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THE CANADIAN AMATEUR

Canada's Amateur Radio Magazine

La Revue des Radio Amateurs Canadiens

JUNE 1987

34/94 in the East Kootenays

*Harry VE7ASH shown with his
11 element 2 metre Armstrong
rotatable Yagi which he uses
regularly to access 34/94 from
Rossland, B.C. For story see
page 10.*



Photo — VE7CAS

Proper Care and Use of Transmitting Tubes

— Page 40

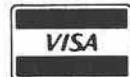
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WHAT IS ?

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

Hello from the New Editor

BY GEORGE. W. SANSOM
VE3LXA

The June edition of *The Canadian Amateur* marks my acceptance of the Editorial duties from our interim editor and full-time production manager, Steve Campbell. I'm sure you'll all agree that Steve has managed both jobs beautifully, however he has lost ten pounds and his hair turned grey. Just kidding, but sincerely, thanks Steve.

ALL ABOUT ME

Quickly, since I don't want to bore you, I was in the RCAF for 20 odd years; I've been a 'ham' since 1974 (I too got my ticket under the guidance of Dick Harlow VE7BRH), old calls were VE7DVM, VO2BH and, since 1979, VE3LXA. I've been a part-time DJ/news reader/news writer on a number of radio stations in Canada and Europe and was the producer of a Cablenet TV program for two years. My prime job is an Electronic Maintenance Supervisor with an electronics firm. As for my editorial qualifications, well, the above might help but I guess it's just something I've always wanted to do. George Morgan VE3JQW has offered to act as assistant editor, while Debbie Norman and Steve Campbell have promised to correct my spelling, so I should be alright.

The Editor's Aim is to keep *The Canadian Amateur* and CARF at the same high quality as in the past. My objective is to get more involvement from the people we represent. I would like to do a feature on a different province/territory each month. I intend to work through the directors to

come up with a schedule and a person responsible for each area.

I would like to include a new feature called 'Shack of the Month'. Send us a picture of your shack and a panel of judges will decide on its title (i.e. messy, posh, x-rated, etc.) Selected photos will receive a free CARF hat.

I would like to increase our emergency services content. The CRRL/ARRL's 'Amateur Radio Emergency Service' (ARES) is a fine organization, is well-established in Canada and has much to offer. Its goal is simple: to provide communication during time of national or local emergency. No room for petty differences between organizations or national pride to get in the way there!

WHAT I WILL DO

I will continue to encourage our Directors to keep the negotiations going towards a merger with CRRL. It is my view that we, as Canadian Amateurs, must have one unified voice to our Government and the World. It doesn't matter what it's called or where it's located or which periodicals come with a membership, the important thing is that it's unified and it's Canadian!

WHAT I WON'T DO

I won't knowingly print any derogatory remarks about any person or organization. We certainly don't need any squabbling among ourselves, or someone is likely to decide that we really are a bunch of amateurs and not the professionals that the founding 'Hams' were.

LETTERS

COMPUTER ON LINE

My review of the G-QRP Club Circuit Handbook on page 21 for December 1986 did not include my signature. Few readers would be aware of who has their C128 computer available on line after 0600 UTC.

Anyone wishing to set up a schedule can contact Moe Lynn, 10644-146 St., Edmonton, Alta T5N 3A7.

Following is the ordering information for G-QRP Club Circuit Handbook: RSGB Publications (Sales), Lambda House, Cranborne Road, Potters Bar, Herts., EN6 3JE ENGLAND.

Enclose a sterling draft for £4.52 which includes postage by surface mail. My copy carried £2.82 postage which came airmail, compliments of G4FAI.

Moe Lynn VE6BLY

INTRUDERS!

Yesterday morning some interesting traffic was heard on 3780 USB. The traffic originated from U.S. military bases in Alaska and was first directed to Skyking, which is the identifier used for Strategic Air Command aircraft on patrol in the Arctic. After the message to Skyking, traffic was passed between base stations using only number identifiers.

At the time I was doing some antenna work, making short test transmissions with proper identification. I was duly informed by one of the stations that I was interfering with their traffic. I requested their callsign and this was refused. I then informed these stations that without proper Amateur callsigns I could not acknowledge them and that they were operating illegally in an Amateur band which was classed as Amateur exclusive in North America.

Upon this transmission, another very loud station came on directing all stations to switch to other letter designated frequencies and apologizing for intruding on the 80 metre band. These communications took place at 11:20 local time when you would assume 8 metres to be dead.

I contacted the local DOC office this morning and was informed that they were preparing a case of willful interference of several commercial frequencies and would add this information to their submission to the FCC. It might help if Amateurs in

western areas were informed of this so they can keep an ear open for anymore of these intrusions. We had both commercial and military using 3780 USB all last winter in the north.

Maybe if these stations are run off the band we can get something done about the Japanese fishing boats right off our coast that take up the lower portion of the phone band every night and then go after the strange signal between 3792 and 3798 that sounds like some kind of duplex phone traffic.

73, Bill VY1CW

NEW LIFE FOR A DYING HOBBY?

VE2AM's guest editorial in the October issue gave me much food for thought. Much has been and is being said in recent issues regarding the so-called potential demise of Amateur radio privileges. There is much lobbying for an increase in our members versus sustaining our present standards for quality as a prerequisite for membership in our ham fraternity! Somewhere among all the opinions and argument lies the truth of our circumstances and our need. Before we can arrive at the truth, or at least come close to discovering it, we would be wise to assess the 'assumption' we are making regarding the quality versus quantity debate.

Use or lose our Amateur frequencies! Is this really a major issue? Except for the WARC bands, we have been using our HF and VHF bands with increasing numbers for many years. Our ranks have swelled and our bands are very crowded when conditions are favourable. UHF bands are vulnerable to the commercial mobile and portable lobby for sales in the field of 'cellular radio' and the increasing demand for private radio systems. Are they? Do we have knowledge and statistics to prove it? Do we have alternative uses for hams to be attracted to these frequencies in greater numbers than at present?

Is it likely that we will lose all or some of our high frequencies? Is there a demand for them? Why have the WARC bands been assigned to Amateurs if HF use is under question? Commercial, military and government telecommunications are rapidly swinging over to satellite relay and the expanding opportunities of wide-band fibre optic technology.

Is bigger better? Does it give us more lobbying power or does it feed

SILENT KEY

It is with deep regret that we record that Jim Hildreth VE3BZQ became a silent key on April 6, 1987.

Jim literally grew up with Amateur radio, having been licensed while in his teens. As a life member of ARRL, he will be greatly missed by his many friends in the Amateur community and by his family.

Jim was a former instructor for the Scarborough ARC Code and Theory classes, and for the last several years he instructed in Amateur Radio at the CNIB, where he played a major role in the CNIB Amateur Radio Programme. Most recently, along with his lifelong friend Jim VE3ND, Jim was conducting a course in Amateur Radio at Upper Canada College. Nostalgia Night at SARC was designed and engineered by Jim, and was a tremendous success due to his contagious enthusiasm.

the insatiable appetite of a consumer economy marketing strategy which wants more 'rice boxes' sold?

How are we perceived by the people in the community? As a nuisance, as self-centered groups or as contributors to the welfare of the community and the nation by way of a 'service'? Will we lower a positive public perception of us if we lower our 'entrance standards'? Or would we definitely enhance our 'service' if we maintain our standards, but make it more attractive to our young people by bringing the operational and technical skill requirements more in line with the state-of-the-art and new technology, such as computer applications?

I make a plea for some facts! Let's move away from emotional confrontation over novice licences, CW versus no CW, utilization of UHF, etc. and acquire some of the vital knowledge we need to make a wise and mature decision on what we would like to see. More to the point, on what is and what is likely to be!

The Canadian Amateur Radio Service is a great resource to our people. It attracts doers and achievers. It demands and it rewards. It provides a free, supportive service to our communities. It develops and enhances skills our people and our country needs to keep us a respected contributor and competitor on the world radio telecommunication stage.

Let us set aside our differences and agree to come together to look at facts, talk about it and debate—then from a positive position to present our case,

our vision of ourselves and our service to our government and our people. We have an opportunity to present a unified approach. We have the talent and the resources among our national organizations and clubs. We need a national forum, a conference to resolve the issues, end the debate and solidify our purpose and role more!

J.F. Hopwood VE7AHB

As a holder of a digital class of certificate I disagree strongly that "it's time to bite the bullet and admit that the Digital certificate is a flop."

To suggest this is to suggest that computer usage is obsolete and that the combination of computer and radio, the use of digital hardware and software with radio, should be abandoned by hams.

The Packet activity is 'just arriving' as legitimate Amateur work, with the invention of relatively cheap and effective terminal mode controllers, having the potential of linking every Amateur to it. The need for the growth of a knowledge base in this area is obvious. Having a digital certificate provides:

- Notification to others that the holder has a firm grounding in this field,
- That packeteering is not 'over the head' of the holder,
- Seed for the growth of such a knowledge base.

That CARF provide more instructional information on how to obtain a digital licence is what is really needed, rather than the suggestion that the certificate be abolished and replaced with a novice class. Why can't both be developed? i.e. the digital certificate and novice class certificate. The U.S. still has an extra class licence and the FCC hasn't considered abolishing it. The digital licence does not provide a significant increase in Privileged operation, i.e. band availability, but this is not really the point of the licensing— to guide one to learn some new theory and Practice with digital communication.

73, Richard VE3NGL

FREQUENCY ALLOCATIONS

I noticed your note on 1900-2000 kHz at the bottom of page 31, February issue.

The Canadian Table of Frequency Allocations, page 19, shows:

1800-1850 AMATEUR

1850-2000 AMATEUR

RADILOCATION
RADIONAVIGATION

Seems to me the Canadian rules would not need any change. THEY (the U.S.) seem to have followed OUR example. But at least we have equal primary status, and if Canada and the

U.S. followed the Region 2 allocations agreement in toto, there would be two more services in there. I think we should be happy with what we have.

Bob Eldridge VE7BS

MORE ON COOKED HAM

My literary activity waxes and wanes with the sunspot cycle, but I am breaking silence to tell you that VE3JBX's tribute to my old articles on 'Cooked Ham' in the February issue of *The Canadian Amateur* made my day, even if he did get my name wrong and Doug Burrill dreamed up the snappy title.

So long as the word processor is still on, let me add a few items that I had been saving until the solar flux went over 150.

1. It is time for the mature, seasoned CARF leadership to get together with their opposite numbers in CRRL and negotiate a merger.

2. You should be congratulated— *The Canadian Amateur* gets bigger and better with each succeeding issue.

3. I am reluctant to see a no-code Novice ticket introduced. Code is our badge of entry into one of the world's most exclusive clubs, and can be a lot more fun than meeting boring conversationalists on SSB.

4. Hams should not panic because their average age is rising. The whole population is getting older. Now if you could prove to me that the average age of hams is rising faster than the average age of all Canadians... Even then, if radio no longer turns on the young in this country, there's always DX. There will be new hams to talk to in many other countries for years to come.

Peter VE1PZ

VE3FRA's NEW CALLSIGN SYSTEM

Some years ago I decided not to renew my ARRL membership in the expectation that CARF and *The Canadian Amateur* would satisfy my future needs. This is indeed the case, except for an unfortunate nine-month period when the famous (or infamous!) computer breakdown consigned me to limbo. Thanks to Cathy VE3GJH, I am now engaged in catching up on the developments of 1985.

I would like to comment on Alan Leith's suggestions for a new callsign system published in September, and on VE4AKN's somewhat defamatory putdown which appeared in December. I don't know how old Daryl is, but his unsubstantiated accusations could easily lead to the conclusion that he is hostile to the proposal merely because he might have to wait many years before he could obtain (for example) a 2X1 call.

Ivor Nixon VE3IHN

KUDOS FOR TCA

Please find enclosed my cheques and forms for membership.

I understand the reasons behind the 'merger' but I hope that it will not be the end of this publication. I enjoy *The Canadian Amateur* very much; I think it must be the Canadian content that I like. I also subscribe to *QST*, but *The Canadian Amateur* is closer to home. What is happening in Newington doesn't interest me nearly as much as what happens in *The Canadian Amateur*. The news of the Ravenscroft Case and the proposed regulation changes have received excellent coverage in this publication.

Perhaps I'm worrying unnecessarily, but I just would like to let you know how much I enjoy *The Canadian Amateur*.

Donald S. Sandison VE3OIH

NEW COURSES?

In the first half of this century radio came of age. At that time Amateurs could consider themselves to be in the vanguard of a new, and very exciting, field of communications. In the third quarter of the century, RTTY associations were born and have now reached, or are close to, maturity. Many of its practitioners considered themselves to be in the forefront of a fascinating area of communications. In the last quarter of the 20th Century many Ham shacks are filled with the diversity of equipment required for the various modes of communication now available, such as computer-to-computer, SSTV, Packet Radio, Amtor, Fax and possibly more. The result, perhaps, of electronic communications having become an essential part of space exploration.

It seems odd to me that, at such a time as this, anybody should think of simplifying our examinations, be worried about the future of our hobby, or be concerned with the numbers game of membership lists.

It is time for a change of course and that can be painful for those who prefer the well-trodden path. The coming generation, however, considers computers as basic as breathing and, fittingly, their technical education is much in advance of that of most of their elders. To attract them to a new and exciting field of communications will take more than an introduction to basic radio circuitry.

The basic change necessary, I believe, must come in putting all the current, Amateur methods of radio and/or TV communications in the centre of the Ham picture; they cannot remain on the sidelines. As well, I consider it unfair to others to allow

Continued on next page

those working professionally in the field to be the only ones informed enough to take the examinations successfully, or to understand the newer modes of Hamming. It seems to me, therefore, to be imperative to make available, by mail, good courses of instruction to cover the expanded capabilities and interests of Hams.

With this in mind I have investigated and recently received two course outlines; one from Montreal and the other from Cleveland, Ohio. Both schools are commercial and offer electronics

courses by mail. Both include teaching FCC rules and suitable material for radio Amateurs. One guarantees you will pass the FCC test or will refund your money, and both are expensive. As yet I have not found a comparative commercial school which teaches DOC standards for Amateurs. I think, therefore, we must finance a course ourselves using resources that can be relied upon while at the same time can be urged to be sympathetic to our need to keep costs as low as possible.

In these circumstances I suggest Ryerson and/or Waterloo University be invited to prepare such a course and give an estimate of the probable

cost. Both these institutions have considerable experience in out-reach to the community, programmes using lecture tapes, written material, radio talks and television presentations. As well, both have reputations for good teaching of technical material, I believe, to those with, as well as those without, high standards of formal education. Not much will be achieved without some financial investment to start the project off. It will be costly to set-up suitable courses, even to decide upon course content. If, however, enough Hams agree with my proposal, I suggest a fund be set up, instantly. You can count on me for \$25 to start with.

Don't be distressed by these remarks if you prefer the Cat's Whisker end of Hamming. You will have many friends who share your mode of interest. It is necessary nevertheless, that some of us should take steps towards a broader concept of our mutual hobby in order to keep it healthy, forward looking and to protect it from marauders.

Ron Tannenbawm VE3LZI
Net Manager
Trans Provincial Net

Breakthroughs in mobile radio pioneered by police

In the 1920s gangster era, bankrobbers and bootleggers made clean getaways time after time, to the great consternation of police. For this was before reliable mobile-radio communications existed, communications that could have quickly dispatched patrol cars to the scene of the crime.

But in 1928, a dedicated Detroit patrolman and an electronics buff devised the first successful one-way radio link between police headquarters and cruisers. Critical news of crimes in progress could now be transmitted from the station house to police cars as they drove.

The Institute of Electrical and Electronics Engineers, Inc. (IEEE) has designated the Detroit Police Department's first use of mobile radio, and two subsequent landmarks in mobile-radio history, as Electrical Engineering Milestones. The Milestones also included the Bayonne, New Jersey, Police Department's pioneering of two-way AM radio in 1933, and the two-way FM radio first used by Connecticut State Police in 1940.

Electronics was a fledgling science when Detroit Patrolman Kenneth Cox and Robert L. Batts, an engineering student, built a stable radio receiver and antenna system. Their successful one-way radio, coming after years of trial and error, was installed in April 1928. The Detroit Police Department made history as the first to dispatch patrol cars regularly by radio. Many city police departments shortly followed suit with their own systems.

Soon, police sought the ability to communicate between patrol cars, and from their cars back to the

dispatcher. Two-way AM mobile radio was developed five years later in March 1933 by Lieutenant Vincent J. Doyle of the Bayonne, N.J., Police Department, and radio engineer Frank Gunther. Bayonne's two-way system, another significant stride in crime fighting for the police, became standard throughout the country.

Interference still posed communications problems, however. In answer to this, the Connecticut State Police pioneered the first two-way FM radio link in 1940. FM radio proved a vast improvement over AM by reducing static and other electronic 'noise'. Edward J. Hickey, the State Police Commissioner, spearheaded its development; Daniel Noble, an electrical engineering professor at the University of Connecticut, designed the system; and engineers from the Fred M. Link Company built it. The Connecticut State Police system paved the way for a nationwide switch from AM to FM.

The Electrical Engineering Milestones Program, coordinated by the IEEE's Center for the History of Electrical Engineering, serves to foster awareness of electrical engineers' professional history; increase public understanding of electrical engineering; encourage preservation of the achievements through Milestone site dedications; document historical and current information; and promote use of this information in guidebooks and maps for the public.

The IEEE is the world's largest technical professional society with more than 280,000 members in 130 countries.

