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THE CANADIAN AMATEUR

Canada's Amateur Radio Magazine

La Revue des Radio Amateurs Canadiens

FEBRUARY 1989

Tuning in the Soviet Space Station MIR

— Page 7



*Don Moman VE6JY in his shack,
where he contacted U2MIR.*

 **International**
Amateur Radio Network

— Page 26

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Canada's Amateur Radio Magazine

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Unsolicited articles, reviews, features, criticisms, photographs and essays are welcomed. Manuscripts should be legible and include the contributor's name and address. A signed article expresses the view of the author and not necessarily that of C.A.R.F. Publications Limited.

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WHAT IS ?

The Canadian Amateur Radio Federation, Inc. is incorporated and operates under a federal charter, with the following objectives:

1. To act as a coordinating body of Amateur radio organizations in Canada;
2. To act as a liaison agency between its members and other Amateur organizations in Canada and other countries;
3. To act as a liaison and advisory agency between its members and the Department of Communications;
4. To promote the interests of Amateur radio operators through a program of technical and general education in Amateur matters.

EDITORIAL

BY GEORGE W. SANSON
VE3LXA

Sometime last year, I received a copy of *Guywire*, the Bulletin of the Regina Amateur Radio Association. I noted with interest that it contained a survey to determine how Amateurs felt about the CARF/CRRL merger. I chose to wait for the outcome before printing it in *The Canadian Amateur*.

The results are as I had anticipated; the comments are a little biting, but nevertheless constructive. One thing that should be pointed out though, is: CARF has NEVER been against merger!

Although I am only the Editor and have nothing whatsoever to say about Federation Policy, I do get to sit in on many meetings with the CARF Directors and Executive... the fly on the wall, if you will! The main tone of these meetings from my point of view would seem to be frustration with the delay of the proposed merger.

Directors from all Provinces and Regions have stated emphatically that they WILL merge. A merger is not a take-over! We have a proud history of 22 years of service to the Canadian Amateur. This is not a History we are willing to bury... we want it to be a part of the foundation of the new National Organization.

During all those years of minimum

Canadian coverage in a foreign publication, CARF was taking care of business here at home and producing a fine magazine to boot. Long before I was even a ham, Doug Burrill, Frank Hughes and others were working closely with Steve Campbell and *County Magazine* to produce *The Canadian Amateur*. We also had some excellent representation in Government circles.

Before I give you the results of the 'Regina Survey', I leave you with one thought. CARF WANTS TO MERGE! We agree with Joe Ham that ONE National Organization is the best solution. To show you how concerned some of us are, a member of the Executive stated to me recently (and he was QUITE serious!) "We ARE going to make this work!" We are not about to give up on MERGER now!

CARF is willing to talk, anytime, anywhere, BUT on equal ground. We've got THE Magazine; we've got the National QSL Bureau; we've got the respected representation in Ottawa; we have a firm financial base; we have the membership. What more do we need? What more does Canada want? Write to your Regional Directors, write to your local Club or Association, but WRITE! Let them KNOW what YOU want. Maybe then we can ALL get on with the business of being Hams!

Results of the Saskatchewan Merger Survey, 1988

The merger between CARF and CRRL has been a major topic among Canadian Amateurs for quite awhile. Saskatchewan Amateurs seem to be ready for a merger as noted by the following typical statement: "It's time the two outfits got off their butts and got together!"

As quite a few Amateurs are aware, negotiations between CRRL and CARF were discontinued in October 1987 and, to date, there has been no word regarding the resumption of these talks.

Again, quoting from the survey: "Is it not time to stop playing territorial turf politics and get the two working as one strong body?! Get on with it!"

This failure between the two organizations to resolve their differences is of major concern to your Saskatchewan CARF and CRRL

representatives. With this concern in mind, along with the fact that we didn't really know what the average SK Amateur thought about a merger, a Survey was drafted to find out.

The Survey was prepared by VESAE (Asst. Dir. CARF), VESEE (Asst. Dir. CARF), VESFX (Asst. Dir. CARF & VESQSL Bureau Manager, CRRL), VESRC (SM, CRRL) and VE5WM (Sec., CRRL & Asst. Dir. CARF).

Another Saskatchewan Amateur remarks: "I would be more inclined to join a group if (1) it gave total representation and, (2) I felt confident its energies were put into representation rather than duplication."

Here are the results of the Survey which took place over the Summer and Fall of 1988.

Continued on next page 

EDITORIAL (cont'd)

(1) of the 784 questionnaires sent out, 154 or 19.5% were filled out and returned.

(2) On the question of "Would one National Organization founded from CRRL and CARF better serve the interests of Canadian Amateur Radio operators?", 97% said 'YES' and 3% said 'NO'.

(3) Fifteen questions were asked on the topic of which Organization do you feel better serves Canadian Amateurs? Averaging the returns resulted in CARF at 25%, CRRL at 26%, SAME at 25% and NO OPINION at 24%.

(4) A separate question was included: "Do you object to your name, call sign and address being made available to legitimate organizations?" 94% said 'NO' and 6% still said 'YES'. Communications Canada reversed its decision while the Survey was still out.

(5) It is interesting to note that the question, "Are you a paid up member of: CARF, CRRL, SARL, LOCAL CLUB?" produced the following results— Local clubs 27%, SARL, 23%, CRRL 23% and CARF 20% and NONE 7%. (SARL is Sask. Amateur Radio League).

The following quotes from the Survey, some of which you have already read in this report, represent a cross-section of typical comments which ranged from one or two lines to two and three pages.

"I think that we have here a prime example of the old saying, 'united we stand, divided we fall'. Whatever we have in the way of resources and support would be better utilized in the promotion of one organization rather than two."

"I am of the opinion that one organization would be sufficient to serve the interests of Canadian Amateurs. I suggest dissolving both CARF and CRRL and replacing the dual organization with The Canadian Amateur Radio League. CARF and CRRL have served the Canadian Amateur well with their strong representation, but let's move on with a Canadian IDENTITY."

"I (we) have joined both CARF and CRRL because I don't want to miss anything. However, I am a strong supporter of a SINGLE ORGANIZATION and hope the reasons, whatever they are, which are blocking it, will be removed soon."

"I feel we should be members of ARRL. ARRL has served North American Amateurs for 65 years or more and does a professional job of it. So my opinion is our little strength should add to and support them."

"...from an advertiser's point of view, it (one organization) will encourage them to advertise, because there will be no need of double advertising, thus less

cost. Also, they will know everyone is reading their ads.

"I think the Canadian identity thing is very important (real or imagined)."

"I'm very upset about the apparent jealousy and lack of communication between CARF and CRRL. It appears from my somewhat limited information that CRRL has seized upon a rather flimsy excuse to withdraw from amalgamation talks. No doubt there is fault on both sides, but cannot two groups of human beings with a common hobby find enough common ground to at least continue to negotiate toward a single Canadian Ham organization? Perhaps both organizations are losing ground because of the present polarization. Get at it fellows and show some tolerance and flexibility!"

"It would be nice to have just one Canadian organization to represent Amateurs. When my CRRL runs out, I am not rejoining!"

"If these Ham Radio organizations merge, and produce a good Ham Radio publication, it is possible I may again subscribe to it."

"I am of the opinion that CARF does not carry much influence. Evidence of this is the continual band expansion in favour of the American operators. I must point out here and now—I am not, by any means, anti-American... but when the Elephant sits down, the mouse better get out of the way. The Americans, by their numbers, will dictate policy regardless of how many magazines and organizations we have in Canada. Let us stay united so we can enjoy and pass along our fine hobby to those who follow in our footsteps."

"...I was a member of ARRL for over 40 years, I am quite disappointed with our Government Regs, the fees are highest ever... we pioneered radio communications, did emergency work in all types of disasters, etc., they don't seem to care anymore, the Bureaucrats have taken over, so I hope you boys can do something before it's too late... maybe it would be appropriate to get in touch with your MPs, but they don't seem to listen anymore..."

"I have been a member of ARRL/CRRL since I became a ham and a Life Member. There seems to be a personality clash between heads of both organizations for a long time. I hope this comes to an end soon in the best interests of Ham Radio in Canada."

"I belong to neither CRRL nor CARF. If there was only one organization, I would probably join. A duplication of efforts is NOT needed!"

From this Survey, there is no doubt that the majority of Saskatchewan Amateurs want a merger, which is right for the majority and the sooner, the better. Some people have indicated that

they feel that the power in Canadian Amateur Radio lies in the East as does the political power of the country. If indeed this is true, then those persons holding the guiding reins of Canadian Amateur Radio should stop and reflect. We are very small in number and some of the frequencies we use (and take for granted) are eyed everyday very hungrily by the world of business. The latest example of this being the FCC ruling concerning a segment of 220 MHz in the U.S.A. These rulings are quite often followed by a similar ruling in Canada.

It seems to be inescapable that if there ever was a time for unification, it is NOW! If someone is on an ego trip, then this is a good time to put personal feelings aside and go down in Amateur Radio History as having really done something good for Canadian Amateurs as a whole, through a merger.

Many Amateurs agree that both organizations have excellent qualities borne by the countless hours of volunteer work on each side. Let's not allow that work to not become what it could be... a strong single Canadian organization working side by side with similar groups who represent the other countries of the world. These groups can show our Governments that Amateur Radio operators are not a dying breed and that we are more than capable and deserving to be using communication frequencies.

Amateur Radio is not a Right. It is one of the most wonderful endeavours in the world today, but an endeavour that must be earned constantly. Let's make sure through our united actions that Amateur Radio will be here for future generations to earn. Amateurs can take the first step now by merging!

— Bruce VESRC

EXPENSIVE CODE TEST

If you flunked this code test, it cost you money! At the recent Miami Hamcation, Gordon West tied a code player into a string of lights surrounding his Gordon West Radio School banner. The lights would blink in Morse Code. A 13 wpm Morse Code message could be heard audibly with the lights blinking away. The message was sent over and over again on an endless loop tape cassette. What the message said was "... If you can read this, see me for a \$50 bill..." Apparently no ham took the time to read it! Gordon still has his \$50 bill.

The next time you hear a CW message at a hamfest, take time to read it. Gordon says he is going to have similar 'copy for cash' messages at other hamfests. And, if you can't read 13 wpm, brush up on your CW.

— Auto Call/Guywire

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LETTERS

CALLSIGN COMMENTS

Thank you CARF for helping DOC to see it 'our' way. Hi! Where would Canadian Amateurs be without you? Thank you for a job well done. I enjoy *The Canadian Amateur* and read it cover to cover; it has been a big help to me over the past nine years.

Muriel Foisy VE7LQH

RESTRUCTURING

Over the last year there has been much said about the proposed restructuring of the Amateur Radio Service. Each issue of *The Canadian Amateur* whets the appetite by further reporting advancements with regard to the proposed changes. It seems that progress is being made, albeit, for better or worse, depending on one's point of view.

To date, little has been said about the names of the new categories, except that they are being referred to as A, B, C and D. If such designations were to become the official names for each level, it would seem appropriate to acknowledge a Hierarchy of Achievement. Under the proposed nomenclature, level A is the entry level and D is the advanced. Surely those who have earned the privilege to hold advanced status in the Amateur Radio world, should be given first class standing, with the letter A designating their achievement. Perhaps because of tradition, or our educational system, the letter A is associated with excellence, being first, or achieving privilege and distinction above others.

Though a small point, perhaps even premature and to some seemingly nit-picky, it nonetheless reflects on us all the value that we put on hard work and achievement. Let those who have earned it be first—in other words A!

North Island Amateur
Radio Society,
Vancouver Island, B.C.

DONATING MAGAZINES

Re: *QST* Sept. 1929 to Sept. 1931, (25 mos) plus one extra copy of Sept. 1929.

I acquired the above copies of *QST* from the Estate of a deceased Ham in my neighbourhood. I am willing to donate them to some worthwhile establishment where they might be useful in some way to the cause of Amateur Radio.

The magazines are in very good shape with no mildew or other signs of deterioration. If you have any suggestions as to where the magazines might go, or whom I should contact, I would be pleased to hear from you.

R.D. Stuble VE3IGO,
11 Thornbank Road,
Thornhill, Ont. L4J 2A1

CHARTER MEMBERS

"CARF's Charter Members" by John Iliffe VE3CES in the November 1988 *Canadian Amateur* brought back some very pleasant memories of Summer 1977. I was privileged to accompany Pacific Director Peter Driessen, then VE7BBQ (now VE7AB) to the Annual General Meeting after which we motored down to Toronto for the ARRL National Convention.

I was the second person to present money (then a mere \$100) after the meeting adjourned, and my Charter Life Member certificate, signed by then-president John Henry VE3DNM and dated Dec. 12, 1977, still hangs on the wall of my radio room.

There's been a lot of traffic pass through the airwaves since then, and a lot of changes, not the least of which is my call, as I am now VE7YJ, which brings me to the point of this letter—the list of Charter Life Members in John's article perpetuates a mistake that lasted for a long time, in that I am listed as VE7AXG, when in fact I was VE7AZG. It took a long time to get that sorted out in the membership records of the time and here it is back again. Ain't computers wonderful?

Anyway, I still enjoy *The Canadian Amateur* and the little hamming I get to do these days (the highlight of this week was working U2MIR aboard the Mir space station) and I'm looking forward to many more years of ham radio pleasure.

I wish to extend condolences to the family and friends of Jack Ravenscroft VE3SR, whom I had the pleasure of contacting during an attempt by him to send a message to his daughter in Victoria. This was back in April, shortly after he was allowed to return to the air. I hope he managed to enjoy his last few months on the air, even as restricted as they were.

Dave Bennett VE7YJ

VE3AAT'S PROPOSALS

May I support VE3AAT's restructuring proposals as published in October *The Canadian Amateur*? They are more realistic than the DOC suggestions.

But, I protest the labels attached to the various classes of certificates, by the Department, and by VE3AAT, which are in reverse to the world order of things. In almost all countries, 'A' is the highest class of licence, and 'B', 'C' and 'D' are lower classes of operator. Almost everywhere 'A' stands for 'Advanced'. Also, in eggs, meat and produce, 'A' is the highest grade.

Roy Parrett VE7TG

SILENT KEYS

VE7CZI— Doug Heritage passed away in hospital Dec. 17, 1988, aged 84. An avid Amateur radio operator, he was a long-time member of the British Columbia FM Communications Society and the Burnaby Senior Citizens Amateur Radio Club. Doug had worked for B.C. Hydro for over 50 years, beginning at age 13.

Doug is survived by his wife, Florrie, two sons, Mike (VE7CLE) and Bill, four grandchildren and his sister, Mrs. Grace Shorter. Funeral services were held Dec. 21 in Burnaby, B.C. and were attended by many of Doug's fellow Amateurs.

VE5MG— Dave Glass was born in Langenburg, Sask., and received his early education there. He received his ham licence in 1948.

He was a self-taught radio technician and engineer. He worked as an engineer for Radio CJGX in Yorkton then moved to Moose Jaw to work for Armed Forces Radio.

In 1957, he moved to Saskatoon to work in the Physics Department of the University of Saskatchewan, and Sed Systems Space Engineering Division until his retirement. Dave was very well liked and respected by all who knew him. Dave passed away on May 21, 1988.

VE7KU— Les Hammer became a Silent Key on March 4, 1988. Les received his ticket in 1934. He served as postmaster for 35 years, and was Mayor of Port Alberni from 1964 to 1968, through the amalgamation of the cities of Alberni and Port Alberni. He was also very active in Emergency Preparedness, serving as Emergency Co-ordinator for many years. He received the Order of Canada in 1984, and held life memberships in the Navy League of Canada, the Chamber of Commerce, Vancouver Island Tourist Bureau, and Arrowsmith Amateur Radio Club.

As a memorial to Les, his call VE7KU is now assigned to the Arrowsmith ARC and is in use on the Mount Arrowsmith 147.24 repeater, formerly VE7RAC.

LETTERS TO THE EDITOR

All signed letters to the Editor are eligible to be printed, space permitting. The Editorial staff reserves the right to omit libelous and slanderous material and make spelling and grammatical corrections. Please make an effort to type, print or write very neatly. Thank you... Editor.

Tracking the Soviet Space Station MIR

BY DON MOMAN VE6JY

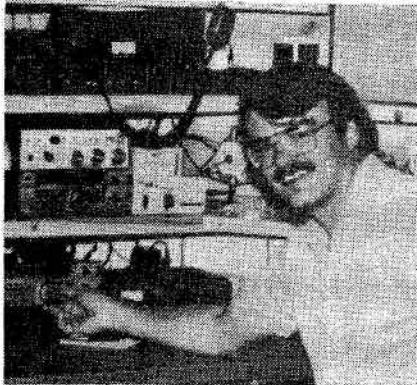
At 0748 UTC, Nov. 15, the quiet of the radio room was broken by a distinctly accented voice saying, "I am U2MIR. It is the Soviet Space Station MIR." The 2 metre transceiver was tuned to 145.555 MHz, where I had recently finished a chat with Ray Nadeau VE6SF. I quickly called U2MIR and he repeated my call several times but the signal was fading fast. Since I had no idea where his position was, I wasn't able to track him with my rotatable 14 element beam.

Ninety minutes later, on his next orbit, he came into range at about 0920 UTC with an excellent signal. He was calling CQ and getting no answers, so I was fortunate enough to have a nice long chat with him. He asked me what I knew about his station, and he mentioned that they had been in orbit for 11 months. He explained that he couldn't speak English very well and asked if I spoke Russian. When I answered in the negative, he asked whether I was going to learn it! I asked him what part of the continent he was over at the moment but he replied that he couldn't understand my question.

By then he was rapidly approaching the limits of my radio horizon so we passed the usual farewell messages. I heard him several more times that morning, calling long CQs and getting no replies. I worked him again the next night using our Canadian International DX Club call of VE6SWL.

U2MIR has been very active from about 0500 to 1200 UTC most days, although his schedule may not allow him to operate Amateur radio on some orbits. According to a report on Radio Netherlands 'Media Network' their sleep schedule is from 2100 to 0500 UTC. I'd estimate that he has been heard on nearly half of his orbits that pass within range, during the above time period. I've contacted him several other times but the channel is rather crowded so 'contacts' are limited to his repeating your callsign and possibly wishing you '73'.

His signal is quite strong, easily heard on just a handheld. Bruce Atchison VE6XTC contacted U2MIR with a 2M handheld and a broken 5/8-wave telescopic whip antenna! Several others, including VE6BPI and VE6ARJ, have also worked him on a handheld with an external groundplane antenna.



Don Moman VE6JY

I always make it a practice to have a tape recorder with fresh tape at the ready, so I was able to record my contacts, as well as those of many other stations. On tape I have contacts recorded between U2MIR and the following: KB6XY, VE6SF, VE7ARS, VE6ANY, VE6BMK, VE6LQ, VE7DNM, VE6VM, KEOCF, VE7FYB, VE7GDH, VE6BJH, VE7AV, VE7EME, VE6BOS, VE7TT, VE5FN, VE6PC, VE7HZA, VE6BPI, VE6ADI, VE6TAR, VE6XTC, N6LQB, VE7BGJ, VE7VI, VE7ADF, VE7GFT, VE6BRA, VE6CE, VE6BOE, VE6ARJ and VE6TE.

If any of you in the above list need more proof to convince the local chaps at the Saturday morning coffee session that you actually worked U2MIR, a blank tape and return postage will get you the evidence! My address is 61-52152 RRd 210, Sherwood Park, Alta. T8G 1A5.

A few facts, as I know them to be at this time: the Soviet space station MIR orbits the earth every 91 minutes, usually at a height near 340 km. During some of the orbits a beacon and telemetry signal can be heard on 19954 kHz. I can't say for sure that this beacon comes from MIR but it does fade in and out close to the computer predicted paths. Since it is on HF it must get an occasional boost from propagation as it has been heard at times when the space station is well below our horizon. It seems to come in very well when the MIR station is located over our antipode, somewhere in the Indian Ocean.

My experience has been that the beacon isn't transmitting when ham radio operations are taking place. He has been heard operating using normal

FM mode emissions using three frequencies in the two metre ham band. The primary frequency is 145.550 MHz with some operation taking place on 145.525 or 145.575 MHz. I understand that over Europe he operates on 145.500. Latest information indicates he has been heard also over Europe using 145.400 and 144.400 MHz.

As the space station approaches, the Doppler shift due to his speed will cause the apparent frequency to move up by as much as 3.5 kHz, dropping to zero as he passes over you, and then dropping to -3.5 kHz as he moves away. On FM this shift isn't enough to worry about, as most FM receivers are quite wide. If you have a centre tuning indicator on your FM receiver/transceiver this doppler shift can easily be observed and it will provide a useful indication of the relative motion of the space station with respect to your location.

There are a number of public domain satellite tracking programs available that, when given the proper orbital data, will predict all the parameters of his orbits with excellent accuracy. The space station is in a rather low earth orbit, and with the various docking of other craft, etc., the orbit may change. Over a few days, this can throw the predictions off enough to miss the short nine minute passes.

Latest orbital data is available from NASA or AMSAT by mail, but to keep up with the latest, tune to 14282 kHz Sundays at 1800 UTC for the pre-AMSAT net warmup and 1900 for the official start. From the net, QSL route is via UW3AX, B. Stephanov, P.O. Box 679, 107207, Moscow, U.S.S.R.

According to a report on Radio Netherlands Media Network of Nov. 18, operation from MIR should be a continuing affair, with subsequent operations to use the calls U3MIR, U4MIR, etc. Since Nov. 28 operation from the space station has been very limited, likely because of the increased workload during and after the docking procedure with the transport shuttle.

A considerable amount of publicity has been the result of being one of the first Amateurs to work U2MIR. Local radio stations in Edmonton, CFRN and CHQT have had news items and interviews with me. These were followed by a call from CBC Toronto with a

Continued on next page ▶

Fellow Hams honour Steve Pocock VE7OF

BY LES SAUL VE7GBT

The huge gold-coloured disc reads: "The Wrong Button Club Order of Merit to Steve Pocock, Codemaster, for helping so many people join the ham fraternity— The Lucky 13 Group." The bogus Olympic-style medal was presented at a luncheon in North Vancouver in the Fall by Ric Nicholls VE7GCN, on behalf of the 225 hams who, from time to time, check into the code practice net which convenes daily throughout the year at 1700 UTC on 2.744 MHz.

The 'Lucky 13 Group' refers to the minimum number of check-ins. As Ric pointed out in his presentation, the medallion represents the feeling of warmth and appreciation felt by so many Radio Amateurs for VE7OF.

Though he is known as the Old Fox to most area hams, Old Friend would be more appropriate for a man who has spent most of his 52 years as a licensed radio Amateur helping others get their ticket— particularly the handicapped. Now that he is battling the effects of a stroke which almost spelled 'finis' to his radio activities, Steve Pocock VE7OF continues to keep active in the promotion of CW capability. In the process, he is recovering his manual dexterity on the hand key as Wrong Button Club Codemaster. It was with wry humor that Steve coined that name in recognition of his fumbling attempts to once again master his ham radio equipment during the early days of his recovery.

Steve estimates that over the years he has helped close to 125 people become hams. Back in 1969 he was working with a sightless student who couldn't seem to get the code. But Steve was determined. Putting his own licence on the line with the Department of Communications, he persuaded the Radio Inspector to allow the student, who only lacked CW for his ticket, to come onto the air daily for concentrated practice. The student got his licence. Recognizing an opportunity, many of Steve's night school graduates checked in, eager for on-air experience. Thus, the code practice net was born with Steve religiously pounding out a paragraph of plain language text and 15 call signs, while the students responded with CW check-in procedures and a report on their progress.

Now, 20 years later the program continues. As operators become more proficient and confident at the key, they take their turn at sending the lesson and



Steve Pocock VE7OF proudly displays the Medal of Merit presented to him by members of the Wrong Button Club to mark 52 years in the service of Amateur Radio.

taking the check-ins. The result is a variety of 'lists' and texts and an ever-growing group of brass pounders, not all of them new hams. Many of the current check-ins are by long-established Amateurs with advanced tickets, re-discovering the satisfaction of re-acquiring a skill long dormant. From all over the province they report in as conditions permit, building on friendships from year to year.

Steve credits this group with providing the main contribution to his recovery. To the exasperation of the nurses, they would crowd into his hospital ward to cheer him up and encourage his return to the key. Their patience during his initial hesitant efforts gave him the confidence to persevere. His own indomitable will did the rest.

