino de CW (GACW), Carlos Diehl 2025, 1854 Longchamps, Buenos Aires, Argentina.

BRAZIL - (Also from RADIOFRECUENCIA)

The first meeting of the BRAZILIAN AMATEUR RADIO TELEGRAPHER'S CLUB took place in October, 1985. It was organized by the Club de Aguilas Del Sur and Grupo Morse Paranaense radio clubs. The meeting brought together for the first time all the CW clubs of Brasil.

Our best wishes and congratulations to the new group!



SPAIN - from EA3DOS, Secretary of the Hispania CW Club - (Also from RADIOFRECUENCIA)

It has been three years now since the Hispania CW Club (HCWC) was organized. It is a club with membership of 150 located throughout Spain.

EA3DOS, Jeronimo, writes that the HCWC is offering two CW awards, available to all amateurs. The two awards are the "Spanish Painters Award/Guernica (SPA/G)," and "Spanish Painters Award/M (SPA/M) La Maja Desnuda (The Naked Maja)." For additional details, write with SAE/IRCs to HCWC, Box 10516, 08080 Barcelona, Spain.

URUGUAY - from CUV Club Uruguayo de VHF - CX2CS

The recent tragedy of the Mexican Earthquake brought out the best in amateur radio. CX1AA, club station for the Radio Club of Uruguay, was manned by CX7BY, Raul, and CX5AO, Ariel. Both amateurs spent an average of 12 to 16 hours per day passing urgent traffic between Uruguayan families and their relatives in Mexico.

XE1F, Elio, in Mexico, commented that CX1AA was one of the best South American stations. Our congratulations to both Raul and Ariel for a job well done.

We should also note that there were many other Latin American amateur stations that were also involved, each helping to provide the much needed communications between Mexico and the rest of the world.

VENEZUELA - from GACW, LU6EF

Jose, YV5ANT, has been elected president of the newly-organized Club de DX de Venezuela (Venezuelan DX Club). During the next CQ WW CW contest, the club will award a trophy to the top South American in the single op, multiband category.

4U1UN SKEDS

I am now an advisor to 4U1UN and have been operating the station on weekends. If anyone of the NCDXF needs a contact on any of the bands, let me know and I'll be glad to oblige with a schedule. Our only operating problem at the UN is the need to shut down the Beacon on 14.100 when we operate due to proximity of antennas.

Stan, W6MT

NCDXF MEMBERSHIP UPDATE

As of February 1, 1986, the Foundation had 3,258 members, up 254 over the same period last year. Growth in membership has slowed, in line with declining DX activity. We added three new countries to the Foundation Membership DXCC, bringing the total to 120.

de W6CF

WORKING THEM ALL

From LA DX Group "Bug"

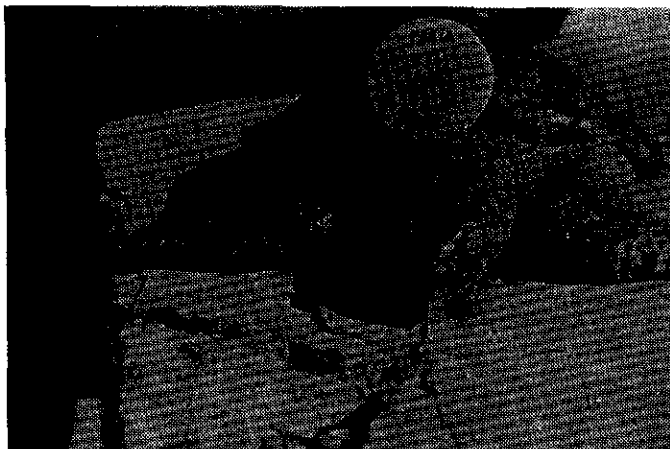
Congratulations are due Ranulf, LA9CE, who is the first LA ham to "WORK THEM ALL." He logged San Felix in September of '84 for #315 but before the card could arrive, ARRL added the ZC4 Sovereign base areas. He had many cards from ZC4 but like many of us they did not identify the base areas so he had to work them again. The card came quickly and now he has been accredited with the magic number 316. Ranulf was licensed in 1954 so it took 30 years to accomplish this feat. It should be noted that his XYL, Klarentze, LA1ZI, is also highly placed on the Honor Roll and only needs three more to equal his score.

From W6DU

Tadeusz, SP7HT, became the first SP to "WORK THEM ALL" with the acquisition of his card from CE0AA last spring. When I first met Tad in 1981, he was on a business trip to California. He then needed the Laccadives, Heard and San Felix. Heard Island came on the air during the period that the SP stations were off the air. Because of the circumstances, a small number of SP hams, SP7HT among them, were permitted to operate during the time the Heard DXpedition was on the air and fortunately Tad worked them during the first days. Tad has been hamming for a quarter of a century, never using more than 200 watts and almost exclusively with home designed and constructed gear.

A NOTE FROM LA7XB

While in St. Brandon waiting for permission from Mauritian authorities to operate, Thor, LA7XB and Erik, SMOAGD, learned that telexes had been pouring in to 3B8 authorities urging that permission be granted. Messages had come from NCDXF, OH, LA, G, PA, ITU, F, VS6, JA, VK, W. Most of these came through the help and organization from NCDXF and OH2BH whom they had contacted while underway between Mauritius and St. Brandon. They are deeply grateful for this support. Unfortunately, nothing came of all this but Thor and Erik made some interesting new friends on St. Brandon and can tell some grand sea stories about their adventures. Ask them.



WITH THE EXPEDITIONS

SAN FELIX CE0AA

by Murf, W4WMQ
[From the June 1985 Issue
of LA-DX BUG]

CE0AA became the center of attraction for the DX world beginning 1 September 1984. Fernando, CE2GXY and Max, CE3DVN had the world on a string for a while last fall. The DX world was very tense, like a gambler waiting for the sign of three cherries to appear on a slot machine -- waiting for the big jackpot to fall in his hands.

Those that had a need and waited, now have that need satisfied and most likely Don Search has already checked it off your list. You have succeeded in adding a new one to your list with very little effort but if you don't know how it all happened you have missed the best part.

There is a difference between DX'ers and dyed-in-the-wool DX'ers. Most of the Radio Club of Chile members are your hard core DX'ers. They seldom slow down or give up when they once start a project. This one took 7 years to complete. How many DX'ers would work for 7 years for anything, except for a new one on his check-off list? These fellows worked for the world of DX, which means you and me. The Chileans had two operators that were professional Navy, amateurs but not DX'ers, no equipment or antennas, didn't speak English, no knowledge of pileups and had only ten days to prepare themselves. This is the point where most of us would have gotten off the bus and said "adios amigo, you all."

I don't know everyone that gave a hand in the operation but the following did one way or another: CE3GN, CE3GF, CE3ESS, CE3CBG, CE3BBW, CE3BOC, CE3CTI, CE3BXP, CE3ACA, CE3AJN, CE3DPD, CE3EED, CE3EZ, CE3RN and CE6COR. Some were in on the training, some the equipment, and some as net controllers. For some DX'ers, it would be a rough decision to make if you were asked to take your valuable station apart, box it for transport to a rock island, and place it in the group of equipment required for the operation. Antennas normally are not as expensive but, brother, is it ever rough to take it down, disassemble it and box it, knowing it has to go back up in a few weeks.

"Magnificent" is the best way to describe the operation from start to finish when you consider the obstacles -- language problems, arranging time to operate, and QRM. Many criticized the list operation without knowing it was the only way until Max and Fernando were broken in to the ways of a monster pileup. Mickey, CE3ESS, along with controllers from all countries, lost a lot of sleep and grew a few more gray hairs during this time, but if you are a true DX'er you will hang in there to assure all the world gets a fair chance. As normal in all good net operations, as the operators gained experience, the list became less important. At first it was backed off to three times a week, then two etc., until only once a week and this was a short one. They were on their own now.

I often heard Mickey mumble a few words during the operation simply because his XYL had served his evening meal in the shack and he was trying to eat and continue the operation at the same time.

The TS 830, 130, 600 and the E500 generator provided 31,000+ contacts on all bands including 6 meters. This effort removed San Felix from the ten most wanted list. Those that criticized at first should now know it was the only way for it to work and it did. We know 31,000 who have said TNX to our fellow DXers from down south.