ANNOUNCING— SHACK OF THE MONTH

Send a picture of your 'shack' to *The Canadian Amateur* and enter the 'Shack of the Month' contest. A panel of esteemed judges will decide who has the most messy, best looking, most equipped or greatest room for improvement. The winner each month will receive 'free and postpaid' a CARF hat of their very own.

At the end of the contest period, we'll hold the run-off and the winners will compete in a challenge contest with 'Hams' from around the world.

Just think, your 'shack' could become world famous, all for the price of a stamp. So don't delay, get yours in TODAY.

Send photos to: Shack of the Month, c/o CARF, Box 356, Kingston, Ont. K7L 4W2.

The Canadian Amateur would like to print biographies of deserving Amateurs. We're looking for long serving 'Hams', young people in Amateur radio, people who run courses, design emergency exercises and serve their communities through Amateur radio. If you know someone who meets these or other 'deserving' qualifications, send us the information and we'll do the rest.

PACKET RADIO

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 (((SPECIAL)))

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 KPC-2
 \$ 279.00



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Hobbytronique Inc.

Hammering the Jammer on VE2RM

BY DINO MORIELLO VE3FSA —

The evening of Sept. 10, 1985 was cold and wet. It was about 20:10 hrs. when Claude VE2BTR and myself decided to try to find the culprit.

Since 13:30 that afternoon a signal was holding the VHF repeater on the air. He was heard several times entering and leaving his car and tuning the AM/FM broadcast radio.

We knew he was west of Mount Royal. However, this was a wide area to cover with only two mobiles. Claude was using his IC27A in the car and I was using an IC02AT with a 1/4-wave antenna on the roof.

As I was leaving my QTH in Laval, Claude indicated that the signal strength at this location in Montreal-North was increasing. It seemed that he was heading east now. As I was heading east on Henri-Bourassa, Claude was leaving his place and heading south. At that point, Claude and I were coordinating on VE2RHH repeater on 224.90 MHz. Lionel was also listening on VE2RM UHF giving us signal reports from the West Island.

It was obvious that our efforts were beginning to draw some attention. Soon Jim VE2AQI joined us on 450 MHz and Nick VE2HOT on 220 MHz. Despite their good intentions, there were some stations who insisted on having a QSO on the 2M repeater while we were out there trying to track down the jammer. This made our job even more difficult.

During one of the culprit's stops, Jim was able to determine with his beam that the signal was coming from east of Ile Perrot. Meanwhile Claude and I were travelling along in the southwestern end of Montreal with no real success. I mysteriously ended up in Chateauguay, before I decided that the signal was not coming from there.

Jim's deduction was further confirmed by Howard VE2AED, who informed us that the signal had to be between Hampstead and Ile Perrot. This left us with the entire West Island to cover. Claude and I met on Hwy 20 while driving through Lachine. The signal was not really getting any stronger since we had left our respective QTHs. We knew now, however, that he had to be in the West Island. After covering most of the city we were beginning to grow impatient.

I got off at Sources Blvd. and Claude at St. John's. From there we both headed toward the Lakeshore. Suddenly, Steve VE2ESV came on the

repeater and notified us that the signal was coming from the Pointe Claire village area. He had been taking readings with his beam and was now driving around the area to try to help us locate the signal. It was 21:30 hrs.

His report proved to be the most precise clue we had gotten all evening. So with Claude now in Beaconsfield and I heading north on St. John's, Lionel VE2DPY jumped into his car and joined in the search. Things were starting to get confusing. Lionel and Steve were coordinating on 146.52 while Claude and I were on 224.90. Nick, who had called Howard earlier, jumped in and retransmitted my 220 signal onto 146.52 to allow the entire mobile force to communicate amongst themselves. It was only when I reached the Pulp and Paper Research Center on St. John's Blvd. that the signal really began to give me a meter deflection. I tried heading east on Hymus to find that as I travelled further away from St. John's, the signal became progressively weaker. So I headed back north on St. John's. By this time, Lionel was getting strong signals from Brunswick and St. John's. Claude was on his way in from Beaconsfield. Steve suggested we check the area north of Brunswick along Tecumseh. While I followed that advice, Lionel was heading back toward Sources Blvd. and Claude was now not too far behind. It became necessary at the time for me to switch from the 1/4-wave to a rubber duck to decrease the sensitivity of the receiver. We were finally getting close! Then someone said, "He started his engine again!"—the alternator whine was loud and clear.

Where would he take us now? At first he seemed to be going west, then Lionel picked up a stronger signal from Sources and Brunswick. Therefore Claude and I turned around and headed east. As I was exploring the area behind the West Island Mall and Lionel exploring north of there, I suggested to Nick that he give Mike VE2AM a call. Within minutes after the call was placed, Mike directed us to an area north of the West Island market. He was receiving a solid signal from our friend, who was now stationary. With Lionel on 146.52, Claude on 224.90, Mike on 449.00, 146.52 and 29.600, receiving on 224.90 and Nick on 146.52, 29.600,

224.90. We all felt that the moment—the discovery— would soon be upon us.

At about 11:10 pm I was heading north on Westpark Ave. in DDO. The signal was very strong now, even without an antenna on the handle! Claude was west of me on Roger Pilon and Lionel was east of me on one of the side streets. We were all converging on the signal.

Suddenly, the signal on the O2AT hit full scale with no fluctuation! I was extremely close. The street was dark and it was still raining lightly. I left the car and began checking the houses nearby. The signal was solid. Then I found parked in a driveway, a car with a two-metre antenna on it. I went 5, 10, and 15 kHz above and below 146.40 and found it to be still full strength. Four hours after having decided to find the jammer, we had found him. I called Claude on 220 and directed him to my location. Lionel was also contacted on 146.52 and given directions on where to find me.

Once we had gathered on the culprit's front lawn, we proceeded to ring his door bell. He was very hesitant to admit that his radio might have been on transmit all this time. Got him to come out and check his car. Within a glove compartment, mounted between the front seats of the vehicle lay, not visible to anyone, a Yaesu 2M crystal-controlled radio with the transmit light on. His mike had been stuck between the seats for 10 hours! Not realizing what we had done to find him and the fact that he had jammed the repeater for 10 hours, he merely offered a weak apology. He didn't even have the decency to identify himself on the air. Claude, Lionel, and I were very displeased with his unsympathetic attitude. Nevertheless, with a feeling of accomplishment we quietly left the scene.

With no special direction finding equipment, and little experience, we had solved the 10-hour jammer mystery. Thanks to all those who participated in the search in any way. Next time we'll be more prepared!

JRSD FUND

If you haven't done so yet, please write your MP about Ravenscroft and make a donation— 1% of the value of your rig seems fair— to the JRSD Fund, Box 8873, Ottawa K1G 3J2.

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34/94 in the East Kootenays

**BY FRANK VANDERZANDE
VE7AV**

Most visitors to the East Kootenays remember the area for Kimberley's Bavarian theme, Cranbrook's 'Rene' (Miss Canada 85), Creston's orchards, Fort Steele's provincial park, Fernie's skiing, Sparwood's coal mines, and Radium's hot springs. The visiting 2-metre Amateur would probably also remember this area's repeater. The coverage is definitely superior.

The parking spot for VE7CAP is Mount Baker's 7240 ft peak. Broadcasting and other commercial radio services share the relatively flat top. The mountain is accessible by road and the provincial power company provides the AC.

The equipment lineup could be found anywhere. A Western Radio WR-90 repeater, Sinclair Reslock duplexer and a Sinclair 210C-4 dipole array antenna does all the work. The effective radiated power is about 40 watts.

The repeater has been at this location since 1968. Old club records show that the locals had to blast a 4x4 foot hole in rock to place the antenna supporting structure. Good thing that

some of the hams helping had extensive mining experience, otherwise they would still be digging today!

VE7CAP can be heard and worked from areas in British Columbia, Alberta, Montana and Idaho. Communications from high terrain in the state of Washington is also possible, however, you receive the Spokane, Washington, Repeater at the same time.

Signals travel best north along highway 95/93 as far as Radium Hot Springs and south along highway 93 as far as Kalispell Montana. The highways in these two directions more or less follow a valley. The 90-mile line-of-sight from Mount Baker comes into play here.

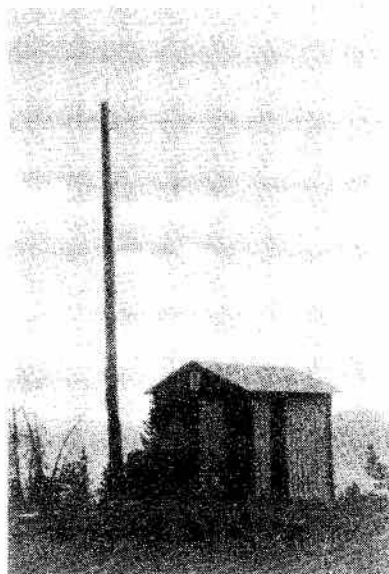
In the southwesterly direction, mobiles can communicate with the repeater as far away as Sandpoint, Idaho. Towards the west, VE7ASH who lives in Rossland communicates with the East Kootenays on a regular basis. Rossland is 100 miles in a straight line from Mount Baker. The

path is obstructed by several mountain ranges. The free-space attenuation alone is some 115 dB, so obviously knife edge diffraction from high mountain peaks makes the signal travel the distance.

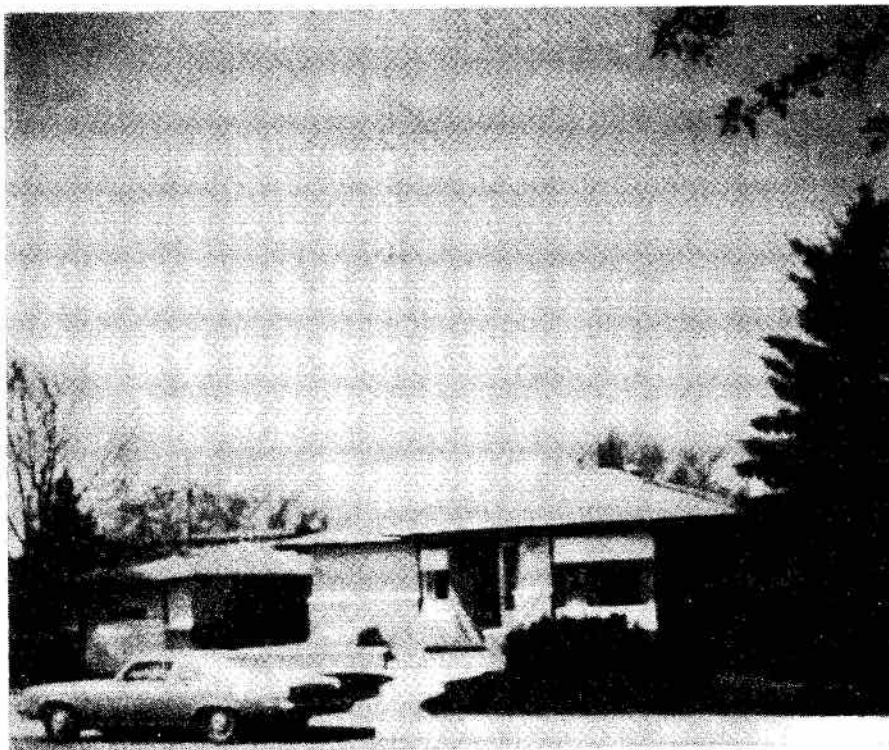
Even further away, but in the opposite direction, Lethbridge area hams work into the repeater. A crow would have to fly some 130 miles. This path is obstructed by the Rocky Mountains. Knife edge diffraction is also the medium of signal propagation. The requirement for VE6s is a small yagi antenna. With that they can check into the East Kootenay Sunday morning net every time.

The East Kootenay Amateur Radio club does not have the most up to date bell & whistle repeater in Canada but there are certainly few repeater systems in Canada that can claim the kind of extensive area of coverage that is enjoyed with VE7CAP. On your next vacation in B.C., drive the scenic southern route and try 34/94 yourself.

VE6ABY's Lethbridge QTH. Vic is a regular on the East Kootenay repeater. The heavy duty tower supports HF and VHF antennas.



The VE7CAP repeater hut on Mount Baker. The pole supports a Sinclair 210C4 antenna. Photo by VE7ESP.





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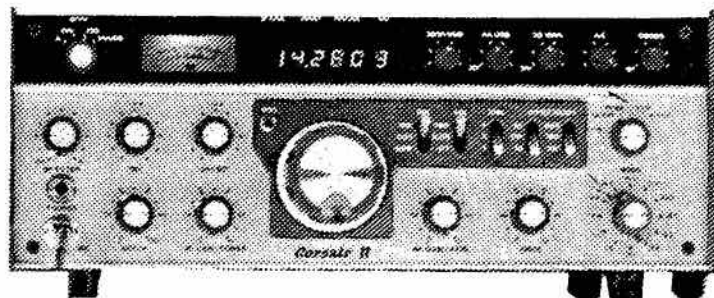
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**MODEL 960
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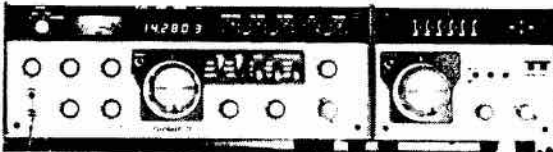


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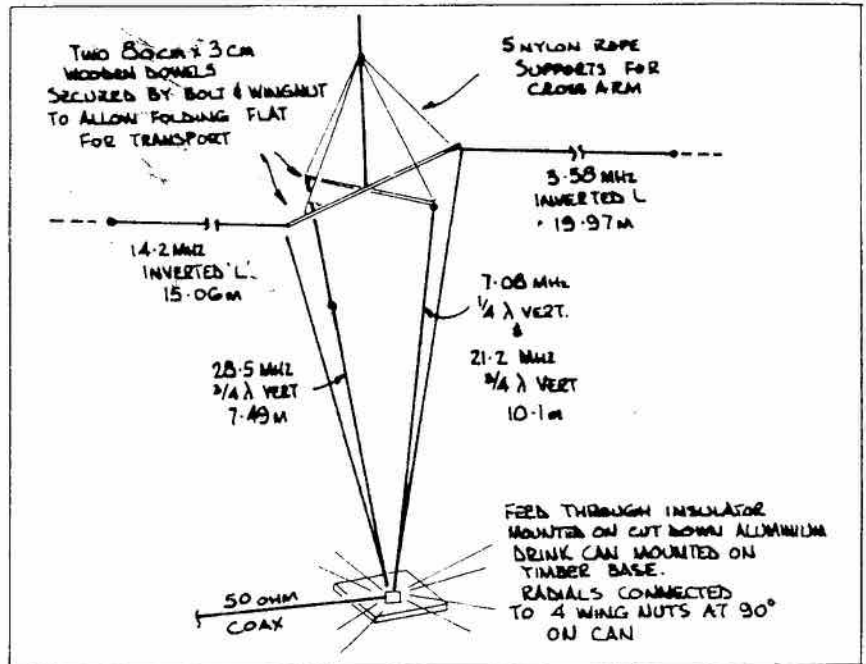


Field Day

Field-day is fast approaching again and of course this gives us a good opportunity to promote Amateur Radio and our ability to set up almost anywhere in a relative hurry. It's a good time to invite some local dignitaries to our sites (police, fire or the Mayor) and show them first hand what it is we can do for them. Don't forget packet, RTTY and the use of computers for logging, etc. Every little bit helps to impress them, and the general public.

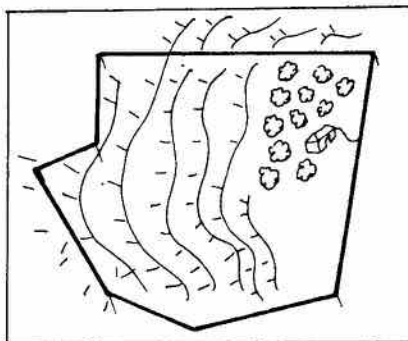
To promote an even greater turn-out for Field Day '87, we've included some antenna set-ups that may interest you. These are courtesy of John Hampel VKSSJ and *Amateur Radio*, the Journal of the Wireless Institute of Australia (Aug '86). The diagrams are part of an article in which John describes sites in Kulpara, Australia in 1950 and 1954.

Good luck in the contest and don't forget to send us pictures and accounts of what happened at your local site. We can't print it all but we'll sure try.