Today he still tires easily; a cane helps him negotiate streets and stairs; occasionally his signal wobbles— but, the enthusiasm of half a century of hamming is there in abundance, infecting and encouraging a new generation of CW operators who carry on the traditions of the Wrong Button Club. ■

► TUNING IN (cont'd)

request to be interviewed on *As it Happens*, which is heard around the world on shortwave as well as in the U.S.A. on National Public Radio and of course, across Canada on the CBC network. The local *Sherwood Park News* did a feature article and the Saturday, Nov. 26 *Calgary Herald* put the story on page 1 with photo on page 2. CKO-FM just called for an interview as I was typing this.

CBC television did a feature as well and I've been talking with producers from both the *CBC Midday* and *Journal Diary* programs. I didn't overemphasize the point that it was just pure coincidence that I happened to hear U2MIR that first night. I hadn't even thought about listening for him yet as the info I heard said he wouldn't be operating until the following weekend. Just goes to show that if you listen enough, once in a while you're going to be in the right place at the right time! This is also one of the few times Amateur radio gets into the happy side of the news without the story being related to earthquakes, floods, tornadoes or natural disasters. ■

SOCIETY OF WIRELESS PIONEERS GETS NEW PRESIDENT

The Board of Governors of the Society of Wireless Pioneers has named William C. Willmot K4TF of Merritt Island, Florida to be the Society's new President. The Society of Wireless Pioneers is an international organization of current and former professional radio (wireless) telegraphers.

Willmot has been active in wireless communications since his high school days. During World War II, he served as an Army radio operator in the Pacific, then as a communications officer in the New Jersey National Guard and later in the U.S. Coast Guard Auxiliary. While working for NASA, he spent four years as emergency radio officer at the John F. Kennedy Space Centre in Florida.

He retired from NASA's Kennedy Space Centre in 1979 after spending 35 years in government service. He spent three years in retirement before taking on a new career with Pan Am World Services. He is currently working at the Cape Canaveral Air Force Station in support of the U.S. Air Force's Eastern Space and Missile Centre.

Willmot is a member of several other radio organizations including the Radio Club of America where he was elevated to Fellow status in 1987. He is also active in the Army MARS program as a radio operator.

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**For more information write CANADIAN AMATEUR RADIO FEDERATION,
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"On Top of Big Nickel"



Another polar expedition? No, just a very wet and cold trenching crew: Claude VE3CPD, Cork VE3BST, Verner VE3FPS, Dirk VE3VNX, Barry VE3ZLB and Don VE3MOW.

BY BARRY MERCER VE3ZLB

The November '88 issue of *The Canadian Amateur* included a story written by VE6BGL called 'So You Want to Set Up A Repeater'. Well, here's a similar yarn about the work that the Sudbury Amateur Radio Club had to go through to re-establish their club repeater. You see, as far as 1988 is concerned, their repeater suffered a prolonged period of restricted usefulness. Here is some background on the whole story.

Back in September of 1987, SARC was warned that its two metre system would soon have to be removed from its Cable Television tower host. When that eventuality came to pass, our good friends at Science North, a local science centre/tourist attraction, came to our aid. They permitted us to relocate our equipment to the site of the world-famous Big Nickel. The trouble was that the new location and its set-up was less than satisfactory, and so was the repeater's performance.

Over the course of the winter, VE3SRG was used less and less. Finally, most club operations switched to a repeater operated by the local Vocational College (Cambrian, VE3JPF at 146.7 -600). It was about this time that the club decided it was time to replace the aging gear and to look for a better repeater location.

Well, to make a long story a little shorter, a list of repeater equipment was drawn up, and a plan to finance the scheme was plotted. This included applying for a Wintario Grant.

According to the Public Relations material provided by the Ontario Ministry of Tourism and Recreation, Amateur Radio seemed to fit their criteria like a 'hand-in-a-glove'. We presented the Ministry with the very first application for the 1988/89 season, and wouldn't you know it, it was accepted and late summer saw a cheque for almost \$2500 arrive!

Adding an equal amount of hard-earned club funds, SARC then went on a shopping spree. We purchased

radios, duplexers, a controller and an antenna system. While we were doing this, we also approached Science North to ask if we might permanently locate a tower at the Big Nickel. A little reluctant at first, they said if Communications Canada said okay, then go ahead. Well, Reino Martin VE3AC did most of the footwork on that, and as it turns out, it was that 'OK' from C.C. that really slowed the project down. It seemed we were waiting forever, but when we finally did hear, the news was good. We could go ahead with the installation without the added burden of lighting it. All we would have to do is paint it. (That's another story!)

As Murphy's Law would have it, it was November when all of the many details finally came together. As you may or may not know, there are one or two rocks in the Sudbury area, and the Big Nickel site provided one of the biggest on the go. Here's where Sudbury's 100+ years of Mining Heritage came into play.

On a cool, clear and windy 3rd of

November, Jim Plummer VE3NNC, Glynn Clarke VE3PVE and Pete Schumacher VE3DXH secured a drill, bits and miscellaneous other material and installed the base of the antenna. Murphy stayed away from the site that day and the drilling operation went smoothly. The base of our tower is now supported by 1.2 metre (4 ft.) lengths of 1.9 cm (3/4 in.) threaded re-bar. All three of these long bolts are held in place with a 'super glue' the Mining Industry calls Rock Lock. It would take thousands of tons of vertical pull before the bolts would come out. In all likelihood, the rock would give first.

A couple of days later, the first attempt at installing the tower was made. A small number of hams showed up, only to be greeted by high winds and torrential rain. The crew persevered long enough to dig a trench which would contain the 100 metres (360) feet of hard line. Even that took a couple of hours to complete. In the meantime, other hams came to view the club 'crazies', and to offer encouragement. The trench completed, we retired to a local Doughnut Emporium. It was decided that we would make another attempt on the next day.

To say the skies were still gray the next morning is an understatement. However, it wasn't raining or snowing, so what more could an Amateur ask for? Claude Dupuis VE3CPD and I showed up at the site that Sunday morning, well-equipped for a tower climbing expedition. That is precisely what we did for the next three hours. Despite gusty winds and cold temperatures, the erection of the tower went smoothly.

Many thanks to the two terrific

ground crews. One passed sections up the tower, while the other touched up the trenching job of the previous day. The crowning glory, after the installation of the antenna, was the confirmation of the site's potential! Reino connected his handheld to a section of the feed line, and with very little output, a full quieting report was received from a station a number of kilometres away!

Now SARC members are enjoying the fruits of the labour of quite a few of the club members. How much labour, you ask? One hell of a lot. For instance, the removal of the tower we are now using took 80 man-hours of work; painting the thing took three members two whole

working days; there was the time involved trenching for the feedline and the erection of the tower. Before, during and after all this, there was the preparation of the radio gear.

Dedicated Amateurs like Reino Martin and Frank Horsefall VE3FJH did not only the lion's share of the work, but they also contributed their time to ensuring that the whole system is the best that it can be. Others like Glynn Clarke VE3PVE and Lee Carpenter VE3PVM also gave freely of their time.

Now every time a member or visitor keys that repeater, well over \$5,000 worth of equipment is going to go to work. We hope you'll enjoy the system for many years to come! ■



Top: Climbing crew Claude Dupuis VE3CPD, Verner Scherzinger VE3FPS and Barry Mercer VE3ZLB. Above: Part of the crew for the tower erection. Right: Reino VE3AC works on repeater radios at home.

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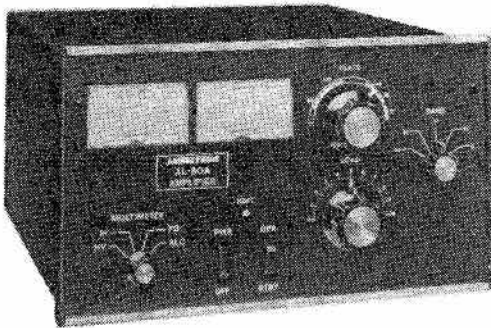


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VE3VRI

VE3VRI— The Royal Canadians re-unite



VE3GSO operating VE3VRI.

BY DICK MOORE VE3LRB

The 105th year of the Royal Canadian Regiment was planned as a reunion at the home station, Wolseley Barracks, London. It was scheduled for July 1, 2 and 3, and preparations began months in advance. Following a London United Services Institute meeting in February 1988, I was socializing with Lt. Col. Dan Bonner, one of the planners, and I suggested the possibility of a special event Amateur radio station in conjunction with the activities. He was enthusiastic about the idea and referred me to two other planners, Majors Conyers and Stott, who were equally receptive.

Early in April, the London DOC office issued 'The Regiment' with the call VE3VRI, with myself as sponsor, as president of the London Amateur Radio Club, who would operate the station. Planning proceeded smoothly, with lots of club hams volunteering to operate in

shifts over the holiday weekend.

For accommodation, an office was turned over to us in Beaver Hall, the main indoor facility and a mix of transceivers, Kenwood, Yaesu and Ten-Tec made their appearance, with the usual assortment of accoutrements. We had lots of furniture and fresh air and antennas were mounted onto roofs, lamp standards and tent poles. We had dipoles for 80, 40 and 20 and also a 5 band trap vertical for the Argonaut QRP rig.

Being located near several refreshment tents and having a free public telephone outside the door, there was no lack of visitors and we spent nearly as much time explaining what was going on as we did operating. We made a few phone patches and let some visitors operate a bit— ham radio received lots of public exposure during those three days.

The station managed about 200

contacts and a special QSL card was produced for all who requested one. QSOs included four other special event stations and several on packet radio. The following Amateurs gave of their time and talent: VE3's KGL, IAE, GAM, NRJ, GSO, LUV, IBV, ST, LSE, ZAV, PZR, ZK and LRB and we were active for about 36 hours.

Our only perceived RFI problem was with the sound system for the dance next door, but it was quickly solved and operation on Saturday evening was accompanied by the tunes of the Guy Lombardo Orchestra— Live!

The degree of acceptance and co-operation provided by the Royal Canadian Regiment and Canadian Forces Base London was most gratifying and we hope we added, in some small way, to the weekend's festivities. It was a pleasure to be a part of the reunion and we hope to again offer our services. ■

Tower Rezoning calls for vigilance

BY RALPH CAMERON
VE3BBM
PLANNING ISSUES

Most Amateurs are unaware that possible zoning bylaw changes could occur in their municipality which could significantly restrict the height of their antenna support structures. In at least two cases recently, Amateurs have foreseen the possibility that local bylaws, if passed, would be restrictive.

In Gloucester, Ont., near Ottawa, VE3EBI made representation to the Council and was able to question the origin of the proposed bylaw. With some explanation from Dan, the Council was able to make an informed decision and the bylaw motion died. This is fine, if you know beforehand that such a bylaw is being proposed. Be vigilant!

ZONING PROPOSALS

Zoning proposals may take several forms. A 'Planning Issue, Info Sheet #4' issued by the Ministry of Municipal Affairs last June details some of the concerns facing municipal regulators. Some of these have, of course, been addressed by the *Townsend Report*. We learned from the Report that satellite dishes are not subject to Federal licence. Transmission towers, on the other hand, are governed by regulations pursuant to the Radio Act. We'll return to this Municipal directive later.

ELGIN AMATEUR RADIO CLUB

This club learned that the City of St. Thomas was planning to introduce and review a new zoning bylaw in 1987. Fortunately the Elgin Amateur Radio Club was made aware that the proposed bylaw contained height restrictions and yard restrictions. The Club's objections were registered during the preliminary hearing. The approach was made to the City Council of the concern, and referred to the jurisdiction of federally licensed Amateur Radio towers.

CITY ACTION

The City Council amended their proposal around the Club's recommendation and the new bylaw was approved with the height of Federally licensed stations being exempted. A victory for Federally licensed stations.

EXAMPLES FROM THE PLANNING ISSUE INFO SHEET, JUNE 4, 1988

1. Municipal Authority to Regulate 'Dishes'

The Municipal authority to regulate the height, bulk, location, spacing and type of construction of structures is contained in the zoning power in Section 34(1) of the *Planning Act 1983*.

The legislative competence of municipalities has been questioned because radiocommunications is exclusively in the Federal domain. Antennas are governed by regulations pursuant to the *Radio Act*. However, the Federal Department of Communications has stated that: "...a properly framed municipal bylaw dealing with local zoning and relating only incidentally to radiocommunications may co-exist with federal legislation provided the bylaw *neither prohibits nor unduly restricts the conduct of radio services or the operation of Federally licensed radio stations*."

2. Municipal Authority to Prohibit 'Dishes'

Any attempt to prohibit the erection of a satellite dish is likely to be successfully challenged as an infringement on Federal jurisdiction. This would be equally true if the probation period were limited to residential zones. Bear in mind that the operative capacity of a satellite dish is not related to height per se and so may be regulated for particular aesthetic purposes.

3. Examples of Zoning Provisions

i) City of North York, Bylaw Number 29467— TV dishes are permitted in all zones. In certain cases they may not exceed a height of 16.6 metres. (partial bylaw);

ii) City of Sarnia, Bylaw Number 8654— Dish is classed as an accessory building and is not to be located in side yards or between the street line and the front wall of the main building. (partial bylaw);

iii) City of Niagara Falls, Bylaw 82-284— specifically TV dish antennas are restricted to 1.0 metre diameter when circular. They include all mounts and members. Erection is prohibited in front yards, exterior side yards and interior side yards of any lot zoned residential, DH or R. (partial bylaw);

iv) Town of Whitchurch-Stouffville Bylaw 87-34— No dishes to be located

in front or minimum side yards so that the top of the dish is higher than the main building. (partial bylaw);

v) Township of King, Bylaw 86-141— Restrictions apply specifically to satellite dishes in Urban, Residential Hamlet or Residential Estate zones less than 0.8 hectares. Dishes may not exceed 4.5 metres in height.

MUNICIPAL BOARDS AND LEGAL DECISIONS

Township of Wilmot

A particular case related to antennas, but in this case the antenna was a TV dish antenna, occurred in the Township of Wilmot. It seems neighbours complained about a resident's dish in his front yard. The resident applied for a minor variance and was refused.

An appeal was launched and in subsequent discussion there appeared to be unshared agreement on what constituted the 'building line' and whether or not the antenna was to be considered a building.

The township then tried to exclude the dish by saying it contravened a bylaw which prohibited 'obstructions'. Subsequent photographic evidence revealed that many neighbourhood shrubs and trees to some degree 'obstructed', so the board ruled that no variance was needed to allow the TV dish antenna to remain.

Source: Ontario Municipal Board Reports, *Kuhr v Township of Wilmot*, 15 O.M.B.R.451.

Satellite Dish— Hamilton Front Yard

In a similar action in Hamilton, the Board ruled that the application for a minor variance from the bylaw was not a minor variance because the community was a "contemporary planned community wherein high standards of residential amenities are the norm."

The neighbours complaining successfully argued that there are no wires or cables in the area. The dish was a 10-foot one mounted on a 5-foot pole. It was deemed to be out of character with the community. The official plan for the community called for compatibility within residential districts. The dish was ruled to be a visual intrusion upon the character of the streetscape and would conflict with the intent.

The requested variance was deemed

► VIGILANCE (cont'd)

not minor and the appeal was dismissed.

Source: Decision of the Ontario Municipal Board, Gauthier, City of Hamilton C. of A., File V 860426.

St. Lambert P.Q.— Aesthetically Motivated Restrictions

A homeowner claimed that article 2.7.6 of Bylaw 1152 of the Town of St. Lambert was not authorized and was an invasion of Federal jurisdiction. The homeowner was accused of having an illegal TV dish attached to the roof of his house.

Subsequent litigation found that the Town was empowered to restrict such antennas as a means of controlling the aesthetic purpose of such structures. The homeowner was found guilty and the decision was upheld by the Quebec Supreme Court.

Source: Decision of the Cour Municipale, Ville de Saint Lambert, Saint Lambert v. Claude St. Jean, Files 5-3773 to 5-3777.

CONCLUSIONS

The foregoing cases refer to actual events relating to residential bylaws and how they have been interpreted by various municipalities. It should be

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VE3EMD, SOON A PART OF THE CANADIAN AMATEUR.

PACKET NETWORK GROWS

Two new digipeaters are in the works in Israel— one in Mitzpe Ramon on two metres to expand the network further south, and the other one on UHF in the centre of the country to let the Novices into the packet scene. To remind our readers, Novices now have expanded privileges, being able to use all modes on 7 cm with up to 25 watts output.

Hagal International,
Israel ARC

evident that Amateurs will need to keep an open ear for possible changes to local bylaws and ordinances lest tower height restrictions are passed before any objection can be raised. It would seem the Elgin Amateur Radio Club has adopted the preferred approach and they are to be commended for it. Thanks to Ray Else VE3MGC of the City of St.

Thomas for most of the above information.

The City of St. Thomas zoning provisions are shown as examples of what can be expected in residential areas. Try asking your own planning department what they have on the books for the coming year. Be like the Boy Scouts— Prepared! ■

Jamboree on the air in Lunenburg County



Martin VE1AUZ discusses ham radio with Theo Sloat of the First Maitland Scouts.

Jamboree On The Air began Friday morning Oct. 14, 1988. Martin Thomas VE1AUZ and I drove out to the Scout camp located at Lake Mush-A-Mush to set up equipment for the weekend.

This activity has been held before in our county with good success. This would be the first time however, that we have attempted a Jamboree combined with other events.

The idea behind this 'combination' was that, in the past, when Scouts had gathered at the home of an Amateur, some Scouts were very interested in radio, some were mildly interested, and some were not interested at all. By setting up in a location where there were other events taking place, the Scouts who were interested could spend whatever time they had by the radios and those who weren't could be involved in the other activities. This worked well and will be the game plan for future jamborees.

Martin AUZ was the only ham who could be there for the duration. The

enthusiasm he showed with the Scouts was something to admire. He managed only a few hours of sleep and, from what we gather, ate only one submarine sandwich during the entire event. Other hams in attendance off and on during the event were Bruce VCJ, John CZC, Peter BZI and of course, our resident photographers (historians?) Bun AGD and Roxanne VCC.

Our Scouts and leaders had opportunities to talk to other Scouts and leaders all over the world. To help ease mike shyness, many people had written questions down in advance.

By the end of the weekend, a total of 38 contacts had been made with other Scout groups. Highlights were contacts made with the Commissioner of Scouts in Bridgetown, Barbados and our last contact in the event, the International Scout Headquarters in Geneva.

Thanks go out to Jack Hughes for his excellent hospitality and to all the hams who participated. ■

— Bob Comeau VE1ARN

LAST CHANCE! - The Rush is On!

CARF CALLSIGN & ADDRESS BOOK

October 1988 Communications Canada Call/Address Listings

CARF's Ottawa-based 'Government Relations Liaison Committee' has been successful in convincing Communications Canada to release the much-touted Ham Call Tapes. With President John Iliffe co-ordinating the operation, CARF has published the complete listing, which we are now in a position to offer to members for \$13.95. The **CARF CALLSIGN & ADDRESS BOOK** features easy-to-read pages, attractively bound similar to our Study Guides.

GET YOURS FREE!

Any current member of CARF who, using the attached sheet, successfully recruits **THREE NEW OR EXPIRED** members for CARF, will receive his or her **CARF CALLSIGN AND ADDRESS BOOK, ABSOLUTELY FREE!** The new member's **CARF CALLSIGN & ADDRESS BOOK** may then be purchased for the low price of \$13.95 each.

*Pool your resources - Save Money - Save Time -
LAST CHANCE! - ORDER TODAY!*

CARF CALLSIGN & ADDRESS BOOKS are also available from the following dealers:
Atlantic Ham Radio, Downsview, Ont.; Canatron, Ottawa, Ont.; Canatron, Niagara Falls, Ont.

Member's Name, Call, Membership Number _____

New Members' Information

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Address _____

City/Postal Code _____

Name/Call _____

Address _____

City/Postal Code _____

Name/Call _____

Address _____

City/Postal Code _____

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CSA Standards Activity Report

BY IVOR NIXON VE3IHN

This is a follow-up to the initial report in May 1988 *The Canadian Amateur* on the subject of the development of standards to further the cause of electromagnetic compatibility of electronic equipment, which in the fullness of time could lead to an EM-compatible world in which all devices could live side-by-side in perfect harmony.

While holding your breath waiting for this utopia to arrive could be counter-productive, there is increasing worldwide recognition that the problem is growing worse exponentially and that the time for action is now.

As mentioned earlier, impetus has been provided by the establishment of 1992 as a target date for implementation of the EMC standards within the European Economic Community, and the handwriting on the wall is readable in all countries hopeful of supplying that important market.

C108.8. TECHNICAL COMMITTEE ON INFORMATION PROCESSING EQUIPMENT

(including electronic office machines, word processors, computers, calculators and the like).

This TC met in Toronto on Sept. 20, 1988, after being more or less dormant for three years. Indicative of the new emphasis is the fact that the next meeting will be held on Jan. 18, 1989. A name change to 'TC on Information Technology Equipment' was proposed, to harmonize with the parallel European working group.

The current standard was issued in 1983 and covers conducted and radiated radio noise emissions. (Another parallel specification, C108.8.1, covers immunity to external interference sources, but is still in draft form). The DOC representative announced that regulations were published in *Canada Gazette* Part II on Sept. 15, which mandate compliance with CSA C108.8-M1983 for all equipment manufactured in or imported into Canada on and after Feb. 1, 1989. In general, the Canadian standards are consistent with the U.S. FCC Part 15, subpart J, which means (a) that offshore manufacturers can no longer ship substandard equipment into Canada which has been rejected by the FCC, and (b) that they can market identical products in both countries.

The Steering Committee on EMC, which is convened annually, met in Ottawa on Nov. 16. Its function is to

establish and organize subordinate Technical Committees, to appoint Chairmen and Vice-Chairmen, to approve their terms of reference, to plan, co-ordinate and monitor the TCs' standards-writing activities, and to liaise with other relevant national and international bodies such as ANSI, BSI, IEC, ISO and CCITT. Specifically, it functions as the Canadian Subcommittee on IEC/CISPR and IEC/AEC in Europe.

The Steering Committee among other things supervises the make-up of the Technical Committees as far as representation from producer, user, general interest and regulatory authority groups are concerned. A discussion took place as to whether radio Amateurs should be classified as 'general interest' (in other words, interested observers with varying degrees of involvement), or as 'users' (i.e., those adversely affected by lack of EMC).

It was pointed out that hams often, if not always, fall into both categories, since they suffer from disturbances emanating from such sources as oil burners, computers and leaky cable systems but also as the source of disturbances affecting users of television and radio receivers, microwave ovens, stereo systems, thermostats, etc.

The Committee agrees that each technical committee would have to establish ground rules for participation based on the various concerns outlined. As both CARF and CRRL are represented on C108.8 (above) and on C108.9 (Domestic Communications and Entertainment Products), we will have to establish our unique terms of interest in each forum as events unfold.

In other matters arising from the European deliberations, it is interesting to note that certain definitions have been proposed leading to standardization of meanings between the various countries and languages. Included are the following:

Electromagnetic Interference (EMI). The degradation of the performance of a device, equipment or system, caused by an electromagnetic disturbance.

Electromagnetic Disturbance. Any electromagnetic phenomenon which may degrade the performance of a device, equipment or system, or adversely affect living or inert matter.

EM environment. The totality of electromagnetic phenomena existing at a given location.

Electromagnetic compatibility. The ability of a device, equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable disturbances to anything in that environment.

Emission. The phenomenon by which electromagnetic energy emanates from a source.

Emission level. The level of a given electromagnetic disturbance emitted from a particular device, equipment or system, measured in a specific way.

Emission limit. The specified maximum emission level of a source of electromagnetic disturbance.

Disturbance level. The level of a given electromagnetic disturbance, measured in a specific way.

Disturbance limit. The maximum permissible disturbance level, as measured in a specific way.

Level (of a quantity). The mean value of a time-varying quantity, evaluated in a specific manner during a specified time interval.

Electromagnetic susceptibility. The inability of a device, equipment or system to perform without degradation in the presence of an electromagnetic disturbance.

Immunity. The ability of a device, equipment or system to perform without degradation in the presence of an EM disturbance.

Degradation. An undesired departure in the operational performance of any device, equipment or system from its intended performance.

Immunity level. The maximum level of a given EM disturbance incident in a specified way on a particular device, equipment or system so as to cause no degradation.

Susceptibility level. The minimum level of a given EM disturbance incident in a specified way on a particular device, equipment or system so as to cause degradation.

Susceptibility limit. The minimum required susceptibility level.