MEMORANDUM FROM WB6ZUC

WE HAVE THE FOLLOWING SLIDES SHOWS AVAILABLE:

1. Kingman Reef and Palmyra Island DXpedition of 1974 (148 slides)
2. K5YY in Africa of 1978 (62 slides)
3. W6KG/W6QL on Eastern, Galapagos, San Andreas and Juan Fernandez Isl., 1984 (140 slides)
4. W6REC and ZLIAMO on the 1984 Kermadec expedition (58 slides)
5. AHOC (Saipan) CQ WW Contest Operation of 1983 (82 slides)
6. 1985 Clipperton DXpedition (192 slides)
7. Monaco by F6HIX and F3EYS (42 slides)
8. Ponape Island by N6HR (81 slides)
9. Pribilof Island DXpedition, August 1983 (46 slides)
10. Midway, World High CQ WPX SSB multi-single by NA6T and KD7P (120 slides)
11. Antarctica by WB6ZUC (101 slides)

IF YOU HAVE THE CAPABILITY OF SHOWING VHS VIDEO, WE HAVE THE FOLLOWING AVAILABLE:

1. XU1SS (includes a BV0YL and BV0JA operation) (about 35 minutes)
2. 7J1RL of 1976 and 1978 (includes the VK9ZR, Mellish Reef trip) (80 minutes)
3. VK9ZR DXpedition of 1978 (plus JD1YAH and JD1YAK, Ogasawara of 1978)
4. Frankford Radio Club ARRL phone 1981 parody plus JH7YFL WW CW 1982 trip
5. JF1IST/7J1 Expedition to Okino Torishima of 1979
6. Australian travelog about the climb of Big Ben mountain on Heard Island

BOUVET 1984-85 AND FUTURE

by LA5UF/LA8CJ

Excerpted from the LA-DX=GROUP "BUG" article by LA5UF/LA1EE, LA8CJ. Photos by Egil Eriksson, Stavanger Aftenblad. Translated by W6DU.

As is well known by DX'ers throughout the world, Bouvet is one of the most sought islands in the world. Unfortunately, the hoped-for operation for 1985 had to be postponed. The LA-DX-Group had spent much time and effort in planning the DXpedition. From the start, it had been hoped that transportation could be provided by the Norwegian Antarctic expedition vessel. Financial arrangements were made and met. The authorities had provided all the necessary permits. Operators were no problem. Many very capable operators from Norway and other lands had announced their interest and availability.

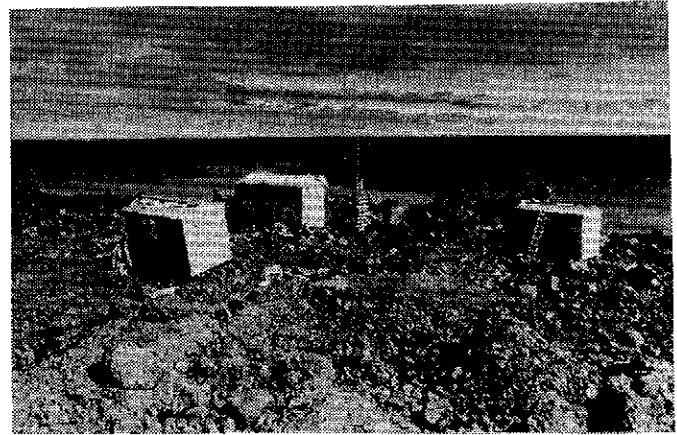
There was no problem in accompanying the Antarctic expedition, but the ship was scheduled to leave directly from South America to the Antarctic and would not pass anywhere near Bouvet until its homeward trip in February.

Other attempts at finding transport were made. As landing on the island is very difficult due to the cliffs, a ship equipped with a helicopter is almost a necessity. The group could not support the immense expense of chartering such a vessel. Instead, they investigated possible support from other countries interested in the area but without success.

Despite the meager result, there were some happy highlights. The group met with interest, goodwill, cooperation and assistance from the Polar Institute, Televerket (radio licensing group), NDCXF, South African Radio League and many others, both public and private.

JUST ONE DAY AT BOUVET THIS TIME

On its return trip from Antarctica to home, the Norwegian Coast Guard vessel Andenes stopped for one day at Bouvet. This 50 square kilometer island ranks high on the DX'ers' list of wanted countries. It is populated by some 6,000 elephant seals and 120,000 penguins. Upon arrival, the ice-capped, mountainous island was bathed in sunshine, permitting the first photos ever made of much of the whole island. Thirty minutes later it was its usual cloud-covered self. During the short visit, two automatically controlled radio weather stations were installed and two of the three cabins were repaired. The third was filled with large rocks to keep it from being blown over in the heavy winds which are typical of the area. One of the men going ashore was Kare Bartlien, LA5CF, but with the tight schedule there was no opportunity to get on the air. The photos serve to give you an acquaintanceship with 3Y until you get to work it next time.



The cabins on Bouvet



The crew including Kare, LA5CF. Let's hope we see this photo on a QSL card soon!

by Chris Burger, ZS6BCR

There were 10,000 QSOs made from this tiny, rare West African country during the latter part of 1985 but what turned out to be a real surprise was the appearance of C53AA on the bands for the CQ WW CW contest in November. AA normally stands for something extraordinary -- something out of the Boardroom -- and it was no exception for this one.

Following the other two operations and the groundwork laid by his countrymen, Olli Rissanen, OH2BBM, visited The Gambia combining his holiday with the presentation of a complete Yaesu station to The Radio Society of The Gambia, a presentation made on behalf of the Northern California DX Foundation.

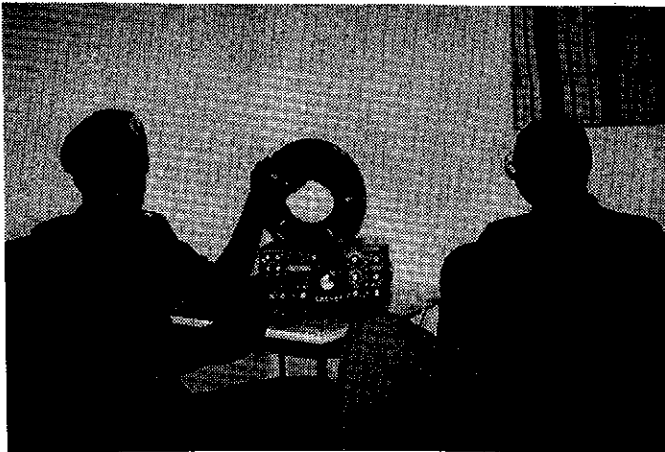
As part of this happy occasion, Olli was honored with permission to use the Society's call sign, C53AA, for the CQ WW contest. More than 3,000 QSOs were made on all 6 bands with an inspired antenna "farm" using bamboo and wire. . . C53AA hit the airwaves and caught everybody's attention.

The newly-established Society is now setting up facilities at the French School and the President is Lawrence Jarra, C53AU -- an air traffic controller at Banjul Airport. Scotty, C53EU, is Secretary while Tony, C53FG, takes care of the Treasurer's chores. Fr. Mike, C53M, a longtime amateur in The Gambia, serves as Honorary President. The authorities have granted the new Society the right to process license applications from foreign amateurs, so now you know whom to contact in case you plan to visit the country.

Further development is planned for C53AA with the aim of establishing a versatile West African radio site to serve The Gambia and the world.

Olli reports The Gambia as being an ideal holiday resort with the local hams making up a super nice group of amateurs with a lot of enthusiasm and good camaraderie.

QSL's for the CQ WW CW contest only go to OH2BBM.



Lawrence, C53AU, and Olli, OH2BBM with FT-901 from NCDXF

Southern Africa contains several countries that are rather high on the "Wanted Lists" that appear from time to time, and thus they would seem to be a DXpeditioner's paradise. However, all these countries are rare for good reason. Two that fall in different categories, in that they are rare for different reasons, are Mozambique and Marion Island. Most of the local wanderers have one eye cocked permanently onto these spots to be ready the moment something changes that will allow the intrepid DX'er to fulfill the DX dreams of all.

A student may not be in the best financial position to be a DX'er, but that does not have to be a deterrent. During 1984, Chris Burger, ZS6BCR, and Bill Hoek, ZS6G (then ZS6BYK), decided to start running some operations from neighboring states to enable them to iron out all the bugs from a portable station, so that this will be available, snag-free, if and when the opportunity arises to get something "big" on the air. The obvious first targets were the National States. These are independent republics, governed by their own people, which are prevented from gaining DXCC status only by politics. With this in mind, H5 calls were obtained in the Republic of Bophuthatswana, and a small scale operation was run during July 1984. This served mainly as a proving ground, as some pieces of equipment were modified or discarded based on experience gained from this operation. The calls H5AWD and H5AYB are still being heard from time to time, and will probably appear soon in some of the contests.

This operation was followed by a brief stint by ZS6BCR/A22, which was to have been a preliminary for a large scale operation from this country. However, subsequent moves in the licensing agreements have rendered this impossible for the near future.

Because of this experience, an operation from ZS3 started sounding like a good idea. The planning was started in early 1985. One problem cropped up when the Colvins arrived in Southern Africa. The operation was scheduled for December 1985 and, during the previous month, the Colvins operated from there. They made about 10,000 contacts. This was a severe blow, until some calculations were made, showing that to be an insignificant number when it comes to reducing demand for a country. Thus, the operation continued as before. As Bill would be unavailable during the planned period, Chris was to go on his own.

A mast was built that would easily carry a three element tribander about 10m up, but would fit into a light plane or car. New log sheets were made up, by butchering the CQWW logs and fitting 160 contacts onto a A4 page. These proved to be the best innovation of the expedition, as they take about an hour to fill up. A vertical was split to fit the plane as well, and a way was devised to lay out about 50 radials. These were worth their weight in gold as many stations on 7 MHz commented on the loud signals.

REDUCING VCR TVI

by Chuck, W7MAP

All bands were worked with a measure of success, except 80/75 metres, where the antenna had about 6 dB of gain (over a dummy load). Even 10 meters produced consistent openings, as several hundred Europeans and W's were worked. The day the expedition ended, the solar flux started rising, and much better conditions were reported in the following few days. Even so, the five days of operation netted well in excess of 2,000 contacts.