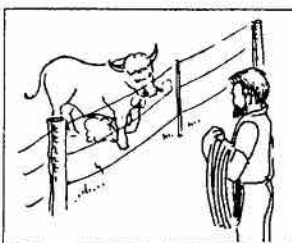


Multi-Band Vertical/Inverted L.
Radial Lengths:

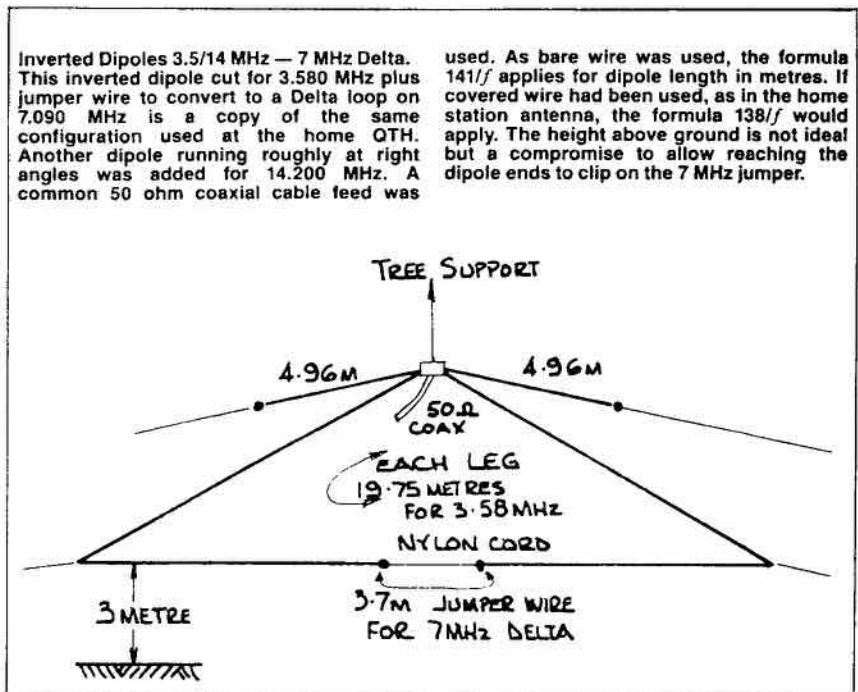
- 3.580 MHz — 20.42 metres
- 7.080 MHz — 10.35 metres
- 14.200 MHz — 5.18 metres
- 21.200 MHz — 3.45 metres
- 28.500 MHz — 2.56 metres



Irregular Shaped Loop. It was approximately 1800 metres long.



An "Antenne-Bull" Situation — "... not on this side, OH!"

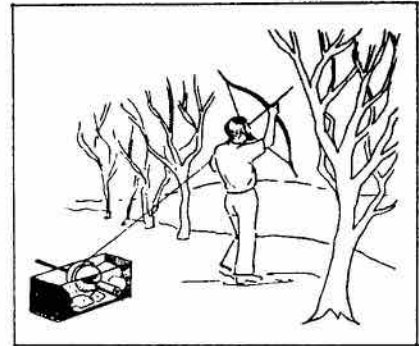
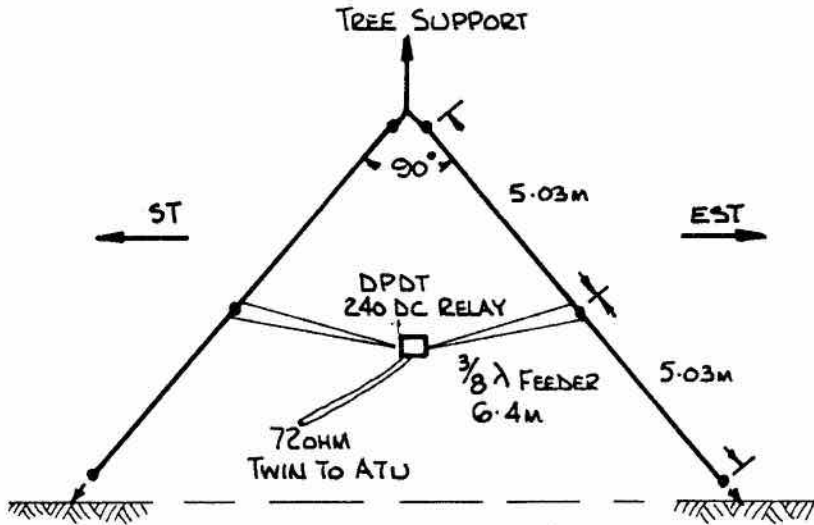


Inverted Dipoles 3.5/14 MHz — 7 MHz Delta. This inverted dipole cut for 3.580 MHz plus jumper wire to convert to a Delta loop on 7.090 MHz is a copy of the same configuration used at the home QTH. Another dipole running roughly at right angles was added for 14.200 MHz. A common 50 ohm coaxial cable feed was

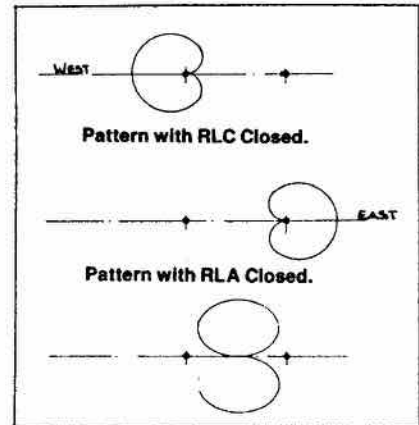
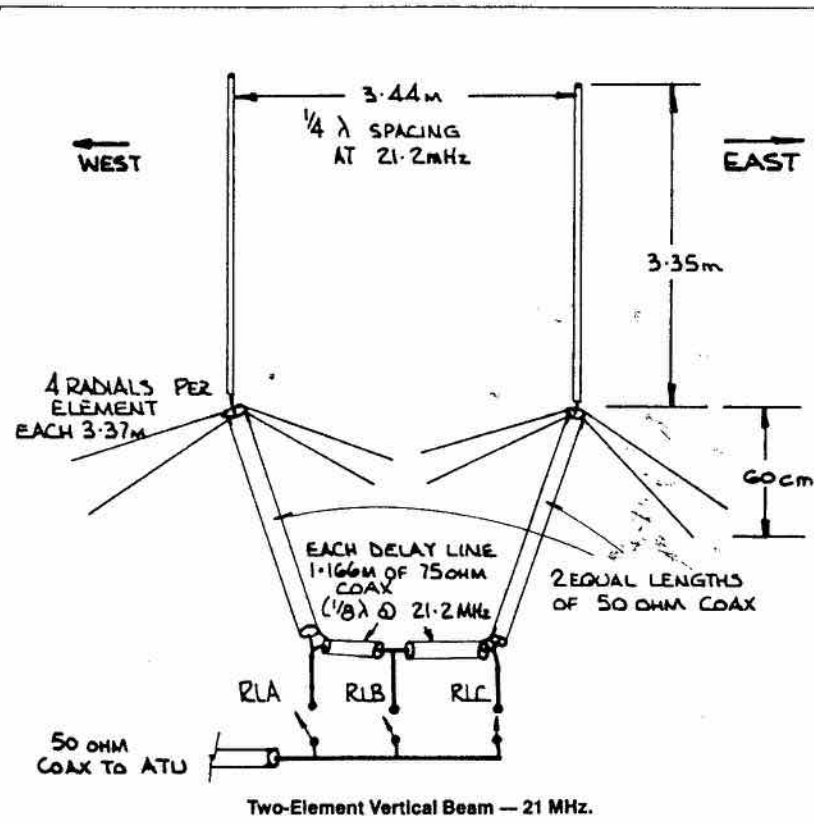
used. As bare wire was used, the formula $141/f$ applies for dipole length in metres. If covered wire had been used, as in the home station antenna, the formula $138/f$ would apply. The height above ground is not ideal but a compromise to allow reaching the dipole ends to clip on the 7 MHz jumper.

Two-Element Sloper Beam — 14 MHz
 The dimensions shown resonated at 14.190 MHz using the formula $143/f$, which is a good starting point for sloper calculation. The ends of the dipole were secured by nylon fishing line through soldered loops so there is no insulator end effect with the dimensions shown. A bell-wire twin-line switched the relay in a small plastic container hung from the tree. The twin-line use refers to '14.036' auto-cable, NOT the

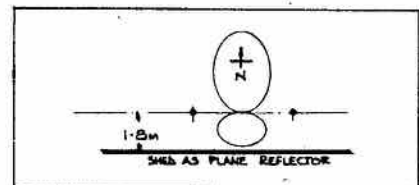
usual figure-eight lighting twin flexible. A dip-oscillator put the velocity factor at 0.81 so the $\frac{3}{8}\lambda$ feeders should be accurately checked. With no voltage applied to the relay, the beam fired east. Application of 24 volts DC selects the other dipole with the unused $\frac{3}{8}\lambda$ in each case acting as inductive loading for a reflector element.



Anti-sag set-up for playing out the fishing line using a screw-driver, cardboard carton and rocks to hold it in position. If a second person is available, a 'casting reel' used by anglers could be used. This is a reel open on one side with a flared edge so that it may be held in the hand, and angled in the direction of shooting the line. Other methods of putting a light line over trees for portable antennas are a catapult (should be used with caution and plenty of practice beforehand) or, the simplest expedient of a smooth rock of size equal to the operators throwing ability! Avoid items which may (nay — Murphy's Law says WILL) be caught in the twigs and foliage.



Normal Figure-eight Pattern when phased array is fed in phase (RLB closed).



Shed as Plane Reflector.
 Approximate pattern with RLB closed and beam spaced $\frac{1}{4}\lambda$ in front of reflector.


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Reviews

BY MOE LYNN VEGBLY

As mentioned in the QRP column, I was fortunate in receiving a copy of the Amateur Radio Club, International journal *QRP Quarterly* for January 1987 (25th Anniversary issue).

QRP QUARTERLY

It is 8½ by 11 inches format (218mm x 282mm) black and white in three column style and totals 36 pages. The front cover has a very well-reproduced picture of the WHD-40, an Evolving Homebrew project by Michael Bryce WB8VGE who has recently become the QRP editor for *73 Magazine*. Page 2 carries the Editor's Word by Jim Stevens KK7C and President's Message by Les Shattuck WB2IPX. Page three lists Contents and masthead; page 4 has Experimenter's Corner by John Collins KN1H; pages 5 and 6 starts Solar Activity: Gearing up for Cycle 22 by Bob Brown NM7M. Pages 7 to 9, QRP Means QUICK REDUCE POWER by Norm Fleming W8PJ. Pages 10 to 12, WHD-40 by Michael Bryce again. Page 13, Build a Tuber by Bob Brown. Pages 14 and 15, LF QRP-LERP by Brice Anderson W9PNE. Pages 18-19 are Eye Ball QSOs at Dayton '86. Page 20, Net News by Danny Gingell K3TKS; pages 20-21, Telling the World, QRP article and pictures by Joe Sullivan WA2WW. Pages 23-26, Contesting by Gene Smith KA5NLY. Pages 27-28, Idea Exchange by D.A (Mike) Michael W3TS. Pages 29-30, DXing with a Half Sloper by Brice Anderson. Pages 31-36, Activity and Awards by Fred Turpin K6MDJ including a Morsum Magnificat announcement for all us Morse buffs.

SOARING COSTS

My eyeball QSO with Bob NM7M informed me this is no small-time club when an issue of this magnitude costs \$1.75 U.S. for typesetting and printing. They will no doubt be increasing club dues in order to continue publishing their quarterly. If the articles continue to maintain such high calibre it could well be worth an increase, judging by this issue.

We in Canada can benefit from the ARCI experience and extend our energies toward expanding CARF membership. This will provide more articles in all sections of our Amateur magazine which already has

International members as well as readers. Such expansion will also assist local groups anywhere by including their news with the traditional Canadian flavour and eliminating duplication of services.

INTRODUCING QRP

INTRODUCING QRP is a publication of *Practical Wireless*, the British Amateur Radio magazine, and came to me compliments of G4FAI who happens to have an article or three included. All are reprints from earlier issues of *Practical Wireless* and done in typical British style.

The front cover is extremely professional with a crisp clear photo of an inside project. Inside front bears a kit advertisement by C.M. Howes Communications. Dave G4KQH is technical manager, and he has built a number of kits that are of particular interest to the QRP enthusiast. All Howes kits they say are good quality glass fibre circuit boards, drilled, tinned and have screen printed parts locations.

Page one lists contents and publisher's statement. Page two, The World of QRP by Tony G4FAI. Page 5 begins QRP equipment projects which include PCB etching patterns in full size and component layout details. All photographs of the finished projects are clear and crisp, leaving nothing to your imagination. These are rather involved undertakings and are labelled Intermediate in regards to construction rating. The last two in the book are for beginners, as you will see further along. The advanced projects are by George G3RJV in co-operation with Colin G3VTT. A Follow Up by Ken Buck (no call) to one project is an improved VFO complete with PCB pattern and layout drawing. Some appropriate advertising is included in these 53 pages, but seems well-located as it often applies to those or other projects.

Page 58 is a beginner's QRP SWR Bridge by Tony G4FAI followed by a beginner's QRP RF Wattmeter also by Tony and ending on page 64. Inside back cover is an ad by *Practical Wireless* for Specialist Reprints. Outside back cover is an ad by Timestep Electronics Ltd. for various kits or built equipment such as weather satellite receiver, 2M monitor, gas-filled RF relay, Tone

burst, FRG7 Digital conversion, 2M preamp by Timothy Edwards, 934 MHz personal communication transceiver and more.

You may order *Introducing QRP* from IPC Magazine Ltd., Westover House, West Quay Road, Poole, Dorset BH15 1JG and enclose £1.50 plus £1.44 for surface postage and ask for a list of Specialist Reprints. Tell them that you saw it in *The Canadian Amateur*.

Book Reviews

BY RALPH CAMERON

VE3BBM

Those CW operators who are fascinated by the operations which took place during WWII in the gathering of enemy intercepted communications will be interested in three books which have crossed my desk in the last six months. The contributions of those who committed to such operations are just now being revealed, so the 20 odd years protecting National security have elapsed and these operations may be revealed.

Many Canadians have been involved in the formative years of one group and those of you who have read *Camp X* will now understand the role served by that establishment. I remember as a boy living in Toronto that there was a suspected submarine sighted in Lake Ontario. From what I recall, the sighting was disputed; however, reading the book reveals many strange things went on during the years when the 'Camp' was active.

THE EXPENDABLES

By Ted Wildman, published in Clearwater Florida. Library of Congress card number: TXU 144-306. Available from the author directly at 14829 Feather Lane, Clearwater, Fla 33520.

This book covers the true life story of Ted Wildman's career in the U.S. Cryptologic Organization from 1933 to 1944. His assignments involve interception of Japanese Naval radio communications. Ted is a radio Amateur and is still operating. His duties in the Pacific theatre and Mongolia, which was part of

Continued on next page ▶

REVIEWS (cont'd)

mainland China many years ago, make very interesting reading. Through an introduction to this book, which is paperback, I received a picture of Ted Wildman manning a Direction Finding loop in the Gobi Desert. Should appeal to those retired wireless operators seeking to reflect on what happened many miles from the shores of Canada.

TO SPY OR NOT TO SPY

By E.E. Okins, published for the Pateo Publishing Company, 480 Napels St. W., Chula Vista, California 92011. Library of Congress card number 86-60045. ISBN 0-936797-01-0.

Elliott E. Okins is a retired LCDR, U.S. Navy, and the book is about his 23-year involvement with the U.S. Naval Cryptologic Organization. This group was responsible for the breaking of Japanese codes during WWII and the interception and foiling of the Japanese takeover of the Shanghai China International Settlement in 1940. Actions in Hawaii and Midway and the importance of communications intelligence are revealed. Many descriptions relate to operation of portable radio equipment and the difficulties of maintaining the equipment in a jungle environment. To think all this was accomplished using tube equipment is difficult to believe. If you think you know the record for copying CW, read about the new recruit who learned to make solid copy at the incredible speed of 94 wpm. Most accounts are given in vignette form. According to this record, not all military decisions were correct.

THE ENEMY IS LISTENING

By Aileen Clayton, published by Random House of Canada, Limited, Toronto, Ontario. ISBN 0-345-30250-B.

Discusses the role of the 'Y' service during the last war and the methods used and information gained from monitoring German radio telephone and telegraph traffic. Answers many questions relating to operation of the 'Knickbein' which were innovative means to direct bombers to specific targets by radio. The groups of female operators reveal their contribution to the war effort by their dedication and loyalty. The book reveals how some of the popular pieces of surplus LOM converters appeared after the war on the Amateur market. Good reading for those who only 'heard' about it.

BY MICHAEL CRESTOHL

VE2FW/KH6KD

THE FIRST FIFTY YEARS

The First Fifty Years is a history of the Collins Radio Company and the

Collins Division of Rockwell International, by Ken C. Braband.

I like Collins equipment. It is good, solid, reliable equipment and I can fix it. Recently I was informed about a new book that outlines the history of Collins Radio. At first I was of the opinion that this book must be a PR job written for the benefit of the stockholders. Upon reading *The First Fifty Years* I soon realized that this is not the case.

Essentially it is a success story. It was the love of Amateur radio that started the whole thing. A teen-aged Iowa farmboy named Arthur Collins was enthralled by the concept of radio. At the age of 16, Collins was asked to write a technical article for *Radio Age*. He wrote: "The real thrill in Amateur work comes not from talking to stations in distant lands... but from knowing that by careful and painstaking work and by diligent and systematic study you have been able to accomplish some feat, or establish some fact that is a new step toward more perfect communication."

The book covers the early days of Collins Radio and highlights some early achievements. In 1933, Admiral Richard E. Byrd led an expedition to the South Pole. The radio equipment was supplied by Collins. By 1933, shortwave radiotelephony was so well developed that Byrd wanted to broadcast from the South Pole. The Columbia Broadcasting System agreed to carry these broadcasts on their radio network. It was a gamble, for the reputations of the Byrd Expedition, CBS and Collins Radio were at stake. On Feb. 3, 1934, Admiral Byrd made the first formal broadcast from the Antarctic. Later, broadcasts were made weekly.

During the Thirties Collins Radio was an innovator. Some experiments in mobile radio and aviation communications led to company expansion. The Cedar Rapids police were one of the first equipped with two-way radio. Collins developed the Autotune transmitter which made switching from one band to another quick and easy. Major airlines of the day were quick to see the benefits of Autotune and equipped their fleet with radio equipment made by Collins.

An entire chapter is devoted to the war years and some of the equipment developed for the military. Some of these, notably the ART-132, are well-known to many Amateurs. Subsequent chapters cover the post-war growth of Collins Radio, other areas of product development such as aviation and broadcast electronics. As with many post-war companies, Collins Radio grew in the Fifties,

winning government contracts and supplying broadcasters with fine, reliable equipment. Collins Radio of Canada was formed in 1953.