EM compatibility level. A specified EM disturbance level, to which there is a corresponding agreed probability that devices, equipments or systems are electromagnetically compatible at the locations where this level is specified.

Note that if the above are adhered to, we would no longer refer to an 'interfering signal' but to a 'disturbing signal'. It may take a bit of getting used to! (The author of these definitions is J.J. Goedbloed of Philips Research Labs in Eindhoven, The Netherlands). ■

PRODUCT REVIEWS

Fundamentals of Ionospheric Propagation

BY MOE LYNN VEGBLY

PRODUCT REVIEW:

MINIPROP™

The program called MINIPROP™ V2.0 in CP/M is user supported (or share-ware) software. This means if you download it from a bulletin board or copy it from someone who already has it, and find the program useful, just send a \$25 contribution to the author of the program, Shel Shallon W6EL, 11058 Queensland St., Los Angeles, CA. 90034-3029 U.S.A.

Written by a ham, it is easy to use and can certainly be called 'user friendly', particularly when there are almost 34 pages of extra information available on the disk. The fact that it is menu driven should be attractive to most users.

The 34 pages of documentation include such headings as 1. Fundamentals of Ionospheric Propagation, 2. Starting MINIPROP, 3. The Master Menu, 4. Running a MINIPROP Prediction, 5. DX Compass, 6. Changing Prediction Parameters, 7. MINIPROP Utilities, 8. Create or Modify Terminal A Default (your station), 9. Display Entries in MINIPROP Atlas, 10. Add, Modify or Delete entry in MINIPROP Atlas, 11. Display MINIPROP Documentation on Screen, 12. Send MINIPROP Docs to Printer, 13. Print Table of Great-Circle Bearings, 14. Convert MINIPROP V1 Atlas to V2 MP.ATL, 15. References.

Only after a prediction has been run can you fully appreciate the effort must have gone into writing MINIPROP™. More especially, you can select both short and long path predictions that are printed out for every half hour along the proposed path. Sunrise/Sunset times are given for both terminals, as are bearings to and from, path length in km, sunspot number, radiation angle and number of F Hops.

Signal levels above 0.5uV are given where appropriate for each half hour on bands 3.6, 7.1, 14.1, 21.2 and 28.3 MHz. Your scribe found the program so friendly that it was not necessary to print out the documentation before running a prediction.

Not just for the QRP enthusiast, but typically useful, is the DX Compass, a screen display showing the highest FMUF expected on 12 bearings every 30° from your terminal at any specified time of day.

Shel may have gone overboard supplying five bands of signal information for every half hour and the print out being too precise by giving

beam headings to the nearest 0.1°. Word has come in from his beta-tester in Washington that V3.0 is in the testing stage, soon to be released and much improved, if that is possible.

As a means of presenting what might be a short course in ionospheric propagation and to give an idea of what to expect, the first section of the documentation is reprinted here.

FUNDAMENTALS OF IONOSPHERIC PROPAGATION

The ionosphere is that region of the earth's atmosphere in which free ions and electrons exist in sufficient abundance to affect the properties of electromagnetic waves that are propagated within and through it. Ions are produced in the atmosphere partly by cosmic rays but mostly by solar radiation. The latter includes ultraviolet light, x-rays and particle radiation (during storm periods). These radiations are selectively absorbed by the several gaseous constituents of the atmosphere, ion-electron pairs being produced in the process.

For practical purposes, the ionosphere can usually be assumed to extend from about 50 to roughly 2000 km above the earth's surface. The structure of the ionosphere is highly variable, and this variability is imparted onto signals propagated via the ionosphere. The structure of the ionosphere is divided into three vertical regions—D, E and F—which increase in altitude and in electron density.

The D region has an altitude range from 50 to 90 km. The electron density in the region has large diurnal variations highly dependent upon solar zenith angle. The electron density is maximum near local noon, is higher in summer than in winter, and is lowest at night.

The E region spans the altitude range from about 90 to 130 km. The maximum density occurs near 100 km, although this height varies with local time. The diurnal and seasonal variations of electron density are similar to those of the D region. Collisions between electrons and neutral particles, while important in the E region, are not as numerous as in the D region. The E region acts principally as a reflector of HF waves, particularly during the daylight hours.

Embedded within the E region is the so-called sporadic-E layer. This layer is an anomalous ionization layer that assumes different forms—irregular and

patchy, smooth and disklike—and has little direct bearing to solar radiation. The cases of sporadic-E ionization are not fully known. The properties of sporadic-E layer vary substantially with location and are markedly different at equatorial, temperate and high latitudes. 'Short-skip' openings, sometimes on an otherwise dead band, are often a result of one-hop sporadic-E ionization. When sporadic-E ionization is sufficiently widespread, multi-hop propagation is possible. MINIPROP predictions do not include the effects of sporadic-E ionization.

The highest ionospheric region is termed the F region. The lower part of the F region, from 130 to 200 km, is termed the F1 region, and the part above 200 km is termed the F2 region.

The F2 region is the highest ionospheric region, usually has the highest electron density, and is the region of the greatest value in long-distance HF ionospheric propagation. The region exhibits large variability in both time and space in response to neutral winds and electrodynamic drifts in the presence of the earth's magnetic field.

The maximum electron density generally occurs well after noon, sometimes in the evening hours. The height of the maximum ranges from 250 to 350 km at midlatitudes to 350 to 500 km at equatorial latitudes. At midlatitudes, the height of the maximum electron density is higher at night than in the daytime. At equatorial latitudes, the opposite behaviour occurs.

The F1 region, like the E region, is under strong solar control. It reaches a maximum ionization level about one hour after local noon. At night and during the winter, the F1 and F2 regions merge and are termed simply 'F region'.

Electromagnetic waves are refracted when passing through an ionized medium, the refraction increasing with increased electron density and decreasing with increase of frequency. If the refraction is large enough, a wave reaching the ionosphere is bent back toward earth as though it had been reflected, thereby permitting reception of the wave at a large distance from the transmitter. The F2 layer is the most important in this regard because of its height and its high electron density. The maximum earth distance traversed in one F2-layer 'hop' is about 4000 km.

Round-the-world communication can often occur via multiple hops.

If the frequency is too high, the wave is not refracted sufficiently to return to earth. The maximum frequency for which a wave will propagate between two points is called the maximum usable frequency (MUF). Frequencies higher than the existing MUF at any given time are not supported, no matter how much power is used. However, because of the large variability that exists in the electron density of the F2 regions, predicted MUFs are intended to be median values; i.e., the actual MUF will exceed the predicted MUF 50% of the time, and will be less than the predicted FMUF 50% of the time.

The predicted frequency that will be supported only 10% of the time is a frequency higher than the predicted MUF called the highest probable frequency (HPF), but even higher frequencies are possible 10% of the time.

The predicted frequency that will be supported 90% of the time is a frequency lower than the predicted MUF called the optimum traffic frequency (FOT). Curves of predicted HPF, MUF and FOT for several paths appear each month in various radio magazines. In MINIPROP, the predicted F2-layer maximum usable frequency is referred to as FMUF.

Signals on their way to or from the F2 layer must pass through the E region of the ionosphere. The E layer is also capable of 'reflecting' HF signals, and if the E-layer MUF is too high, the signals to or from the F2 layer are blocked—or cut off—by the E layer. In MINIPROP, the E-layer cutoff frequency is referred to as ECOF.

Signals at frequencies below the ECOF will not pass through the E layer. Signals can propagate between two points on earth via the E layer in the same manner as they do via the F2 layer, but the maximum earth distance traversed in one E-layer hop is only about 2000 km, so a significantly greater number of hops is usually required on DX paths. E-layer propagation modes are not predicted by MINIPROP.

The D region of the ionosphere must be traversed by signals on their way to and from the F2 or E layers. Electron densities in the D region are not large enough to cause HF signals to be returned to earth, but the high collision frequency between the electrons and neutral particles in the D region gives rise to absorption of signals passing through it.

The reduction of signal strength can be substantial, particularly in daytime on the lower HF frequencies. Antenna installations that provide low radiation (take-off) angles can minimize the number of hops required between two stations, thereby reducing the number

of passes through the D region and the amount of signal absorption.

Electron density in the ionosphere increases with increased solar activity. Therefore, MUFs and signal absorption both increase as solar activity increases. The Zurich smoothed mean sunspot number has been used extensively as an index of solar activity and the one with which propagation data has been correlated over the years. Therefore, most propagation models require that the user specify the sunspot number to be used in making a prediction.

The 2800 MHz (10.7 cm) solar noise flux is generally considered a more accurate measure of solar activity, but with a smaller base of propagation observations. Since the two indices are highly correlated, either index may be used. MINIPROP allows you to specify either sunspot number or solar flux as a measure of solar activity.

Ionospheric propagation is susceptible to several kinds of short-term disturbances that are usually associated with solar flares. Depending upon the nature of the disturbance, they are called sudden ionospheric disturbances (SID), polar cap absorption events (PCA), or ionospheric storms. These disturbances upset the electron configuration in the ionosphere, and consequently affect propagation.

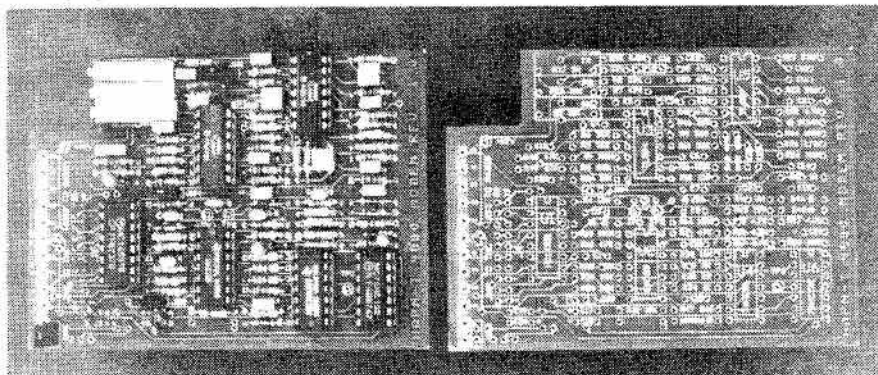
Propagation is also affected by

changes in the earth's magnetic field. The magnetic field is constantly fluctuating, but the fluctuation occurs over much wider limits during magnetic storms that accompany ionospheric storms. Ionospheric and magnetic storms are also often accompanied by visible aurora.

Except for the tendency of these disturbances to recur in synchronism with the 27-day rotation period of the sun, they are difficult for the Amateur (as well as the professional) to predict and to quantify. The severity of magnetic disturbances is indicated by A and K indices that are broadcast by WWV at 18 minutes past each hour. The A index is a daily measure of geomagnetic field activity on a scale of 0 to 400. The K index is a measure, for a 3-hour period, of variation or disturbance in the geomagnetic field on a scale of 0 to 9. In general, MUFs decrease and signal absorption increases as geomagnetic field activity increases, although MUFs sometimes increase in equatorial regions.

Propagation only along great-circle paths is considered in MINIPROP. Backscatter modes and bent-path modes are not considered.

For more information about ionospheric propagation, see the references given at the end of the documentation contained on the MINIPROP™ disk. ■



HAPN-T

HAPN-T, a 4800 baud modem

Hamilton and Area Packet Network (HAPN) has designed a plug-in 4800 baud modem for the TAPR TNC-1 and TNC-2 and many of its clones. The installation of this modem will allow normal packet operation to take place at four times the speed of the standard 1200 baud now commonly in use. Additional speed performance is achieved by a fast-acting modem squelch (about 15 msec).

Many 1200 baud modems require the radio to do the squelching for the audio.

The radio's squelch, which is optimized for voice operation, is often very slow and a major cause of missed packets. The volume control and squelch setting of the radio do not affect the operation of this modem and could be completely turned down if desired.

The modulation is direct FM biphase modulation and does not require a randomizer or synchronization burst. There is no DC component in the

Continued on next page ►

HAPN-T (cont'd)

encoded data making it possible to use regular FM/PM synthesized or crystal controlled voice radios. The required bandwidth is the same as for voice.

Due to the simple hookup to the radio's discriminator and modulator, the distortion normally caused by the mike preamplifier, limiter, emphasis, de-emphasis and receive audio amplifier is avoided and the reliability is generally better than 1200 baud modems using the radio's mike and speaker connections. Voice operation of the radio is not affected with the new interface installed.

A similar modem has been in use with the HAPN-1 plug-in packet adapter for the IBM PCs for several years, with excellent results.

The HAPN-T daughter board plugs into the external modem connector of the TNC (terminal control unit). Its small size, 9.5 x 7 cm (3.75 x 2.75 inches), allows it to be mounted inside almost any TNC. The power for the modem is taken from the +12V inside the TNC.

The modem contains a multiplexer that easily switches between the 4800 HAPN-T and the 1200 baud modem on the TNC mother board. Detailed instructions are included for assembly and installation onto the TAPR TNC-1 and TNC-2 (and true clones, such as MFJs).

The modem is available from HAPN in kit form. The address is: HAPN, Box 4466, Station D, Hamilton, Ont. L8V 4S7.

The cost of the bare board is \$15 U.S. (\$18 Cdn). A parts kit containing the circuit board and components is \$48 U.S. (\$60 Cdn). A 10% discount applies to orders of five or more units. Handling and shipping is \$5 (\$8 for overseas orders).

IBM PC 'Gemradio'

(Editor's Note: Our own columnist Tony Salvadori VE3NXQ of 'Nybles and Bits' offers a very comprehensive package for logging, contests, awards and QSL card mailings. Our thanks to CQ Magazine and Carl Thurber WBFX for permission to publish this excerpt.)

GEM RADIO SYSTEM

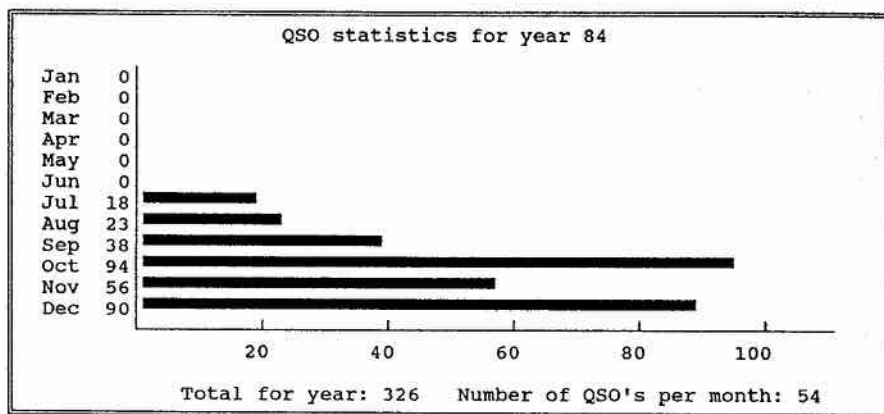
Dr. Antonio (Tony) Salvadori VE3NXQ, a computer science faculty member at a major Canadian university, sent us a copy of his logging and 'database system' for Amateurs, the Gemradio System. According to Tony, several of his friends who use it believe it to be the best logging and retrieval program that they have yet seen.

The program was originally written for the Apple II, but due to memory limitations on that machine, Tony expanded it to IBM-PC compatible machines. It consists of two major components, 'GEMAIR', which is the reporting and utility module. The system is, indeed, a very sophisticated one, with powerful database reporting features. It includes distance to and other information on target prefixes and an optional label printing module.

The program is offered in two versions, one for floppy drives, and the other for hard-disk equipped PCs. The

two versions are virtually identical except that with the former, all files are maintained on floppies and therefore retrieval is slower. However, while you can get by with about 300KB memory with the floppy version, you need close to a full 640K available for the hard disk version to function. (Being limited to 512K, I was required to run up the floppy version.)

The VE3NXQ system contains two major programs, 'GEMAIR' and 'GEMRADIO'. Some of the main module 'GEMAIR' features can be seen by a quick look at the program's major menu



Sample output of the Histogram program (H option)

Enter callsign of ham you want to add: i4ccc

Call	Name	Location	State
I4CCC	silvana	cesena	ita

Date	Frequency	Time	Mode	QSL	Sent	Rcvd	Comment
16 dec 87	14196	1720	S	B	59	59	yz15

A typical completed entry showing all of the entered information.

Enter callsign of ham you want to change: i4ccc

Call	Name	Location	State
I4CCC	Silvana	Cesena	ITA

Date	Frequency	Time	Mode	QSL	Sent	Rcvd	Comment
16 Dec 87	14196	1720	SSB	B B	59	59	yz15
17 Dec 87	28Mhz	0000	RTTY		599	599	
21 Dec 87	7167	0345	SSB		39	49	
03 Jan 88	21015	1545	CW		419	329	
12 Jan 88	3766	1045	SSB	D	59	59	

Call, Name, Location, State,
Date, Frequency, Time, Mode, Qsl, sent(X), Recvd, cOmment, countY, Exit

A typical display for the change command.

functions. These include: adding a new contact (QSO) to the log, changing information about an Amateur in the database, displaying a contact on the screen, searching and displaying contacts by frequency, state, location, and country, displaying all Amateurs in the database, and summing the numbers of Amateurs and contacts in the log.

'GEMRADIO', the reporting and utility module, has two main menus. The first offers a number of printout options, which include such functions as printing lists of confirmed U.S. counties, various DXCC statistics, all Amateurs worked, confirmed prefixes, all QSOs, all Amateurs worked in a particular state, summary QSL information, WAZ countries worked and many more.

The second menu allows you to obtain bearings and distances to locations (QTHs) around the world, display yearly QSL statistics, produce a listing of country, state, and provincial abbreviation codes, set up the QSL file for personal label generation, and take care of various housekeeping and utility functions.

Tony advises that he offers the program for \$30 to cover his photocopying and duplicating expenses (hardcopy documentation is included). He also plans to issue new functions, corrections and updates on a yearly basis, to be distributed at cost. As this is written, he's working on the 'GEM CONTEST' module. This module logs and calculates the score for the major

Amateur contests and automatically integrates the contest data into the database; it may be available by the time you read this. A customized label production program that is integrated with the database is available for \$10.

For further information, contact Antonio Salvadori VE3NXQ, 17 Colborn St., Guelph, Ont. Canada N1G 2M4.

IBM PC Software 'Logwrite'

BY J.F. HOPWOOD
VE7AHB

With the increasing use of Personal Computers for logging and developing contact, award and contest data, there is a growing number of software packages available for the ham/computer buff. Unfortunately, software buyers can end up with packages that do only the bare minimum. Some commercially offered packages do little to utilize the full power and flexibility of a modern PC. One such product is

'Logwrite' offered by Aerospace Consulting of Gwynedd, PA.

At \$29.95 (U.S.) 'Logwrite' is a very simple database package which does well by offering you the essential data you want to record, plus room for extended information on QTH, QSLing and miscellaneous note-taking. But, beyond a rudimentary entry base record (Fig. 1), it leaves only one printed report which lists each entry in

Continued on next page ▶

NUMBER	DATE	TIME ON	CALL SIGN	NAME	BILL
1	9/23/88	10:06	WB3AKX		
RST S	RST R	FREQUENCY	MODE	POWER	QSL SENT
579	599	7.056	CW	100	
QTH:					10:10
QSL:					ERIE, PA
					BURD

NUMBER	DATE	TIME ON	CALL SIGN	NAME	DOC
2	9/23/88	10:13	VE7AKG		
RST S	RST R	FREQUENCY	MODE	POWER	QSL SENT
599	579	147.320	FMI	10	
QTH:					10:14
QSL:					

NUMBER	DATE	TIME ON	CALL SIGN	NAME	YURI
3	9/23/88	10:14	UA3FCB		
RST S	RST R	FREQUENCY	MODE	POWER	QSL SENT
459	559	14.010	CW	1000	
QTH:					10:15
QSL:					

NUMBER	DATE	TIME ON	CALL SIGN	NAME	HARRY
4	9/23/88	10:16	K5ERA		
RST S	RST R	FREQUENCY	MODE	POWER	QSL SENT
599	599	21.256	SSB	100	
QTH:					10:17
QSL:					HOUSTON

Figure 2— Logwrite Report Printout

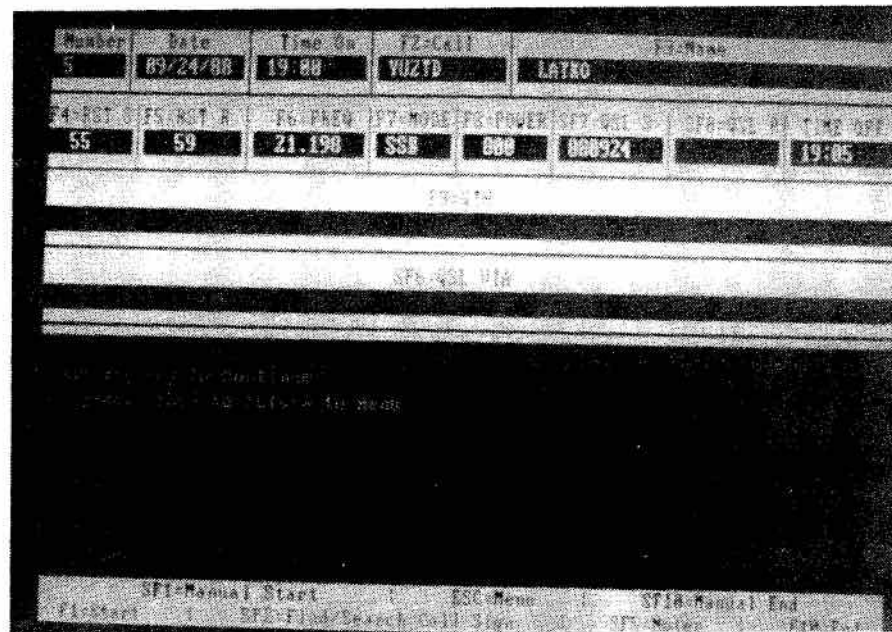


Figure 1— Logwrite Data Entry Screen

The CARF Firsts

1967— CARF formed as a Federation of Provincial Amateur Radio Societies.
1968— Introduction of a 'DOC Liaison Committee' based in Ottawa to deal directly with DOC Ottawa day-by-day on matters affecting the Canadian Amateur Radio Service.

1969— Recommended Guidelines for Amateur Auto Repeater licencing and operation that formed the basis for subsequent Ministerial Guidelines.

1970— Established the first Canadian National QSL Bureau to assist foreign QSL bureaus in forwarding cards to Canada.

1970— Published the first Edition of the *Canadian Amateur Radio Regulations Handbook*.

1972— CARF reorganized as a federal corporate entity, CARF Inc., with individual Associate membership.

1973— First edition of *The Canadian Amateur* published.

1973— First Canadian News Service Bulletins published and distributed to selected stations for on-the-air broadcast and to CARF Affiliated clubs and provincial Amateur Radio Societies.

1975— CARF Inc. reorganized with individual membership through their election of regional directors.

First Canadian Amateur Certificate Study Guide published. First meeting of a Canadian National Amateur Radio organization with the Minister of Communications. Among other items discussed, CARF requested that a competent Amateur be included in the

Canadian delegation to WARC '79, subsequently approved by the Minister.
1976— First edition of the *Canadian Amateur Advanced Study Guide* published.

A staffed HQ Office established in Kingston, Ontario.

The national station, VE3VCA, established in Kingston, Ont.

1977— CARF supplied, at the request of DOC, a codification of Radio Regulations pertaining to Amateur Radio. This codification was accepted as a basis for future changes and amendments to the Regulations.

At the request of DOC, CARF sponsored the first Canadian National Amateur Radio Symposium held in Ottawa, Ont.

1978— Initiated the prestigious 'Canadaward' certificate and the Canada Day Contests.

1980— First presentation to DOC on the need for restructuring the Canadian Amateur Radio Service including different examination procedures, a lessening of the technical knowledge requirements, an annual review of questions used and a rewrite of certain sections of TRC-24.

First Sections of the *Canadian Amateur Reference File* published.

1985— First group insurance plan against EMI suits and tower damage for Canadian Amateurs initiated.

1985— Initiated MERGER TALKS with CRRL.

1988— Instituted *The Canadian Amateur Radio Hall of Fame* to honour achievers. ■

LOGWRITE (cont'd)

a cluttered, hard-to-read layout (Fig. 2).

While the unit record (Fig. 1) supplies the full log entry on one screen, it is 'memory driven'— your memory that is! To become proficient at making entries, you must memorize or quickly check out the various function (F) keys and become adept at moving around the screen while making progressive entries. If you make a mistake you have to go back to the main menu to re-enter and correct the word. That's awkward and frustrating in the middle of a QSO.