The spectacular propagation (closer to the west coast and the Equator) has really caused a measure of resolve to return for some serious contesting. For a long-time ZS6 operator, the difference is just amazing.

Some valuable lessons were learned. Probably the most valuable is that the "normal DX frequencies" are good for those who read the bulletins and know what to expect, but too high to maintain a pile-up under marginal conditions. The Log sheets were a great success, and will definitely be used again in the future.

We are still hoping that the "Big ones" will break, but we are at least sure that we will be ready when they do. In the meanwhile, there is little that compares with the thrill of dishing out a "new one" and having some time to work old friends again.

Many of us are concerned about TVI. A particularly troublesome form of TVI is that which finds its way into home VCR's. After three early withdrawals from contests, I resolved to do something about my VCR interference, and hopefully find a solution that would keep both my kids and neighbors happy.

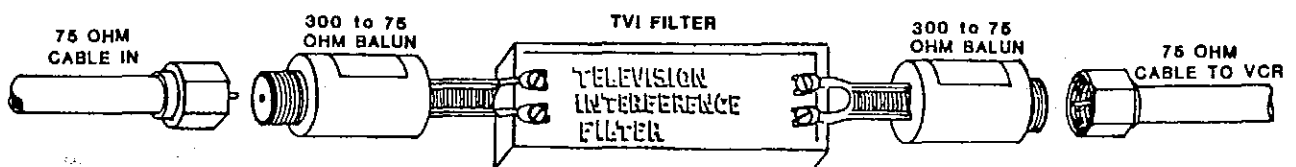
After five or six false starts, I discovered that most of the RFI was getting into my VCR from the shield on the 75 ohm coax. Most newer homes are wired for cable (as was mine), and the three or four hundred feet of shielding makes a wonderful antenna.

To test for this kind of interference, simply remove the antenna connection from the VCR and (with a tape playing) gradually put more power into your antenna system. In my case, if the cable distribution from my house was connected to the VCR, I had no interference while watching normal TV, but found that the picture was destroyed during record and playback. In my neighbor's case, I destroyed regular TV as well as VCR recording and playback with any power level above 100 watts. I also discovered that if I disconnected the cable system, I could run any power level and watch VCR tapes.

I first tried to get the RFI off the shield by using all of the published methods, i.e., ferrite, hi-pass filters, grounding, etc. etc. Nothing worked, until one day I figured that in a balanced system, both leads could be filtered. To accomplish this, I used two Radio Shack coax to 300 ohm baluns, and a six dollar balanced TVI filter.

To use the set-up, simply hook the balun to filter to balun and place it into the line in front of the VCR (see the diagram which follows). The results are very gratifying. I can run full legal power and simultaneously playback or record tapes on the VCR, in addition to watching regular TV. Somewhat more gratifying is the fact that my neighbor with the VCR hasn't had any interference after installing the same configuration.

TVI can take a lot of the fun out of our hobby and cause a lot of bad publicity. I hope this simple, inexpensive remedy helps some of you put the fun back in contest weekends.



A TRAVEL TO ZAIRE

by Gerben Menting, PA0GAM

After I got my license in 1976, it took some time before I became interested in DXing. I became more serious in this field of our hobby in 1979 and when I was asked in 1980 to take over the editor job for DXPRESS, the DX newspaper of the VERON, I needed not much time to say "yes." Since 1981 I have been the editor and that gave me more close ties with the DX'ers and expeditioners. My interest in going on an expedition myself was growing and in 1983 I made my first trip, which was to Market Reef, OJO. A year later I was together with Martti-OH2BH and Mic-JA1MIN in Taiwan where we operated BV0AA. Most of you can guess what kind of feelings I had after these trips. Yes . . . going again. Because of certain reasons, something special could not happen in 1985 but several other things were developing.

I had written Julien, 9Q5MA, a letter asking if I could use his station for a week. Propagation from that part of the world is always good enough to work the US, Europe and Japan. Only a very few stations are active from Zaire and working only SSB, so many people were looking for a CW contact, especially on 80 and 40 meters. For me it was also a new continent with new experiences and, above all, I was looking for an operation to do all on my own.

When on holidays in the Netherlands, Julien called me up and welcomed me at his house in Matadi whenever I would like to come. Julien had a FT101ZD with SB200 linear and dipole antennas, so the only thing I should have to bring with me was the electronic keyer. That made it much easier with the customs.

A few weeks after Julien's call, I had made the necessary arrangements and planned my visit for October 2-10. I thought it was better not to be there during the CQ-WW contest, because a lot of QSO's would go to the big-guns as only a multiplier (having 9Q5 already many times worked before), leaving all the little pistols and new DXers behind me. Communication with Julien was very difficult because it was impossible to reach him by phone and telex took at least three days. By post, it takes nearly two weeks at the minimum. A few days before departure, I decided to take a windom FD-4 with me, just in case . . .

On October 1st, I went by train from Leek (in the northern part of the Netherlands) to Brussels, where I departed on an Air Zaire DC-10 at 2200 local time. Next day, I arrived at Aeroport de Ndjili near the capital Kinshasa at 0540 local time (same as in PA and ON and one hour ahead of GMT). Julien arranged a very pleasant arrival at the airport and everything went smoothly. After an hour, we were on our way to Kinshasa for some shopping in a big "western style" supermarket and a cool drink in a Chinese Restaurant on the top floor of a high building, giving us a nice view of Kinshasa.

In the early afternoon, we started the long drive to Matadi, 350 km southwest of the capital and located on the River Zaire. Fortunately, the connection between Kinshasa and Matadi is part of the only 1000 km long asphalt road in Zaire, so we could drive at a speed of 100 kmph.

It was already dark when we entered the living room of Julien's house where we were welcomed by the XYL and two daughters. After a very fine dinner and a refreshing bath, Julien took me to the shack. It was not long before the keyer was connected and I called CQ at 2050Z on 14025 kHz on October 2. The first I heard was my buddy back home PA0GIN who was waiting for me. He was the one who kept my family informed.

The next day, I went outside to see how the antennas looked. Julien agreed that it was better to replace the single dipoles with a windom FD-4, giving us 80 through 10 meters with just one cable (on behalf of the NCDXF I left the windom as a donation). The windom worked OK on all bands. Julien's house is located on the slope of a steep hill. Seen from the house, the US, Europe and Japan are all in a rather small angle and in the same direction as the narrow long valley. All these circumstances were certainly responsible for the very good signal. 20 meters proved to be the best band and was very good for contacts with the three main areas, but only one ZL entered the log. 15 and 10 meters were actually only good for Europe and a few Africans and South Americans. After one day, it became clear to me that operation on 40 and 80 meters would be very much limited for two reasons: both bands were very noisy and a lot of tropical QRN/QRM, which was much worse on 80 than on 40 meters. Further I had TVI problems. As usual in remote areas, there is no reception of TV stations, but people are watching video. When operating 80 or 40 meters, the family could not watch the video anymore. For both reasons, I started on 40 meters late in the evening if there was no QRM. Because of this, I missed a lot of JA's on 40 meters. However, at 2115Z the JA's came through on 20 meters for several hours so many JA's were able to get at least a CWQSO with 9Q5. One evening there was a good chance for 80 meters and it produced nearly all 80 meter QSO's.

On 80 meters I made only 240 QSO's. On 40 meters I worked about 150 JA's, 690 W's (including many West Coast), 500 Europeans and a total of 1380. 20 meters was good for 4100 QSO's and 15 meters 1100. When back home I learned from the DJ9QN/S9 operation that the good opening on 10 meters was around 1500Z. Unfortunately I had always tried around 10 or 11Z. That was also the time DL0MAR/9G mostly was heard in Europe. Only 37 QSO's were made on 10 meters. The last QSO was on October 10 at 0223Z on 40 meters and about 7000 QSO's were logged. That was more than Julien made in 8 years.

A great part of the expedition is making new friends. I am still impressed by the fantastic hospitality of Julien and his XYL and the way they supported me. Without their care, I am sure that the result would have been worse. I enjoyed the fine cooking and exotic meals such as manio, cooked bananas, kossa-kossa, etc. (which are the local food), Portuguese, Chinese. Further, I enjoyed the nice trips in and around Matadi.

After all this expedition information, I would like to introduce Julien, 9Q5MA, to you. Julien was born in the Netherlands and came to Zaire 18 years ago. Since 1976, he has been the manager of the Coca Cola Company in Matadi and Boma.