However, Amateur equipment, 'the sentimental favorite', is well covered in the book. So you know, Collins Radio developed the first SSB transmitter, the KWM-1 in 1957. This became the famous KWM-2 in 1959 and was still in production in 1976. Can you imagine a Yaesu or Icom model in production for 17 years with few design changes?

One of the many other developments by Collins Radio is the mechanical filter. *The First Fifty Years* details the research and production of this important breakthrough.

Other chapters include The Space Age, Growing markets and Computer Systems. An appendix contains a list of Collins Products.

Author Ken Braband has done an admirable job in presenting a corporate history in a readable, almost chatty fashion. The book contains over 200 pages and features many photographs, both black and white and colour. It was printed on top-quality glossy paper and well-bound in hard-cover with a colorful dust jacket. Although it is not a technical work, it is worthy of notice as it represents a history of radio communications as experienced by Collins Radio. For information on obtaining a copy write to: Judy Jourdan, Spectrum Association 105-161, Rockwell International, 400 Collins Road, N.E., Cedar Rapids, IA 52498.

CARF NEWS

John Iliffe has withdrawn his name as a candidate for Ontario Director of the Canadian Amateur Radio Federation, in order to accept a nomination for the Presidency of CARF.

New Directors for Ontario will be Daniel Holmes VE3EBI and Pierre Mainville VE3LPM.

VE3VCA

CARF would like to invite Amateurs who are in the Kingston area to come operate the club station, VE3VCA. President Ron Walsh, reports that "our signal using a Viewstar PT-2000A and TH-7 is amazing." The station creates a pile-up every time it gets on the air. Ron reports that in one hour of operating on April 27, he worked TU210, E14ZH, UQ1EWC, EA8BLP, GW4HSH, SH3BH and VE6JW/DL. If you'd like to visit the station, contact us and make an appointment.

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QRP

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GLEANINGS

From Edmonton we have a report by Barry VE6BMX and his one-watt during the recent QRP contest while working on 14060 using a 3-el beam. Nothing spectacular, he says, but at least a beginning with five two-way QSOs. Rick VE7FOU made the 'top 60' list of total checkins to all U.S. QRP nets which was 1471 up to Nov. 23, 1986. VE1BF barely missed the top ten of this list with his 1986 total of 40. So it appears we do have someone out there using the Amateur airwaves in a manner to make anyone green with envy. Yours truly, VE6BLY, was issued number 30 one Sunday afternoon for a QNI while mobiling home along the west coast this spring. Wonder what the total for all nets reporting to ARCI will be at the end of 1987? VE7FOU could head the list now that he has an HW-7 to back-up his homebuilt FOXX transceiver. (VE3DQB has kits.— Ed.)

MOBILE QRP

The last few days in AZ brought nice reports while using QRP on my motor-home whip from Ursula VP2MDY on Montserrat, John OE1JWA/EAB Canary Is., Barbara GOBKH Northwich, Manch. also on an island, Bob NM7M Guemes Is., and Chuck NJ7M Boise, ID., using a rebuilt Argosy.

During the Feb. 22 weekend, Bob N4OVH in Hollywood FL, managed to break through and we had a good QSO between the KW weekenders CQ TEST calls. Roger W5LXS on the air promised me a copy of the *QRP Quarterly* and fortunately while visiting NM7M was supplied with the January 1987 issue. (See Review elsewhere in this issue.)

From Tony G4FAI another long letter and a reprint of the Zygi beam aerial for 20M he thought might fit a motorhome configuration. An indication somebody reads this column, Tony has now put me in the awkward position of having to try his idea as soon as our weather improves. Will it be an advantage to have maximum radiation off one's wing tip or should that be starboard gunwale?

WET YOUR FEET

One way to test your funny bone and also find out what you might be missing is 'Quick Reduce Power' and check out the QRP frequencies 3560, 7030, 10106, 14060, 21060, 28060. Jump in if you hear a QRP net or call CQ QRP CQ QRP de VE6BLY when you don't hear anything. A list of QRP nets with an explanation of calls and

locations is expected for next issue. In the meantime use the following as a guide or make enquiries on the International QRP QRGs. All times UTC: 2000 Wed WSN 7285 NJ7M; 2300 Sun TCN 14060 W5LXS; 0100 Wed SEN 7030 K3TKS; or 0130 Wed SEN 3535 when 7030 QNP; 0200 Thu GSN 3560 open; 0200 Thu GLN 3560 K2JT; 0400 Sat WSN 3558 NM7M; 1300 Sat NEN 7040 W1FMR; 1700 Sat WSN 7040 NM7M or W6RCP. Another neat tactic is to tune around if you are not rock-bound until you hear a pile-up. Study the station's modus operandi before inserting your call. Some rare stations have been known to call for QRP ONLY, so you stand an even chance with the kW and once a week operator just by being alert. Not many DX stations will ignore QRP even if your signal is two or three S-units lower than the next station, inject your QRP call on the quiet side.

ARCI

1987 is the year that Amateur Radio Club, International celebrates its 25th year of operation. In that time they also published the *QRP Quarterly* as their journal. This year's January issue is Volume XXV Number 1 and more particularly number one to me as it was personally delivered by their new secretary-treasurer Bob Brown NM7M. Not only does he send a QSL if you check in to their QRP net but he also issued us an engraved invitation in CW when he heard we were going to be in his area. Lois and I usually visit my aunt in Everett at least once a year and Bob lives just across the water, you might say.

As luck would have it, the slight detour out of our way after leaving Everett turned out to be another interesting visit among strangers, if you can call a ham stranger!

Bob is a retired physics professor from Berkley and certainly knows how to make visitors feel at home. On arrival at Anacortes he talked us on to the ferry leaving for Guemes Island where he lives and then off again for a short trip along the waterfront to their home using WB7NAN repeater.

Building their house was arranged by his wife Mary Lou NM7N who, among other attributes, is Vice President of YLRL. She was born in Hawaii where this year's presidential election of YLRL takes place and we should all wish her mountains of luck in her endeavors. Both are accomplished QRP enthusiasts but do not plaster their walls with paper or certificate frames because two ham

shacks in their loft display little beyond the minimum world map and licence. If you bump into a harpsichord or two it is simply that both are left over from his previous hobby of building them, although he does play one on rare occasions.

IONOSPHERE

Besides being sec/treas for ARCI, Bob also writes for them, is net control for WSN QRP net twice on Saturday and writes the WSN newsletter. The following is reprinted with permission and is only one of nine pages in his latest WSN newsletter. Anyone wanting the complete issue should send their address and two stamps to myself for a photocopy.

"NOBODY'S BABY"— When it comes to the ionosphere, the F1-region is like Rodney Dangerfield: it gets no respect. As a matter of fact, probably the best publicity it gets is in FCC examinations where the hapless candidate is asked what happens to it when the sun sets. The answer is simple; it goes away but with four possible answers, that's not always the one chosen.

So what about the F1-region? If you do some looking, you'll find the obvious: it's above the E-region and below the F2-region, at least during the day. Just to make the story complete, let's list all the regions by the range of their heights:

D-Region— 50 to 90 km
E-Region— 100 to 115 km
F1-Region— 160 to 220 km
F2-Region— 210 to 420 km

Of those four, the E- and F1-regions are present only when the ionosphere is illuminated and the critical frequencies associated with them follow the zenith position of the sun, both diurnally and seasonally. Electrons in the D-region are kept alive by sunlight but in a different manner.

Now with all the talk about the F2-layer and the possibility of the E-layer cutting off propagation during daytime conditions, why don't we hear something about the F1-region? After all, the critical frequency of the F1-region is significantly different than that of the E-region. Well, the apparent neglect of the F1-region is all due to a quirk of fate or, more precisely, geometry.

Let me try to explain. Consider paths from point A to point B via both the E- and F1-regions. The F1-region, being higher, involves a higher radiation angle than the E-region; moreover, its critical frequency is

about a third higher than the E-region. But when you work out the cutoff frequencies for those two paths, the two geometrical factors essentially cancel out the difference in critical frequencies and thus make the oblique cutoff frequencies for the paths about the same. Thus, in the interest of economy of calculation, most propagation programs ignore any differences between the E- and F1-region cutoffs and use only that due to the E-layer.

So, alas, the F1-layer sinks deeper into oblivion. In spite of the above remarks, the F1-region can be of importance when it comes to propagation, particularly since the F2-region is highly variable and subject to all sorts of disturbances. So we do better than we'd expect during stormy times when the F2-region is wiped out, thanks to the F1-region. Thus, during daytime we find that the E-layer controls contacts up to distances of 2000 km, the F1-layer between 2000 and 3000 km, and, when it's there, the F2-layer out to about 4000 km.

When you come right down to it, all these discussions have to do with solar radiation and ion-electron chemistry in the upper atmosphere. Thus, electrons are liberated in the ionosphere thanks to the ionizing ability of the solar flux. Once free, a lot of things can happen to them. In the upper regions, they usually combine with positive ions to make electrically neutral systems again. But down in the D-region, they can also attach themselves to oxygen molecules to make negative ions. That's just what happens there at night and hence we have no D-region losses. But, come sunrise, solar radiation sets them free again and we're back to the losses, as usual, when our RF traverses the D-region. C'est la vie!"

COMPUTER PROGRAMS

Our computers were not compatible except for CP/M and Bob did not have his propagation program converted yet. He is working on just that before sending it along with the 36 pages of documentation contained therein. When it arrives and runs on this C128, anyone is invited to call for frequency predictions that doesn't have access otherwise.

Thanks to Michel Ricard VE2DDT, the CARF News Bulletins will now appear in French as well as in English. It's nice to have the National Bulletin in both official languages again. (Thanks, Michel, Ed.)

CARF News Service

GRAB YOUR KEY

CARF along with CLARA is celebrating their 20th anniversary this year and no doubt could use your concerted efforts toward new members. Grab your key by the handle and brush up on Morse so you can demonstrate while on holidays or even at work. Take your last few issues of *The Canadian Amateur* with you as reference on what your Federation is all about and their activities. Jason Beyette has already been introduced to Amateur radio's Mr. Murphy who messed up his signature in the March issue. Hang in there Jason, we can use you help in keeping the code alive and occupying our CW bands. Articles like yours will no doubt also encourage more input from across Canada.

Des VE3ABT wrote me about his activity and thinks it might be a good idea for a QRP net to meet every Sunday on or near 14060 at 1900 UTC. He uses a HW8 and Tentec Argosy mainly on 3560, 7040, 10106 and 14060 working about 20 stations in the last three months. Des also pointed out that 7030 kHz is International QRP but U.S. Amateurs use 7040 kHz. His more recent DX was GM30XX and G3KDB and heard VE7BLU on 7040 but now looking for a VE6 on 14060 soon! Rick VE7FOU dropped me another line after reading our January issue suggesting we all get on 15 metres as he has found it open every day of the last two or three months. He closed with a reminder that everyone use their best antenna when QRP because the DX is lurking under the noise otherwise. Ed VE3JFH says using more than QRP is like 'shooting fish in a barrel'. (Do you smell something here?) He uses an Argonaut S15 or HW8 to work the contest scenes these days and may have some ideas for VE QRP celebration in the near future. In the meantime, one that comes to mind is 'Worked All CARF' by two-way QSO with one call sign in each province and exchange of membership numbers. Maybe Ed meant everyone who is high on power will likely go QRP when band activities pick up. We will not chase QRO off the bands judging by the few stations working QRP but there is room under those using excess power anyway.

TRAINING

QRP nets will introduce you to how it is done under adverse conditions. QRP working among the gallon jugs who have non-specific intentions toward Amateur service will pay dividends in an emergency. It never fails that there is considerable extra activity on our bands by those trying to help without any training. Taking a

page from the book Jason Beyette studies— get your practice before the emergency. BE PREPARED!

QRP FIELD DAY

Thanks again to Roger W5LXS for having the latest ARCI *QRP Quarterly* despatched direct from the printer. Talk about a super first class publication in more ways than one. As mentioned earlier here, 1987 is the 25th year that ARCI has been touting QRP around the world. This issue is number two Volume 25 and the cover features photos from Principia College QRP Field Day team. The cover pictures and more, along with four pages of stunning QRP activities and antenna writeup, was done by Bill Stocking W0VM just before he became a silent key. The manuscript was typed by this daughter Maria Griswold after it was proofread by his long time field day partner Hilliard Goldman KYOU. Nowhere else will you read about true field day accomplishments than in a QRP environment. From AC generators to battery powered rigs in a few short years, all hash and racket entirely eliminated and total scores rising astronomically!

This review of such a fine article does not do the 'SK' justice so anyone seriously interested should apply to ARCI. Total pages were increased over the January issue to 40 which more than makes up for their dues increase. They still do not have any paid advertising. New DX members may send \$13 U.S. for four issues yearly plus their normal membership perks. Send cheques or money orders payable to QRP ARCI care of Bill Harding K4AHK, 10923 Carters Oak Way, VA. 22015 USA. Say you saw it here!

NET NEWS

Les VE3ABT conducted his first VE QRP net Sunday March 20 at 1900 UTC on 14060 with quite a respectable showing. Serge UA9KAT in Nadym gave me a 449 for my 6W but was almost one kHz QNL. Subsequent nets should show an increase since Roger W5LXS has announced the VE QRP schedule on their ARCI net. Nets are another big item in ARCI *QRP Quarterly* and this issue covers the 1986 QNI contest. There were 240 winners listed of which nine were VE and one XE. You do not need to be a member of ARCI to participate in their on the air functions but any support extends their longevity. Just fire up your QRP rig or cut down on your regular excess power and jump in on any net. Don't forget the VE QRP meets every Sunday at 1900 UTC on 14060 plus or minus QRM. ■

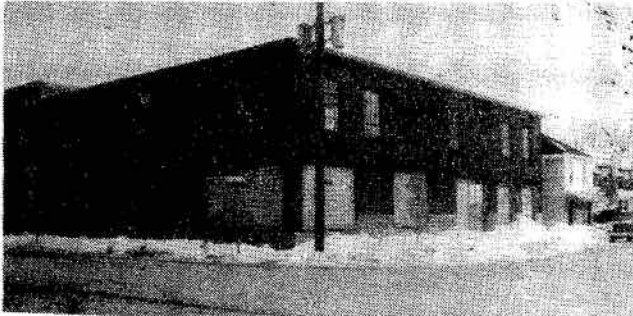
W. J. FORD SURPLUS ENTERPRISES

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4 MILES EAST OF FRANKTOWN
3 MILES SOUTH OF PROSPECT

DISPLAY AREA OVER 5,000 SQ. FT.
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WATCH FOR OUR MOVE TO BE ANNOUNCED LATER THIS YEAR



Future Home of Surplus Enterprises

While the move will soon commence, it will take some time to shift over our complete stock. In the meantime, we are operating from the old location. Please note CHANGE in mailing address.

More new items in stock:

New, non-smoking signs, 7" diameter aluminum, two colour with self adhesive back. 50 cents each.

Differential AC-DC voltmeters, 1 to 1000 volts, Fluke Model 893A \$65.00.

Automatic film photographic processor for B & W, colour & Ektaprint. Complete with manual, various program drums, film containers, reels, etc. Made by King Concept Corporation. \$125.00.

Camera, Polaroid Model 420 with coupled rangefinder. \$10.00.

Oscilloscopes, Hickok Model 5002C, solid state dual channel with 20MHz bandwidth. \$175.00.

Dejur Grundig "Stenorette" recorders, reel to reel, 110v operation. \$6.00.

Here's an item for the experimenter. AES90 word processor consisting of 13" monitor mounted on swivel mount, keyboard, table/stand with floppy disk drive, QUME table top printer, QUME power supply and assorted cables. \$150.00.

Oscilloscope, Dumont 5", low priced basic unit only \$20.00

Oscilloscope, Hewlett Packard Model 130A, crt 5". \$75.00.

Oscilloscope, Tektronix Model 531, crt 5", with plug in. \$100.00.

As above but Model 531A. \$115.00.

Oscilloscope, Tektronix Model 545A, crt 5", with plug in \$150.00.

Deviation/modulation meter, Marconi Model TF2300. Direct reading solid state unit tuning from 4 to 1000MHz. Five deviation ranges. \$175.00.

XY plotter, Varian Model 1130. Accepts up to 11 x 17 single sheet paper. Vacuum platen. Complete with manual. \$40.00.

TV camera, Sony Model AVC 4600. Built in 3 x 2 CRT monitor, built in intercom facility. Size 14 x 10 x 5-1/2 with rack mounted control unit. Studio style with "camera in use" light, with Lens Cosmicar Television 8.5mm f-1.5. \$145.00.

Variacs, small size rated at 1.25 amps, 115 volts 60Hz. Various manufacturers. \$7.00.

Decade boxes, General Radio resistance decade, Model 1432P in metal case. \$50.00.

As above but Model 602N in wooden case. \$35.00.

As above but General Radio capacitance decade, Model 219N, wooden box. \$25.00

As above but made by IRC resistance decade, 6 decades to 10Megohms, wood case. \$35.00

Coax cable, 6 inch lengths with BNC fitting (not crimped) on each end. New, packaged. 75 cents.