The use of UTC time is only available through a 'manual' entry, while the more attractive 'automatic' entry of date and time is limited to the computer's standard local time output. This is not a good feature when UTC is the universally preferred time log method and, as such, ought to be easy to record through an 'automatic' entry method. Why can't the time and date be automatically entered per UTC as you enter the call sign?

As already noted, the use of output 'reports' is limited to a record-by-record listing of everything. There are no other options for listing data, time, call, QSL, QTH or other info in an easy to glance at column and table format. There is no 'dupe' checking or score totals for the serious contesters. There is no logical step-by-step menu format for ease and simplicity of entries, just a cluttered, hard-to-use scramble of record fields to deal with.

To be fair, perhaps it offers \$29 (U.S.) worth of data entry storage, but the average ham would be better to look around and pay a little more for increased versatility in processing and reporting log entry data. Logwrite has a very limited repertoire! ■

IT'S FOR THE BIRDS

Each year, starlings invade my cherry, apple and peach trees, and strip the grapevines. They arrive in the thousands! This year, I took a leaf from my boating friends, and bought a plastic owl from a local Zellers store. I mounted it on a ten foot pole. The pests have stayed away ever since! It works for antennas, too.

— Roy VE7TG

FIRST QSLs FROM THE SOVIET UNION

Yitzhak Halfon 4X4FU, the IARC incoming QSL bureau manager, reports that the first parcels of cards since 1967 have arrived from P.O. Box 88 in Moscow. Concrete proof of Glasnost.

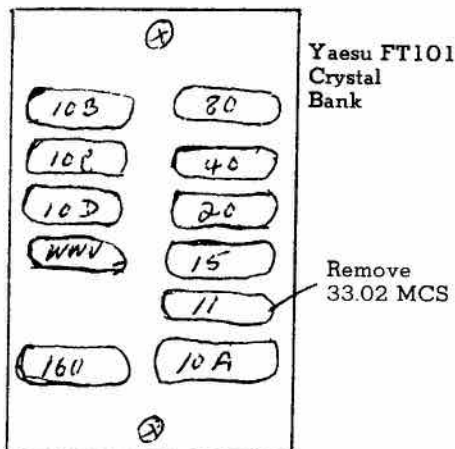
Hagal International,
Israel ARC

Does your local library carry the radio Amateur call books? If not, ask them!

The FT-101 on 12 Metres

If your old faithful, the FT-101, still has all of its 22 metre circuitry intact, you can easily put it to good use working the new 12 metre band with very little modification. From a local supplier, I ordered an 'HC 25V' type crystal, cut to a frequency of 30.52 MHz. Removal of the 11 metre, 33.02 MHz crystal and installation of the new one put me on the band almost immediately. In my case, internal tuning was not required and the DX is good. ■

— Sid Allen VE7AEG



Front

KEPT FROM PACKET RADIO BY HIGH TNC COST?

Commodore C-64 users take heart. Digicom 64, a software packet radio system has arrived! It is by far the most economical way to enter packet radio yet.

This system, requiring only a C-64, 1541 disk drive, and a simple one chip VHF/HF modem, has the capabilities of commercial packet systems and more. It is capable of multi-connect, read/write of Prg and Seq files to disk, Store and forward digipeating, operation as a BBS, Disk logging, Buffer texts, parameter files on disk and more.

The modem is very simple. It uses the AM7910, an asynchronous AFSK modem in a 28 pin Dip package, and a handful of support components. For VHF it uses the Bell 202 protocol with 1200 Baud operation and on HF it uses the Bell 103 Protocol at 300 Baud.

It is a public domain program. Thanks to the developers of this excellent program, DL2MDL, DL3RDB and DL8MBT.

— Charlottetown ARC

Shack of the Month

This month's Shack belongs to Max Ross VE1QM of Truro, N.S. Max describes it as the 'Messiest in Canada'. Any takers?



Marigold Award

The Truro Amateur Radio Club wishes to inform all Canadian Amateurs that after a number of years in a state of stagnation, it is re-activating the 'Marigold Award' originally offered in 1975.

Qualifications are as follows:

All contacts must take place after Jan. 1, 1975; All VE1s must work and confirm 5, Truro, N.S. stations; All other VEs must work and confirm 3, Truro, N.S. stations; All QSOs must be simplex, except VHF/UHF space station repeaters will be allowed. Contacts must be confirmed by QSLs and be in your possession.

Applications must be accompanied by a certified list, showing stations worked, Date, Time, Band and mode, signed by two Amateurs or your club secretary and forwarded to George E. Richards VE1XP, Awards Committee Chairman, 12 Belgrave Terrace, Truro, N.S. B2N 2G4.

You'll be hard-pressed to beat the performance of Yaesu's new FT-411 handheld.

Let Yaesu's "next generation" handheld lighten your load!

Picking up where our popular FT-209R Series left off, the 2-meter FT-411 will amaze with its astounding array of features!

The brains of a base station. "Sophisticated operation" takes on new meaning in the FT-411. You get 49 memories, plus dual VFOs for quick band-hopping. Keyboard frequency entry. Automatic repeater shift. DTMF autodialer with ten memories of up to 15 digits each.

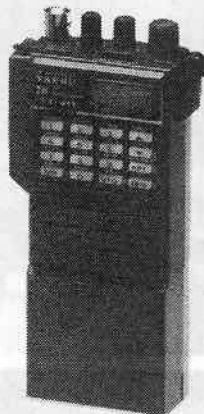
Built-in CTCSS encode/decode. Selectable channel steps: 5/10/12.5/20/25 kHz. Programmable band scan with upper/lower limits. Selectable memory scan. And extended receive coverage of 140-174 MHz (MARS/CAP permit required for transmit on 140-150 MHz).

Not bad for a handheld measuring just 55(w) x 32(d) x 139(h) mm (the same size as our FT-23R Series HTs)!

Friendly operation. For operating convenience, the FT-411's keypad features a "do-re-mi" audible command verification. Both the display and keypad can be backlit (brightly!) for night operation at the push of a button. A rotary channel selector allows fast manual tuning. Or key in the frequency directly. Operate VOX (with YH-2 headset option). Plus you get a battery saver to conserve power while monitoring. And a (defeatable) automatic power-off feature that shuts down your radio if you forget to turn it off!

High power capability. The FT-411 comes equipped with the 2.5-watt, 600-mAh FNB-10 battery pack. Try our optional FNB-12 5-watt, 500mAh pack or tiny FNB-9 2.5-watt, 200-mAh pack. Or get 6 watts output by applying 13.8-volts DC from an external power supply.

Swap options with Yaesu's FT-23R Series. Our rugged best-seller's chargers, batteries, and microphones are fully compatible with the FT-411.



FT-411R \$449
with FNB-10
NC-28B Charger \$22

YAESU FT-4700RH

Introducing Yaesu's FT-4700RH dual-band mobile. Choose Yaesu's FT-4700RH, and you open the door to a lot of tight spaces.

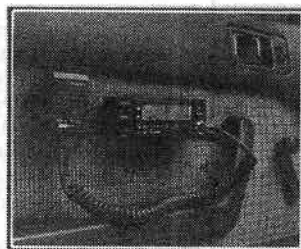
While other dual banders just won't fit in today's small cars, the FT-4700RH utilizes a versatile "remote head" design. So you can mount the "brains" on your dash, visor, or door, and hide the "muscle" under your seat.

High-performance package. Packing a solid 50-watt punch on 2 meters (40 watts on 70 cm), the FT-4700RH includes Dual-Band Watch for simultaneous monitoring of both bands, with independent squelch settings on the main and secondary bands. When you transmit, opposite band monitoring goes on in a full-duplex mode.

You can adjust the relative volume of the two receive channels with the balance control, too. And with Yaesu's bright LCD display, transceiver status is clearly visible in sunlight or shade.

Convenience on the road. Human engineering, long a Yaesu specialty, is an important aspect of the FT-

4700RH design. The ten-button front panel keypad includes a "do-re-mi" audible command verification, and all important controls are backlit for night operation. Plus you get extended receive coverage of 140-174 MHz (MARS/CAP permit required for transmit on 140-150 MHz), or 430-450 MHz on 70 cm. Nine memory channels on each band. High/low power selection (low power: five watts). One-touch reverse repeater shift button. Optional CTCSS module. And 16-key DTMF microphone.



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Multi-Function Five Inch CRT. Displays frequencies, modes, memory contents, operating notes, RTT, two menu screens, plus a panoramic view of all signals in a selected range. A portion of the screen also serves as a display for data modes like RTTY, AMTOR, and PACKET.



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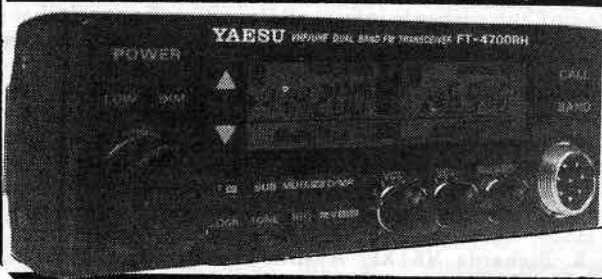
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Pair of EMAC 3-500Z Tubes

YAESU'S DUAL BANDER GOES PLACES OTHER MOBILES DON'T.



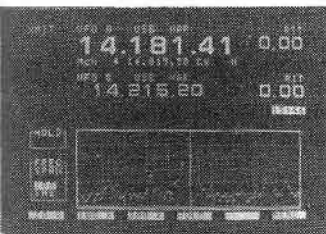
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- 100 Memories

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Data Controller with 6 Modes Packet Morse Code AMTOR Weather Fax



MFJ-1278

- Multi-Mode Data Controller
- Packet, RTTY, ASCII, CW, WEFAX, SSTV, Contest Memory Keyer

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FT-212RH

- THE "ANSWERING MACHINE" MOBILE
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- FT-712 RH for 70cm

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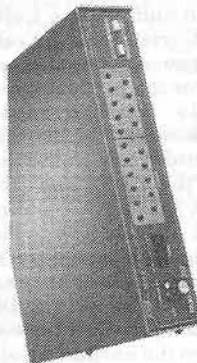
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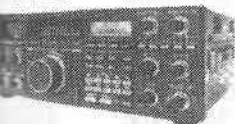
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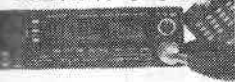
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International Amateur Radio Network

Do we really need *more* radio Amateurs or do we need *better* radio Amateurs?

We need to recruit constantly to gain Amateurs to replace those who leave the hobby but, more importantly, we need to constantly recruit to find the gems and diamonds we need to really show the world what our wonderful hobby can do. It is only natural for one to be enthusiastic about his or her hobby and to try and share this enthusiasm with anyone who will listen. If people are really interested they will follow up. What's the big deal, anyway? If you are interested in a sport, you go out for the team. If you are interested in ham radio, you go for your licence. Right? Well, not quite. You see, you have to be exposed to something before you can be interested in it. Amateur radio doesn't offer enough exposure to ensure that quality candidates are informed of who and where we are... simple as that!

Remember, the world is changing very quickly. Technology is changing rapidly. When I was first licensed, many hams constructed their own rigs; making a contact across the county or across the country was a big deal. Today's kids don't get quite the same thrill. Why should they? Satellite television and cheap long distance telephoning have upped the stakes considerably when it comes to impressing young people. So now that we old timers no longer build our radios, the hobby is in a steep decline! Phooey. Your imagination is in decline, and that is all. It takes more brains to select and hook up storebought gear today than it took to build a station 30 years ago. Most equipment is too complex to build yourself, and we are supposed to be on a guilt trip for this?! We must re-think exactly what Amateur radio is and what it should be.

Thirty years ago it was a miracle to just contact another radio Amateur, much less really get to know him. Now that we have the equipment up to par, we need to take the next step. When you bring a kid into your ham shack, it is not enough to say, "Hey look at that, we just made a short contact with Joe Ham in Ham town," or, "After ten minutes, we said 'Hello' over HF packet radio... really impressive, eh, kid?" No wonder the kids are falling asleep. If we are packaging ham radio as some sort of computer game, why should young people take a lot of time and trouble to sweat through getting a licence? We hams have got to improve on our imagination and set our sights higher to keep pace with the power of the equipment in our ham shacks.

The challenge today is "show me what you can do with your equipment." That really means something! The IARN and the International Amateur Radio Club are examples of really reaching out and doing something important. What can you think of? There must be a number of smart people out there who can think of creative applications for Amateur Radio... far above the present standard. Let's shake the stodgy establishment by their foundations and get ham radio moving. This is what is needed to 'save' Amateur radio— not more of the same old thing. The ham manufacturers can't be expected to understand this, but I expect Amateurs to understand it. You are a shortwave listener or licensed ham and you know what is going on throughout the spectrum. You can reason this out and see the potential I am talking about. That is your job. The manufacturers will make the stuff that you demand for your hobby.

Write to me at IARN, Belgrade Lakes, Main 04918. Tel 207 495 2069. To start your own International Amateur Radio Club, ask for the charter and be sure to enclose SASE with sufficient return postage.

GLASNOST VIA AMATEUR RADIO

IARN has been very active handling all sorts of official, medical, logistical, and health and welfare traffic into and out of the Soviet Union for relay to earthquake ravaged Armenia... all business as usual for the battle experienced and worldwide International Amateur Radio Network. IARN arranged a special third party traffic arrangement between the U.S. and the U.S.S.R. effective 1741 UTC, Sunday, Dec. 11, 1988... an historic first in the history of Ham Radio. This came just 41 minutes after Victor Goncharsky UB4WE checked into the net on 14.275 MHz and informed us that he was officially assigned to the net and would take all of our traffic and feed it into the Soviet Amateur Operation.

We had been beating our heads against the wall since activating the IARN on Dec. 8, 1988 and had offered Amateur assistance to every agency we could think of and to the Soviets through the embassy in London.

On Dec. 9, I met personally with Senate Majority Leader George Mitchell. He offered to contact Soviet officials himself and urge the Soviets to accept help both from IARN and others. The Soviets agreed to some U.S. help, but not Amateur Radio... yet.

Shortly after making contact with Victor UBSWE, he put us in direct radio

Glenn Baxter K1MAN
Long Point Lodge
Belgrade Lakes, Maine
U.S.A. 04918
207-495-2215 TEL
207-495-2069 FAX

contact with the official Government Ham Station, E01, which is, in fact, operated by Andrey Fedorov RW3AH in Moscow. Victor lives in Lvov, Ukraine, U.S.S.R. To our surprise, E01 asked us to supply radio equipment, particularly walkie-talkie gear, both Ham and CB. I agreed and offered to also send Amtor equipment and a computer to establish an Amtor link from the U.S. and the U.K. to Moscow. They agreed after a few minutes. I then offered to send two U.S. Amateurs to assist them with hooking up the sophisticated AEA PK-232 and IBM compatible PC equipment. E01 went back to the young communist league headquarters with this offer and after 15 minutes we had permission and thus an invitation.

The IARN Rapid Deployment Jump Team operation went into high gear. Many IARN members played a part. The team selected for the job included Al Vayhinger W9ELR from Connersville, Indiana and Chuck Sheffer KJ4TY from Apalachicola, Florida. They were dispatched to KB1PJ in Cleveland, Ohio along with donated equipment. Much of the equipment was sent directly to Kennedy Airport in New York to link up with the team which left for Moscow on Dec. 17. We seemed to be scoring big with Glasnost.

Our computer got hung up in New York customs, but everything else made it to Moscow: two Kenwood HF transceivers, two Kenwood UHF transceivers, a number of handhelds, two AEA PK-232s, a number of CB walkie talkies, six Mosley TA-33s, six Cushcraft two metre base antennas, 12 mag mount antennas, and a wedding present for the DX editor at Radio Moscow. (IARN is planning to jointly produce a 15-minute per week Amateur Radio program to be heard over Radio Moscow.)

TWO STEPS FORWARD AND THEN ONE STEP BACKWARDS

With our two Amateurs in Moscow getting the royal welcome and the net on 14.275 MHz operating very efficiently, we were all shocked at the news that the Amateurs had a high level meeting with the Soviet Ministry of Telecommunications on Dec. 19, and would be sent home the next day. The Soviet Amateurs were as disappointed as U.S. and other Amateurs were. TASS, the Soviet News Agency in New York had done a feature story on IARN and then did a follow-up story very critical of Soviet Officials for cutting this wonderful mission of goodwill so short. It just didn't make sense to anyone.

The Soviet Government Officials in Moscow, no matter how many times our Amateurs explained, could not understand that IARN is simply a group of volunteers who want to, and indeed, enjoy helping out particularly when Amateur Radio is involved. We are not sent by the CIA, Ronald Reagan, the State Department, ARRL or any other political group. Victor UBSWE said it best in an exclusive telephone interview with IARN:

"You simply cannot understand Amateur Radio unless you are a radio Amateur and feel like a radio Amateur."

Another problem, I suspect, is that Moscow bureaucrats do not fully understand how fast IARN can move and that radio Amateurs can often out-perform Government Communications during many types of communications crises.

Yes, in many cases, we can be better than professionals... which often leads to resistance. That is why we didn't bother with the State Department in arranging this trip, a mission of international goodwill. Why? Well, first, red tape just slows us down and emergencies can't wait, and secondly, our ham licence infers our ability to respond quickly in a communications emergency. Look at FCC rule 97.1, basis and purpose, section (3):

Continuation and extension of the Amateur's unique ability to enhance international goodwill.

We did use our unique ability and got our team and most of our equipment to Moscow. Victor said, "This was a big

step and important step and a very difficult step to take."

IARN'S SECOND STEP

Having taken the first step, what was our next one? First, don't look back. Yes, we have to explain to everyone why our team was sent home... no sugar coating... that would be a cover-up and that is not true progress. Let's finish what we started and get that IBM Compatible Computer System to Moscow. This machine was far too powerful to be exported to the Soviet Union, according to the U.S. State Department. Again, Senator George Mitchell intervened and on Dec. 23 at 1800 UTC we were granted a special export licence by the U.S. Department of Commerce.

Earlier in the day, IARN received an urgent radiogram from Konstantin Khoachatorov UW3AA, an Amateur Radio Coordinator for the earthquake in Armenia, requesting all of the above mentioned equipment plus two

portable repeaters, AC generators, and radio operators from IARN. We offered two repeaters and two operators from IARN Australia and one digital expert from the U.S. to go back to Moscow. All of this caused a lot of debate among high government officials in Moscow, and as this goes to press we are working out the details of step two.

The Soviet Officials have apparently had a change of heart. I'm sure the coverage by TASS and other media worldwide, together with widespread disappointment expressed by Radio Amateurs on both sides of the Iron Curtain, has demonstrated that this curtain is no longer needed or wanted by anyone. Meanwhile, our net continues to help people of Armenia around the clock. It is unfortunate but true that sometimes it takes tragedy to bring people together.

This great ham radio story will be continued next month, right here in *The Canadian Amateur*.

SWAP SHOP

FOR SALE: HOME in Nakusp, B.C., 733 Columbia Crescent. Nine yrs. young, 1450 sq. ft. plus 325 sq.ft. court-yard-sundeck. Beautifully fenced and landscaped. Double garage, Sauna with pool. Underground wiring, sewer, street lights, side walks. EXCELLENT DX-Location. Curling, fishing, golf, Hot Springs, Ski Hill. Contact VE7EHD, 604-265-3175.

WANTED: Wireless set no. 19 equipment and accessories. Especially looking for power amplifier and pocketwatch. I am willing to buy and/or trade equipment. Please write to Chris Bisailion VE3CBK, RR#1 Old Carp Road, Kanata, Ont. K2K 1X7.

WANTED: My son Ronnie VE7GRS, age 11, urgently requires a 10-80 metre transceiver (No Tubes Please), Tuner and Power Supply to get on the air. Must be reasonably priced. Write to: Gary Anderson VE7GJA, Box 681, Ucluelet, B.C. V0R 3A0.

FOR SALE: Linear Amp. Viewstar PT 2000. Full legal output. 2 3-500Z Tubes. Very good condition. Hardly ever used. VE3BPM, Harold MacFarlane, R.R.2 Battersea. 613-353-2800.

FOR SALE: HyGain 5 Band vertical antenna Model 18AVT/WB with instructions, \$100. Paul Pierrard VE3OFF, 1327 Essex St., Ottawa, Ont. K1H 7P1. 613-521-8182.

FOR SALE: 1200 Watt Linear Amplifier, military grade, 1.7-32 MHz, in brand new cabinets, takes 20 watts drive, two 4CX350A in output, separate heavy duty power supply \$1200. 432 MHz Cushcraft 416B cross yagi with teflon phasing harness, New, \$100. You ship. VE3CTP 416-291-0088.

WANTED: Handheld Mike with 12-pin adapter for Azden 2000. Al Johnson VE3NFB, 930 Old Colony Rd., Kingston, Ont. K7P 1S1. 613-389-5894.

WANTED: Modulator Unit (AM) for a B&W Model 5100-B Transmitter. John VE3GOX, RR 2 Ingle side, Ont. K0C 1M0.

FOR SALE: MFJ 1274 Packet Radio TNC. Mint Condition. \$225.00 OBO. Wayne

Pedersen VE6CLG, Box 1030, Claresholm, AB. TOL 0T0 403-625-2988.

FOR SALE: Commercial 1200 Watt TMC Linear 1.7 to 32 MHz continuous. Two 4CX350 \$975. Info: VE3CTP, 416-291-0088. **WANTED:** CW Filter for TS430S 88C or 88CN, VE7KZ, 10327 Bowerbank Rd., Sidney, B.C. V8L 3L2.

FOR SALE: Heathkit SB401, SB301, SB600 and 2 metre converter SBA-300-4, all in very good condition with manuals, \$325.00 shipping not included. C.P. Beauregard VE2BIA, 286 Helen, Otterburn Park J3H 1R6. 514-464-6911.

FOR SALE: 1 Kenwood TS700A MultiMode 2M c/w DTMF Mic, \$400; 1 Belcom 70 cm 435 SSB XCVR 10 Watt, \$250; 1 Microwave Modules 28-144 transverter 10 watt, \$100; Electrohome Satellite Satellite Receiver, Remote Control, Power Supply, Polarfeed, Block Down Converter, Documentation; All in excellent condition when shut off— Best offer. All equip. has owner's manuals and shop manuals. VHF/UHF eqpt. in use on AO10/13 until Nov. 15/88. Credit Card or cert. cheq. You pay shipping. Also have a large quantity (30+) VHF Pyecom 2S 6 Chan mobiles for \$100 ea. or better in 10 lots. M.T. Lett VE6XD, Tel. 403-539-6086 Wk. 766-2785 Res.

Please send your 'Swap Shop' notices to the *The Canadian Amateur Swap Shop*, Box 356, Kingston, Ont. K7L 4W2. Single insertion is \$1.00 minimum (10 words) and \$1.00 for each additional 10 words. To renew, send copy and payment again. Please TYPE OR PRINT CLEARLY! and put your membership number and call (not counted) at the end of your ad. Include your full address with postal code; if using a phone number, include the area code. The *Canadian Amateur* accepts no responsibility for content or matters arising from ads. This feature is for the use of members wishing to trade, buy or sell personal radio gear. It is not open to commercial advertising.

EMERGENCY AUTOPATCHES FOR REPEATERS

Until lately, the Ministry of Communications in Israel has put their foot down on the question of automatic phone patches for the IARC repeaters. The background can be found in the licensing regulations that state that only a Grade 'A' licensee may permit persons other than himself to speak over his station. Thus only 'A' holders can operate a phone patch, and all other licence classes are denied that privilege.

Now, word has come that the Ministry has authorized autopatches for repeaters, but only on the condition that they be used for emergency numbers alone— Fire Fighters, Police and First Aid Services, which have a shorter telephone number anyway. The IARC executive is working out the details, and it is hoped that the new service will become reality. No longer will it be necessary to have someone monitoring the repeater for it to be of use in the case of an emergency.

Hagal International,
Israel ARC

Paul Cooper VE3JLP
RR 2 Metcalfe Ont.
K0A 2P0

A VISIT TO 'G' LAND

For the last few years I have been crossing the Atlantic every Fall to look up friends and relatives, young and old, in the U.K. While these trips don't leave too much time for Amateur activities, I have always wanted to take advantage of being in Europe to see and hear what our fellow enthusiasts are up to over there.