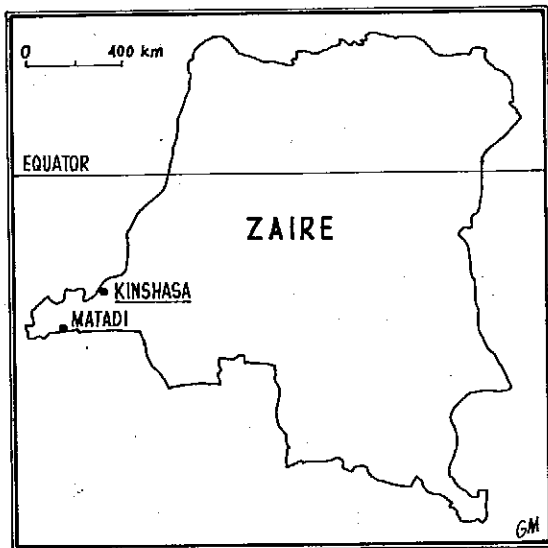
In 1972 Julien got his license, during the time there was the Union Zaire Radio Amateur with a

number of active members. The club had very frequent meetings and helped each other with building equipment and antennas and exchanging information. Over the years, most of the members have left Zaire and the club does not exist anymore. Julien is the only member who is still active. Imagine how difficult it is to be a DXer in a remote place like Matadi with lots of difficulties in getting information and necessary materials. Julien likes DXing and is happy to give many a new one for DXCC. He is very often on 14183 kHz with Snooky, KA1DE.

Although he has already worked quite a number of DXCC countries (I have still not counted the exact number). Julien is always eager to raise his total. To keep him up-dated with DX information, I donated to him a subscription to DXPRESS and membership in NCDXF. Julien was very happy with the NCDXF Newsletters I brought with me. After my operation he was very excited about CW and will try to learn CW lessons on a cassette tape.

Due to lack of answering QSL's, I took over the QSL manager job and have logs from 1978 onward. Julien also received a lot of cards direct, which he answered with a special "hand-painted" QSL card. It took him a lot of time printing his call on the cards with a rubber stamp. He was not able to exchange the IRC's so he paid all the postage himself! Further, he always tried to arrange something with East-European ships in the harbour of Matadi to take the cards for their home area with them. I wonder how many DX-stations there are who are doing so much work to get their QSL's out!

Being a DXer in Zaire is a lot different from us here in the western world with a good working post office, a radio shop on the corner of the street, and a lot of hams in the neighborhood standing by for questions. When you work Julien next time, you will have a better idea about the enthusiastic DXer on the other side.



Julien's "hand-painted" QSL



Julien, 9Q5MA, at his station holding his NCDXF membership certificate

ZAIRE

THE COUNTRY

Zaire is the third largest country in Africa. The country's size has endowed it with a tremendous variety of assets including vast mineral resources, almost unlimited agriculture potential and abundant wildlife. The country's only outlet to the Atlantic Ocean is a narrow strip of land on the north bank of the Zaire River. The vast low-lying central area is sloping toward the west and covered by tropical rain forest. This area is surrounded by mountainous terraces in the west, plateaus merging into savannas in the south and southeast, and dense grasslands extending beyond the Zaire river in the north. High mountains are found in the extreme eastern region.

Zaire lies on the Equator, with one-third of the country to the north and two-thirds to the south. The climate is hot and humid in the river basin and cool and dry in the southern highlands. South of the Equator, the rainy season lasts October-May; north of the Equator, April-November. Along the Equator rainfall is fairly regular throughout the year. The tremendous Zaire river dominates the country. This river has the second largest volume of water of any river in the world, being fed alternately by rains in the northern and southern hemispheres.

THE PEOPLE

The main ethnic groups are Banthu, Sudanese, Nilotic, Hamite, but there are between 200-250 tribes in Zaire. Despite differences, there exists a certain unity which distinguished the peoples of Zaire from peoples of other African cultures. Because ethnic groupings may be based on various and shifting constellations of shared language and culture, traditions of common ancestry, and more transient political factors, the general term "tribe" is difficult to define. The largest group, the Kongo, may include as many as 2.5 million persons. Other socially and numerically important groups are the Luba, Lunda, Bashi and Mongo. Special mention should be made of the pygmies, a peaceable nomadic forest-dwelling people, easily identifiable by their unique physical features.

LANGUAGES

The Belgians introduced the French language, spoken country-wide by the educated. About 700 local languages and dialects are also spoken; 4 of these serve as official languages:

1. Lingala developed along the Congo River in the 1880's in response to the need for a common commercial language. It was given written form and is now used extensively along the Zaire River from Kinshasa to Kisangani and in the north and northwest.

2. Swahili, introduced into the country by the Arabs and especially the Zanzibar Swahilis during the 19th century slaving operations, is spoken extensively in the eastern half of the country.

3. Kikongo is used primarily between Kinshasa and the Atlantic Ocean as well as in parts of Congo and Angola.

4. Tshiluba is spoken primarily by the tribal groups of south-central Zaire.

CULTURE

Zaire has a strong artistic tradition. Though traditional Zairean music is basically vocal, a large assortment of musical instruments exists, of which the most important is the drum, the source of rhythm. The museum in Kinshasa has a vast assortment of drums. One of the most interesting is the one used for relaying messages, the "telephone drum". Other traditional instruments include the harp, zither, lute, horn, flute, whistle and xylophone. Modern Zairean music is the most popular in Africa. The songs have an urgent rhythm but a curiously sad and lilting melody.

The most famous dance is probably the ballet "Bobongo" of the Konda tribe, but there are many others, including the Intore dancers of Kivu and the dancers of the Bapende and of the Lunda.

YOU'RE FIVE BY NINE PLUS FORTY db . . . BUT THE BAND IS DEAD!

by Ross Forbes, WB6GFJ

While operating on 14 MHz as F00FB during July, I was often told by stations, "Wow! You're 5 X 9 plus 40 db, but the band is dead!" You must admit that is an interesting contradiction. If a band really was "dead," how or why could a signal be so strong? The equipment at F08HL's location, where I was operating, is not spectacular: TS-820 and AS-33 triband yagi up 75 feet (25 meters).

After hearing the above statement boldly made many times, I began to take close note of who I was working -- QTH, power, and time of day. I never had someone tell me this who was himself less than S7, but more often would be over nine and running a vertical or dipole antenna. Even in July 1986, I would pull stations from the pile-up who were running 100 watts to a three element triband yagi, or 100 watts to a mobile whip.

Probably the funniest comment took place on a number of nets. The Net Control Station would request "check-in stations only from the South Pacific." When no response was received, the NCS would ask again time for check-ins, again without a response. The third request would often be more pleading for South Pacific check-ins. When no station responded, the NCS would boldly proclaim, "The band is dead, and there is no propagation to the South Pacific today!" Often there were visiting Amateur Radio operators in the shack during this scenario, and we would then give each other a quizzical look, wondering where in the world F08 had suddenly floated to! This same experience happened on other South Pacific islands, too.

The comments about the band have taken place every year I have been in the South Pacific. In 1979, when we were at the peak of the present sunspot cycle, I would try to move a station to 28 MHz and would be told flatly, "We can't make the sked now, since there is no propagation." As I had already checked the 28 MHz beacons and found the band open, I continued to persuade stations to move to 10 meters. Finally, when we moved frequency, the

station who was convinced 10 meters was dead was suddenly was in a state of shock to find the band open! I have even called CQ for many minutes without any response, only to have stations continue to come back every five or ten minutes to say I was still 59 at their QTH.

Of course, the fact of Mother Nature cannot be argued. At a sunspot maximum, 28 and 21 MHz will be open to world wide locations for longer periods of time than at the sunspot minimum. However, before anyone boldly proclaims a band is dead, we must ask ourselves what an unanswered call really means. In fact, when no response is received to a call or CQ, it simply means nobody took the time to key their own transmitter. In the situation concerning nets, I would monitor a net for one to two hours. Every twenty minutes or so, one would hear the same request take place. Finally, when the NCS was about to close the net, I would drop my call in and hear a state of shock as the NCS couldn't figure out how the band had opened up suddenly. "Oh my goodness. You're five nine plus, OM, but the band has been dead all day!" Imagine the bewilderment of the NCS when I told him what he had been saying for the past 90 minutes as I listened to them on the "dead band."

Consider another reason to question the "dead band" condition. Those of us who have been through a few sunspot cycles should recognize that, for some "strange" reason, a DX contest always brings out the DX stations. For days on either side of the contest, very few DX contacts may be heard. Then suddenly at 0000z on the Saturday of the contest, continuing for the next 48 hours, our logs suddenly show a surge of DX activity. Does this mean that "Old Sol" knows when contests are scheduled? Of course not! It simply tells us the contest gave us a reason to get on the air.

It appears that if nobody answers our "CQ," there is little we can do to encourage a response. However, there are methods to use which will allow you to learn if a path is open. Take some time and learn what commercial signals are on either side of your favorite HF band. Learn the locations of these signals and note their strengths, especially when you also hear DX stations within the Amateur HF bands. Better yet, learn to use the NCDXF beacon network on 14.1 MHz. Every ten minutes of each day, the NCDXF beacons cycle through their transmissions which allow you to check certain paths. You will be amazed the number of times you will hear a particular beacon, yet no other station coming from the same or nearby location.

Finally, when you work a DX station, tell them if you found a path open but nobody was on the air. Talk to your friends who have operated from DX locations and learn what the propagation was like. I am always amazed at the different paths available. While in F08, I continued to be surprised when a VU2 or an EA8 would talk right over a North American pile-up to me. Usually it happened right after I was told my signal was "Five by nine plus, but the band is dead." Remember the story that we all learned as children about "Chicken Little and the sky was falling?" The next time everyone on your favorite DX repeater, DX net or roundtable boldly proclaims the band is dead, don't be so quick to accept their statements as fact. It could be simply that "everyone else" was just not listening.