Enlarging and reducing camera especially suitable for making PCB's. Convertible horizontal or vertical, double bellows, V and H lens adjustment, ground glass focusing, mounted on floor cabinet with castors, dual 1500W copy lights. With accessories including lens boards, 6 x 8, 9 x 10, 4 x 5 and 14 x 12 ground glass focusing backs, foot operated light switch, Kodak 7.7 203mm lens in Kodak #2 shutter, Meyer 12" process lens in Betax #4 shutter, Cooke process lens 16" series 9, two copy easels, Kodak filter assortment. MUST BE SEEN, VERY IMPRESSIVE. Made by Burke & James, their Model Princeton. Excellent condition. \$1100.00.

Military 2 way radio sets, 24VDC operation. Unit contains three chassis, a pwr. supply, a transmitter and a receiver. Rogers Majestic/RCAF Model 43GGV-6. Units have a few good parts such as miniature variable capacitors and coil forms. Only \$2.00 each or 6 for \$10.00. Don't forget, shipping on these will be more than you paid for them!!!!

Ampex dual channel reel to reel system. Consists of PR10 transport mechanism in fibreglass suitcase plus SA10 amplifier/speaker unit in similar case and a rack mounting 96900 mixer unit. \$175.00.

Limited supply of Tektronix manuals including 315,555,536,515A,545,511A,524,RM561A,547,541,564BMod121N,T921/2/2R,575/175,611,122/125,127,53D/54D,570,CA,3S1,7B50,1B1,3T2,N,3A6,129,53/54L,53/54C,P6032,P6015,D,53/54E,P6006,P6012,CA,G,3B3,3T77,K,1A2,B,C5A,Q,3L10,3A1,H,2B67,3A74,5T3,1A1,W,4S1,L. All priced at \$10.00 each.

All items are used surplus unless indicated otherwise. Ontario residents add 7% sales tax. All items FOB Smiths Falls. Happy to answer any queries but please provide a postage stamp for the reply.

Canada Contest Multiplier Chart

Province Province Territory Territoire	VO1 VO2	VE1 NS	VE1 NB	VE1 PEI	VE2	VE3	VE4	VE5	VE6	VE7	VE8	VY1	VE0	TOTAL
Band/Mode Bande/Emission														
1.8 cw														
1.8 phone														
3.5 cw														
3.5 phone														
7 cw														
7 phone														
14 cw														
14 phone														
21 cw														
21 phone														
28 cw														
28 phone														
50 cw														
50 phone														

Rules: contests are open to all Amateurs. Everybody works everyone on 160 metres through to 2 metres in both CW and Phone.

Classes:

In the single op section there are 10 classes of entry. They are All Band Mixed Mode (CW-SSB), All Band CW, All Band SSB, and Single Band Mixed Mode (CW-SSB). There are two multi op classes and they are Single TX All Band (Multi-single) and Multi TX All Band (Multi-multi).

Exchange: Operator's name; Signal report; Consecutive serial number; Province, territory, state or country. Multi-multi entrants use separate numbers for each band.

QSO Points: 10 points for each station operating in Canada and for all VE0 stations, and 4 points for stations operating outside Canada. An additional 20 points may be claimed for each official station using the VCA or TCA suffix.

Multipliers: As listed above for a possible total of 182.

Frequencies, kHz: 1825/75, 3525/3775, 7025/7070/7155, 14025/14150, 21025/250, 28025/500, 50040/50125

Entries: A valid entry must contain log sheets, signed statement, summary sheet showing claimed score, QSO's, a list of multipliers and bonus stations. Entries must be postmarked within 30 days of the contest. Please send in your comments and photos.

Awards: Certificates will be awarded to top scoring entries in each class in each province, territory, DXCC country and each U.S.A. call area. Trophies for All band Mixed mode, All band CW, All Band SSB, Single Band 14 MHz, Single Band 7 MHz, Multi op single, Multi op multi. Trophy winners may win the same award only once within a two year period.

No Cross mode QSO's are allowed. Single ops must use own station.

CANADA DAY CONTEST ENTRIES go to:
John Clarke VE1CCM, 16 Keefe Ave., Sydney, N.S. B1R 2C7

CANADA WINTER CONTEST ENTRIES go to:
Norm Waltho VE6VW, Box 1890, Morinville, Alberta T0G 1P0



The NEW improved FT-757GX Mark II available at a price lower than FT-757GX. Call Now !!



Atlantic Ham Radio's version of the FT-211RH come with 140-164 MHz coverage and the 10 memory 22 digit Auto-Dial TouchTone Mike (MH-1508) Also fits 270 2700.

FT-211RH List c/w MH-1508 \$ 649.00

CALL FOR YOUR CASH DISCOUNT

The FT-211RH and FT-711RM are compact synthesized FM mobile/base transceivers providing switch selectable power output of 5 or 45 watts on VHF, or 4 or 35W UHF, respectively. The reversible sloped front panel allows convenient overhead mounting, and includes soft green back-lighting of the keys and controls, and the large liquid crystal display (with bargraph PO/S-meter). Extensive use of chip components assures high circuit reliability, while modular circuit construction makes servicing easy.

Operating features include both push-button and knob memory selection and tuning in selectable steps; ten memory channels storing repeater splits; one-touch repeater reverse and call channel recall; band, memory and partial memory auto-resume scanning and priority channel monitoring. All memories store independent transmit and receive frequencies; seven hold any shift and all accept automatically programmable ± 600 Hz (VHF) or 5 MHz, 1.6 MHz or 7.5 MHz (UHF) shifts.

The microphone jack includes all signals needed for connection of a packet radio



MFJ-108 \$40.00

MFJ-107 \$20.00



MFJ-12-24 HOUR DUAL LCD CLOCK MODEL MF-100

POLICE/FIRE/WEATHER 2 M HANDHELD CONVERTER

Turn your synthesized scanning 2 meter handheld into a hot Police/Fire/Weather band scanner! 144-148 MHz handhelds receive Police/Fire on 154-158 MHz with direct frequency readout. Hear NOAA maritime coastal plus more on 160-164 MHz Converter mounts between handheld and rubber ducky. Feedthru allows simultaneous scanning of both 2 meters and Police/Fire bands. No missed calls. Crystal controlled. Bypass/Off switch allows transmitting (up to 5 watts) Use AAA battery. 2 1/4 x 1 1/2 x 1 1/2 in. BNC connectors.



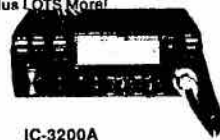
MFJ/BENCHER KEYS COMBO

MFJ-422 \$219
The best of all CW worlds—a deluxe MFJ Keyer in a compact configuration that fits right on the Bencher iambic paddle! MFJ Keyer - small in size, big in features. Curtis 8044-B IC, adjustable weight and tone, front panel volume and speed controls (8-50 WPM). Built-in dot-dash memories. Speaker, sidetone, and push button selection of semi-automatic/tune or automatic modes. Solid state keying Bencher paddle is fully adjustable; heavy steel base with non-skid feet. Uses 9 V battery or 110 VAC with optional adapter. MFJ-1305.

M.F.J. PACKET 1270-\$199
12708-\$249; 1274-\$299



The Biggest & Best From ICOM
• All HF Bands plus General Coverage Receiver from 100 kHz-30 MHz
• Built in Power Supply
• Built in Automatic Antenna Tuner
• Built in Electronic Keyer
• Plus LOTS More!



IC-3200A



IC-02AT
IC-04AT
IC-2AT
IC-3AT
IC-4AT

MFJ AC

This may be the world's most popular 3 M matches virtually everything and gives you all at a great price!

Meet "Versa Tuner V". It has all the features you asked for, including the new smaller size to match new smaller rigs-only 10 1/4" W x 4 1/2" H x 14 7/8" D. Matches coax, balanced lines, random wires—1.8 to 30 MHz. 3 KW PEP—the power rating you won't outgrow (250pf-6KV caps). Roller inductor with a 3-digit turns counter plus a spinner knob for precise inductance control to get that SWR down to minimum every time. Built-in 300 watt, 50 ohm dummy load, built-in 4:1 ferrite balun.



MFJ9898 \$ 599

MFJ's Fastest Selling TUNER

MFJ-941D \$179



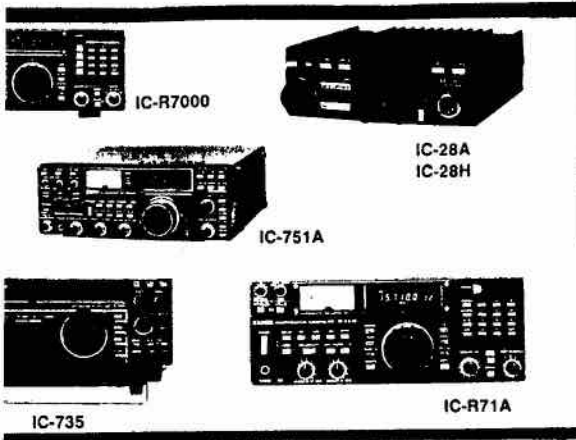
MFJ's fastest selling tuner packs in plenty of new features. New styling! Brushed aluminum front. All metal cabinet. New SWR/Wattmeter! More accurate. Switch selectable 300/30 watt ranges. Read forward/reflected power. New antenna switch! Front panel mounted. Select 2 coax lines, direct or through tuner, random wire/balanced line or tuner bypass for dummy load. New airwound inductor! Larger more efficient 12 position airwound inductor gives lower losses and more watts out. Run up to 300 RF power output. Matches everything from 1.8 to 30 MHz! dipoles, inverted vee, random wires, verticals, mobile whips, beams, balanced and coax lines. Built-in 4:1 balun for balanced lines. 1000 V capacitor spacing. Black. 11 x 3 x 7 inches. Works with all solid state or tube rigs. Easy to use anywhere.

MFJ's 1.5 KW VERSA TUNER III

MFJ-962B \$399



Run up to 1.5 kw PEP and match any leadline continuously from 1.8 to 30 MHz; coax, balanced line or random wire. Lighted Cross-needle Meter reads SWR, forward and reflected power in one glance. Has 300 and 3,000 watt ranges. 6 position antenna switch handles 2 coax lines, wire and balanced lines. 4:1 balun. 250 pf, 6 kv variable capacitors. 12 position ceramic inductor switch. New smaller size matches new rigs: 10 1/2" x 4 1/2" x 14 1/2" inches. Flip stand for easy viewing. Requires 12V for light.



ACCESSORIES

Inductor tuner because it's small, compact, reliable, 1/Wattmeter, antenna switch, dummy load and balun —



Lighted Cross-needle Meter reads SWR, forward and reflected power all in one glance. Has 300 and 3,000 watt ranges. Meter light requires 12 VDC.

6 position antenna switch (2 coax lines, through tuner or direct, random/balanced line or dummy load), SO-239 connectors, ceramic feed-throughs, binding post grounds.

Deluxe aluminum low-profile cabinet with sub-chassis for RFI protection, black finish, black front panel with raised letters, tilt bail.

VERSATUNER

MFJ-949C
\$109

...tuner is now even better!
...all-in-one Deluxe Versa Tuner II
...cross-needle SWR/Wattmeter,
...enna switch and balun in a new
...You get quality conveniences
...a shack at a super price.
...meter SWR/Wattmeter gives you
...d reflected power—all at a single
...automatically computed with no
...as 30 and 300 watt scale on easy-
...ghted meter (needs 12 V).
...black brushed aluminum cabi-
...ew rigs. Its compact size (10 x
...rly a little room.

...transceiver power output—up to
...and match coax, balanced
...nes (direct or thru tuner),
...3 poles, vees, long wires,
...s and quads.
...dummy load gives you quick
...e six position antenna switch
...nes (direct or thru tuner),
...d line and dummy load,
...round inductor—3 inches in
...you plenty of matching range
...or more watts out. 100 volt tuning
...avy duty switches gives you safe
...n. A 4:1 balun is built-in to match

MFJ-202B
\$109

...shorten or lengthen antenna for
...Measure resonant frequency.
...ce and reactance.
...Dividually calibrated resistance
...apacitance range (1150 pF).
...ender for measurements be-
...gs. 1-100 MHz. Comprehensive
...battery. 2x4x4 in.

MFJ's Smallest VERSA TUNER

MFJ-901B
\$109

MFJ's smallest 200 watt Versa Tuner matches coax, random wires and balanced lines continuously from 1.8 thru 30 MHz. Works with all solid state and tube rigs. Very popular for use between transceiver and final amplifier for proper matching. Efficient airwound inductor gives more watts out. 4:1 balun for balanced lines. 5 x 2 x 6 inches. Rugged black all aluminum cabinet.

MFJ-945C
\$139

Designed for mobile operation! Small, compact. Takes just a tiny bit of room in your car. SWR/dual range wattmeter makes tuning fast and easy. Careful placement of controls and meter makes antenna tuning safer while in motion.

Extends your antenna bandwidth so you can operate anywhere in a band with low SWR. No need to go outside and readjust your mobile whip. Low SWR also gives you maximum power out of your solid state rig—runs cooler for longer life.

INDOOR TUNED ACTIVE
NEW! IMPROVED! ANTENNA
with higher gain "World Grabber" rivals or exceeds reception of outside long wires! Unique tuned Active Antenna minimizes intermode, improves selectivity, reduces noise outside tuned band, even functions as preselector with external antennas. Covers 0.3-30 MHz. Tele scoping antenna. Tune, Band, Gain, On-off bypass controls. 6x2x6 in. Uses 9V battery. 9-18 VDC or 110 VAC with adapter, MFJ-1312.

MFJ-1020A \$149

YAESU



FT 23/73
Mini Handhelds
for 2m/440 MHz



FT 727R
2m/440 MHz Dual Band HT
Enhanced Version !!



FT 767GX
All Mode Transceiver
with CAT System



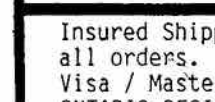
FRG 8800
General Coverage Receiver
All mode 150 kHz-30 MHz



FRG 9600
Scanning Receiver
for 60-905 MHz FM/AM/SSE



RX 325
Short Wave Receiver



Paragon
Amateur Transceiver with
General Coverage Receiver

ATS-803

Size & Weight like Sony ICF-2010



SANGEAN
ATS-803
Full band coverage LW/MW/SW 150-29999 KHz FM RR 108 MHz
5 Tuning functions direct-key-in auto scan manual scan memory recall rotary manual tuning
Direct press button access to all 12 short wave broadcast bands
LCD digital frequency display 5 LED signal strength indicators
BFO control (Beat Frequency Oscillator) enables reception of SSB (Single Side Band) and CW (Morse Code) transmissions
AC adaptor & short wave handbook
11.5" (W) x 6.3" (H) x 2.4" (D)



The Santec ST-20T FM handheld transceiver features a tremendous amount of modern technology and super "bells and whistles" in a handsize package.

KENPRO KT-220ET		VHF FM TRANSCIVER MODEL ST-20T	
General	Frequency Range	140-155.995 MHz	F3
Type of Emission	Memory Channels	10 Channels	50 ohms
Antenna Impedance	Power Source	9.6V NiCd battery pack	9V Dry battery pack
Transmitter	RF Output Power	5.0 Watts (H), nominal at 12V	3.5 Watts (H), nominal at 10.5V
Modulation	Maximum Deviation	± 5 KHz	± 60 dB
Transmit Scenarios	Microphone	Electret Condenser Microphone	Receiving Methods
Receiver	Receiving Methods	Double Superheterodyne	1st 16.9MHz
Band Width	IF	2nd 455KHz	Sensitivity
Selectivity	Less than -0.25uV at 12dB SIN.	± 7.5 KHz at 60dB down	± 15 KHz at 60dB down
Audio Output Power	400mW at 8 ohm		

USED GEAR

- 30 Day 100% Warranty
- ICOM IC-701/PS/Mike--\$799
 - ICOM IC-271H 100W 2M \$1099
 - ICOM AT-100 Auto Tun--\$399
 - ICOM PS-35 Pwr Sply--\$199
 - YAESU FT-77 HF XCVR--\$699
 - YAESU FT-726R XCVR--\$1389
 - YAESU YO-901 Scope/BS\$599
 - YAESU FTV-901R Trvrtr\$299
 - YAESU FTV-6M Board---\$149
 - YAESU 726-430 Board---\$449
 - YAESU SP-980P Patch---\$129
 - YAESU SP-102 Spkr----\$ 99
 - YAESU FT-227R 2M FM---\$249
 - YAESU FA-9 Fan 101---\$ 25
 - AZDEN PCS-3000 2M FM-\$369
 - AZDEN 3000 Rem Cable\$ 50
 - AEA CP-1 Inetrface---\$225
 - AEA MBA-TEXT-64---\$ 79
 - KENWOOD TS-2400 2M HT\$175
 - HUSTLER RM-10S Coil---\$ 20
 - HUSTLER RM-10 Coil---\$ 10
 - BEARCAT THINSCAN 4ch-\$ 50
 - AMCOMM 2M FM 25W---\$199
 - DENTRON GLA-1000 AMP-\$499
 - YAESU Landliner Patch\$ 79
 - AEA MAP-64/2 Microph\$179

TRADES CHANGE DAILY !! !!



FM 240
Compact 2m Mobile Radio



IC 02AT/03AT/04AT
Handheld for 2m/220/440

QUANTITY DISCOUNT !! !!
ON 3 HF or 5 VHF XCVR

Insured Shipping & Handling - Please add 2% (\$5 Minimum) to all orders. Some items are subject to freight collect..... Visa / Mastercard accepted at slightly lower discounts..... ONTARIO RESIDENTS - ADD 7% SALES TAX AFTER ADDING SHIPPING. PLEASE SEND 2 - 34¢ STAMPS FOR CATALOG & INFO REQUESTS..... NOTE: ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE..... SPECIAL PRICES BASED ON CHEQUE WITH ORDER. CREDIT CARDS ARE ACCEPTED AT SLIGHTLY LOWER DISCOUNTS - USUALLY ABOUT 2%....