This Fall I managed to meet several Gs. In particular I'll be covering my visit to Dollis Hill in north London, where I met Sue and Tom Morgan, GOEZN and GOCAJ. I had first contacted Tom on ten metres in September and when he heard that I would be coming over to England in November he gave me his phone number and asked me to give him a call. I did and the result was a most pleasant evening spent with Tom and his wife in their house on the top of Dollis Hill. Tom pointed out that being on top of a hill was a fairly rare thing in the London area, the only other two significant hills being Hampstead and Highgate (places I grew up in 40 years ago when I was an SWL).

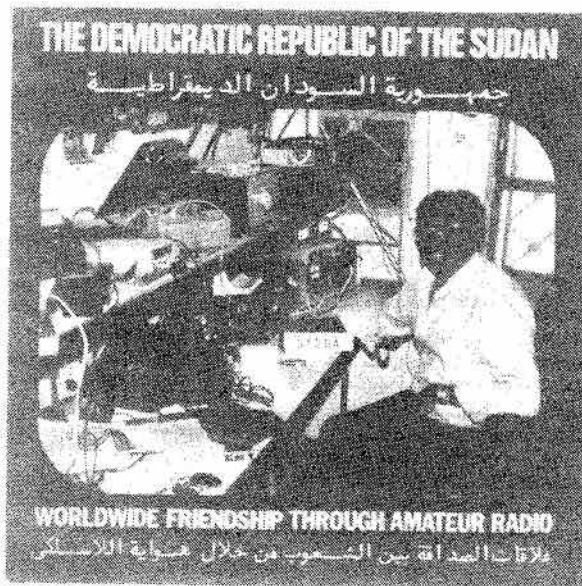
The elevation gives him some advantage for his tri-bander which crouches just above the roof, typical of antenna mountings in the U.K. where the local authorities are lukewarm to Amateur radio towers, to put it mildly! From this modest location, Tom has started to rack up an impressive DXCC total for the short time he has been on the air. He checks in regularly with the Africaner and Snooke's net and finds he can be pretty competitive when it comes to working the rare ones.

While Tom works exclusively on phone, Sue sticks mostly to CW. They have separate shacks on different floors of the house and both share the tri-bander which means some careful planning of operating hours to avoid overlaps! Sue enjoys working in the novice bands, giving many U.S. stations their first DX contact.

There are not many husband and wife teams, both licensed, but in Sue and Tom's case there is a particularly good reason for them both to be interested. They originally took the exam so that they could operate on the ham bands from a yacht they are building. This 40-foot fibreglass beauty has been taking shape on Canvey Island, just east of London, for the last six years, and they still have a couple more years work before they can start cruising. As you may imagine, a good part of the evening's conversation covered things nautical rather than DXing! However that's another story.

CORRESPONDENCE

An interesting letter from Jack Spall of Barrie, Ont. (he forgot to include his call



A nice card I received from 'Dr. Sid' for a 20 metre SSB QSO back in 1986.

sign) starts with a good suggestion for those of us who continue to be somewhat confused by all those Russian call signs and particularly the Oblast Numbers. He reminds us that Geoff Watts, one of England's most famous DXers, publishes an excellent list of the numbers together with locations and maps. Geoff also publishes lists of all the IOTA (Islands on the Air) islands and an up-to-date DXCC list that includes all the old call signs. The cost of all these goodies is about \$10. Geoff's address is 62 Belmore Road, Norwich N47 OPV, England.

Jack has had good results working some of those elusive Indian Ocean Islands using Snooke's Net, 21.355 MHz at 1800 UTC every day. He has collected 3B8, 3B9, FH, FR, ZD9 and VP8 this way... He tells me that he works 20-15 and 10 most of the time looking for new ones and during 1988 he secured a Golden Jubilee DXCC. His station consists of an Icom 7845 with a SB200 linear for when the going gets rough. On his 45-foot tower he has 2 element quads on 20 and 15 and a 3 element on 10.

His letter closed with a short extract from his log that had several calls I'd like to see in mine! How about these 3B9FR, FR5DX, FR4FA/J, 9J2AL, ZS3W, S83H, Z21BU, TZ6AS, TR9LA, TV2QY, EL5E (CN8VE, exVE3 looking for VE3 QSOs), 5V7WB, 5H3RB, OY9JD, JT1BG, 9XSAA, UL8LWL, YBOJBN, HL88XP, AX9YG (Cocos Keeling) and JW5E.

I look forward to further reports from Jack, next time perhaps with his call sign!

ST2SA

DR. SID A. IBRAHIM
P.O. BOX 1533
KHARTOUM - SUDAN



COOPER'S BEEFS

I spotted this comment in the latest issue of *Long Skip*, the monthly magazine of the Canadian DX Association. I certainly agree with John VE3IPR, and I'm very pleased to pass on his beef to readers of *The Canadian Amateur*.

"IT MAKES ME SICK to hear an endless roar of my peers screaming their calls into their mike when the fellow we are trying to work has just called someone. Split or simplex, it makes no difference. If they didn't call you, SHUT UP! The way it is now, it is impossible to spot the last station worked during QSX operations and everything gets bogged down when the DX is not split. Pass it on!"

DX SPOTTING NET?

From time to time I have mentioned the progress we are making in the Ottawa area towards getting a 2 metre DX repeater on the air. Plagued with a low sensitivity receiver, we have decided to move to a new location and use another receiver-transmitter pair which we are currently borrowing from the Ottawa Amateur Radio Club. More on this later when we are actually up and running.

I couldn't help thinking of our Ottawa area efforts when I momentarily became part of an Eastern Canada spotting net last week. You may recall I mentioned in the December column that I had not only not worked V8 Brunei, I had never even heard a V8 on the air in over ten years of DXing. You throw a pebble in the pond... last week my wife picked up the phone to hear an excited voice at the other end asking for

me. As luck would have it, I was down in the barn but our caller was undeterred and passed on the vital information that he assured Mary I would be interested to hear.

He told her that at that very moment Gerald V85GA was on 14.226 MHz. When I came in a few minutes later I rushed up to the shack, turned on the rig and swung the antenna to the North. Sure enough, there he was, working lists put together by the net controller of the Family Hour. It would be nice to be able to complete the story by telling you that I worked Gerald. Unfortunately the happy ending didn't happen that day. I couldn't even get on the list and the V85 closed down after a few more contacts. Never mind, I now know where to find him and I'll be checking the Family Hour over the next few weeks to see if I can add V85 to my score.

I was delighted that one of my readers had taken the trouble to phone me all the way from Sherbrooke, Quebec, with a full rate call just to let me know of this sighting. Many thanks to Terry, whose call got rubbed off our notice board before I'd recorded it somewhere more permanently!

BITS AND PIECES

CQWW— I received a note from Carl Cook AI6V to announce that the multi-station he set up in Aruba for the CQ World Wide SSB contest set a new record with a raw score of 58 million, 21,000 contacts. They were hoping for great things in the CW portion of the contest which was held on the weekend of Nov. 26/27. They may well have set another record as our local contest expert and friend, VE2ZP, managed to work all 40 zones during his efforts in the CQWWCW. He also entered the SSB portion of the contest and told me that he had worked 140 countries over the weekend which could be a new Canadian record. Good work Dave!

4J1 Malj Vysotskij Island— The ARRL Awards Committee has unanimously accepted the DXAC majority decision to add Malj Vysotskij Island (henceforth to be known as M-V Island, as far as this column is concerned, for obvious reasons!) to the DXCC countries list. The deciding factor appears to have been a commitment made by the ARRL back in 1970.

The DXpedition in July 1988 has been accredited, so any of you who managed to work 4J1 then now have another country under your belt. However, for some reason or other, the ARRL will not accept your cards for credit until March 1, 1989, so don't send them in yet! The addition of 4J1 has now pushed the current DXCC countries total up to 320, I think.

YJ Vanuata— *QRZ DX* reports that Norman YJ8NPS can be found almost daily on 3.504 MHz beginning around 1130 UTC. For those of you who are not

familiar with this small group of Pacific Islands, they lie just North of New Caledonia, FK, about half way to the Solomon Islands, H4.

C9 Madagascar— C9MKT seems to be putting Madagascar on the air three days each month. A pattern is emerging and *QRZ DX* has published the dates for the next few months as follows:

Feb. 17-19, March 10-12, April 7-9, May 12-14, June 9-11.

Long Skip, VE3IPR, reports that the operator likes lists and that your chances of finding this one on your own are slim. They go on to say that he prefers 15 metres and suggest that you check all the net frequencies on this band, particularly 21.335, beginning at 1600 UTC, and 21.262 MHz. The DX Bulletins say the frequencies to check are 14.300, 21.295, 21.405, 21.410 MHz. Your QSLs should be sent to SM5KDM.

EP Iran— I mentioned in one of my previous columns that there was still activity from Iran, despite the Gulf War which was only just winding down at that point.

I now see, thanks to *Inside DX*, that the DXCC desk will not accept cards for contacts made since the conflict started. Apparently they are on record as

saying "... any station worked at this time and until Amateur Radio is reinstated in Iran falls under this ruling." It is suggested that we all pin our hopes for an EP, and YI, QSO on contacting the UN Peacekeeping force now in the Gulf although no activity has yet been reported from this group. There are, of course, a number of precedents for UN peacekeeping operations in the Middle East operating on the Amateur bands and being accepted by the ARRL DXCC desk.

4K2 Antarctica— For those of you particularly interested in working YLs, we learn that one of the Russian bases in Antarctica now has a young lady Amateur who is using the call 4K2YL. This is thought to be the first Russian YL to operate from Antarctica, perhaps the first YL of any nationality? Her home call is RA3AM and QSLs should be sent to UW3TW. Look for her on 14.205 MHz at 1700-1800 UTC, 14.005 MHz and 1245 UTC and around 14.010 MHz at 2200-2300 UTC.

Thanks are due to the following sources for some of the material appearing in this column: Jack Spall, *QRZ DX*, Terry (Sherbrooke), GOEZN, GOCAJ, VE2ZP, *Long Skip*, VE3IPR & *Inside DX*. ■

The MFJ-1278 Data Controller and NAVTEX

NAVTEX is a new direct printing service operating on 518 kHz. NAVTEX stands for Navigational Telex. It broadcasts urgent weather, navigational and other information that is intended for ships.

NAVTEX stations currently cover most coastal areas of Europe and the Eastern United States. West Coast stations for the United States are in various phases of planning or construction, and will begin transmitting within a few years.

Currently operational NAVTEX stations in the United States include locations in Portsmouth, Virginia, Boston, Miami and New Orleans. A station in Sydney, Nova Scotia, can also be received in many parts of the United States.

Several NAVTEX stations are planned or already under construction on the West Coast, including locations in San Francisco, Astoria, Oregon, Adak and Kodiak, Alaska, Long Beach, California and Honolulu.

The system is fully installed in Europe, and is well on its way to becoming an international standard for navigational information.

NAVTEX is part of the Mode B (FEC) AMTOR mode. Each transmission is prefaced by the characters ZCZC

followed by a four character code of two letters that identify the station and type of message followed by a number code from 00 to 39 that identifies the particular message. This prevents your MFJ-1278 from receiving messages that have already been received. In addition, you can use the MFJ-1278 commands NAVMSG and NAVSTN to prevent your 1278 from receiving certain types of NAVTEX messages and/or certain NAVTEX stations you don't want to receive.

The first two characters consist of two letters (from A to Z). The first letters identify the station within the particular area (each receiving area is limited to 26 stations). The second letter identifies the type of message. The types of messages currently are:

- A- Navigational warnings
- B- Storm Warnings
- C- Reports of Ice
- D- Search/Rescue Information
- E- Weather Forecasts
- F- Pilot Service Messages
- G- DECCA System
- H- LORAN-C
- I- Omega Systems
- J- SATNAV Systems

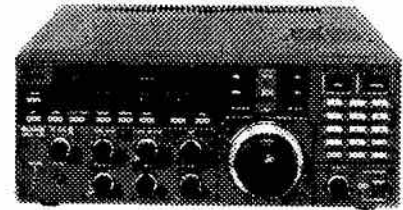
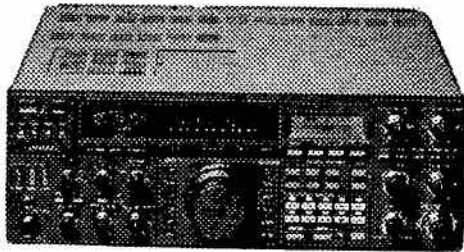
X thru Z are not in use at this time. They are reserved for future use. ■

Open Wire & W4AXO

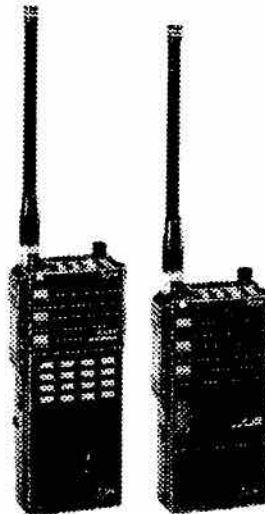
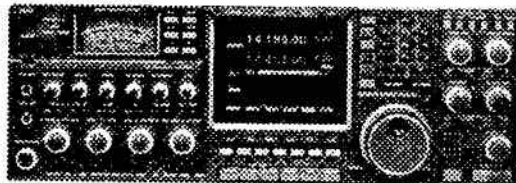
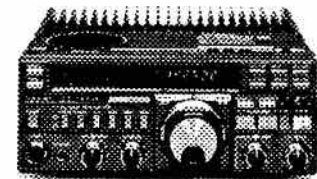
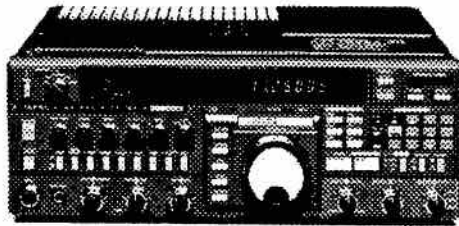
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CONTEST SCENE

CQ WW SSB

Late news of two great scores came shortly after last month's column hit the mail. The team at VE60J/3 shattered the multi-single record with a score over 9 million, and VE5DX did similar surgery to the 10 metre single-band record with an astonishing 3600 Q's, 37 Zones and over 115 countries. Well done! We'll be watching the high claimed scores for these two superb entries.

CQ WW CW

If only conditions had been as good for the CW as they were for the SSB contest. There was lots of DX available, but signals weren't as strong or as reliable as might be hoped for. The low bands were particularly tough.

All band action saw John piloting VE60J/3 to an as yet undisclosed, but possibly record-breaking score. VE2AYJ was also noted as a probable all-band entrant.

The single band entrants included a lot of disappointed faces. VESCB/3, hammered away on 80 metres, and has since been crying 'nevermore'. As if noise and poor propagation weren't enough, Jeff had to put up with competition from John VE60J/3. Apparently more than one DX station came back to VE6?/3 when both of these guys were calling. Your scribe was on 20 and reports that Yuri's record is safe and sound, but there's always next year!

On 15, Zone 2 representative VE2LJ fought questionable propagation, power outages and the responsibilities of three sermons to come ahead to Ron VE3VV, who made an excellent acquittal of his 150 watts. Jim VE5DX gave his all on 10 metres again, and although he did very well, he had little good to say about propagation.

As for Multi-op activity, I have no idea who was on doing what. Last month I reported on the exploits of apartment-bound VE1BHA/3 during the SSB. In the CW, VE1UNB alumnus Steve VE3SMA went up against John on 10 metres in what has all the characteristics of a grudge match. Claimed scores appear below, and remember, these guys are inside apartments with indoor antennas! By the way VHA suggests two new Q signals specifically for people in his situation. QCW means "You have my call wrong!" and QFI means "forget it".

CLAIMED SCORES CQ WW CW

VE5DX 28 1500Qs 33z 93c 425k est.
VE3SMA 28 256Qs 26z 70c 66k est.
E1BHA/3 28 128Qs 19z 43c 22k est.
VE2LJ 21 1500Qs 28z 37c 350k est.
VE3VN 21 800Qs 30z 93c 250k est.
VE2ZP 14 1354Qs 40z 116c 531k final
VE6CB/3 3.5 450Qs 17z 54c 50k est.

VE6OU/3 A probably big despite John's modesty.

K1EA SOFTWARE

K1EA of the Yankee Clipper Contest Club in New England has come up with an excellent realtime contest logging program for the IBM PC. I had the chance to use this software to dupe my logs from both worldwides, and I was very impressed. It automatically records time, calculates QSO points. Keeps track of multipliers, allows you to check if a station is a dupe, and even check partial calls. At present, it handles the CQ WW, ARRL DX and WAE contests, and at the very agreeable price of \$25 U.S., you'll receive a diskette and all the updates as they come up. K1EA is in the Callbook. There are a few blind spots in the software. For instance it automatically calls any KC4 Antarctica, and any KGG Guam. These are, of course, easy to change in the country file used to pick out multipliers, and certainly don't reflect on what is a great piece of software. Many thanks K1EA!

ARRL DX

This is the month for the ARRL DX CW Contest, and next month the SSB takes place. These contests, where the world works Canada and the U.S.A., usually attract little Canadian participation. A quick look at the records table shows a number of highly vulnerable Canadian records. Even records tables are hard to keep up for this one, as ARRL went through three complete sets of rules changes in as many years. If you want to set a record, the ARRL DX may be the place to make your mark.

Canadian Records—ARRL DX CW

A VE2DCW	1,300,830	1970
28 VE3KKB	94,185	1982
21 VE3BMV	201,051	1982
14 VO1QU	270,354	1988
7 VE2ZP	38,613	1982
3.5 VE1AXT	14,784	1981
1.8 VE3INQ	1,596	1987
MS VE6OU	1,462,500	1981
M2 VE1CR	43,281	1983
MM VESUS	701,325	1970

Canadian Records—ARRL DX SSB

A VO1MP	1,997,088	1988
28 VE3BMV	554,750	1981
21 VE7IN	491,892	1981
14 VO1SA	643,560	1987
7 VE3MFA	9,963	1984
3.5 VE2DZE	5,358	1981
MS VE6WQ	1,929,216	1984
M2 no entrant		
MM VE3FHO	1,580,302	1969

NCJ

Have you heard of the *National Contest Journal*? It is an independent U.S.-based bi-monthly all about contests. NCJ first appeared about 17 years ago, and has matured into quite a good little

magazine. The interest in domestic contests is high, and NCJ has all to often been the place to find exhaustive and exhausting analyses of Sweepstakes scores, but there is enough talk of DX. VHF and general contest information to make this a good buy at \$11 U.S. per year. It's available from ARRL, 225 Main Street, Newington, CT 06111 U.S.A. The league is acting as subscription agent and publisher for the proudly independent NCJ. ■

Contest Information

-Courtesy Frank Anzalone WIWY & CQ Magazine

CONTEST CALENDAR

Jan. 28-Feb. 5 ARRL Novice Roundup
Jan. 29-30 Classic Homebrew Exchange
Feb. 4-5 Vermont QSO Party
Feb. 4-6 New Hampshire QSO Party
Feb. 5 North America CW Sprint
Feb. 11-12 QCWA CW QSO Party
Feb. 11-12 Dutch 'PACC' Contest
Feb. 11-13 YLRL YL/OM SSB Contest
Feb. 12 North America SSB Sprint
Feb. 18-19 ARRL DX CW Contest
Feb. 24-26 CQ WW 160M SSB Contest
Feb. 25-26 French Phone Contest
Feb. 25-27 YLRL YL/OM CW Contest
Mar. 4-5 ARRL DX SSB Contest
Mar. 11-12 QCWA SSB QSO Party
Mar. 12 M-QRP-C Classic Sprint
Mar. 18 YLRL East Meets West Party
Mar. 18-19 Bermuda Contest
Mar. 18-19 YL-ISSB SSB QSO Party
Mar. 18-20 BARTG Spring RTTY Contest
Mar. 19-20 Wisconsin QSO Party
Mar. 25-26 CQ WW WPX SSB Contest
Apr. 12-14 YLRL DX-YL to NA-YL CW
Apr. 15-16 IBM QSO Party
Apr. 19-21 YLRL DX-YL to NA-YL SSB
Apr. 29-30 Swiss Helvetia Contest

ARRL INTERNATIONAL DX CONTEST

CW: Feb. 18-19, Phone: March 4-5, 0000Z Saturday to 2400Z Sunday.

Rules are the same as last year. All bands may be used, 1.8 through 28 MHz, but not 10, 18 or 24 MHz. Aeronautical or maritime mobile stations cannot be worked for contest credit. Following is a brief outline.

Categories: Single operator, both single and all band. Multi-operator, one transmitter and two transmitters. Also multi-operator, multi-transmitter. Also QRP, all band only (5 watts or less output). Multi one and two transmitter stations must remain on a band at least 10 minutes once a contact is made. Multi-transmitter stations no limit, but only one signal per band.

Exchange: RS(T) and state or province for W/VE; RS(T) and power input for DX stations (three-digit number).

QSO points: W/VE stations earn three

Continued on next page ▶

LOOKING AROUND

Art Blick VE3AHU
P.O. Box 356,
Kingston, Ont. K7L 4W2

Originally, this column was entitled **THE CARF COLUMN** and was presented for the purpose of acquainting members with the development, purpose, current affairs and future plans of your national Federation. Once my term of office on the National Executive finished in 1987, the column was re-named and has been used to give a personal viewpoint on current and past Canadian Amateur affairs. Lately the two main topics have been the proposed merger of the two national organizations and the proposed restructuring of the Canadian Amateur Radio Service. The main purpose was to stir up interest in current Amateur affairs—and from letters and articles appearing in *The Canadian Amateur*, this goal was reached! But I do feel that we have ruffled enough feathers and belaboured these topics enough.

Discussions with George VE3LXA, Editor of *The Canadian Amateur*, indicated that, while the articles were topical at the time of writing, there was always a minimum of two months' delay before publishing, so topicality was reduced. He felt that a column with a "layman's" approach to homebrewing and playing around with circuits was needed and would be of interest to the readers. This and future columns will be more directed to filling this need.

This article will outline basic needs for anyone planning to do some design, construction, modification, maintenance, etc. Future columns will give details on simple, weekend projects. They will be primarily directed to the new Amateur, or to the 'old-timer' who has stopped homebrewing devices since the advent, and acceptance, of solid-state components.

The first need is a work space. To facilitate the construction of tube type

equipment, I built a work bench 6 feet long, 36" deep and 30" high with a 12" shelf, 4 feet long, 12" above the bench. This was necessary due to the size and weight of tube-type equipment. Today, dealing with solid state devices, this size is no longer necessary, and work can now be done using a work space of about 30 by 30 inches with a solder station, tool holder and power box sitting on the back of this space. The rest of the bench is cluttered up with various instruments, devices under construction, equipment under maintenance, etc.

A selection of hand tools is required and mine consists of a solder station with a temperature-controlled iron and stand, various screwdrivers and pliers, an adjustable wire stripper, a solder sucker, soldering tools and desoldering braid, alignment tools, a set of nut drivers, a small vice, and a set of ignition wrenches.

Most of these tools are held in a 'Lay Susan' tool holder with others mounted on a pegboard on the wall behind the work bench. Heavier tools, including some power tools (a 3/8-inch power drill, with accessories is very useful), are held in tool boxes.

One screwdriver that I purchased recently is a No. 0 Phillips, to work with screws found in miniature and sub-miniature equipment. Good pliers and cutters are relatively expensive, but they are well worth the extra money. For example, in 1947, I purchased a selection of Klein pliers and side-cutters which are still in constant use today. Cheap tools quickly lose their effectiveness and are soon discarded.

There is virtually no end to the number of instruments that are of use in home-brewing. The main types include meters, generators, oscilloscopes and test boxes. Probably the first instrument

that every Amateur obtains in a Volt-Ohm-Ammeter (VOM) with an analog readout (dial). These are excellent for quick, approximate readings of DC voltage and current in low impedance circuits, of AC voltage up to around 1000 Hz, and resistance from 1 ohm to 1 megohm. They are portable, rugged and relatively inexpensive.

For accurate measurement of resistance and DC/AC voltage and current in high impedance circuits, digital multimeters are used, but are difficult to use when tuning for peak, or null, readings. A FET VOM, or Vacuum tube voltmeter (VTVM) is ideal for this use with the FET VOM, like the ordinary VOM, being portable and rugged but slightly more expensive—probably a good choice for the Amateur just starting out. Measurement of RF voltages can be made, using any of the above meters, with a plug-in RF probe that can be readily constructed... a future column will give more details.