THE ANTENNA HERE IS MY ROOF

by Patty Winter, N6BIS

In keeping with the recent Newsletter discussions about tree antennas, I feel compelled to offer a description of my own strange HF antenna.

Due to circumstances somewhat beyond my control, I've spent the last two years housesitting my mother's mobile home. Unfortunately, mobile home parks are notoriously strict about antennas. Hams who have trees on their property can occasionally get away with foliaged verticals or discreet dipoles, but I don't even have that advantage.

When I upgraded from Technician to Advanced in the summer of 1984, I began looking for a solution to the problem. Naturally, I got lots of advice from my ham friends -- some of it even reasonable. The "winning entry" came from Bob Tarone, WA6ZBX, who noticed that the aluminum awning over the front porch was insulated from the house, and suggested that I try "loading it up."

Thus was born the "awntenna" -- or more formally, the Curved Linear Array. I'm lucky in that, although the mobile home is made of aluminum, it has wood siding, so the screws holding the awning to the house go into wood instead of metal. The five upright supports for the awning are bolted into concrete; we replaced the metal bolts with plastic ones and put Mylar between the uprights and their bases to provide insulation from the ground.

The awning is fed by coax (a recent change from unshielded wire) through an antenna tuner. A ground wire from the tuner goes to a copper rod under the house. My rig is a Heathkit 104A (100 watts).

I won't claim that this is a great antenna -- but hey, it works. In 18 months, I've worked all 50 states, and 66 countries. I'm pretty sure the awning absorbs a lot of the RF fed into it, but obviously some leaks out. It's not the antenna I would select given free choice, but I have to admit it makes for some pretty amusing conversations!

This is just a brief, straightforward overview of the system. For a more complete -- not to mention more tongue-in-cheek -- description, see the article in the April 1986 issue of 73 magazine. It's the one with the picture of my rabbit; you'll have to read it yourself to find out why he's there!

HOW'S DX?

by Martti Laine, OH2BH

ALBANIA ZA:

The year 1985 didn't see the coveted ZA operation although the expectations were running high and although many rumors were rampant -- and so were numerous pirates This is probably a good moment to review the current situation and look back at the events of the past year.

Just as a matter of interest and to see what rumors can really do, I would like to state that on the part of the Finnish group working on this project, no expectations were raised and no published information was provided regarding a scheduled operation from Albania during the year. Yet, many rumors were going round and the mailman brought a lot of QSL requests for contacts made by pirates.

If and when there will emerge a reasonable possibility of operating from Albania by their local people or through our visits, an announcement will be made well in advance. We are continuously reading all the DX bulletins and we have selected QRZ DX as the outlet for any major announcements.

Here is a brief summary:

Early in 1985, Albania's longtime leader Enver Hoxha died, having ruled the country since 1944. He was a man with the whole country at his fingertips and he was something of a father figure for the Albanians. There was no point in expecting much to happen until the situation was sorted out.

Bahri, DJ0UJ, had great expectations regarding his planned visit to Albania in July-August. It was decided not to duplicate any effort during that period. Instead, the idea was to support Bahri in every possible way and to see the outcome of his efforts first. The gear already in Albania was scheduled to be used by Bahri, should his endeavors prove successful. Bahri's proposed visit as part of a tourist group did not assure him of a visa, although he did everything in his power to obtain one. Because of many sensitive national and historical issues, Bahri was working on his project alone -- just the way we're working on the Finnish project.

December 6-12 was the date set for a Finnish exhibition in Tirana -- one of the first such exercises allowed to be undertaken by a Western country -- or any outside country. The organizer and host of this show, covering culture and the arts, was the Finnish Ambassador to Tirana who was also heading the amateur radio project with OH2NB and OH2BH.

An extensive package of information and material was presented personally to the Foreign Minister of Albania, aimed at providing further training on the subject, with the Albanians having selected a Finnish group for further familiarization and allowing the Finnish group to demonstrate amateur radio in action.

A very positive attitude was clearly noticeable but -- as expected -- there was no straightforward commitment.

The world will live on and hopefully 1986 will bring along a true-blue ZA station on the air.

A VISIT TO W6AM

by Donald F. Meadows,
N6DM (ex-W6ZGM)

My ham career really began, I think, at amateur radio station W6AM. The year was 1945. I was 15 and lived in Long Beach, California. Ten meters was the only HF band that peacetime had released to hams as of then.

A neighborhood pal (now W6UMA) and I had both read the 1945 ARRL Handbook from cover to cover. We were just dying to see a real working ham station up close. My pal's father happened to know a local ham named Don Wallace. A visit to his station was arranged, and we dreamed of watching him operate it.

As we approached Don's city QTH -- the rhombic farm wasn't yet operational -- we were awed even blocks away by the 100-foot poles on his residential lot. Drawing nearer, we could see a complex web of wires strung between them.

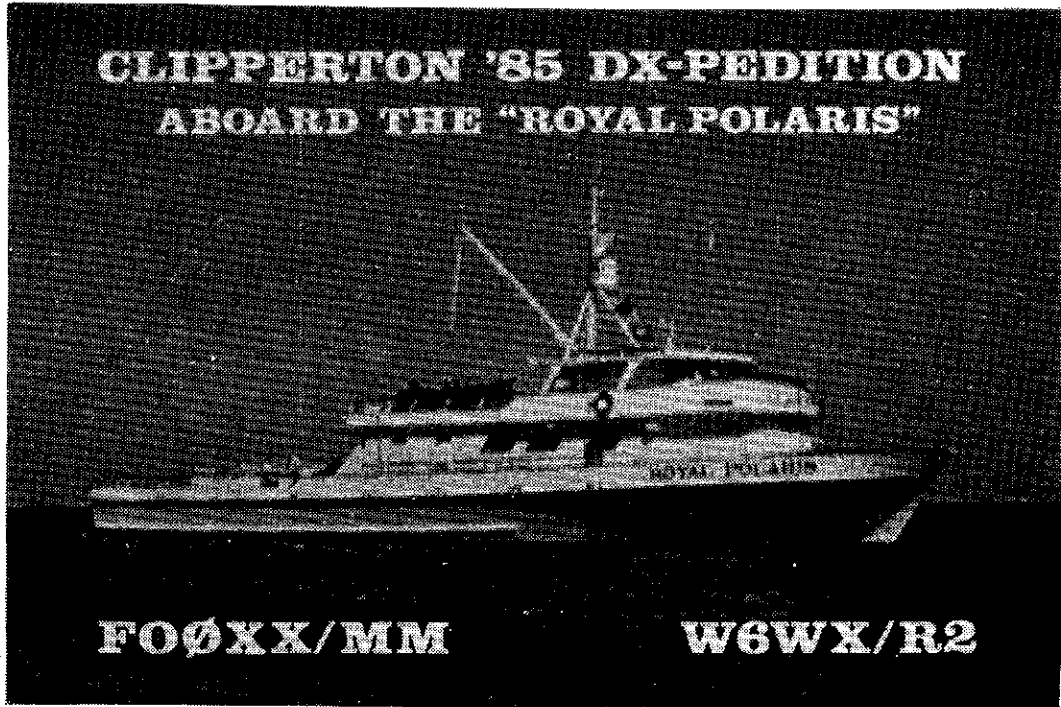
It seems like only yesterday that Don met us two kids at the door that afternoon, greeting us like old friends, then ushering us into the radio room. He let us tune 10 meters on his RME 45 receivers while he went back to putting behind one of the many relay racks. He said he was checking his high-level plate modulator bias. As we tuned a quiet, apparently dead band, Don casually broke the embarrassing silence with the remark, "Don't move that switch in front of you, or I'll be cooked."

We didn't know what to do or say next. Don sensed this, stopped tinkering and moved to the operating position. Moments later a CQ went out on 10 CW. All we heard was the blare of dits and dahs issuing from Don's fist. I remember seeing a shiny D-104 mic standing nearby. I wondered why he didn't use phone. From a loudspeaker we heard a run of code reply to his.

When the QSO was finished, my pal asked, somewhat shocked, how fast the code was. "About 30 words per minute," Don said. "You can get farther with code. I wanted to contact someone for you." The QSO was with a station in Los Angeles.

As we left Don's place, I noted the many open-wire feedlines snaked through the trees and shrubbery. The wires all ended somewhere in that vast antenna maze far above. I clearly recall Don's parting words: "When you get your tickets, be sure to give me a call!"

Don, we learned later, had been for many years a world-famous giant in ham radio -- and this was the same gentleman who had given us two scrubby kids an hour of himself that afternoon in 1945.



FOØXX/MM

W6WX/R2

THE TWENTY-METER BEACON BUSINESS

By W6RQ

The first magazine announcement of our 20-meter beacon network appeared in the June 1983 QST article by Jack Troster, W6ISQ, and the late Cam Pierce, K6RU. Subsequent magazine articles (that we know of) appeared in eleven different magazines published in eight countries. It seems that all the articles ended with, "anyone interested should write to W6RQ."

To date, W6RQ has received 585 pieces of mail (from 35 countries) regarding the beacons. It has been only the wide range of interests and queries of the writers that has kept the answering job from being a real drudge. A grade school teacher wanted to know how to set up a science project using the beacons. A government military research lab should have given its request for detailed information a SECRET classification. And not all the letters are in English! All correspondents have had their first letter and, often, subsequent reports answered fairly promptly.