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After 7 p.m. Call (416) 222-2506 CANADA M3H 1S9
For Orders. (416) 636-3636

CANADA CONTEST

0000Z to 2400 Z
CANADA DAY CONTEST
 1 July every year.

YEAR

0000Z to 2400 Z
CANADA WINTER CONTEST
 Last Sunday in December every year.

CALL _____ TRANSMITTER _____
 NAME _____ ANTENNAS _____
 ADDRESS _____ OPERATORS _____

SINGLE OPERATOR

- All Band/Mixed Mode CW/SSB
- All Band CW
- All Band SSB
- Single Band Mixed Mode CW/SSB _____ MHz

MULTI OPERATOR

- Single TX- All Band
- Multi TX- All Band

SCORE CALCULATION

TOTAL QSO's				
CANADIAN QSO's		X 10		PTS.
OTHER QSO's		X 4		PTS.
BONUS QSO's		X 20		PTS.
TOTAL QSO POINTS				PTS.
MULTIPLIERS				See Chart
TOTAL SCORE = QSO Points X Multiplier				PTS.

This is to certify that in this contest I have operated my station within the limitations of my licence and have observed fully the rules and regulations of the contest.

(Signature) _____

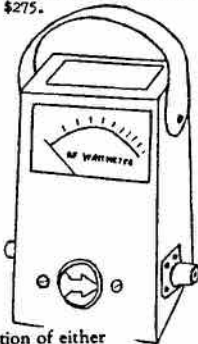
**Logs must be postmarked no later than 30 days from the date of the contest.
 Results will be published in TCA- The Canadian Amateur Magazine prior to the next contest.
 Non-members of CARF must include an SASE to receive contest results.**

The decision of the Contest Committee is final.

COAXIAL DYNAMICS

MODEL 81000-A
Directional RF Wattmeter
\$275.

Standard Elements \$93. (not included) with 81000-A



FOR ACCURACY

Shock Mounted "Taut Band" Meter
± 5% of full scale reading.
(Elements interchangeable with Bird)
115 mm (4 1/2") Mirrored Scale.

FOR VERSATILITY

Quick Match Connectors
Internal Line Section

FOR DURABILITY

Nickel Plated Plug-In Elements
2 Year Limited Warranty

Selection of either UHF or N connectors included in Wattmeter price. Others available.

The MODEL 81000-A completely satisfies proposed CSA standard for bounce & vibration (CSA-STD-C22.2 No. 152-1976), as well as US Navy standard for shipboard mechanical vibration (MIL-STD 160).

STANDARD ELEMENTS (CATALOG NUMBERS)

Power Range	Frequency (MHz)						
	2-30	25-60	50-125	100-250	200-5	4-1.0	
5 watts	82012	82012	82020	82028	82036	82045	Low Power
10 watts	82013	82013	82021	82029	82037	82046	
25 watts	82014	82014	82022	82030	82038	82047	& Milliwatt
50 watts	82004	82015	82023	82031	82039	82048	
100 watts	82005	82016	82024	82032	82040	82049	Elements
250 watts	82006	82017	82025	82033	82041	82050	
500 watts	82007	82018	82026	82034	82042	82051	- slightly higher priced
1000 watts	82008	82019	82027	82035	82043	82052	
2500 watts	82009						
5000 watts	82010						

MODEL NUMBERS

**GREAT LAKES
ELECTRONICS**

VE3CF

54 Clairmont. St., Thorold, Ontario L2V 1R8.

QSL CARDS/CARTES DE QSL



CARF B - RED MAP, BLUE PRINTING ON BUFF BRISTOL

CARF W - RED MAP, BLUE PRINTING ON WHITE BRISTOL

250 - \$32.50

(THIS FORMAT ONLY)

ADDITIONAL 250's
\$10.50 (when ordered
at the same time)

ONTARIO RESIDENTS ADD 7% SALES TAX

CALL _____ NAME _____

ADDRESS _____

INDICATE CALL SIGN STYLE

1. (as sample)

INDICATE LOGOS TO BE PRINTED

(maximum of 3)

4. **VE3GDZ**

CARF CRRL/ARRL

FOR SAMPLE OF THIS CARD, SEND A STAMPED SELF-ADDRESSED ENVELOPE. ALLOW 6 - 8 WEEKS FOR DELIVERY VIA CANADA POST. SEND COMPLETED ORDER & PAYMENT IN FULL TO: BRUCE McCOY VE3GDZ 1128 BRYDGES ST., LONDON, ONTARIO, N5W 2B7

Amateur Radio in Canada

- An Overview -

By Bill Roorke VE3MBF

Another in a series of books by Bill Roorke, this 158-page study describes the basis for Amateur Radio and considers its history including the part played by the DOC in both licensing and guiding the hobby. Following this, nearly 1/3 of the book is devoted to a description of how to go about getting your licence. Questions from previous exams are examined and the correct answers are given, together with references as to where to find more information. A concise index to Ralph Zbarsky's (VE7BTG) study guide is included for reference and an appendix of useful information such as time conversion charts, using IRC's, etc.

Price: \$10.00

(Amateur Radio in Canada— An Overview is available post paid from the CARF Office. See Order Form on Page 46.)

•CQ DX•CQ DX•

Paul Cooper VE3JLP
RR 2 Metcalfe Ont.
K0A 2P0

DX COUNTRY FOR SALE

Not often is one offered the chance to buy a DXCC country, but we understand from *QRZ DX* that one is up for sale. It's 600 acres of tropical coconut groves, jungle and your own lagoon. It's nearly 1,000 miles south of Hawaii and there are no prizes offered for guessing that we are talking about Palmyra, KHS or KP6. Owned by the Fullard-Leo family for more than 60 years it was used as a military supply base and hospital during World War II when various buildings were put up, a water catchment and storage system installed, and a 6,000 foot runway constructed. All these improvements are now in an advanced state of decay with the exception of the water system. Apparently there was an abortive attempt to establish a copra plantation there, some years ago, using imported labour from what was then the Gilbert Islands and is now Kiribati (T30). However this came to nothing so the island has been uninhabited for many years except for the odd visiting yacht or DXpedition. So far we understand nobody has made an offer to buy, perhaps the price is too high or maybe the thousand mile trip from Hawaii for the groceries is putting people off?

DXCC & WWCC

Regular readers may remember an item in the March column about a proposed award system which is being touted as a possible replacement for the DXCC. The latter is under review within ARRL, probably because it is beginning to founder under all its inconsistencies!

Anyway, by a circuitous route the man behind WWCC (the World Wide Century Club), Jim McCook W6YA, got hold of a copy of my column and wrote thanking *The Canadian Amateur* for giving his idea some publicity and, incidentally, correcting one mistake in the column. I had misread his rules, as far as the squares covered by water are concerned. Jim proposes to eliminate only those squares which have no land on them whatsoever; he is just as keen as I am to have all those remote islands part of WWCC. However he does want to eliminate the truly water-only squares to prevent maritime mobile operations qualifying for a credit from these 'wet squares'.

I felt that Jim's proposal was important enough that it should be published in full in *The Canadian Amateur* so that you could all judge for yourselves whether it's worth supporting. Jim tells me that he is very

open to suggestions or criticism, so if you have any comments why not drop him a line at 1029 Passiflora Pl., Leucadia, CA. 92024?

Jim has written to a lot of organizations about WWCC but so far "responses have been limited." This is a pity; if we all care about DXing we should be getting involved in trying to develop a successor to DXCC which we can all be comfortable with. If we sit in our respective shacks and let 'other people' work up a replacement we will only have ourselves to blame when it is launched and we don't like some of its rules.

It turns out that, perhaps not unnaturally, much of the opposition to any change in DXCC comes from that tiny elite group whose names are on the 'Honour Roll'. They would have the most to lose if the DXCC is frozen or phased out, since they would be back with the peasants again building up credits for the new award from scratch!

Jim who, by the way, is at the top of the honour roll himself, correctly points out that much of the fun of DXing comes from the pursuit of those rare ones. Who was it who said, "It is better to travel hopefully than to arrive"? WWCC promises to be a tough one, with most Amateurs taking a great many years to get even near the top. So be it, the pursuit of those elusive squares will be a lot more fun than sitting near the top of the honor roll waiting for Albania to change its attitude toward Amateur Radio!

Before we leave the subject, I see that the DXAC Chairman, John Parrott W4FRU, is surveying DXers to find out what they think about restructuring the DXCC award program. This is a new development, as I thought the time for comments expired some months ago. Anyway it's all good news as it is another chance to influence the process. Club bulletin editors are being encouraged to include the survey form in a future issue. If you want a survey form sent directly to you, write to: ARRL-DXAC Form, P.O. Box 5127, Suffolk, VA 23435 USA. Please include S.A.S.E.

73S TO VE3DQB

It was quite a shock to learn recently from Frank Hughes that he was stepping down from his post as editor of *The Canadian Amateur*. I did not want the event to pass unnoticed in this column as I have enjoyed working with Frank and always found him a most cooperative and sympathetic colleague. He tells me he is now looking forward to spending more time in the shack and on the air.

This, at least, is good news and I know readers will join me in wishing Frank all the best in his new endeavors.

COOPER'S BEEFS

This month I offer a suggestion that would help to streamline our CW QSOs and so slightly reduce levels of QRM on the bands. The idea came to me as I was exchanging the usual standard information with a Russian station recently on 20 metres. I was copying his name and QTH, double checking each as he transmitted them for the second time. As usual I had got them right the first time and as he transmitted his long QTH, just for luck, for the third time I suddenly realized that in a typical QSO with good signals in both directions and tolerable levels of QRM, I almost always get the information the first time it is transmitted. What does this suggest? Not that I am an exceptional CW operator. On the contrary, while I love the mode, I've never really been satisfied with my copying speed and particularly my inability to ragchew for long periods without 'going to pieces' and missing great chunks of copy.

However constant practice has made me, and I'd guess, many other operators, capable of the burst of concentration necessary to grab that name and QTH the first time it is transmitted.

So here is the proposal: let's all start sending our name and QTH only once. If your contact doesn't copy them correctly, he will ask for a repeat and this will be a tip off to slow down a little on your repeats. However my guess is that most times your friend will also have grabbed that information the first time you transmitted it, speeding up your QSO just that little bit.

BITS AND PIECES

TY, Benin— Truly our hobby forces an interest in political geography! While the call 'TY' seemed vaguely familiar, the country's name, 'Benin', was completely new to me. It turns out that this was one called 'Dahomey' and is a small West African country lying between Nigeria (5N0 and Burkina Faso (XT). *QRZ DX* reports 3XOHS/TY has been heard on the ET DX net on 14.160 MHz from 2100 UTC. There are also reports of a station signing DK8PR/TY, but no details are available.

P9, North Korea— This is another unusual one. I hadn't realized that there was any activity at all from the "Democratic People's Republic of Korea"— North Korea to most of us.

However a Californian station reports working P9AF on 7.004 MHz at 145-1600 UTC. The QTH was given as Koksan.

There are rumours of other stations active with P5 and P6 call signs but no firm details. Looking through my reference material I find that DXCC doesn't recognize North Korea as a separate country, so a contact with P9 would presumably be counted as an HL or HM.

'MOST WANTED COUNTRIES' LIST

The 1987 survey of 'most wanted countries', conducted by *The DX Bulletin* and representing the views of 679 top DXers, makes interesting reading so I'm listing them here:

Country	Prefix	% Needing
Albania	ZA	81
S. Yemen	70	75
Bouvet	3Y	74
Burma	XZ	72
Andaman	VU7A	72
Vietnam	XV	68
Afghanistan	YA	67
N. Yemen	4W	65
Libya	5A	57
Laos	XW	56

Of these ten countries, both Libya and the Andaman Islands have recently been activated, which may move their position on the list.

10 METRE 'DEAD BAND' FREQUENCY

An interesting idea has been proposed by Ray K6FD, that may help detect openings on 10 metres.

We all know what to do when we switch to ten and spot the odd signal here and there. Obviously the band is open so we search for something interesting to work, or call CQ ourselves. The big question is what to do when the band appears to be dead. I stress 'appears' as there is no way of telling whether it is really a dead band or if it is open but with nobody yet in QSO with anyone else. If we tune up and down the wide open spaces of the 'dead' band, the chances of hearing anyone else launching a tentative CQ are remote to say the least. However if we are all listening or calling on the same 'dead band' frequency, our chances of being heard are much greater.

Ray suggests we all use 28.500 MHz, monitoring this frequency or else using it to try to open the band. Of course there is one other way to check whether 10 metres is open— you can tune down into the CW portion of the band and look for the beacons. I haven't a list of them in front of me, but I seem to recall that there are a great many of them spread all over the world and, as the band opens, various ones will appear out of the noise. However detecting an opening band

would mean continuously tuning over the beacon band rather than monitoring 28.5 MHz, so Ray's scheme is certainly simpler.

Thanks are due to the following

sources for some of the material appearing in this column: W6YA, QRZ DX, *The DX Bulletin*, *The NCDXC DXer*, K6FD. ■

World Wide Century Club— An alternative to DXCC

Most DXers recognize the need for a new 'supreme' DX award. DXCC is riddled with inconsistencies. Disputes continue to arise regarding country definition and other rules. Top position is shared by an extraordinary number of Amateurs worldwide. Many of them, as well as others near the top, have lost interest because the chase has ended. Others not so close to the top will likely never have a chance to work them all because of the countries where ham radio is illegal. Because of special mode/or band awards characteristic of DXCC (and others), there is frequent anger and frustration when some overeager DXer convinces a rare DX station to QSY, right in the middle of a pileup! Additionally, for this reason, QSL chores have become a tremendous burden. DX stations often are asked to send a dozen cards!

Consider the following, an alternative to DXCC:

1. Divide the world into 10x10 degree squares (multiples of 10 degrees lat. and long.) using a readily available standard such as the National Geographic World map (10 degree lines).
2. Eliminate all the squares containing water only. They have no value.
648 squares - 183 water only squares (approx) = 465 WORLD WIDE DX AREAS.
3. Make no distinction for band or mode. The ARRL-sponsored award is simplified. Any CW/SSB/AM contact on any band except 10 MHz is acceptable. Special interest organizations (RRTY, AMSAT, etc.) can sponsor their own version if they see fit. They could check cards and provide endorsements.
4. Accept confirmation for the new award at a time when DXCC is phased out (frozen, not lost!). For example, confirmations could be accepted for WWCC in 1990 for contacts made beginning in 1988. No new DXCC awards or confirmations would be made from 1990 on.
5. Initial award certificates could be given for 200 DX areas confirmed. Endorsements could be given as in DXCC, with special endorsements for 300, 400 and 465.
6. Since this would be an award of

considerable substance and difficulty, there should be a system to eliminate all contacts made through organized lists. Let the listmasters issue their own version of the award, if necessary. Let's not cheapen this award with lists!

7. An identification system could be arranged to indicate continent(s). Examples are N-12, S-13, O-5, AE-43 (the latter would be an area bridging both Asia and Europe). Someone will surely devise a more exotic system!

ADVANTAGES

This award would offer much better coverage of the world than DXCC. For instance UAO counts as only one country for DXCC. It covers a vast portion of the Asia landmass and includes a wide variety of cultures and languages. Under the new system these sections would be more properly represented.

There would be tremendous new incentive for new expeditions in all areas.

We, as DXers, would gain an all-new awareness of world geography!

Country disputes would finally be eliminated.

QSL chores would be greatly reduced (it would help to negotiate with the JAs!).

It appears that all DX areas would contain portions of countries where ham radio is allowed. There would be no political 'lockouts' such as ZA, 70, XZ, etc. Unless the U.S.S.R. or U.S.A. ban ham radio, all DX areas will continue to be possible.

It appears that it will be necessary to work most countries to complete this award, this will require more study.

Frustration and anger caused by the previously mentioned QSY problem would be eliminated, as far as this award is concerned.

This would be more difficult than DXCC if the no-hamming-allowed countries are not considered. It will be many decades before anyone gets them all! Since we all know by now that the real fun is in the pursuit, the fun will last and last!

It is conceivable that navigation satellites could be used to confirm the presence of stations that may have a

Continued on next page ►

THE COLUMN

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

Your national Federation was formed in 1967, Canada's Centennial Year, and, in the past 20 years, many changes have taken place in the Federation and the Amateur Radio Service it serves.

CARF commenced operations with a membership of three provincial Amateur organizations and finances of \$110. Since then the Federation has developed into the national Canadian Amateur organization, with its own national publication, *The Canadian Amateur*, with the support of over 4,000 individual members and 140 affiliated clubs, with a gross annual income of more than \$100,000 and with invested reserves of \$40,000—a far cry from its position 20 years ago!

In 1967, Canadian Amateurs had accepted Single Side Band as the phone mode for HF use. An average station consisted of a 100 watt output transceiver (or separate receiver and transmitter) feeding dipoles for 80M and 40M and a tri-band beam for 20M, 15M and 10M operations. The antennas were mainly 40 feet high using the readily available, and cheap, towers used for television reception. Two metre operations were confined to a small number of devotees using surplus military and commercial equipment.