I have a selection of instruments in regular use, most of which were obtained years ago. Modifications have been made to increase their capability to work with modern day circuits and devices. These include a 3" scope, EICO Model 320 RF Signal Generator, Heath Tunnel Dipper, IM-4100 Counter, AG-9A Decade AF Generator, and V-7 VTVM (with the exception of the Counter, all vintage 1950 equipment) and a Function/Sweep AF Generator built in 1986. A selection of power supplies, some fixed, some variable but all regulated, are also close by. Future columns will give details on the modifications made, construction details, calibration and use of these instruments and devices, commencing with the power box mentioned at the beginning of the work bench description.

Future columns will include articles on modifications to 'old' equipment, construction of various devices, antenna hints and kinks, experimenting with solid state devices, etc. These will be fairly simple articles. One might call them 'weekend projects', using readily available parts. Possibly you have built such devices, but are not up to writing a technical article on the method. If so, send in the details; we will do the writing and pass it on to the Technical Editor for publication. ■

IARN BROADCASTS

The International Amateur Radio Network broadcasts and coordinated nets may be heard on 3.975, 14.275 and 28.475 at 1400, 1800, 2200, 0100 and 0500 UTC. One hour earlier during Daylight Saving Time.

CONTEST (cont'd)

points for each DX contact. DX get three points for each W/VE contact.

Multiplier: Each DXCC country worked on each band for W/VEs. DX stations use U.S. states (48), District of Columbia (DC), and VE districts VE1-8, plus VO and VY1 for their multiplier (10). (Maximum multiplier of 58 per band).

Final Score: Total QSO points times the sum of the multiplier from each band. Entries with 500 or more QSOs must include a QSO check sheet.

Awards: Certificates given in each category, in each country, and in each ARRL section, plus a wide selection of plaques. Also certificates to DX stations making over 500 QSOs.

Disqualification regulations will be strictly enforced and are listed in the official rules. Mailing deadline for all entries is April 4, and they go to ARRL DX Contest, 225 Main Street, Newington, CT 06111.

CQ WW 160M SSB CONTEST

2200Z Fri. to 1600Z Sun., Feb. 24-26

The SSB section of the 160 Metre Contest will be coming up the last full weekend of this month. The same rules have been used these past many years and are well-known worldwide.

Mailing deadline for your entry in last month's CW contest is Feb. 29, and March 31 for this month's SSB section.

They can be sent directly to the 160 Contest Director, Donald McClenon N41N, 3075 Florida Ave., Melbourne, FL 32904. And, of course, they can always be sent to the CQ office. CQ 160 Metre Contest, 76 North Broadway, Hicksville, NY 11801. (Be sure to indicate CW or SSB on the envelope.)

CORRECTION

The 1987 CQ WW Phone Contest results showed G3FXB's score as a Phone entry. This was in error. G3FXB's 610,426 points on 14 MHz was a CW entry. This makes Al a winner for England and number 2 for Europe. ■

Ralph Cameron VE3BBM
30 St. Remy Drive
Nepean, Ont. K2J 1A3

CROSSWAVES

REMARKABLE NEW RADIO RECEIVERS MOTION DETECTORS

It was just a matter of time before the latest electronic gadget was nominated for the next edition of susceptible appliances in EMCAB 1, Issue 3. In fact, this Crosswaves can nominate three such devices this month. I wonder what will be next?

VE3BAD reports operation of his exterior motion sensor by VHF. He reports that HF operation has no effect on it but as soon as he fired up his 25 watt 2M rig the infrared sensor diode burned out. The 2M rig was nothing special and the antenna used consisted of a simple 1/4-wave whip mounted on his roof. The sensor/alarm system, Model EMS-220, is sold by Zellers, made in Korea and distributed by Carlon-Thyrocon of Telford, Pa. Owners of this sensor should notify CARF of any malfunction of this and similar infrared sensors related to operation of any Amateur transmitter.

The subject of diode sensors has arisen before in regard to fibre optic communications. It is well-established that fibre optic systems have much to commend them but they used to suffer from shielding difficulties.

In one case in the Ottawa area, an infra-red intrusion detector located in a neighbour's living room responded quite favourably to 20M SSB transmissions. The Amateur's station was located about 100 feet from the house. Inspection of the house alarm system wiring revealed long bundles of unshielded wires running throughout the house. There must have been 30 separate conductors all converging to a sealed steel box in the basement. The offending motion detector was replaced by the alarm company and was of a type that had a smaller visible detection range. The alarm company appeared to know what radio energy would cause the sensor to react. The concern by law enforcement agencies about the frequency of faulty alarms may have some basis in the proximity of passing mobile transmitters.

MOTOR VEHICLES

A ham friend of mine recently purchased a new Ford Tempo. On page 125 of the Owners Manual is the following caution:
"RADIOS - CAUTION - Use only properly installed FCC approved radio transmitting equipment. Use of other transmitting equipment may interfere with your vehicle's electrical system and may cause the engine to malfunction or stall."

Now all this is fine if you live in the U.S. but what about Canada? What will we do? In fact what will hams do? None

of our equipment is type-approved at the present time. From the standpoint of digital emissions coming from the vehicle itself it will have to meet the recently approved standard CSA108.8 which applies to all microprocessor controlled equipment.

MUNICIPAL HYDRO COMMISSION

A reported malfunction by a local hydro utility may add more cannon fodder to the plea for tighter mandatory controls over co-location of transmitters and motor vehicle controls.

In this instance a VHF antenna was moved (mag mount) to a different spot on the truck roof. Lo and behold, the electronic motor governor was stimulated to great activity— so much so that the highly-revved engine soon overheated, melted the carburetor and caused about \$7,000 engine damage! At least the malfunction was covered by warranty but, can you dream of the possible consequences in other situations? A full report of this incident will soon appear on these pages.

MEDICAL EQUIPMENT

It was not that long ago that Crosswaves alerted readers to potential problems with using VHF transmitters in hospitals. The particular incident(s) involved the malfunction of intravenous pumps. I am sorry to say that the authorities have never been able to duplicate the malfunction which occurred on at least 20 occasions, by one Amateur alone.

In the Barrhaven area, an area famous for its proximity to the National Capital Commission green pasture land and other well-nurtured RF fields, we've noticed a new effect.

A newly-constructed medical clinic about 3/4 km from the CHU transmitters began to notice what are called 'artifacts' or faulty graphic patterns on their ultrasound display. Ultrasound is a newer medical tool used in the investigation of what is happening beneath the surface of the skin. It makes use of a piezoelectric crystal array, shaped into one or more manageable forms so that an operator may move the sensor over the surface of the body freely and so detect when the sensor energy emitted is reflected and detected. The detected signal is displayed on a CRT in a sector type or linear display.

The ultrasound principle utilizes the effect that greater resolution is obtained by higher frequencies. The units on the market today typically cover from 1 MHz to 5 MHz.

This particular clinic noticed that their ultrasound malfunctioned by displaying false information which

interfered with the interpretation of the display. Some simple tests with Communications Canada present and also not present did help determine the cause of the malfunction.

The first test involved using a portable spectrum analyser and receiver with built in generator to confirm the frequency suspected. It was CHU on 3.33 MHz. The malfunction appeared as radial lines on the sector display, about 1/32 inch spacing. Much of the wanted display was viewable but every time a time tick occurred the radial display would appear. This was quite disconcerting to the ultrasound operator who stated this had been the best of FIVE machines tried. One or more was absolutely useless.

Since the clinic was located below ground level, one could scarcely attribute the problem to direct radiation. In fact, at this distance there was a fair amount of RF ground current flowing. (NRC estimated it to be quite high within a 1 km radius.)

A toroid tried on the power cord did help somewhat but it soon became obvious that the real culprit was the handheld transducer. Unknown to me, this transducer resonated at 3.5 MHz. All ultrasound transducers resonate somewhere between 1 and 5 MHz. Imagine a medical ultrasound unit next door to an Amateur using 75/80M.

Let's you think it would be a simple matter to place the ultrasound unit in an X-Ray shielded room, forget it. Lead doesn't make a very good shield for RF, in this case. Our clinic brings in the X-Ray power supply via a cable placed against the baseboard of the shielded room. It only took five seconds to confirm that RF currents circulating in this cable totally wipe the ultrasound display when brought near the cable. A very good line filter used on the ultrasound in this location had very little effect on the displayed artifacts.

It was noted that the transducer cable was double shielded, whereas the plastic moulding for holding the sensor appeared very sensitive, especially when grasped in the hand. When suspending the sensor by its cable, the artifacts almost went away. It is clear that the plastic moulding needs the improvement of better shielding. Because of medical and safety considerations, any modifications of this type of equipment is best left to the manufacturer who will be faced with having approval for safe operation verified by those competent to do so.

In this case it will probably be necessary to not only better shield the transducer but to arrange the examin-

Continued on next page ▶

YL News & Views

Cathy Hrischenko VE3GJH
2 Dalmeny Rd.
Thornhill, Ont. L3T 1L9

I don't know if you will be receiving this issue of *The Canadian Amateur* in time for **GUIDES ON THE AIR**, Feb. 18-19 ('89 of course), but just in case, we are suggesting that the frequencies mentioned before be used, **BUT** as calling frequencies; and then move on.

From feedback I have received, **Guides On The Air** is certainly growing by leaps and bounds. There will be about three **VEGGC** calls, maybe more. Proclamations are being made by different levels of Government proclaiming the weekend of Feb. 18-19 to be **Guides On The Air Weekend**. I will tell you all about it later. If anyone needs information, please contact me, Cathy VE3GJH, by mail or phone. The United Kingdom is quite involved this year, as well as several other countries which have shown interest.

NEW WESTERN YLS

My plea for information about new YLS came through via Pat VE6EVE. Thanks.

Grande Prairie-Peace River area of Alberta. In the past year the YL population has risen from 0 to 5. The first was Rose VE6MOM in October 1987. She then helped teach CW to the Amateur Radio Class in Grand Prairie. Linda VE6KAY was next. She and the OM are now sailing on the ocean. When last heard they were somewhere near Greece.

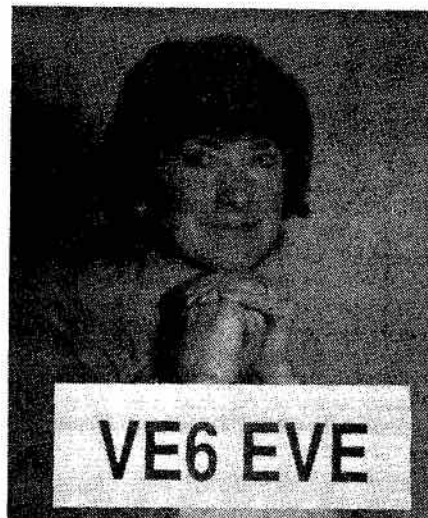
Third was Linda VE6LIN, who in September was the first Amateur in the club to have a baby. (I was going to make a comment on that last sentence, but think I'll leave it!)

Phyllis, also known as Pat, received the call VE6EVE. As she lives a distance

from the city, going to classes was a bit of a problem, but with help from her OM on theory, and from Rose VE6MOM's CW on cassettes, she made it.

Last but not least was Carol VE6TEA, who received her call October '88.

To these new YLS— Congratulations! Hope to hear you all on the air. Don't forget to check into **CLARA** nets when you can.



WEFAX Frequencies

WEFAX - WEATHER FACSIMILE FREQUENCIES - AMERICA
From the October 1988 issue of *Popular Communications*

Station	Frequencies (kHz)
Frobisher, Canada	3235, 7710, 15644
Halifax, Canada	4271, 6330, 10536, 13510
Boston, Massachusetts	3242.5, 7530
Boston, Massachusetts	3502, 12750
Norfolk, Virginia	3357, 8080, 10865, 16410, 20015
Lewes, Delaware	4223
Mobile, Alabama	6852, 9157.5, 11145
Esquimalt, British Columbia	4268, 6946, 12125
San Francisco, California	4346, 8682, 12730, 17151.2
La Jolla, California	8646.1, 17410.6
Honolulu, Hawaii	4855, 8494, 9369, 14826, 21837
Honolulu, Hawaii	9982.5, 11090, 16135, 23031.5
Kodiak, Alaska	4298, 8459

Courtesy Open Wire & W4AXO

Thanks to those who wrote in to tell me that they had heard our *CBC Morningside* radio program on Amateur radio, with Peter Gzowski. Your notes, letters and phone calls were appreciated. Some said they recognized the voice before they knew what it was all about. 33/73/88 as the case may be. ■

CROSSWAVES (cont'd)

ation table so that RF potential between patient and machine is practically zero. It may be quite difficult to achieve full sensitivity of the ultrasound machine under such circumstances. This is a case of re-radiation from electrical cables which effectively carry the energy to all electrical outlets.

EMSIM-EMI SOFTWARE

Not too long ago, mention was made of a new tool being used by Bell Northern Research in designing printed circuit boards for higher immunity and conversely lower emissions.

Bell Northern Research is using a software program called EMSIM for electromagnetic simulators. This promising software has been integrated into a computer-aided design package so that engineers can now see the effects of densely populated PCBs. EMSIM assists the circuit designer in predicting

and optimizing acceptable levels of radiation from a new board design.

The graphic display of program output on a colour monitor is quite dramatic because it enables the circuit designer to immediately spot the board areas that have the highest density of emission. According to the developer, Bell Northern Research product development, intervals are reduced and quality of product is much improved.

The development of EMSIM is symptomatic of statements made previously in this column, that is, the problems of EMI will never be addressed properly by a regulatory body until the emitting devices cause themselves to malfunction or a technically susceptible environment is created for this to occur. It is only then that savings from designs such as those created by an 'EMSIM' approach accrue to those technically 'smart'. We need more such approaches, especially to the household. ■

IC REVOLUTION NOW 30 YEARS AND GROWING

Integrated Circuits (ICs) celebrate their 30th birthday!

Jack Kilby of Texas Instruments demonstrated the first IC in September 1958. Since then they have become smaller in size, greater in capability, and lower in cost, allowing us systems only imagined by science fiction. The IC has also contributed to a growth in the electronics business from \$25 billion in 1960 to nearly \$500 billion today. This growth, due in part to the power and uses of the IC, will reach \$900 billion in the 1990s.

It has sure helped to change Amateur radio— from builders using either components or kits to operators of very sophisticated radio transceivers and other equipment. Neither the modern computer or ham rig would be possible without ICs. Quantum leaps in technology do precipitate economic and social change.

Michigan's Largest Swap-N-Shop
A.R.R.L. APPROVED HAMFEST

Livonia
Amateur Radio Club
Presents the 19th Annual



**SWAP
-N-
SHOP**



COMPUTER-FEST

Sunday
Feb. 26
1989
8 a.m.
to
4 p.m.

SAME LOCATION
At
Dearborn Civic Center
(See Map on Reverse Side)
• Plenty of Parking
• Lots of Tables
FCC Exams Appointments
Walk-in Exam Appt. — 9 AM
Write for Details

Sunday
Feb. 26
1989
8 a.m.
to
4 p.m.

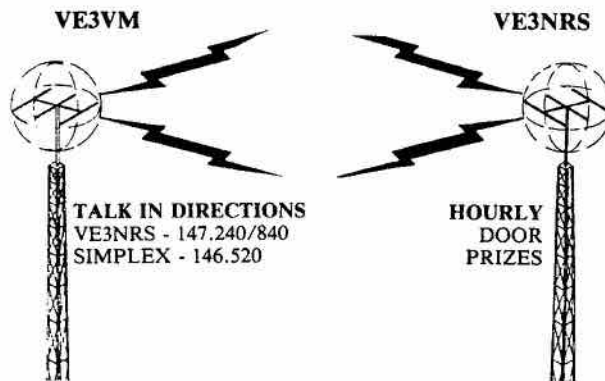
Come to the L.A.R.C. Swap-N-Shop
Buy or Sell Amateur Gear, Computer
Equipment or Electronic Test Equipment
Michigan's Largest Swap-N-Shop

NIAGARA PENINSULA
AMATEUR RADIO CLUB INC.
ANNOUNCES

BIG EVENT #11

SATURDAY, FEB. 4, 1989

0800 hrs to 1400 hrs
Set-up at 0630 hrs



CANADIAN AUTO WORKERS HALL
125 BUNTING RD., ST. CATHARINES

Lots of Parking - Indoor Displays
New and Used Parts and Equipment
Commercial Displays
Hot and Cold Refreshments will be served

TRANSMITTERS - RECEIVERS - TEST EQUIPMENT - LAB EQUIPMENT - COMPONENTS

CARF

VE3 KHB

ARRL/CRRL

RSGB

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W. J. FORD SURPLUS ENTERPRISES

Buy/Trade



Our warehouse 21 Market St., Smiths Falls.
(corner Market & William)

Mail to: P.O.Box 606
Smiths Falls, Ontario
K7A 4T6

Phone: Bus. (613) 283-5195 Res. (613) 283-0637

We are now open Saturdays from 9 am to 5 pm. Weekdays, for the present, are restricted to appointments for any time between 5 am to 10 pm. We normally are not maintaining a regular schedule during the week and therefore an advance appointment is essential to ensure your visit is successful. Sundays and holidays we are closed.

We carry a vast assortment of items ranging from medical, laboratory, scientific, photographic, optical, antiques and other strange pieces for the experimenter and enthusiasts as well as schools, labs and electronic firms. If in the area when we are open, feel free to drop in and browse through two floors loaded with surplus.

We are always happy to answer queries by phone or mail. Don't hesitate to phone us any time at home or warehouse. If by mail, a postage stamp to defray the cost of a reply would be appreciated. Due to the nature of surplus very few items are stocked in depth and as a result it is impossible to prepare a catalogue or listing which would remain valid for even a short period of time.

New items for February include: (1) Digital RX02 dual floppy drive \$30.00. (2) Diablo printer Hi Type II Model 1345A (daisy wheel). Friction feed with power supply. (3) Henry Electronics 130A02 VHF amplifier, 1-5W in with 130W out. Now tuned to 141.15MHz, solid state. \$85.00. (4) AvanteK type AWC 4215N LNA's, 3.7-4.2GHz. \$50.00. (5) Military pack sets PRC502 with whip antenna, loading coil, dipole kit, rechargeable battery pack & AC charger, handset & canvas case. \$150.00. (6) Sony dual speaker cabinets approx. 9x5x14 18w at 8 ohms Model SS170A. \$15.00. (7) Double shaft AC motors 1/35 HP, 1625RPM, 115V60Hz. \$2.00 each. (8) Aircraft vertical gyros. \$15.00. (9) H.P. plug ins, 1908A, 1910A and 1921A priced at \$40.00 each. (10) HP 8054A real time audio spectrum analyzer. \$600.00. (11) Portable "Fast Fold" projection screen made by Commercial Picture Equipment complete with aluminum folding frame and stand, portable carrying case with instructions. This is a professional screen for slides or film projection. Size 10 1/2 ft. x 14ft. Priced at \$100.00

Listening to the World

Welcome once again to our look at the world of international broadcasting. Thank you to all of those who have taken the time to write and express their appreciation for this column. I hope that many Amateurs who might not have been aware of the value of international broadcasting have now ventured into this world of long distance radio monitoring and are enjoying it. If you are, let's hear from you. I'd like to know what kinds of things you have been hearing. If the interest is there, I may consider including a small logging segment in each column, highlighting some of the catches you have made.

COUNTRY OF THE MONTH

This month we'll focus on one of the pioneers of international shortwave radio broadcasting, the Netherlands or Holland, as it is sometimes better known. The international voice of Holland is Radio Nederlands. This is one of the most highly respected broadcasters on shortwave radio today.

Radio Nederlands began overseas broadcasting to the Dutch East Indies in 1928 with the Happy Station, thus making the Netherlands the first international broadcaster on shortwave radio. They broadcasted programming featuring the Happy Station programs until 1947 with only a short interruption for World War II. In 1947 Radio Nederlands World Broadcasting Foundation was formed. Radio Nederlands is now headquartered in Hilversum, Holland and uses transmitters located in Flevo, Holland as well as relay transmitters in Bonaire, Netherlands Antilles and Talata, Madagascar.

Radio Nederlands broadcasts 24 hours a day with programming in nine languages including English and French. They employ over 400 people. They are reported to receive some 140,000 letters per year from their listeners around the world. Their programs are of superior quality and their production is very professional.

One may write to Radio Nederlands for program and frequency schedules, as well as information sheets about different aspects of shortwave radio in general. Their address is P.O. Box 222, 1200JB, Hilversum, Holland. Due to the strength of their transmitters, we in North America are able to receive many transmissions daily from Radio Nederlands, even though they may not be directed to North America.

Radio Nederlands also runs a transcription service which offers studio quality tape recordings to radio stations in other countries. When writing to the station, one asks for a Listener Service Catalogue which will give the listing of various information sheets such as

booklists, computer programs and receiver reviews which are available free of charge. Let them know that you heard about their station and services from *The Canadian Amateur* shortwave radio column.

One of the most popular programs on Radio Nederlands is a communications magazine show, *Media Network* hosted weekly by Jonathan Marks, a familiar voice to shortwave listeners the world over. This program is full of information about radio communications in general, from receiver reviews to station profiles to DX tips... whatever is happening in the world in the field of radio communications. At the time of this writing, *Media Network* is aired five times a week for the North American audience. Here are the times and frequencies:

Thursday 1650 UTC on 6020 and 15570 kHz

Thursday 1850 UTC on 17605, 21685 and 15180 kHz

Thursday 2050 UTC on 9715 kHz

Friday 0250 UTC on 6020, 9895, 6165 and 9590 kHz

Friday 0550 UTC on 6165 and 9715 kHz

Listeners in North America can best tune into the Radio Nederlands North American service in one of two evening broadcasts heard daily in English. The first from 0230 UTC to 0325 UTC on 6020, 6165, 9590 and 9895 kHz for Eastern North America or from 0530 to 0625 UTC on 6165 and 9715 kHz for Western North America.

You will find many wonderful hours of program enjoyment over the airwaves of Radio Nederlands. They are also one of the most helpful stations in the world when it comes to listener services. Once on their mailing list, you will continue to receive program and frequency schedules together with other interesting information about the hobby of shortwave radio monitoring. Radio Nederlands is definitely recommended listening.

RECEIVER REVIEWS

One question which I am asked most frequently by people with an interest in shortwave radio is, "What receiver should I buy?" This is by far one of the most confusing questions as well. The following is a list of recommended shortwave receivers. Those indicated with a (P) are classified as portables and do not require external antennas. Non-portables are not recommended for those with limited space or for those in high-rise apartment complexes. Those indicated with * are very popular and highly recommended.

Please consider contacting me to discuss your requirements prior to

Sheldon Harvey
79 Kipps St., Greenfield Park,
Quebec J4V 3B1

making a purchase. This consultation is free of charge. Please note that the prices indicated are approximate Canadian prices and will vary from city to city.

SONY	
(P) ICF-7700	\$280.00
(P) ICF-7601	\$170.00
* (P) ICF-2003	\$360.00
* (P) ICF-2010	\$525.00
(P) ICF-PRO80	\$560.00
* (P) ICF-SW1S	\$490.00

GRUNDIX	
(P) *210	\$150.00
(P) *215	\$170.00
(P) SATELLIT 400	\$600.00
* (P) SATELLIT 650	\$1500.00

PANASONIC	
(P) RFB-20	\$170.00
(P) RFB-40	\$310.00
(P) RFB-60	\$450.00

EMERSON or SANGEAN	
(P) W-40	\$90.00
* (P) ATS-803A	\$300.00

KENWOOD	
R-2000	\$1050.00
* R-5000	\$1300.00

ICOM	
* ICR-71A	\$1400.00

REALISTIC	
* (P) DX-440	\$300.00

I strongly recommend that prior to purchasing any equipment, you should consult someone who is experienced in the hobby to discuss your requirements to ensure that you get the best value for your dollar. Unfortunately, many people selling shortwave equipment don't really know that much about the subject. As many Amateurs will know, much of the new ham gear on the market is now general coverage. In most cases, the shortwave coverage on these units is equally as sensitive and selective as the transceiver itself.

Both Kenwood and Icom are two brands which I have had some exposure to and have been quite impressed with their performance on shortwave.

The Canadian International DX Club has put together an information sheet entitled *Receiver Comparison Guide*. This publication reviews most of the receivers you see mentioned above, giving pros and cons for each of the units. This information sheet is available from me for \$1 to cover postage and photocopying. If you are interested in a copy or if you have questions about receivers, please feel free to contact me.