With respect to equipment, the beacon watchers fall into three groups. First, the fellow with a general-coverage receiver and a piece of wire for an antenna. He's often discouraged. Next, the fellow with a good grade amateur transceiver and some sort of wire antenna -- some of them do very well. And third, the real DX'er type with an expensive transceiver and a big beam.

But, discouragingly, we found that we couldn't do too much in evaluating beacon reception based on the capabilities of the layout. When it comes to digging a weak beacon signal out of the noise, QRM and crud on 14.100, there are operators who can -- and operators who can't. Some of the best-equipped people are just poor operators who can't even identify the beacon signals. These well-meaning fellows' letters have been the most difficult to answer tactfully. One of them even said that we'd never make the beacon network at all usable without kilowatt amplifiers all around!

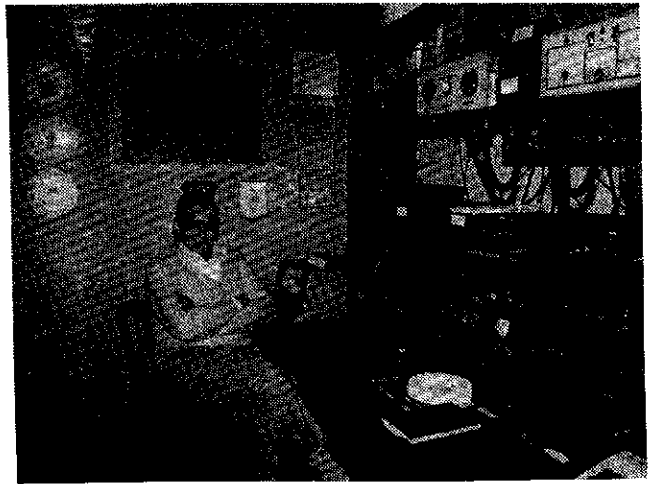
It has also been interesting to see how long it took some fellows to notice the beacon article in June 1983 QST. One wrote, in October 1985, that he had just seen the article. Maybe his wife just now ordered him to clean out the garage. We should also comment that all this correspondence has generated some new Foundation members. A beacon reception report accompanied by a check gets a very fast answer.

Several writers have proposed, and a few have rigged, a computer-controlled monitoring setup for unattended beacon logging. None of these attempts seems to have been very successful. Were the beacon frequency a clear channel, there might be some hope. But 14.100 has many users, and spreading the word about the beacons has not been simple. At least the packets have now driven most of the RTTYs off 14.100, and that lets us grab a quick listen while the packets stop for breath. The one European fellow with computer control hears two or three beacons a pass. Another fellow, in a neighboring town, using trained ears, hears six or seven beacons.

We are still trying to put together a study of the relation of reported beacon reception to solar activity indices. An algorithm which will include even most of the variables in a given transmission path becomes an awfully unweildy animal. And how do we weigh these factors of equipment and operator capabilities? Even my own beacon observations suffer from my not making them at the same time every day.

Stories about various beacon users keep filtering in. The latest concerns a WB0 who telephoned the university in Tel Aviv to tell them when 4X6TU/B had a problem -- some fellows truly want the beacons always available!

We are certainly fortunate to have, and most appreciative of, our group of beacon maintainers. The great reliability we have experienced with the system certainly owes much to these great guys who keep in running.



Carlos Kaufman, LU9CN, President of the Radio Club of Argentina and NCDXF Beacon Manager of LU4AA

SATELLITE SECTION

by Ross, WB6GFJ

December 1985 puts us near the current sunspot cycle minimum. Each day that passes, low solar flux numbers make us look for more challenging activities. If you want to continue your DX contacts, and still enjoy relatively QRM free contacts, now is the time to consider getting active on OSCAR-10.

In order to take the first step towards getting started, you need to contact your local AMSAT coordinator. This organization is the main group responsible for the Amateur Radio satellite program today. If you don't know who that person is, your first step in North America is to contact AMSAT headquarters. Their address is:

AMSAT
P. O. Box 27
Washington, D.C. 20044
Telephone: (301) 589-6062

There are branches of AMSAT all over the world including Great Britain, Germany, Australia, New Zealand, and Japan to name a few. To learn the name and address of your nearest AMSAT representative outside of North America, contact your own national Amateur Radio organization (WIA, NZART, RSGB, DARC, JARL, etc.) Once you are in contact with your local AMSAT coordinator, you have someone who will provide you with answers to the questions you have concerning operating, finding equipment, computer programs, and of course, how to locate OSCAR-10! At this time, there are also UoSAT-OSCAR 9 and UoSAT-OSCAR 11, spinning around the Earth, and in 1986 we expect Phase IIIC, JAS-1, RS-9, RS-10 and Arsene to be launched.

You may wonder how often you can work stations via OSCAR-10. Although the satellite isn't in a perfect orbit, there is still a lot of time available. From my location in San Francisco, it varies from 3 to 10 hours per day when the satellite can be heard (effective October 1985). Those living in the Southern Hemisphere can hear the satellite for longer periods of time.

Since the OSCAR can be heard for a fairly long period of time, how long can one operate on OSCAR-10? First of all, you must understand that all Amateur Radio satellites are powered by batteries kept charged by solar cells. So, as long as the proper amount of sunlight reaches the solar cells, then the batteries can be kept fully charged. Of course, like the handie-talkie many of us have, the batteries discharge when used for long periods of time. Therefore, when you hear another station say that the OSCAR-10 transponder is turned off, you know that this is being done to recharge the batteries.

The term "transponder" may be new to you. Simply, the transponder is the OSCAR-10 system that receives your own 435 MHz transmitted signal, amplifies the signal, then rebroadcasts it on the 145 MHz band. Unlike a regular FM repeater that operates on a single channel, OSCAR-10 rebroadcasts an entire segment of the 145 MHz band. Therefore, when you listen to the OSCAR-10 segment, or what is referred to as the "DOWNLINK," you will tune your receiver from 145.805 to 145.950. As you tune through this passband, you will hear SSB, CW, Packet and RTTY signals. If OSCAR-10 is within range of your location, always listen on 145.807 for the "general beacon."

The OSCAR-10 beacon is continuous transmission of the satellite's "internal electronic" condition, or "heartbeat." There is a second beacon, referred to as the "engineering beacon," but you will usually hear just the general beacon. Every 30 minutes, the satellite will send five minutes of CW (about 15 WPM), 20 minutes of ASCII, and five minutes of RTTY. The information transmitted on the beacon frequency by each mode tells you the current status of the satellite, plus there is always a short bulletin of general information. The bulletins are always clearly stated. However, to learn about the health of OSCAR-10, you need to copy down the numbers sent, and apply them to various formulas to decode the data. Information to decode these numbers is available from your AMSAT coordinator. The beacon sends this data whether or not the transponder is turned on for general usage.

It should be clear by now that you must have the ability to receive SSB and CW signals and have a tunable VFO to hear OSCAR-10. Of course, this means that your present 2 meter FM only transceiver or your 2 meter HT won't do the job. Getting started on OSCAR-10 requires some careful thinking about what equipment you really need. While you cannot get started on the satellite just for the price of a used handie-talkie, equipment doesn't have to be real expensive. Of course, just like on HF, the price goes up as you add antennas, or more complicated equipment. Just realize that to get started you may not have to spend a great deal of money.

The very basic equipment you need to receive OSCAR-10 is something to receive CW or SSB or 145 MHz, some form of directive antenna for the same frequency, a short length of very low loss coax cable, and low noise preamplifier. The major manufacturers of Amateur Radio equipment all produce excellent equipment for OSCAR-10 communications. Certainly you should look into this. Another way to get started, especially if you have existing HF equipment is to consider a 2 meter receive converter fed to your present HF station. There are a number of kits available that are fairly inexpensive. So this may be the best way for you to get started. The same goes for the preamplifier. Since the signal coming from OSCAR is rather weak, you will most likely need a good low noise preamplifier. There are a number of good commercially made units, or you can construct one from a kit.

Just like on the HF bands, put as much as you can into your antenna system. However, on the frequencies involved on OSCAR-10, the loss figures become very important. Many have used the large, low loss hard line coax with success. However, there is a new type of coax cable available that has a loss of about 2 db per 100 feet that is affordable. In the United States, it is made by Belden and is referred to as 9913 coax. This coax is an excellent choice as it is about the same size in diameter as RG-8/U coax, but has loss properties similar to hard line.

Your antenna is THE most important part of your system! If you have a linear 145 MHz antenna, you can certainly get started. However, at some time in the near future, you will want some type of antenna that favors circular polarization. Yagi type antennas with elements in both the vertical and horizontal planes are the type I refer to. There are a number of commercially made antennas, or you can make your own. Another excellent antenna that is quite easy and inexpensive to make is the "Helix" antenna. The ARRL and RSGB handbooks describe this antenna, and you can also obtain some excellent construction information by sending an SASE to WOCY. A simple antenna that is easy to build to get started hearing OSCAR, and is used successfully by many stations currently on the satellite right now, is a quad antenna built for 145.9 MHz.