The change from 2M AM to FM was beginning and a small number of Amateur auto-repeaters were functioning. OSCAR 3 and 4 had been launched in 1965 and 1966 but these were short-lived and it would be 1974 before OSCAR 7 was in operation giving many years of service. Radio Teletype was in use with the 'mechanical monsters' of those days, particularly the Model 15 and 19 using 850 Hz shift. The days of the 'home brewed' station were disappearing with the advent of 'commercial' Amateur equipment from manufacturers in the U.S.A., England and Italy. The well-known names of today—Icom, Yaesu, Kenwood—were virtually unknown in Canadian Amateur circles.

There was no national Amateur publication in 1967, but many provincial societies published bulletins, etc. at regular intervals for the information of their members. Many Canadian Amateurs had subscriptions to the big three U.S. Amateur publications—*QST*, *73*, *CQ*—each about 120 pages (6" x 9" format) and full of technical and operating information and advertising geared to Amateur needs. A look at this advertising brings back many memories—Swan 500, Galaxy Mark

2, Drake TR4, National NCX-5, Collins KWM-2, Hallicrafters HT-46, KW2000A and others. CARF published the first issue of *The Canadian Amateur* in January 1973, a four-page news sheet, with a circulation of less than 500. This changed to magazine format in 1979 with a circulation of 4300 and has steadily developed into the national publication of today.

Vacuum tubes were in their hey-day with some intrusion of solid-state devices into Amateur equipment, usually diodes and transistors. Some integrated circuit AF and RF amplifiers were on the market but digital electronics were not yet a part of Amateur equipment. Articles on the care and feeding of solid-state devices were to be found in Amateur publications, but few forecast the tremendous revolution that these devices were to make in the following 20 years. The original micro-processor chips were just coming on the market, at a very high price, and it would be at least 10 years before micro-computers started to become available for home use and another five years until they were to be found in Amateur equipment. It was not many years ago that 2M transceivers were crystal-controlled, average of six-channel capability, and, compared to modern types, bulky and heavy. Back in 1967, the majority of Amateurs were using modified ex-taxi transceivers, full of vacuum tubes and requiring many amps of 12 VDC for operation! The Handie-Talkie of those days used special vacuum tubes and bulky batteries with a weight and size many times the vest pocket devices of today.

The next 20 years could see as many changes in your national Federation and the Amateur Radio service as have taken place in the previous period. Packet Radio is in its infancy and could become the accepted mode for handling traffic both on HF and bands above 30 MHz. Much greater use of bands above 150 MHz is forecast with more and more reliance on digital communications for speech, word and picture transmission. Geo-stationary Amateur satellites, combined with special ground-based auto-repeaters, could enable world-wide communications using hand-held VHF/UHF transceivers—and pose a multitude of problems for sponsors of DX Awards and Contests! But we can see no great change in the CW and SSB modes of today for HF communications with Amateurs continuing to use CW as a mode almost peculiar to Amateur Radio.

If the above forecasts come true, effective regulation, both national and international, of Amateur operations of these 'exotic' methods of communication will be necessary. Luckily, the officials of both CARF and CRRL are now engaged in discussing possibilities of a merger of both organizations into a single, independent national society for a very strongly supported, national voice will be needed to ensure the continued development of our Amateur service.

Although the author is an 'old-timer' Amateur, he can see that the future of Amateur Radio depends on our use and retention of bands above 30 MHz. Realistically, the HF spectrum is unreliable and has limited frequency space for commercial use employing digital techniques and so, except for international broadcasting, no great pressure should develop on our use and retention of existing HF bands. But, above 30 MHz, the situation is reversed with increasing commercial use of these frequencies and, consequently, increasing pressure to invade Amateur bands. Note that today we are a secondary user of the 430-450 MHz, 902-928 MHz, 1240-1300 MHz and higher bands in Canada and these are the prime communication frequencies of the next 20 years. Amateur equipment for use on the bands above 150 MHz is now readily available and a swing to these bands will be vital to our continued allotment of frequencies above 2M. A major growth in numbers of Canadian Amateurs will ensure this and the proposed Restructuring of the Canadian Amateur Service could bring this about. Let us all trust that this proposal will not get bogged down in governmental bureaucracy! ■

▶ WWCC (cont'd)

habit of not being where they say they are.

Individual organizations, as previously mentioned, could decide on special mode/band awards. For instance, who could possibly be more qualified than AMSAT to decide if an 'all-satellite' award is indicated? They could check the cards and issue their own awards and endorsements.

My personal opinion is that band/mode awards should be no more than individual, personal record keeping. This doesn't even require QSLs! When it comes right down to it, *nobody else really cares about your bands and modes anyhow!*

73, Jim McCook W6YA

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How they brought the Good News

The Radio Advisory Board in Canada approved the terms of reference for an EMC subcommittee on May 1, 1986. These terms were:

i) To inform the EMC Committee of RABC concerning the nature, urgency and possible ramifications of the electromagnetic susceptibility matter.

ii) To advise the EMC Committee re possible rationale and equitable solutions that may be implemented to:

- reduce EMC problems
- improve the general awareness,
- preclude the need for solutions by litigation.

iii) To recommend to the EMC Committee a method of proceeding that, comprising the opinions of all sponsor members, can, in consideration of the RABC's proactive role, be presented to the DOC for consideration. The final report as submitted by the Committee covers 'Electromagnetic Immunity of Electronic Equipment'.

SCOPE OF THE REPORT

The report, which was prepared by several discussions with manufacturers as well as other spectrum users and both national Amateur Radio organizations, covers the subject thoroughly. The intention in preparing the report was to be able to submit the findings to the RABC sponsor members for ballot and subsequent adoption or rejection.

ACCEPTANCE

The ballots returned as of March 20 indicate unanimous acceptance of the report and transmittal to DOC for action. Most of the conclusions and recommendations will prove very positive toward elimination of the EMC problems which seem to plague us.

CONCLUSIONS

Conclusions reached were:

1. The immunity problem is of sufficient significance that action is required to begin at once, recognizing that it will take time to produce tangible effects.

2. An effective immunity program is feasible and practical based upon the mandatory requirement that manufacturers and importers of susceptible electronic equipment repair, replace or refund payment for equipment which malfunctions in the

presence of licensed radio transmissions.

3. In the interim, diminution of the potential for litigation in instances of immunity problems can be effectively achieved through the use of the offices of the DOC for the review of exceptional complaints and by exercise of moral suasion at an executive level when such cases arise.

4. There remains a need for the continuing development of voluntary reference standards for equipment immunity to:

- provide diagnostic tools for the industry in their design specification of immunity requirements;
- provide a basis for compulsory standards should these prove necessary at a later date.

5. The Department of Communications should be vested with clear cut authority to prepare regulations regarding the immunity of all electrical/electronic equipment.

6. Such regulatory authority is a prerequisite to any successful resolution of the immunity problem and should include from the outset not only the power to require repair, replacement or repayment as indicated above, but also the power to impose mandatory standards should they prove to be required at a later date.

7. In the interim, to facilitate an early implementation of immunity controls:

- an awareness program for the service industry is required;
- continued cooperation of industry in fixing problems as they arise will be needed. This may be stimulated by an awareness program developed by the DOC outlining the objectives of the program and the need for cooperation by all affected parties during its implementation phase. It is expected that the RABC would assist the DOC in this program through further promotions to its sponsor groups and their memberships.

8. In the development of reference standards, the program of the Standards Steering Committee on Electromagnetic Compatibility proceeding in the CSA forum adequately addresses the issues of concern to the subcommittee, including the necessary harmonization with international and North American standardization, and its

timely continuation should be encouraged.

9. A stand alone labelling program is not considered a solution, but labelling is viewed as a possible integral requirement in the implementation of the proposed program.

10. Some process of conciliation, arbitration or other measure of reasonableness should be developed and incorporated in any resultant regulations.

RECOMMENDATIONS

1. The RABC should strongly recommend to the Minister of Communications that legislation be sought at the earliest possible date extending the power of the Minister to encompass the regulation of the immunity of electronic equipment. This legislation should include both the authority to impose requirements for the repair or replacement of, or restitution for, susceptible equipment and the authority to impose immunity standards.

2. Further, the RABC should recommend that preparation of regulations imposing requirements for the repair or replacement of, or equitable restitution for, susceptible equipment whenever it malfunctions in the presence of signals from licensed radio transmitters commence so as to permit their implementation as soon as the enabling legislation is adopted.

3. The RABC views as an immediate necessity and recommends the establishment by the Department of Communications of a 'point of technical reference' office to provide assistance toward the equitable resolution of exceptional complaints prior to their getting out of hand. This office should also provide a liaison between affected parties and the executive level of companies regarding critical immunity incidents involving their product.

4. The RABC, in its advisory role, has identified the urgent need for and is prepared to consider becoming involved in an educational program to coordinate industry and government efforts in the preparation and dissemination of information on the theory and practice of isolation of susceptible equipment from the electromagnetic environment in

order to improve the ability of the service industry to effect such repairs.

5. Recognizing that uniform standards are a prerequisite to the voluntary adoption of immunity measures by the industry, the RABC reaffirms its support for immunity standards writing programs, such as the CSA's and recommends the continuation of these programs on a priority basis.

Radio Amateurs are encouraged to write their Federal MPs and express support for an immediate extension to the mandate of the Minister of Communications to amend The Radio Act in accordance with Recommendations above. Recommendations 1 and 2 are of most immediate concern to Amateurs.

The solution or recourse a licensed station may have, when neighbours demand cessation of transmitting, may come a step closer when equitable legal obligation is imposed in spectrum sharing. For those of you brave enough to commence costly, frustrating and largely contentious litigation, may your independent litigation be successful. This is definitely the second course to choose.

ISSUES RELATED TO ELECTROMAGNETIC COMPATIBILITY

A recent article in *PC World* for December 1986 contains yet another scheme for a 'full-fledged data communications corridor'. The article states that there is in excess of 40 million American homes linked by cable TV. It is further estimated that fully 55% of the population will be served by the same system by 1990. These systems deliver not only TV but local programming, premium subscription services and movies.

It is recognized that a pipeline into the home could be that ideal medium to interconnect millions of PCs. Just

HELP WANTED

A study is being undertaken by DOC that would examine current bylaws and/or restrictive covenants and ordinances for antennas and antenna support structures. Note: There is no intent to restrict operative capacity of licensed undertakings so this study should not be viewed as detrimental. To ensure existing Local Legislation is considered in Guidelines to be issued to municipalities, send a copy of such bylaws, etc. to:

Ralph Cameron VE3BBM
20 St. Remy Dr.,
Nepean, Ont.
K2J 1A3

think of the opportunities to conduct banking, voting, shopping and polling via the existing cable. There have been over 7,000 cable TV franchises granted to Cable companies that deliver TV signals to homes.

DATA TRANSMISSION

Cable systems in Canada parallel those of our neighbours to the South—it may be a matter of time before some 'Nabu-like' entrepreneur successfully markets a system which offers affordable and practical data transmission for you and me. Present cable systems offer 'Off Air Cable' facilities which span the spectrum from 5 MHz to 300 MHz. Service offered via cable in the U.S. extend the high end of this offering to 400 MHz. Larger institutions such as hospitals and schools would receive video, audio and data by this medium.

One major consideration from a susceptibility standpoint is that transmissions to effectively time share (desirable for a large number of users) must be as high as 9600 bps. With the Frequency Division Multiplexing schemes evolving, one can anticipate any cable digress will be very 'dirty', RF-wise. Similarly, the potential for incompatibility with local transmitters will be extremely high. It is likely that a single case of cable ingress could disrupt MANY users who have no interest whatsoever in the electronic 'pox' called 'interference'. In one New York city alone, over 200,000 subscribers share one main cable system. Think of unintentionally sliding a few milliwatts of unwanted RF under the sheath of that system—good for more than a Bronx cheer!

AUTOMOTIVE EMC

The Society of Automotive Engineers has responded to the need for EMC performance and testing standards to ensure the industry DESIGNS with due regard for problems associated with Radio Frequency interference. The designers have had to address the problems of internally generated interference before considering the outside influences. It is stated in an article in *RF Design* for September, 1986 that a priority of design considers minimizing the susceptibility to RFI and then the device is designed to minimize failures which could result in a hazardous situation.

It's refreshing to actually read in print that, "minimizing susceptibility is primarily a matter of cost for added shielding, filtering higher rated components and additional testing." Safety is a marketable feature after all. If appliance manufacturers need a reason, here's a good one.

MORE EXAMPLES OF EMI— SOME SERIOUS

Biomedical telemetry is used in some hospital areas and uses frequencies in the 400 MHz band. One company in the U.S. even sells bandpass filters to reduce the probability that a local land mobile service could interfere with telemetry data. There have been cases of microwave ovens in hospitals causing interference to such critical care telemetry units. M/W ovens are used in the role of thawing units of frozen blood and are often co-located in recovery rooms. Such reports make one wonder to what extent the spectral purity of microwave ovens is tested, or whether there is a Federal requirement to do so?

A discussion with a local appliance merchant seems to confirm that some of the newer inexpensive microwave ovens almost completely lack metal shielding. Since this was a remark by an experienced technician, it too may bear follow-up. Is safety not paramount in such appliances? Think of the possible legal ramifications.

One other confirmed case of a serious EMC problem concerns the medical use of transcatheter probes. These are delicate sub-miniature probes used to measure minute currents beneath the skin. There have been cases where the actual probe sensor burned out due to local RF pickup from 27 MHz diathermy. One would not need to do much guessing as to how the problem occurred, nor a suitable cure. The problems of EMC in the medical field are of enough importance that the Dept. of Health and Welfare are planning an EMC seminar, particularly for the Medical Instrumentation people. It is to be held in Edmonton, in September. I hope the press is present.

EDUCATED EMI

The Carelton Board of Education recently spent several tens of thousands of dollars on a Board translation system. The system provides microphones for each trustee and the interconnection with colleagues provides instant bilingual translation. It seems that the local radio station is quite plainly heard, even when the system is turned down so low as to be essentially off. It is bothersome even in standby mode. It should be fun to see how the problem is rectified because of the long runs of interconnecting cabling used. Not a clean job to tackle. In this case the transmitter involved is 4 km away.

A similar case involving a domestic intercom system was reported from

Continued on next page ▶

CROSSWAVES (cont'd)

the same vicinity last year. Sometimes proximity is not a factor. I wonder what is? Powerline reradiation? Interesting speculation.

CONTROL SYSTEMS— GARAGE DOORS, SECURITY ALARMS

One recent local case of EMC involved a very comprehensive security alarm. Several tests

confirmed that most problems occurred with linear active and antenna pointed within 30 degrees of the neighbouring house. A personal investigation in the basement of the 'protected' home revealed a bundle of almost 30 separate unshielded wires entering a metal box. It should be a requirement of businesses utilizing electronic circuitry in their products that they certify to have a basic knowledge of EMC techniques related

to pick-up from unshielded leads and input protection for amplifying devices. Minimum line filtering, such as simple line bypassing would assist in almost total elimination of the source of the majority of the problems. Now if there was only somewhere to buy shielded Hi Fi speaker leads. Does anyone use or sell this?

DOC IMMUNITY MEASUREMENT SYSTEM

A letter dated Dec. 11, 1986, from S.N. Ahmed, Director General, Engineering Programs, Dept. of Communications indicates the DOC designed and constructed a radiated immunity measurement system in 1980. In 1982, a report on its performance was presented to the CSA. The system is now fully automated and available for members of the Canadian Business Equipment Manufacturers Association, Inc. Use of the system is on a cost-recoverable basis and available at rates established in DOC Procedure RSP 110. If it took four years for a reaction to the DOC report from the CSA, it's small wonder the problems of EMC have not even been seriously considered before the Ravenscroft case, nor for the past 40 years for that matter. ■

SWAP SHOP

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SHACK CLEANING: 50 years old-timer stocking parts, meters, transformers, tubes, sockets, instruments, phone patch. Mobile antennas, Central Electronic 200 V first transceiver. QST's, 73's, pre-1930 old radio magazines, interested? Send SASE for listings. VE2OU, 2785 Valcourt St., Ste Foy, Quebec G1W 1W2.

GREAT DX: HDR 300, TH7, stacked Sinclair 2M, Hustler collinear, Remote CoAx switch fed by 7/8 Heliac on 70' guyed tower at 1200'. Room on mast for full 40 metre 3 el beam. Quiet Haliburton Lake 200' frontage; year round insulated cottage with all amenities. ATV or water access, 2 hrs. max. from

Toronto. \$50,000. Nick VE3LLJ (416) 372-4576.

FOR SALE: FOXX transceiver kits are available from Frank Hughes VE3DQB, Box 855, Hawkesbury, Ont. K6A 3C9. Diode tuner kit \$40, variable capacitor tuning \$50. Either kit \$5 postage and packing.

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 Bisaillion VE3CBK, 91 Varley Drive, Kanata, Ont. K2K 1H5.

Please send your 'Swap Shop' notices to the TCA 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 print or type, 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. TCA accepts no responsibility for content or matters arising from ads.