Bob Boyd VE3SV
P.O. Box 356,
Kingston, Ont. K7L 4W2

ARES AMATEUR RADIO EMERGENCY SERVICE

It is hoped that this column, which is being submitted to both The Canadian Amateur and to QST Canada, can become an ongoing source of news and information for members of both organizations on ARES activities across Canada. ARES members and particularly ECs are invited to send along information on what they are doing and on any developments they would like to share with other ARES groups. Yours truly will pull this together in future columns, all with the objective of increasing our collective ability to serve our community and our nation, should disaster strike.

In what may have been a 'first', a simulated search and rescue operation by Amateur radio operators, police and civil defense directors in Canada and the U.S. took place on Oct. 31. The location was a wilderness area west of Lake-of-the-Woods on the Ontario-Minnesota border. Participating were aircraft from Kenora and Roseau, Minnesota, some 20 Amateurs from both Countries, Sheriff's officers and Civil Defense directors from the Roseau and Lake-of-the-Woods counties in Minnesota and Ontario Provincial Police from Kenora. All communications were by Amateur radio.

The scenario involved an aircraft enroute from Fargo, North Dakota to Kenora, carrying seven people, which

LISTENING (cont'd)

Another good source of equipment reviews is Lawrence Magne, Editor in Chief of the passport to World Band radio. Lawrence can be heard monthly on the Shortwave Listeners Digest program on Radio Canada International, reviewing equipment. He also publishes a series of equipment reviews called *White Papers* which are available on specific receivers. You can contact Mr. Magne for more information as to cost and availability of these *White Papers* at International Broadcasting Services, Ltd., Box 300, Penn's Park, Pennsylvania 18943.

That's all for this month. Next month we'll be looking at some of the special DX programs which can be heard on the shortwave bands. These programs help you to get the most out of the radio monitoring hobby and should become a regular part of your listening schedule. If you have any questions about any material appearing in this column, please contact me. Also remember that a sample copy of the bulletin of The Canadian International DX Club is available for \$2. The bulletin includes a membership application form and information sheet about the club and its activities. Until next time, 73's to all. ■

was reported down on the Canadian-U.S. border west of the International Airport at Pinecreek, MN. Word of the crash was flashed to area Amateurs by Woody Linton VE3JJA from Kenora.

Within half an hour, aircraft carrying Amateur radio operators were in the air and a network utilizing three two-metre repeaters, an emergency base station and two control stations was in operation to coordinate communications. Airborne Amateurs spotted the downed aircraft and landed to set up a base station near the crash site. It was reported that the pilot and a female passenger were dead, another man was seriously burned and in shock, a younger man had wandered into the bush to seek help, an elderly man suffered severe back injuries and a fifth male had minor injuries but was uncontrollably hysterical.

Hand-held transceivers and repeaters were used to relay information to Kenora to alert the OPP and to call for an air ambulance for the victims. OPP were also requested to take video pictures of the scene for investigators who had been notified by local authorities. Imaginary ground personnel were pressed into service by the Roseau County Sheriff.

Ambulance, police, search, rescue and all other communications were handled by Amateur radio in this make-believe emergency. When conditions on the two metre band deteriorated, communications were carried on by two control stations, one in Roseau and one in Kenora, on 75 metre SSB.

The exercise was the culmination of a two year effort by Canadian and U.S. Amateurs to put together a combined search and rescue and emergency communications test for the huge wilderness area surrounding and including Lake-of-the-Woods.

Directing the exercise from Kenora was Woody Linton VE3JJA, who is also an OPP officer. Serving as control operator in Kenora was Dale VE3EFY. Other Kenora Amateurs participating were John VE3JH, Andy VE3JX, Reg VE3NNF, Nick VE3ZAN and Art VE3LMB. Operating the Sioux Narrows repeater were Paul VE3SNO and Dick VE3VGU.

Minnesota Amateurs involved were Bill WODCM, base operator, Ken WOHQL and Bill WOWJK. Standing as relay stations were Roy KODID, Jerry VBOQCY and Roland KOOTE.

EARTHQUAKES

Our last column dealt with the potential of a disastrous earthquake in British Columbia. Little did we think when we mailed it that ten days later a

major earthquake would occur in eastern Canada and northeastern U.S. The force was reported to be 6.2 on the Richter scale. Fortunately, damage was minor, due to the remote location of the epicentre in northern Quebec. If an earthquake of this magnitude had been centered in a populated area, damage would have been very great.

More recently, an extremely serious quake occurred in Soviet Armenia. At the time of writing, in early December, reports indicated fatalities might exceed 100,000, with tremendous property damage. Spitak, a town with a population of 20,000 near the epicentre was reported to be "erased from the earth".

We'll pass on later any reports received of communications assistance provided by the Russian ham fraternity.

DATABASE

Does one of your members have access to a personal computer with a database program? If so, he can make an important contribution to your ARES group by setting up a file of your members, their equipment and their capabilities. Here in Kingston we use a Commodore C-128 with the 'Consultant' data base program. Data fields were set up for all of the items in the ARES membership registration form such as ability to operate CW, SSB, RTTY, packet, etc. on each band, availability of emergency power at home, mobile capability, and so forth.

The record file is kept up to date, and periodic reports are printed and distributed to the EC and the AECs. We thus have at our fingertips information on who is capable of providing a required type of emergency communications. This should save us precious time in organizing our manpower and other resources in a real emergency. We also use the information to print labels for periodic mailings to our members.

ACCIDENT REPORT

Quinte EC John VE3MB reports assistance provided by his group in reporting a single car accident on Highway 62 north of Belleville. Tom VE3NFT spotted the wrecked automobile with the driver trapped inside. Using the Belleville repeater, VE3KBR, he passed a report to Ed VE3OBG who in turn advised the OPP. They responded, rescued the driver and dispatched him to the hospital. Tom also relayed a personal message from the injured driver to his family via Al VE3OX. Al used excellent judgement in passing the news to the driver's wife in such a way as to avoid undue alarm. Nice work, fellows! ■

QRP

Moe Lynn VE6BLY
10644-146 St.
Edmonton, Alta. T5N 3A7

QRP seems to be one subject most people welcome a discussion on in any Amateur magazine. We are fortunate to have access to the writings of Bob Brown NM7M of 504 Channel View Drive, Anacortes, WA. 98221. Being a retired Physics Professor from Berkley, he writes mainly for the ARCI *QRP Quarterly*. This month we begin a series of articles by Bob. Readership comments are welcome.

COMPONENTS

Having gotten this far in ham radio, you know that solar X-rays and ultraviolet radiation interact with atoms and molecules in the upper atmosphere to produce a region we call the ionosphere, whose level of ionization varies in proportion to solar activity and follows an 11-year cycle. Long distance propagation of high frequency radio signals changes in step with the strength of the ionosphere's F-layer, being better at times of high sunspot count and very poor at times of low solar activity which produces weak ionization.

There is more to the story: disturbances of the earth's magnetic field reduce free electron density in the ionosphere, weakening signals and causing signal fading. When ionization is already weak due to low sunspot activity, geomagnetic disturbances have a determining effect on high frequency band conditions. Knowing this, can we anticipate the quality of propagation on the HF bands? The answer is yes.

Future band conditions, like rolling dice, are predictable only within a certain range, but it is neither difficult nor impossible to improve our QRP DX results beyond what ignorance and luck can do. All that is required is to make proper use of readily available solar and magnetic data. Where do we find the data and how can we use them to improve our QRP activities?

MEAT OF THE MATTER

Starting at 1818 UTC daily and continuing every hour thereafter, WWV broadcasts the 1700Z measurement at Ottawa of solar flux (radio frequency radiation) at 10.7 cm wavelength as well as the K- and A- indices of geomagnetic disturbance. Solar radiation at 10.7 cm, though not causing ionization in the F-region, is highly correlated with the sunspot number and much more easily measured. With the usual cautions about statistical variation, the 10.7 cm solar flux measurement permits us to monitor the extent of ionization in the F-region. Times of high solar flux correspond to better band conditions;

times of low solar flux correspond with marginal band conditions.

The geomagnetic K- and A-indices are more complicated to understand, but can be used just as easily for prediction purposes. The WWV K-index, a logarithmic measure of variations in the earth's magnetic field determined every three hours at Voulder, Colorado, gives a coarse measure of short term disturbances. The non-logarithmic A-index gives a smoother measure of geomagnetic disturbance averaged over a 24-hour period. Low values of these indices,

especially the A-index, mean a quiet ionosphere with little fading thus auguring well for band conditions.

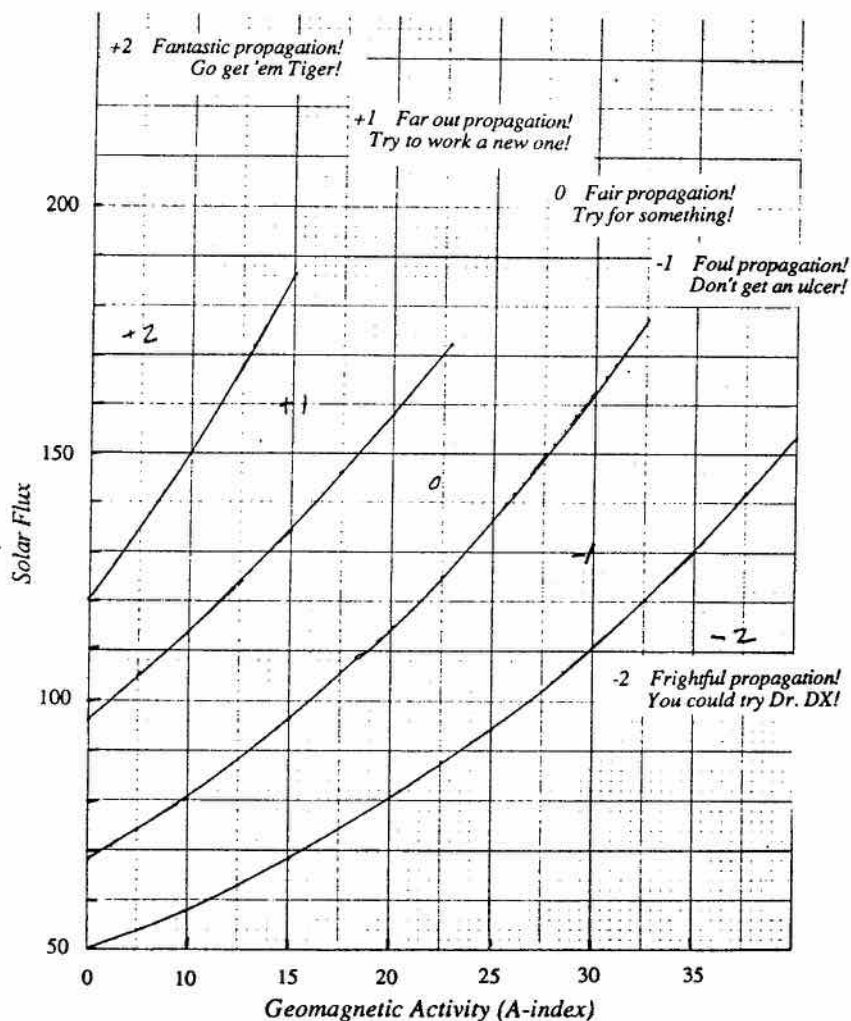
So there we have the main ideas: the best band conditions exist when solar flux is high and the A-index is low, the worst when flux is low and the A-index is high. If we take into account just one more item you will have all you will need to get started on your own program for predicting band conditions.

SOLAR ROTATION

This is the last twist we need to

QRPer's Propagation Predictor

Plot Solar Flux and geomagnetic activity A-Index as broadcast hourly by WWV beginning at 1818 UTC. Points falling in the upper left corner of this scatter-plot correspond to good HF band conditions, while points in the lower right represent poor conditions. The scatter-plot is divided into five regions representing different observed band conditions, labelled from +2 (excellent) to -2 (poor).



consider. The sun rotates about its axis in a period of 27 to 28 earth days. Because of that rotation, active regions on the sun's surface return to face toward the earth every 27 to 28 days, producing recurring patterns of propagation, both good and bad. This becomes our key to anticipating future band conditions. First we make a running plot of daily solar flux and A-index values, checking them against experience of band conditions at those times. A scale from zero to 400 will accommodate both measures over their ranges during a complete solar cycle. When you have a little history, you'll see recurring patterns; then you will be ready to predict when to 'go for it' and when to 'hunker down' and let the rig have a rest.

There's one more thing you should do with the data you accumulate, namely, make a scatter-plot with solar flux plotted vertically and the A-index horizontally. You'll find that points in the upper-left corner of the scatter plot correspond to good HF band conditions while points to the lower right represent poor conditions. See the QRPer's Propagation Predictor reproduced here, courtesy of Bob Brown NM7M. He is always interested in hearing from anyone who uses these methods while working QRP or even QRO and DX.

If you want help with programs, let him know what you are using and give a rundown on your recent DX and propagation experiences. He recognizes a QRPer involved with DX and propagation is really a practising geometer, solar astronomer, ionospheric physicist and chemist all rolled into one. It is nice to be able to talk to someone in the upper reaches of knowledge when it comes to propagation, so give him your best

shot... who knows, you might work WAC or QRP like Bill Dickerson WA2JOC, who did it in 11 minutes! As Bill says, a lot has to do with your attitude and the first important rule in working DX QRP is to believe it can be done. Of course living near the ocean or a large lake does wonders for a QRP signal and being patient helps. His advice to anyone who thinks they need a linear to work DX is to sell the thing or give it away. Its absence will do more to help you work DX than anything else!

GLEANNINGS

Dick VE6XW called from out of town enquiring about more info on the FOXX kits. Could be that another convert to Quaint Relaxing Pleasure is thinking of joining the ranks of quite a few from among the readers of *The Canadian Amateur*. Now all we need is for them to check into the weekly Sunday net at 1900 UTC on 14060 kHz +/- QRM.

A nice package of information arrived from Mike WB8VGE (he writes QRP for *73 Magazine*) who has run his rig and most of his home on solar energy for the last 12 years. He calls his company Sunlight Energy, 2225 May Flower N.W., Massillon, OH 44646 U.S.A. Certainly whatever is required can be purchased from Mike from just a trickle charger to a unit designed for house power. (All of the highest quality.) Which reminds me of a story in the Nov./Dec. issue of the Royal Bank letter titled 'The Quest for Quality': "There is room for improvement but the real challenge is to stimulate a drive for excellence not only at work, but in every corner of life... Aiming for excellence means raising the target ever higher, or surpassing merit!"

From *Worldradio* comes a tip for anyone with a 40 metre dipole. "Go ahead and use it on 15 metres as is, and forget whatever SWR you get; it will work just fine." The same seems to hold

true with my 3560 tuned vertical when used on 30 metres. Backing off the output to compensate for high SWR allows me to work VK land and most other readable signals without difficulty. Another thing to remember, place your antenna over good moist ground and not up on dry asphalt roofs or rocky mountain tops. Do you know what type of ground Radio Canada uses for their antenna or have you seen the array at Sackville?

NET & OTHER ACTIVITY

Some recent call signs showing up at 1900 UTC on 14060 kHz Sundays are: Peter VE7AB, Dave VE3OOL, Pete VE7XXX, and old faithful just back from a remote island holiday in time for the snow was Rick WL7BDK! All we need now are a few reporting in regularly and bringing a friend along to make each week more interesting.

The ARCI gang certainly have a large turnout each week. Anyone not in a hurry can expect a chance with his or her comments after all have checked in. Contests and QRO CQs add to the fun and practice of reading through QRM so come along... or don't you need the exercise?

There were seven entries from Canada in the 1988 Fall QSO Party sponsored by ARCI again. In descending order of total points, VE3OOL, VE5VA, VE2ABO, VE6BLY, VE7EKS, VE6BMX, VE2AUG. Outside of North America there were entries from G3XJS, PA3ELD, OK2BMA and JH5NTL. Top scorer overall was N4BP with 3,587,220 points closely followed by AA2U with 3,560,400. Both used solar power but the latter ran less than one watt! The lowest of the top ten was still 1,277,136 points running four watts using three antennas on five bands during 23 hours of work. W1HUE said it best: "QRP is great... NO TVI complaints!"

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2. Connect a 0.01 uf cap. across the receiver element.
3. Connect a 0.01 uf cap. between terminal RR and terminal C of the telephone network.
4. Connect a 0.01 uf capacitor between terminal GN and terminal R of the telephone network.

PHONE PATCH NOTES

1. Install a 1542-A inductor in series with the patch. In lieu of inductor use two 2.5 mh RF chokes, one for each line.
2. Connect a 0.01 uf cap. across the patch side of the inductor.
3. Install a 2.5 uh RF choke in series with the microphone lead inside the phone patch.
4. Install a 470 pf cap. between the microphone side of the RF choke and ground.

— Charlottetown ARC

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NYBBLES AND BITS

Generating times around the world

With the improvement of Cycle 22, I have been talking to several people all over the globe. On a few occasions I have been embarrassed by wishing an OM/YL a good morning when it actually was late at night in his/her home. As a result I wrote the following little program to help me.

The program generates a table of local times and GMT for the complete 24-hour clock. You should tailor it to your home QTH and to the places in the various time zones that you are likely to work or be interested in. I list a sample set of places in the program, but you should verify the accuracy of the times yourself. Furthermore, in summer many locations change time to save on energy, so the times may be out by an hour. You should calibrate two versions, one for the summer and one for the winter months. (The calibration is done in line 510 of the program.)

The beginning of a typical table is given in Fig. 1. Note that I have used special abbreviations for QTHs around the world (see Table 1). You may use these or invent ones of your own to place in the program. As described in the program, you may use as many lines

as you wish for as many QTHs in any one time zone as you like (the program as it stands has two).

THE PROGRAM

The line numbers are followed by the explanation:

100-150: Remarks about the program.
160-170: The program uses the extended graphics characters to print the table, so make sure your printer is properly set.

190-200: The printer is got ready for output. (C-64 users type line 200 to open the printer file for output; IBM Basic users type line 210 to make sure that there are enough columns for the output.)

240-150: Since the output table is going to be longer than the usual 80 columns, we have to set the printer to compressed mode. You may do this by either using the switch on your printer, if it has one, or by including line 250.

260-300: Variables used for some of the special print characters that will be used in the program. (CR = carriage return; HL = horizontal line; V1 = vertical line.)

310-330: The top line of the table.

340-390: These few lines print out the first line of countries in the table. Leave QTH and GMT alone, but for the others you may substitute codes for your favourite places in the same time zone as the places in the program. In this way you can customize it to your own likes and dislikes.

400-440: Same applies to this set of lines. Put in your favourite country codes for the places shown. You can add as many new sets of countries here as you like. Make sure, however, that the columns match and watch your typing!

450-460: The last line of the table title.
480: The start of the hour loop from 0 to 24 hours. This will give all times in the 24 hour clock.

490: The statement PRINT #4, USING "###"; HOUR; lets you print the HOUR using three columns.

510: This statement must be adapted for your own particular QTH. The number added (or subtracted) reflects the number of hours to be added (or subtracted) from GMT to get the local time. In Ontario we have to add 4 hours in summer and 5 in winter (eastern standard time.) You should use the number relevant to your particular QTH— winter or summer.

520-540: Prints out the time in all of the other zones. Note that the time at your local QTH is repeated in the table. I have repeated this for easy readability.

550: If we have reached HOUR 24 we want to exit and print the last line.

560-570: Print the crossed lines in the table.

580: The end of the HOUR loop.

600-610: Print the last line.

QTH	GMT	SWE	FIN	ERU	UKR	UZB	IND	MAL	CHA	JAP	ARU	NCA	MID	ETC
	CAN	NIG	SAF	KEN	REU	PAK	SRL	INA	AUS	INA	AUS	GUA	TON	
0	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	5	6	7	8	9	10	11	12	13	14	15	16	17	
ETC														

Figure 1— The start of a typical table from the program.

AK	Alaska	ALB	Alberta	ARG	Argentina
ARU	Asiatic Russia	AUS	Australia	AZO	Azores
BRA	Brazil	CA	California	CAN	Canary Isl
CHA	China	COI	Cook Islands	CRI	Costa Rica
ERU	European Russia	FIJ	Fiji	FIN	Finland
FPO	French Polynesia	FRA	France	GRE	Greenland
GUA	Guam	HI	Hawaii	INA	Indonesia
IND	India	ITA	Italy	JAM	Jan Mayen
JAP	Japan	KEN	Kenya	MAL	Malaysia
MAN	Manitoba	MAU	Mauritius	MEX	Mexico
MID	Midway	NCA	New Caledonia	NFL	Newfoundland
NIG	Nigeria	NSC	Nova Scotia	NZE	New Zealand
PAK	Pakistan	PER	Peru	PHI	Philippines
PIT	Pitcairn	PNG	Papua New Guinea	QUE	Quebec
RCV	Rep Cape Verde	REU	Reunion	SAF	South Africa
SGA	South Georgia	SRL	Sri Lanka	SWE	Sweden
TOK	Tokelau	TON	Tonga	UKR	Ukraine
UZB	Uzbek	WAUS	Western Australia		

Table 1— Country Abbreviations

I hope you find this little program useful. Since I have started using it, I have certainly saved myself a great deal of embarrassment. During the recent Olympics in Korea I could see that at 1 a.m., when the CBC was broadcasting live, it was 2 p.m. in Korea.

Another useful purpose that the program can be used for is chasing some of those elusive DX stations. If you want to chase African DX from Ontario, better do it in early afternoon, otherwise the African OM/YL may be at work or asleep!

Remember that all programs appearing in this column may be obtained from CARF for a mailing and handling fee.

Continued on next page

```

100 REM PROGRAM TO GENERATE THE DIFFERENT TIMES AROUND THE WORLD
110 REM
120 REM written by Antonio Salvadori, VE3NXQ, Guelph
130 REM
140 REM (c) C.A.R.F., Kingston, Ontario.
150 REM
160 REM Select the IBM Graphic Character 2 set or
170 REM set the DIP switches in your printer to be IBM compatible.
180 REM
190 REM Get the printer ready - choose either 200 (C64) or 210 (IBM)
200 REM OPEN 4, 4
210 REM WIDTH "LPT1:", 130
220 REM For IBM change all PRINT# 4, to LPRINT
230 REM
240 REM Set your printer for compressed mode or include statement 220
250 PRINT# 4, CHR$(27) + CHR$(15)
260 REM Set up some of the special print characters
270 CR$ = CHR$(197)
280 HL$ = CHR$(196)
290 VL$ = CHR$(179)
300 H4$ = HL$+HL$+HL$+HL$
310 REM Print out the header line with all the country names
320 PRINT# 4, CHR$(218)+H4$;
330 FOR I = 0 TO 23 : PRINT# 4, CHR$(194)+H4$; : NEXT I : PRINT# 4, CHR$(191)
340 REM Substitute the countries you are most interested in. See article.
350 PRINT# 4, VL$+" QTH"+VL$+" GMT"+VL$+" SWE"+VL$+" FIN"+VL$+" ERU";
360 PRINT# 4, VL$+" UKR"+VL$+" UZB"+VL$+" IND"+VL$+" MAL"+VL$+" CHA";
370 PRINT# 4, VL$+" JAP"+VL$+" ARU"+VL$+" NCA"+VL$+" FIJ"+VL$+" MID";
380 PRINT# 4, VL$+" HI "+VL$+" AK "+VL$+" BCO"+VL$+" ALB"+VL$+" MAN";
390 PRINT# 4, VL$+" QUE"+VL$+" NSC"+VL$+" GRE"+VL$+" JMA"+VL$+" AZO"+VL$
400 PRINT# 4, VL$+" "+VL$+" CAN"+VL$+" NIG"+VL$+" SAF"+VL$+" KEN";
410 PRINT# 4, VL$+" REU"+VL$+" PAK"+VL$+" SRL"+VL$+" INA"+VL$+" WAUS";
420 PRINT# 4, VL$+" INA"+VL$+" AUS"+VL$+" GUA"+VL$+" NZE"+VL$+" TON";
430 PRINT# 4, VL$+" COI"+VL$+" FPO"+VL$+" PIT"+VL$+" MEX"+VL$+" CRI";
440 PRINT# 4, VL$+" PER"+VL$+" ARG"+VL$+" BRA"+VL$+" SGA"+VL$+" RCV"+VL$
450 PRINT# 4, CHR$(195)+H4$;
460 FOR I = 0 TO 23 : PRINT# 4, CR$+H4$; : NEXT I : PRINT# 4, CHR$(180)
470 REM Print out the hourly table
480 FOR HOUR = 0 TO 24
490     PRINT# 4, VL$; : PRINT# 4, USING "###"; HOUR; : PRINT# 4, " "+VL$;
500 REM Calibrate line 510 to your local time - see article
510     GM = HOUR + 4
520     FOR ZONE = 0 TO 23
530         PRINT# 4, USING "###"; (GM + ZONE) MOD 24; : PRINT# 4, " "+VL$;
540     NEXT ZONE
550     IF HOUR = 24 GOTO 600
560     PRINT# 4, CHR$(195) + H4$;
570     FOR I = 0 TO 23 : PRINT# 4, CR$+H4$; : NEXT I : PRINT# 4, CHR$(180)
580 NEXT HOUR
590 REM Print out the last line
600 PRINT# 4, CHR$(192)+H4$;
610 FOR I = 0 TO 23 : PRINT# 4, CHR$(193)+H4$; : NEXT I : PRINT# 4, CHR$(217)
620 END

```

Figure 2— The program to generate the time around the world.