My own station will give you an idea what an OSCAR-10 station is like. To receive OSCAR-10, I use a Kenwood TS-700A, an Advanced Receiver Research GasFet preamplifier mounted on the back of my TS-700A, about 60 feet of 9913 coax, and two KLM 14C antennas. My antennas have 14 vertical elements, and 14 horizontal elements. With this system, I have no problem hearing OSCAR-10 whenever it is within range of my location.

On the transmission side, I use a Kenwood TS-430S HF transceiver, feeding a Microwave Module MMT-432/28S transverter. To help the signal, I have a Mirage D1010 100 watt linear amplifier that produces about 85 watts on my system. Again, I have about 60 feet of 9913 coax and my antenna is a KLM 18C which has 9 vertical and 9 horizontal elements. There is NO time during the time the transponder is turned on that I cannot hear my signal at the 10 watt level!

In speaking to various individuals, it is clear that there have been a number of misconceptions of what it takes to get started on OSCAR-10. I hope that you are getting a clear idea of what it really takes to get on OSCAR. Setting up on OSCAR-10 is really very easy. In the next issue of the Newsletter, we will continue the discussion of what you need to get started on OSCAR-10 and bring you up to date on the satellite plans for 1986.

YOU'RE FIVE BY NINE PLUS FORTY db . . .

BUT THE BAND IS DEAD!

by Ross Forbes, WB6GFJ

While operating on 14 MHz as F00FB during July, I was often told by stations, "Wow! You're 5 X 9 plus 40 db, but the band is dead!" You must admit that is an interesting contradiction. If a band really was "dead," how or why could a signal be so strong? The equipment at F08HL's location, where I was operating, is not spectacular: TS-820 and AS-33 triband yagi up 75 feet (25 meters).

After hearing the above statement boldly made many times, I began to take close note of who I was working -- QTH, power, and time of day. I never had someone tell me this who was themselves less than S7, but more often would be over nine and running a vertical or dipole antenna. Even in July 1986, I would pull stations from the pile-up who were running 100 watts to a three element triband yagi, or 100 watts to a mobile whip.

Probably the funniest comment took place on a number of nets. The Net Control Station would request "check-in stations only from the South Pacific." When no response was received, the NCS would ask again time for check-ins, again without a response. The third request would often be more pleading for South Pacific check-ins. When no station responded, the NCS would boldly proclaim, "The band is dead, and there is no propagation to the South Pacific today!" Often there were visiting Amateur Radio operators in the shack during this scenario, and we would then give each other a quizzical look, wondering where in the world F08 had suddenly floated to! This same experience happened on other South Pacific islands, too.

The comments about the band have taken place every year I have been in the South Pacific. In 1979, when we were at the peak of the present sunspot cycle, I would try to move a station to 28 MHz and would be told flatly, "We can't make the sked now, since there is no propagation." As I had already checked the 28 MHz beacons and found the band open, I continued to persuade stations to move to 10 meters. Finally, when we moved frequency, the station who was convinced 10 meters was dead was suddenly was in a state of shock to find the band open! I have even called CQ for many minutes

without any response, only to have stations continue to come back every five or ten minutes to say I was still 59 at their QTH.

Of course, the fact of Mother Nature cannot be argued. At a sunspot maximum, 28 and 21 MHz will be open to world wide locations for longer periods of time than at the sunspot minimum. However, before anyone boldly proclaims a band is dead, we must ask ourselves what an unanswered call really means. In fact, when no response is received to a call or CQ, it simply means nobody took the time to key their own transmitter. In the situation concerning nets, I would monitor a net for one to two hours. Every twenty minutes or so, one would hear the same request take place. Finally, when the NCS was about to close the net, I would drop my call in and hear a state of shock as the NCS couldn't figure out how the band had opened up suddenly. "Oh my goodness. You're five nine plus, OM, but the band has been dead all day!" Imagine the bewilderment of the NCS when I told him what he had been saying for the past 90 minutes as I listened to them on the "dead band."

Consider another reason to question the "dead band" condition. Those of us who have been through a few sunspot cycles should recognize that, for some "strange" reason, a DX contest always brings out the DX stations. For days on either side of the contest, very few DX contacts may be heard. Then suddenly at 0000z on the Saturday of the contest, continuing for the next 48 hours, our logs suddenly show a surge of DX activity. Does this mean that "Old Sol" knows when contests are scheduled? Of course not! It simply tells us the contest gave us a reason to get on the air.

It appears that if nobody answers our "CQ," there is little we can do to encourage a response. However, there are methods to use which will allow you to learn if a path is open. Take some time and learn what commercial signals are on either side of your favorite HF band. Learn the locations of these signals and note their strengths, especially when you also hear DX stations within the Amateur HF bands. Better yet, learn to use the NCDXF beacon network on 14.1 MHz. Every ten minutes of each day, the NCDXF beacons cycle through their transmissions which allow you to check certain paths. You will be amazed the number of times you will hear a particular beacon, yet no other station coming from the same or nearby location.

Finally, when you work a DX station, tell them if you found a path open but nobody was on the air. Talk to your friends who have operated from DX locations and learn what the propagation was like. I am always amazed at the different paths available. While in F08, I continued to be surprised when a VU2 or an EA8 would talk right over a North American pile-up to me. Usually it happened right after I was told my signal was "Five by nine plus, but the band is dead." Remember the story that we all learned as children about "Chicken Little and the sky was falling?" The next time everyone on your favorite DX repeater, DX net or roundtable boldly proclaims the band is dead, don't be so quick to accept their statements as fact. It could be simply that "everyone else" was just not listening.

A THEORETICAL INVESTIGATION OF THE EFFECT OF HIGH FREQUENCY RADIO TRANSMISSIONS ON THE DENSITY OF FREE IONS AND ELECTRONS IN THE IONOSPHERE AND ITS IMPLICATIONS FOR THE FUTURE OF THE WORLDWIDE AMATEUR RADIO SERVICE*

by James A. Maxwell, W6CF**
April 1, 1986

INTRODUCTION

It has long been believed that the well-known 11 year cycle in high frequency (HF) radio propagation is a consequence of the 11 year solar cycle. Briefly, it is believed that radiation from the sun induces variations in the density of free electrons in the ionosphere. The presence of these free electrons makes possible HF radio propagation over the horizon. Studies have shown close correlation between ionizing radiation from the sun and the numbers of spots on the sun. Since the number of sun spots varies over an 11 year cycle, it has been concluded that the observed 11 year cycle in HF radio propagation is therefore related to the solar cycle. Evidence presented in this paper suggests that this is not the case, and that previous researchers have been in error. Rather, it is shown here that the observed variations in electron density in the ionosphere are induced by HF radio transmissions themselves. Two coupled, linear differential equations governing the phenomenon are derived from basic principles. These equations, denoted the MAXWELL ELECTROACTIVITY EQUATIONS, are verified and a means for additional experimental verification is proposed.

The full details of this research will appear later this year in the International Journal of Polymorphous Propagation. Since the results have considerable impact on the worldwide amateur radio service, this condensed version has been prepared for immediate release to the amateur radio community.

In order to understand fully the underlying theory as presented here it is necessary to have a working knowledge of elementary calculus. Those readers who do not choose to delve into the mathematics may skip directly to the section titled "Discussion of Results."

*Just when we are convinced that everything useful, important or revolutionary has already been discovered or invented, along comes another study of major significance. We are pleased that Dr. Maxwell has selected the Foundation Newsletter as the medium to make public his discoveries.--Editor

**Fellow, The Institute for the Preservation of Worldwide Amateur Radio. This paper has been supported by a grant from the Institute.

DERIVATION OF THE ACTIVITY EQUATIONS

Let A denote the mean daily activity of amateur radio operators on the HF bands. The units of A are not important, but it may be convenient to think in terms of activity hours per day on a worldwide basis. Thus, if 100,000 hams were each active for an hour per day over a given day, A for that day would be equal to 100,000 hours.

Worldwide amateur radio activity on the HF bands is highly dependent on band conditions. If the bands are good, A is very large while, if the bands are poor, A is very small. An inverse relationship has been noted on VHF bands. That is, when HF conditions are good, activity is low on VHF, and conversely. Several hypotheses exist which can explain this inverse relationship, and will be the subject of a later study.

Previous studies have shown that A has a periodic behavior. For example, DXCC applications vary sinusoidally with a period of 11 years. This is commonly attributed to the 11 year sunspot cycle, an erroneous belief as will be demonstrated in this paper. But no matter what the cause, the activity at time t can be closely approximated by the equation

$$A = A_p \cos W(t-t_0) + A_0, \quad (1)$$

in which A_p is the non-negative peak amplitude of the sinusoid, W the angular frequency, t_0 an epoch denoting the peak time of the cycle, and A_0 a constant such that A is non-negative for all times t. The period T, in this case 11 years, is related to the angular frequency by $T = 2\pi/W$.