Bernie Murphy VE3FWF
3 Herrington Ct.
Nepean, Ont. K2H 6B9

PACKET RAP

THE BASICS

The topic for this month's column was going to be protocols and the ISO model. Before I delve into the more esoteric aspects of packet radio, I thought it might be useful to go over the 'basics' of a typical packet station. I will assume that your packet station is made up of the following:

1. a 2 metre radio and appropriate antenna,
2. a Terminal Node Controller or TNC,
3. a terminal or terminal emulator running on personal computer or PC.

I will assume that you are knowledgeable about the way your 2-metre radio basically works. Of course, you may not be able to fix this little high-tech wonder when something does go wrong, but you should be able to understand the block diagram in the manual. The main function of the TNC is to allow data (from your terminal or PC) to pass through your radio. The TNC has 1 analog input, 1 analog output, a digital interface using the RS-232C specification and 1 control line that keys your radio when there is data to send. The TNC's analog input is usually the speaker lead from the radio and the analog output is connected to the

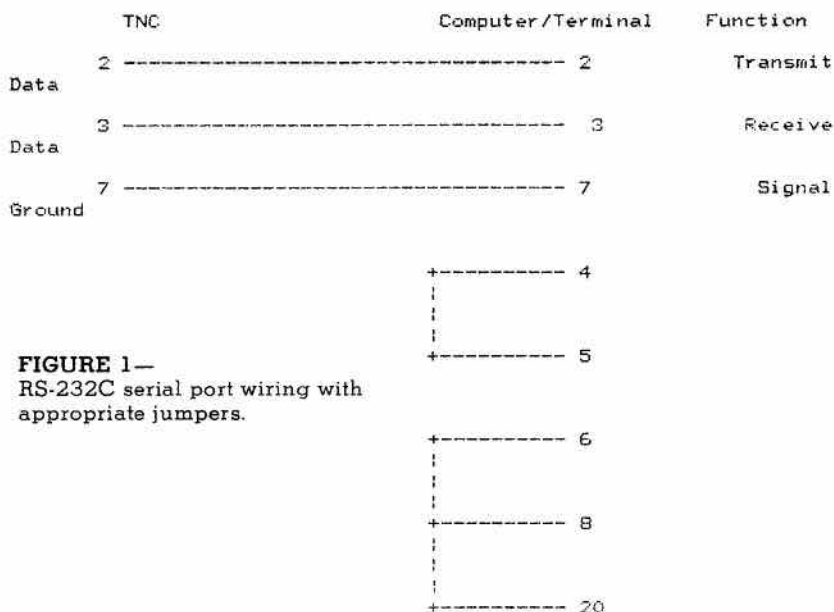


FIGURE 1—
RS-232C serial port wiring with
appropriate jumpers.

microphone lead. Since we are dealing with analog data, things normally need to be adjusted or tweaked. Note that shielding practices used with audio equipment are required.

In many cases, the analog level coming out of the TNC may not be correct. Improper levels may under-modulate, or worse, overmodulate the radio. The analog signals present on the speaker leads and microphone leads of your TNC are pairs of tones following the Bell 202 modem specification. The tones used are 1200 Hz and 2200 Hz. The modulation of these tones at 1200 times per second gives us the familiar 'brap' sound over the air that packet radio enthusiasts know and love.

The easiest way to make sure that everything is okay is to have a friend who is close by monitor your signal over the air. There should be no hum present (of course!) and the modulation should be clean and at the correct level. Access to proper test equipment is the best way to check out your rig, but the 'over the air test' may turn up problems that you were not aware of.

The digital side of the TNC is where a lot of the magic occurs and many hams are not too familiar with this type of interface. The formal name for this digital interface is IEEE RS-232C. This interface causes problems and confusion both for professionals and hobbyists such as ourselves! This specification outlines the electrical signals for the interface (normally +/- 12 volt signal levels are used) and what each pin does. The problem is that many devices require 'some' of the signals, but not necessarily 'all' of the signals defined by the RS-232C specification.

In a subsequent column we will delve into the more intricate details of the RS-

Continued on next page

NYBLES (cont'd)

CORRESPONDENCE

I have spent the last six weeks in Argentina on business and I was very pleasantly surprised to find a full mailbag on my return. Thanks to VE3NEG, VE7IU, VE7DBN, VE3NBW, VE3AKO, VE2BP, VE7AHE, VE1AEM, VE1BZP, VE7DSH, VE5LC, VE7TV, VE1TX, VE5LC, VE6VK. I am very grateful for your interest in the column. I hope I will live up to your expectations. Those of you who sent me SASE will receive a personal acknowledgement and I will reply to all in this column over time. Remember that it takes a couple of months from the time I type this to the time you see it in print.

VE7IU ran the October program on his Apple II+ but ran into problems; nothing was printed out from ASCII 126 on. What could the problem be? The problem lies in the incorrect setting of his printer. His printer—an Epson—is set up for normal Apple II use—probably Epson mode—but to run the program properly he must change the DIP switches to IBM mode. Check your printer manual, Rees, for the location and setting of the DIP switches and everything should be OK.

VE1AEM has the following problem: His rig is a Yaesu FT102 and he owns a Coco 2 computer. He also has the 73 and G4BMK RTTY/CW programs. Has

anyone got a simple interface that will allow him to use these (or run RTTY.) Has anyone put a proper monitor (I assume non-TV) and the Coco together? If you can help, Mac would appreciate a call.

VE1TX has adapted my GEMLOG program (November, 1988) to run on a PET 4032. He has sent me a printout and I will gladly send it to anyone who is interested (SASE please!) Thanks for your kind words, Roger.

VE7TV urges me—as indeed several others have—to maintain the C-64 flair to the column. Yes, Ron, I certainly will, however I must add that so far I have been amazed at the answers to my May 1988 questionnaire. The most popular machine so far seems to be an IBM clone followed closely by the C-64. I will publish the results shortly, but let me once more urge you all to send me the questionnaire from the May issue—a photocopy or a note with the information will do.

VE6VK, his suffix betrays his beautiful country of origin where I spent a delightful two years, would like to obtain a copy of *Computer Programs for Radio Amateurs* by J. Steffan W. Overback. Does anyone know where he could buy it, or who the publisher is? (I, too, would be interested in a copy). The only book of which I am aware is of the RSGB Amateur Radio Software. ■

PACKET (cont'd)

232 specification as well as describing the asynchronous ASCII (wow, that was mouthful!) data format that is used to converse between the TNC and the terminal or computer.

Your best bet is to consult the manual for your TNC when dealing with the RS-232 interface. Some terminals will not work properly if there are certain signals missing—other terminals only

require transmit data, receive data and ground. Fig. 1 describes a typical cable that 'usually' works. Note that each end of the cable is wired in a different manner. Beware of shorts between adjacent pins when soldering!

NETWORKING NEWS

Most of you are aware that a packet link between Ottawa and Calgary now exists. The Calgary end is terminated on a NETROM node with call sign

CGYSAT (VE6PAK-1) running on 145.01 MHz. The Ottawa end of the link also has a NETROM node. The call sign in Ottawa is OTTSAT (VE3RWJ-1) and the frequency is 145.07 MHz. You may ask, "How is this possible?" Well, a small item which I failed to mention—a satellite link is used! Please consult Fig. 2 for more information about the satellite.

1. Satellite: ANIK C2
2. Channel speed: approximately 400 Kbps of which 9.6 Kb/s is for Amateur use.
3. Error performance at 400 Kbps rate is 1×10^{-9}
4. Duration of Trial—two years from July 1988
5. Link is donated free by Telesat Canada
6. Transit delay is 300ms one way.

Figure 2 ANIK C2 Information

By the time you read this, there should be 2 interlinked NETROM nodes in Ottawa—one on 145.01 and the other on 145.07. The completion of these linked NETROM nodes should hopefully stir up some packet DX interest in Canada as west-east packet DX will be available 24 hours a day.

KA9Q NEWS

Those of you who are running the KA9Q NET code will be pleased when Phil Karn releases the latest version of this marvelous piece of software. Please read the January 1989 *The Canadian Amateur* column to find out what the NET software is and why you might want to use it. A number of hams in the Ottawa area are now experimenting with pre-release versions of the NET code. Some of the new features as of release 871222.33 (alpha w9nk.3) include:

- Support to run IP using NETROM nodes
- A mail box.
- Support to allow mail forwarding from an AX.25 BBS
- A 'finger' command which allows you to interrogate another station running the NET code.

All you need to experiment with this software is some sort of computer (IBM PC or clone, Amiga, MacIntosh, etc.) and a copy of the NET software. If you live in a remote area, and cannot get a copy by any other method, I can provide copies for the IBM PC. Please provide me with SASE, a 5¼-inch diskette and a diskette mailer. Please include sufficient postage. I do not have access to any other types of media so please, don't ask. Mail your requests to the address at the head of the column. Your comments and other feedback regarding the column are most welcome. My packet address is VE3FWF@VE3JF.

JRSD Fund

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS FOR THE 2 YEARS ENDED SEPT. 30, 1988—AUDITORS' REPORT, NOV. 21, 1988

To The Trustees of JRSD Fund:

We have examined the statement of cash receipts and disbursements for the period Oct. 1, 1986 to Sept. 30, 1988 of JRSD Fund except as explained in the following paragraphs. The examination was made in accordance with generally accepted auditing standards and accordingly included such test and other procedures as considered necessary in the circumstances.

The fund derives its income from the general public in the form of donations which are not susceptible to complete audit verification. Accordingly, our verification of revenue from this source was limited to accounting for the amounts recorded in the records.

In our opinion, the statement of cash receipts and disbursements present fairly the financial position of the fund as at Sept. 30, 1988 and the results of its operations for the 2 years then ended, in accordance with generally accepted

accounting principles applied on a basis consistent with that of the preceding period, except for Note 2.

The prior period's statement of cash receipts and disbursements was prepared by another chartered accountant.

Connelly, Koshy & Frouin
Chartered Accountants

NOTES:

1. Nature of Fund's Operations

The fund was established to aid Jack Ravenscroft defray legal costs in a lawsuit.

2. Comparative Statement

The current statement of cash receipts and disbursements is prepared for a 24 month period. While the 1986 statement was prepared for a 12 month period. Thus, these statements are not comparative.

3. Subsequent Events

Subsequent to Sept. 30, 1988, \$4800 was paid out of the fund as a final settlement to the plaintiff. After this payment, the fund has a cash balance of \$947 and accounts payable of \$4110, resulting in a projected deficit of \$3163.

JRSD FUND

Statement of Cash Receipts and Disbursements for the Period Oct. 1, 1986 to Sept. 30, 1988

	1988 24 Months \$	1986 12 Months \$
CASH RECEIPTS:		
Donations received	21,122	59,605
Foreign exchange gain (loss)	(78)	2,483
Interest earned	2,623	243
	23,667	62,331
CASH DISBURSEMENTS:		
Legal fees and expenses	55,123	24,424
Office supplies and expenses	251	189
Bank service charges	193	71
	55,567	24,684
EXCESS OF CASH RECEIPTS OVER CASH DISBURSEMENTS	(31,900)	37,647
Opening balance	37,647	0
Closing balance	5,747	37,647
REPRESENTED BY:		
Bank of Montreal - Savings account #5147-893	4,600	29,745
Bank of Montreal - Current account #4600-093	1,147	7,902
U.S Dollars \$934.80 @ \$1.2265	5,747	37,647

A Pair of Budget PA Amplifiers

Just prior to the Banff-Calgary foot race, there was a scramble for public address amplifiers. The idea was to feed audio output from the mobile transceiver to the PA amplifier so that it could be used as a public address system.

Two easy to build and economical amplifiers that worked for this need, are described here. The 8-watt unit can be built for about \$12 and the 16-watt unit for about \$20. These figures can be reduced substantially if a well-supplied junk box is at hand.

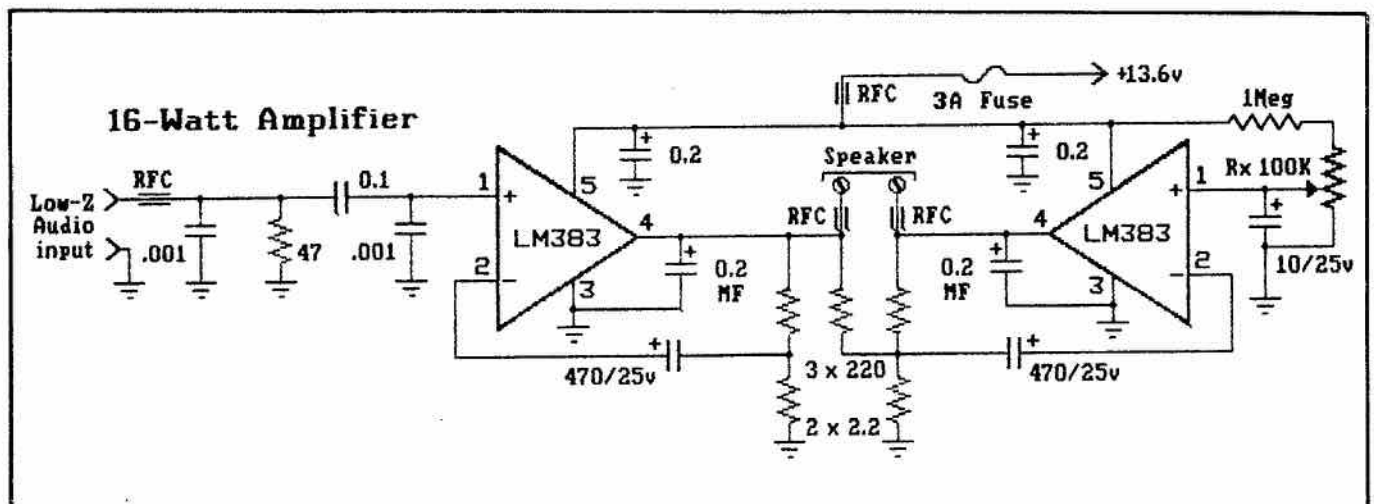
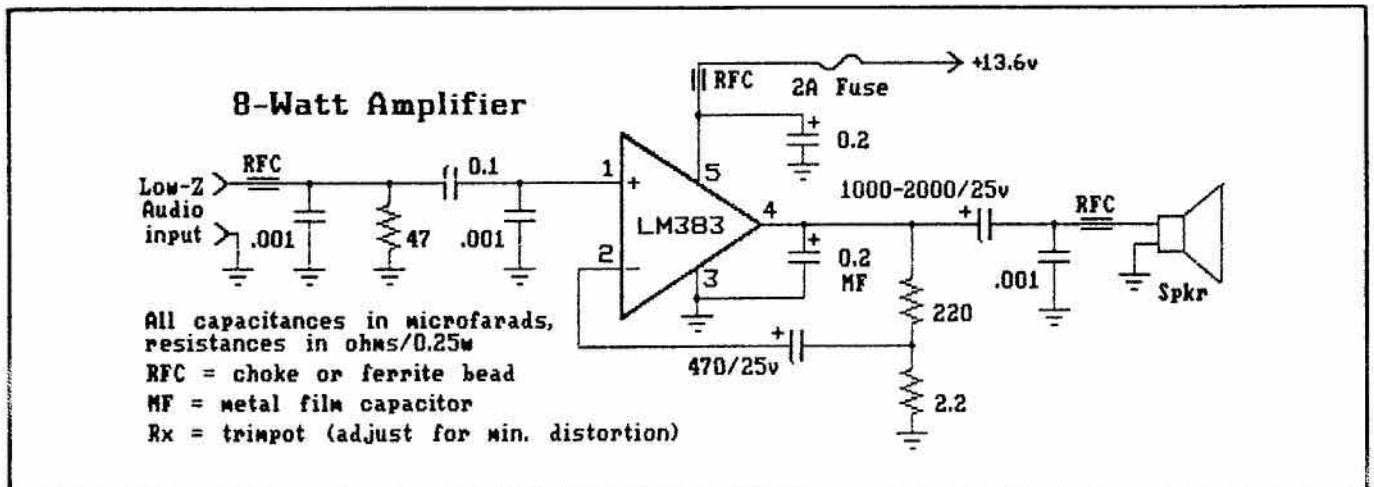
The National LM383 IC copies in a TO 220 package and is rated for 8 watts when operate at 20 volts. A pair of them in a bridge configuration produce 16 watts. At a cost of \$4 each, these IC's provide a lot of output for low cost.

A small mini box is used for an enclosure and the LM383s are heat sunk to the walls of the box. Point-to-point wiring can be used in conjunction with tie lug strips. All parts are available from Radio Shack. All leads entering and leaving the enclosure

should be fitted with RF chokes and/or ferrite beads.

If microphone operation is desired, it can be connected to the input coupling capacitor for the LM383. Since audio drive requirements are low, a crystal mic would probably work fine.

The 8-watt amplifier will also work well to increase audio output of hand-held rigs when used in mobile applications. Audio gain is controlled by the handheld as there is no volume control on the amplifier. ■



A Packet Message Waiting Indicator and Connect Alarm

BY JIM LESLIE VE2AQ1

This weekend project is something to get 'alarmed' about!

Looking for a simple method to see if someone had connected to your TNC while you were out? Like most packet operators, I normally leave my TNC on 24 hours a day, but shut down the computer. I wanted a way to see if someone had connected to me without turning on the computer, loading a terminal program and sending the TNC a Ctrl-Q to dump the TNC's buffer. Not only is it easy to find parts for and to build, but it is also easy to implement as there are no internal connections to be made to the TNC. The interface to the TNC is 'optically' coupled via the photocell CD1 to the CON LED.

CIRCUIT OPERATION

The message waiting feature is performed by U1 (wired for schmitt trigger operation). When someone connects to the TNC, the CON LED lights. The resistance of the photocell CD1 drops, triggering U1. The output of

U1-3 goes high and turns on Q1 via R4. This puts a low at U1-2 via R6 and acts to keep U1 latched when the CON LED goes out. The circuit is reset by S1 which opens the feedback path to U1-2.

At the same time U1-3 goes high, it triggers U2 via R7, C2 and Q2. U2 is wired as a one shot and performs the connect alarm function of the circuit. With the timing components shown at R10, C4, it produces a pulse of about 2 seconds at U2-3. This turns on the peizo buzzer to audibly indicate a connect has taken place. You may want to disable this at night, however! This is easily done by placing a SPST switch in series with the buzzer. Note, too, that if the message waiting feature only is desired, the connect alarm portion of the circuit could be eliminated by not adding the components within the dotted line.

The only adjustment is R1 which is the sensitivity adjustment. Its value will be dependent upon the photocell used at CD1 and the level of sensitivity desired. I have found this not to be critical,

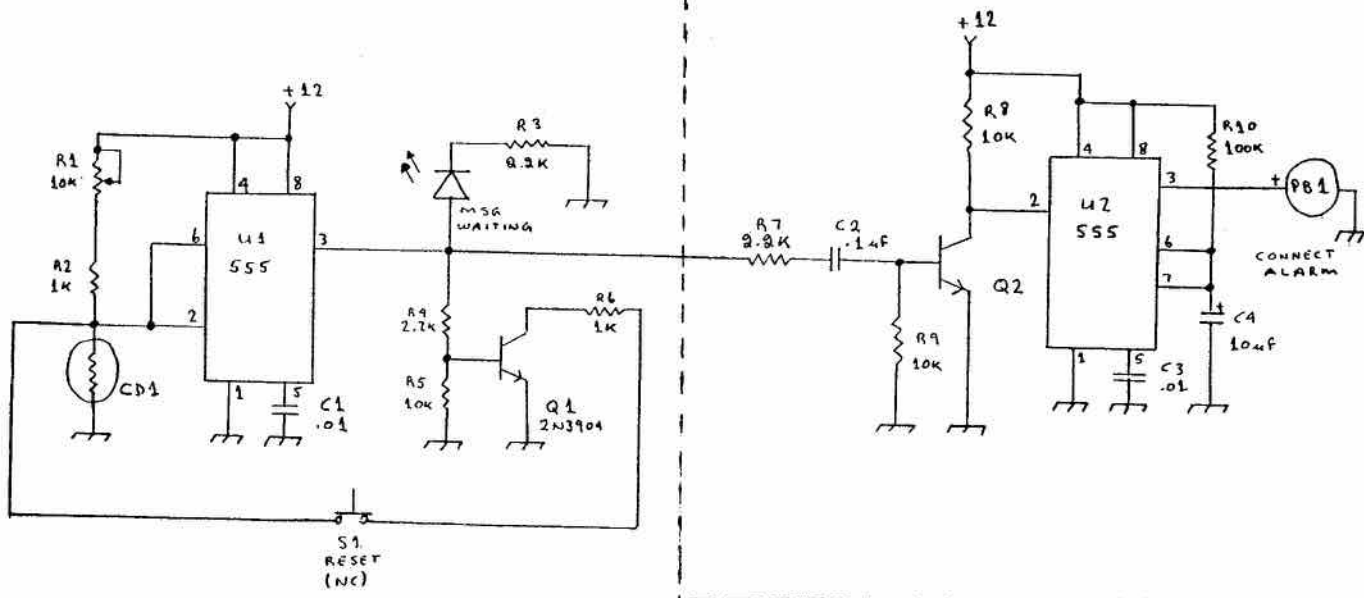
especially if a light shield is used to prevent falsing when you turn the lights on in the shack. Use 'tight' coupling to the CON LED. I used shrink tubing to cover the photocell and CON LED completely and found this to work quite well.

CONSTRUCTION

There are no critical components used in this circuit. I tried a couple of photocells of dubious origin at CD1 and found them to work fine. You may need to vary the value of R1 depending on the photocell you use.

Any means of construction can be used for this simple project. I used perfboard, but PC board may be a better approach, especially if a few are to be built.

Building your own equipment may be difficult these days, but a project like this should be easy enough for anyone to complete over a weekend, including a trip to the local Radio Shack. Try homebrewing. It's a satisfying experience. ■



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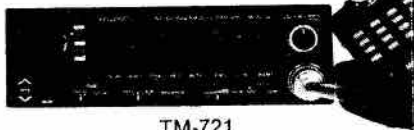
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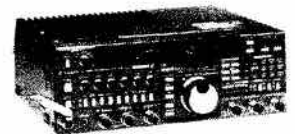
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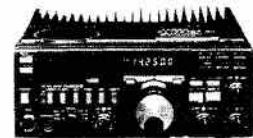
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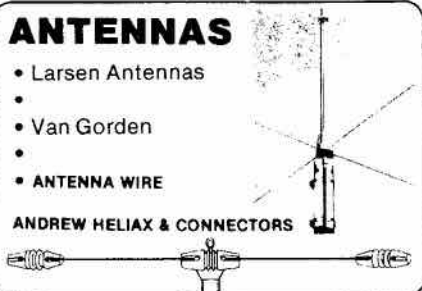
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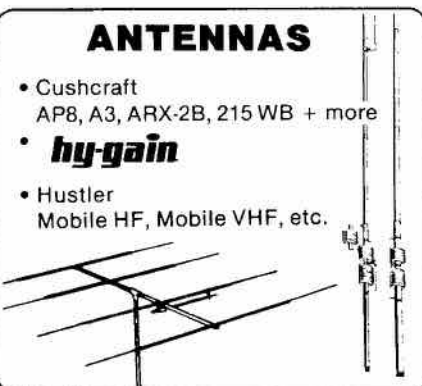
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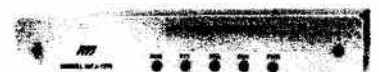


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