This equation for A satisfies a 2nd order linear differential equation of the form

$$\frac{d^2A}{dt^2} + W^2A = W^2A_0. \quad (2)$$

Next, let D denote the density of free electrons in the ionosphere. It is also well known that high values of D imply good HF propagation, which in turn results in high on-the-air activity. Furthermore, good conditions breed increased activity. Most DXers are aware of this phenomenon - if the 20 meter band is "hot" on a Friday, the word gets out and Saturday will see a surge of activity on 20 meters, with huge pileups. This has become more pronounced in recent years due to the proliferation of 2 meter spotting nets, which ensure that the word gets out quickly if the bands are good. Conversely, if the bands are poor, activity will fall off. Stated mathematically, the rate change of activity is proportional to the ionospheric free ion and electron density, D. That is,

$$\frac{dA}{dt} = k(D - D_0), \quad (3)$$

where k is a proportionality factor to be determined by experiment and D_0 is the mean ionospheric electron density.

Equation (3) may be differentiated a second time, yielding

$$\frac{d^2A}{dt^2} = k \frac{dD}{dt}. \quad (4)$$

Substituting Eqn. (4) into Eqn. (2) results in the following equation.

$$\frac{dD}{dt} = -W^2(A - A_0)/k. \quad (5)$$

THE MAXWELL ELECTRO-ACTIVITY EQUATIONS

Equations (3) and (5) together are of such importance that they are summarized here, for emphasis.

```

*****
*                                     *
*                                     *
*      dD = -W^2(A - A_0)/k         *
*      dt                                     *
*                                     *
*                                     *
*      dA = k(D - D_0)             *
*      dt                                     *
*                                     *
*****

```

These remarkable equations, the First and Second MAXWELL ELECTRO-ACTIVITY EQUATIONS, apparently have been overlooked by propagation researchers for many decades. The equations have profound implications for propagation science and the future of amateur radio.

VERIFICATION OF THE MAXWELL ELECTRO-ACTIVITY EQUATIONS

In this and in all following sections, the MAXWELL ELECTRO-ACTIVITY EQUATIONS will for brevity be denoted the MEAE equations.

The MEAE equations have been derived from, and are consistent with, widely available experimental evidence. Any reasonable theory must, however, be tested against independently derived data.

Consider first the special case of $D = D_0$. If $D = D_0$, which is the case if the electron density is equal to its mean value, then the first MEAE equation becomes

$$\frac{dA}{dt} = 0 \quad (6)$$

implying that A is constant. But this fact is well-known in practice: if band conditions are average, or "so-so," activity is flat. Although this may appear on the surface to be a trivial result, it is actually extremely important, for it is a result predicted by the MEAE equations, a result not at all obvious from the fundamental assumptions which went into their generation. One of the tests of a useful theory is its ability to predict verifiable phenomena. Thus, the MEAE equations have passed their first important test.

Next, if the first MEAE equation is differentiated once and combined with the second, the result is the equation

$$\frac{d^2D}{dt^2} + W^2D = W^2D_0. \quad (7)$$

This equation, as is well known, has solutions of the form

$$D = D_p \sin(Wt + Q) + D_0. \quad (8)$$

in which D_p and Q are arbitrary constants. The two constants are evaluated easily by means of combining the known form of the activity A expressed by Eqn. (1) with the first MEAE equation. This results in

$$D = \frac{-W A \sin W(t-t_0)}{k} + D_0. \quad (9)$$

This equation shows that the free ion and electron density D varies sinusoidally, also at an angular rate W, with period of 11 years. This is another triumph of the theory, for this prediction is in exact agreement with experimental data.

Thus, in summary, the MEAE equations predict two well-known phenomena. This success lends the theory additional credibility.

DISCUSSION OF RESULTS

As is shown in the previous section, the Maxwell Electro-Activity Equations are entirely consistent with experimental data. It is of interest to discuss the meaning and impact of the MEAE theory in non-mathematical terms.

The first equation, derived from fundamental and irrefutable experimental data, states unambiguously:

The rate change of density of ionospheric free ions and electrons is proportional to the negative of the activity level A.

In other words, the more the HF bands are used, the poorer the conditions become. In a sense, high activity "wears out" the ionosphere. The reaction of operators to falling band conditions is to suspend operations. In time, the electron density level returns to its previous state, which in turn causes increased activity, followed by reduced levels, and so on in a cyclic manner. As shown by available data, the period of the cycle is approximately 11 years. However, it is clear that the 11 year cycle is not caused by sun spots, but rather by amateur radio activity levels themselves.

A great deal of attention has been paid by many national amateur radio organizations, including the American Radio Relay League, to increasing the number of licensed amateur radio operators. This is obviously a dangerous course of action. One needs only tune the 20 meter band on a weekend to understand the unhappy effects increased amateur activity has had since WW-II. Any additional significant increase in activity may well cause a disastrous total suckout of the ionosphere which could take many years to heal, if ever. Although this statement may be somewhat controversial, it can be verified experimentally. Referring to the first MEAE equation, if worldwide activity could be reduced to zero, or to an extremely small value, then

$$\frac{dD}{dt} = A_0/k$$

which is readily integrated to

$$D = A_0(t - t_0)/k.$$

That is, if amateur radio operation were to cease worldwide, this theory predicts that ionospheric ionic and electron density would recover and increase linearly with time, which in a few years would result in incredibly good band conditions.

RECOMMENDATIONS

Principal responsibility for the impending HF propagation crises lies squarely on the shoulders of the amateur radio operators of the United States, due to their large numbers and the high transmitting power authorized them. It is therefore only fitting that the radio amateurs of the United States take the initiative to reverse the present trend and thereby to save worldwide amateur radio from destruction. It is therefore recommended that amateur radio operators in the United States immediately cease operations on the HF bands and shift their activities to 2 meters and above, where ionospheric propagation is not important. This cessation of operations should last one-half a cycle, or six years, so that the theory can be validated and so that the ionosphere can recover to a usable and sustainable level. In the interim, in order to monitor band conditions, a small number of U.S. stations should be permitted to remain active. These "gateway" research stations should be limited in number, preferably no more than one per call area but under no circumstances more than one per state. An ideal gateway station is one with an excellent receiving location, but with a transmitting capacity which cannot cause measurable changes in the condition of the ionosphere. An initial survey has been carried out, and it appears that the amateur radio station W6CF in Santa Cruz County, California, is ideally suited to be the gateway station in the 6th U.S. district. Gateway stations in other districts are now being identified. Additional technical information will be released as it becomes available.

ACKNOWLEDGEMENTS

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TREE ANTENNAS - NOT SO SAPPY

By Bill Avery, K6GNX

(Two issues ago we published an article on how trees were used, experimentally, for TV reception in India. Some readers wrote that we were full of sap. Others responded with research articles on the subject. One reader, Bill Avery, K6GNX, has been looking into the tree antenna subject in depth. Just how far up the tree Bill has climbed is the subject of this report.)

Previous publications

From the number of papers published in the late 60's and 70's, it appears that the U.S. Army found out that radios don't get out very well in the jungle. The rules of thumb for HF and VHF propagation were getting stomped into the ground by the dense, tall, lush vegetation. A lot of work was

done to "model" the jungle. One of the best was an oreo cream layered sandwich of ground, jungle and air. A transmitted signal would go to the jungle roof and bend and duct along the roof-air interface, coming down later with much less attenuation than the direct or reflected waves.

Out of some of this research came the fact that a tree beats a whip antenna by 5-15 dB over paths of a few miles. Before anyone sez baloney, let's point out that the tree beat a whip on a PRC-74 at 4.6 MHz. Nobody thinks a walnut tree will put down a Butternut; but there are a couple of obvious places where a tree might be the answer. The environmental impact of a tree vs. a 160M vertical is one. And what clever lawyer has a clause in your covenants and restrictions against using a tree as an antenna?

Coupling

The big thing is coupling to the tree. One easy way is to run a coax near the tree, put in a ground rod for the shield, slope the center conductor up to the trunk and drive in a nail. The height of the nail determines the real part of the impedance. If you were thinking delta match, you win. However, this isn't the preferred method. There is a great picture of a tree in a paper by some German scientists with a nail in it and a big frown painted on the trunk. Actually, one author points out that the internal resistance of the tree goes up after RF is applied to the nail. Is the tree trying to tell us something?

The best way is to take a coil, imagine 15 turns 6 inches in diameter and stretch it around the trunk. If you ever wrapped a "Slinky" around your wrist you've got the picture. Tune it to resonance with a series capacitor like in link coupling. In this fashion the RF is coupled by a transformer with no direct connection to the tree. This is how the tree vs. whip tests were done. One word of caution though, before your wife's favorite flora turns brown and curls up: there will be considerable losses and hence heating in the tree. Before cranking up the KW, check how warm things are getting, especially with the nail. Since it is generally agreed that the current will concentrate in the layer just under the bark, it should be easy to avoid irreversible damage.

Need your help

This author, being a glutton for punishment, went back to school at age 40 for a PhD. The thesis topic is "Using Trees as Antennas". If anyone out there would enjoy experimenting along these lines, please drop me a line. Any data on tree vs. antenna tests would be enthusiastically welcomed, as would on-the-air tests. Write K6GNX, Bill Avery, Box 8074, Incline Village, NV 89450.

VHF

One last thing -- the use of trees for vhf might not be a bust even though the tree is several wavelengths high. Since the attenuation is not negligible, this might damp out current so that grafting lobes don't occur as they would on a metal structure of similar height. Who knows, maybe in a few years we'll be planting phased arrays.

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