MORE WOODPECKERS

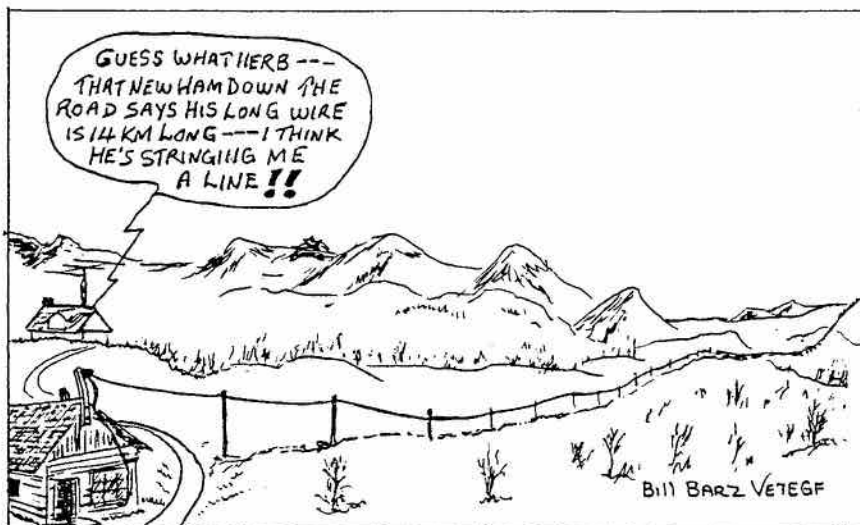
The American Woodpeckers are coming!!!

The November issue of *High Technology* covered everything you ever want to know about OTH/B radar— high frequency radar beams bounced off the ionosphere. While aircraft can't underfly OTH (over-the-horizon) radar, you can't tell the height of the object detected. You can determine its speed, however.

Transmitting antennas are 4,000 feet long and vary from 35 to 135 feet high! Various sections transmit different frequencies from 5 to 28 MHz. Transmitting and receiving antennas must be at least 100 miles apart. The U.S. will be protected by four different systems pointed in different directions. The \$1.2 billion U.S. network is slated for completion by the early 1990s. Changes in propagation are compensated for by altering the frequencies and wave form of transmission. At sunrise, OTH/B radar operators typically have to shift frequencies by 1 MHz every 10 minutes.

From W5YI Report

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From the Clubs...

George Morgan VE3JQW
687 Fielding Dr.
Ottawa K1V 7G6

Thanks to Ian McAuley VE3MYO for the following:

"The Eastern Ontario ARC is located in Moose Creek, Ont., about 45 miles east of Ottawa. It consists of a widely scattered group of hams stretching from Glen Robertson in the east to Berwick in the west; McCrimmon Corners in the north to Cornwall in the south. The area covered is over 1,000 square miles.

"Last October we hosted about 80 Scouts from various troops in Cornwall, Maxville, Tagwi, Alexandria and Williamstown and they participated in the JOTA (Jamboree on the Air). On Feb. 22 this year we hosted 100 Girl Guides and Brownies from the same areas for their GOTA (Guides on the Air). We set up three stations in our clubroom facilities at Moose Creek— one each on 20, 80 and 40 metres— and let the kids 'have a go' at speaking to other Scout and/or Guide stations in England, Germany and various parts of Canada.

"Each youngster was awarded a participation certificate by our club showing what country they had talked to. Judging by the looks on the youngsters' faces and the thanks we received from their leaders, we have to assume that these were very successful outings for them."

Ian adds a bit of advice: "A tip to any other group planning the same thing. Impress on the kids that they have to speak up in a firm voice (to get through some QRM/QRN) and prepare them a bit ahead of time about introducing themselves. Some of them are 'mic shy' at the start."

We received a note from the East Kootenay ARC this month in response to our request for a correct mailing address. Seems that the club is still in business and doing great with about 35 members. Strangely enough, the address received is exactly the one we have been using, and which Canada Post told us was incorrect. Makes one wonder, doesn't it?

We also received a package from the South East Queensland Teletype Group down under. David Brownsey VK4AFA sent along a number of the news bulletins issued by the SEQTG and I found them very interesting. One item I found intriguing was the following:

PICTURES TRANSMITTED VIA PACKET

"At the Kingston (Ont.) ARC meeting on 4/11/86, members of the Belleville Telipak Group demonstrated Telipak, a system providing the

capability for Amateurs to exchange high resolution, error-free, digital colour images, text and speech.

"The novel aspect of the lecture and demonstration was that the pictures used for the talk were transmitted by packet radio from Belleville, using two digipeaters, to the Kingston meeting hall."

Even more novel, for me, is that this item reached me from halfway around the world, having appeared originally in *The Canadian Amateur*.

CALGARY HAMS BUSY

According to the Calgary ARC's *Key Klix*, the club is going to be very busy again this year: Feb. 7, the Kananaskis '45 cross-country marathon; Feb. 21, GOTA; Mar. 7, Winter car rally in the Bow Cross area north of Cochrane; Apr. 25, Rocky Mountain car rally at Pincher Creek; May 2, Theatre Calgary Run between Banff and Calgary; May 16-18, Golden Triangle bike tour between Castle Junction, Invermere, Golden and back to Castle Junction; June 6-7, Jasper-Banff road relay; Jun. 27, Kananaskis 100 relay from Longview to Nakiska; Aug. 9, Triathlon at Sylvan Lake; and on an unspecified date, work with the Calgary Rowing Club.

I trust we will be seeing full reports on all these activities.

QUESTIONNAIRE

I have received quite a few returns from the questionnaire Debbie sent out requesting up-to-date mailing addresses, and, to all of you who have responded so far, thank you. To those who may not have sent back the questionnaire yet, I hope you will take a few minutes to complete it and send it to us. Incidentally, a number of you have sent comments and I will take whatever action is necessary to correct the problems mentioned. Please, just bear with us.

Again, I will repeat that if your club is an affiliate and you did not receive a copy of the questionnaire, let us know immediately. Chances are you have been removed from the mailing list because of an incorrect address, which is exactly why we are asking for your assistance.

THE WINNERS ARE...

And now, the news you all have been waiting for! The suspense is over.

In case you haven't a clue what I am talking about, I have in the most scientific method known to man or woman selected two clubs to receive a copy each of the CARF Canadian

Amateur Reference Guide. The first lucky club, selected from those clubs that became affiliated during the past year, is the Dufferin ARC, and a copy of the guide will be going to the Club Rep David Stevens VE3NN. The second lucky club, selected from those clubs that already were affiliated, is the Chilliwack ARC, and a copy will be going to the Club Rep Jim Voight VE7CWC.

Congratulations, and thank you all on behalf of CARF for your continued support.

Thanks to the Peterborough ARC for the following two reports:

NORDIC SKI TOUR

"Mac VE3PBM and Larry VE3NLB, that odd couple of retired refugees from the local Lamp Bulb Co., proved they had acquired the skills of their adopted calling by successfully holding down the southern anchor point at the Haultain check point on Saturday, Feb. 1, opening day of the Nordic Ski Tour. Thanks to Rick's Ranger at Apsley and Mac's 'plumber's delight' at Haultain, a steady stream of traffic flowed both ways throughout the day. Larry and Mac are quick to point out the advantage of their 'southern posting': easy access from Peterborough; a warm, dry inside location with a view of the finish line and all the raisins and Gatorade you could ask for.

"Meanwhile, further north in the woods between Apsley and Haultain, Ray VE3NUW and Larry VE3NTQ, at the Bennet and Wolfe checkpoints respectively, served efficiently despite the rigours of their outdoor locations. Larry tells of being 'tied to a tree' all day because of the need to stay close to his antenna location up in a convenient tree.

"Finally, warmly holed up in their Apsley arena headquarters were Ollie VE3MT and Bill VE3MCD. An anxious few moments were felt by the whole crew when Ollie's first signals from Apsley were hardly getting out. However, a little connector tightening was all it took to put the 'VOICE OF APSLEY' on the air with authority. We can thank Rick VE3IQZ and Bill VE3MCC for the excellent job they did earlier in installing the permanent 2-metre antenna at Apsley.

"All told, it was another real success for PARC in our continuing service to our community. It was certainly very reassuring to have our efforts publicly lauded by the KNST officials who recognized the significant role our club plays in helping to make this

CLUBS (cont'd)

annual event so successful."

(From Larry VE3NLB)

Then on the following day, Sunday, "when Gord VE3LKG got into the Apsley Community Center, there was John VE3DCJ, rig all set up and rarin' to go. He had been there for about 45 minutes.

"The starting time for the skiers was delayed by half an hour because of the weather. By then, all the checkpoints were ready to go. The skiers' times were understandably slow. The youngsters, 9 years old, came in from completing their 12 km run, tired and wet, but smiling with satisfaction all the way. It was then I thought seriously about throwing away my

skis that haven't been used for two years.

"During the afternoon the storm got worse. The skiers coming in began to look like abominable snowmen. There were some concerns about the skiers still out and about the checkpoints. The ski tour people were so well-organized that they had their fingers on everyone and pickups were there for the skiers when needed. I can't get over how well-organized they were, this being my first ski tour. I enjoyed it and the enthusiasm never dampened.

"We had some concern for the fellows out at the checkpoints. John and I had the soft touch at Apsley. A big medal goes out to Rick who had two points to control from 'Bennets'. I

don't think he could have burned up more energy if he had been skiing in the tour. Eric VE3CUD, Bill VE3MCC and Rick VE3IQZ all did a great job under stormy conditions. Because of some very grim reports from the OPP, it was thought we might have to stay over in the Community Centre. It turned out that it wasn't that bad. Many thanks to the hams who came on frequency from all over and gave us weather reports— in particular, VE3PBM. The cars seemed to pull out in bursts of 15 to 20 and formed convoys down the highway and everyone made out fine. With the drifting, I found the toughest part was getting in my driveway." (from Gord VE3LKG) ■

The Phantom Voice of the Falkland Islands

Throughout the 73 days of the Argentine occupation of the Falklands, a secret daily radio link was maintained between Port Stanley and— improbable though it may sound— the resort of Bridlington-on-Sea, Yorkshire (England), via the good offices of one of the principal unsung heroes of the South Atlantic war.

Reginald Silvey, assistant keeper in the Imperial Lighthouse Service, can now be revealed as the Phantom Voice of Radio Port Stanley, the Man With the Plastic Shopping-Bag, the Man the Argies Never Found.

Silvey, who came to the Falklands 10 years ago as junior keeper of the Cape Pembroke light, is a ruminative, taciturn bachelor of 43, whose main interests are fishing and Amateur Radio. He set himself up on the islands— as he had done when he worked in the British Antarctic bases as station VP8QE— broadcasting to anyone in the world who would listen on 21.325 MHz, 15 metres!

When the Argentine commandos stormed ashore at dawn on April 2, he saw, as he now puts it, "No particular reason why I should close down."

His first messages, picked up all around the world, relayed some of the awful drama of the first hours of the invasion. But later on that first Friday, a ham operator in Bridlington, Bob North G4KHR, made firm contact with Silvey, whereupon someone, as yet unidentified, realized the value of retaining a link between the two operators for as long as possible.

"I realized by Monday morning that Bob North had been taken over by Ministry of Defence," Silvey says now.

"He would come on each evening around 4 p.m. saying: 'This is G4KHR, waiting for traffic from the South Atlantic,' and I could tell from his manner there was a ministry man breathing down his neck.

"I had to decide whether it was worth the risk, my talking to him any more. I thought about it a lot, and then decided I had to do my bit. So we would talk almost every day. He would pass on their questions, and I would pass back the answers."

Silvey is well known in the Falklands as a ham operator. His equipment was listed in the Post Office register in Stanley, and it was only a few days before the Argentine occupation forces arrived at his front door to confiscate it. But he then managed to borrow an unregistered transceiver— an American Atlas 210-X, with the paltry (!) output of 100 watts.

"But the advantage of this set was that it was so small that it fitted neatly into a plastic shopping bag. I was able to carry it around from house to house without any of the Argies noticing," Silvey explains.

And so, every tea-time, he would move into a house, spring up a crude aerial, plug in his set, lie on the floor, tune into the 15 metre band and listen for Bridlington. "Bob used to ask how I was, where our new friends were, what they were doing, what movements there had been in the harbour, and that sort of thing. We would talk for five minutes or so, and then I'd close down. It was too risky, they were always looking for me."

They knew someone was operating a clandestine set. Each day a detector

van would roam the streets of Stanley, waiting for the transmission. "Sometimes they got pretty close. A neighbour once told me they had broken into her house while I was on the air. They searched her place from top to bottom, convinced I was there."

"Once in a while, they got so close that I got really nervous, and I did think about giving it up. They put the word around that they would do all sorts of nasty things if they ever found me. But it was so exciting, really, being able to hear England calling, and being able to talk back. It's difficult to explain if you're not mad on radio."

Silvey's mischievous enthusiasm was not limited merely to sending Argentine military secrets to Bridlington. He spent some weeks rigging up a transmitter to jam the Argentine's 2 metre local radio network, and, according to other islanders, caused havoc.

"He would jam them for a while, and then stop jamming and start sending false messages to various army units. He had great fun. Best of all was that the Argies knew that someone in Stanley was doing it, but they could never find out who. It was great for our morale. We called him the Phantom Voice, a sort of Lord Haw-Haw in reverse."

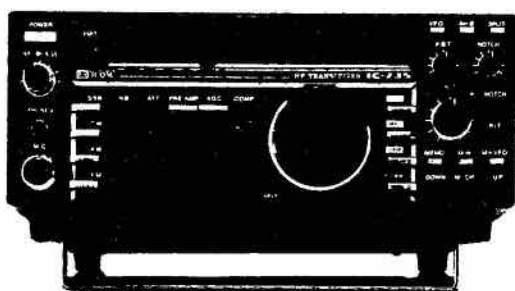
Silvey, sadly, no longer has a paying job. The Cape Pembroke lighthouse— one of only two in the world still run by the once great Imperial Lighthouse Service— is unworkable, surrounded by Argentine minefields...

—Windsor ARC from
the Sunday Times
London, England

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June 17: DOC licence examination.

June 22-July 5: Cobourg, Ontario, sesquicentennial prefix VX3. Details March, letters.

July 11: 13th Annual Ontario Hamfest, Burlington, Ont. Details May issue.

July 12 & 13: International Hamfest. Details May issue.

July 16-19: ANARCON '87, Mississauga, Ont. Details June issue.

July 31, Aug. 1 & 2: Saskatoon 1987 Hamfest and 9th CARF/DOC/CRRL National Symposium. Sponsored by Saskatoon ARC, Box 751, Saskatoon, Sask. S7K 3L7.

Sept. 4-7: RCCS Reunion '87. Details March issue.

Sept. 11-13: CLARA 87 Celebration. Details October YL column.

Sept. 19: Kingston ARC Third Annual Flea Market.

Applications for DOC licence examinations Sept. 23. DOC licence examinations June 17, Oct. 21.

Publicize your get-together here. Write the Editor, P.O. Box 356, Kingston, Ontario K7L 4W2. Please let us know about your events three months in advance to list them in the Calendar.

The deadlines for *The Canadian Amateur*, 1987, are for September, July 17; October, Aug. 21; November, Sept. 18.

Social Events

1987 CARF/DOC/CRRL National Symposium

Aug. 1 and 2, sponsored by the Saskatoon Amateur Radio Club.

1) Spectrum Management:

A. Deregulation of the HF bands, gentleman's band planning? Will it work?

B. Contests, RTTY, ATV, prefixes, should there be band segment limits?

C. Radio Spectrum utilization policy for the 30 MHz to 850 MHz bands?

2) DOC:

A. Administration— can we do that ourselves?

B. Regulations— should they be enforced more? Banned countries— should they be enforced more?

C. Examinations— how can we improve them?

3) EMI:

A. DOC involvement— can we help?

B. Industrial noise— can we do something about this?

C. Interference to and from electronic devices?

D. Political concerns to the radio Amateur?

4) The Future of Amateur Radio in Canada:

A. A National Organization— should there be one? What should it be like?

B. Liability Insurance for Amateurs?

C. 6 Metres— how do we add new life above 30 MHz?

D. 2 Metre Linking— should we link nationally? Should the repeater councils work together?

5) Selling Amateur Radio:

A. What can be done by everyone to promote the Amateur Radio Hobby?

B. To whom should it be promoted and how?

Please send any comments that you or your club have regarding the above workshops, or your own concerns, to: 1987 CARF-DOC-CRRL Symposium, c/o CARF, P.O. Box 356, Kingston, Ont. K7L 4W2 OR CARF Mid-West Director, Norm Waltho VE6VW, P.O. Box 1890, Morinville, Alberta T0G 1P0.

Please ensure that your submission arrives before June 1 1987 for copying.

VE3CNE

Visiting Toronto later this summer? Amateurs and anyone else interested in this great hobby known as Amateur Radio are invited to visit and operate VE3CNE at the Canadian National Exhibition the world's largest annual exhibition. This year's edition of 'The Ex' runs from Aug. 19 until Labour Day, Sept. 7.

VE3CNE is located in the Arts & Crafts Building at the west end of Exhibition Place just steps from the Dufferin Gates. Hours of operation are 1000-2200 daily local time. In addition to 'traditional' HF and VHF operation, the station is equipped for packet and other 'high tech' modes.

If you would like more information about VE3CNE, contact Thelma Woodhouse VE3CLT, Secretary-treasurer: The VE3CNE Committee, 44 Innisdale Crescent, Scarborough, Ont. M1R 1C3 or at (416) 757-5593.

And if other travel plans or budgetary constraints won't permit a trip to Toronto then visit us via Amateur Radio. We will be found on all the bands, propagation permitting, and a nice QSL card will confirm all contacts.

ANARCON '87

The 1987 Convention of the Association of North American Radio Clubs will be held July 16 thru 19 at the Novotel Hotel in Mississauga, Ontario. Hundreds of radio listening enthusiasts are expected to attend during the run of the Convention. Many radio broadcasters, authors, publishers, manufacturers, dealers and listening club officials will be in attendance.

PRESENTATIONS

A Vintage Radio seminar will explain the hobby of collecting and restoring vintage radio receivers.

Other presentations include International Broadcasters Forum and Introduction to the Radio Listening Hobby. Modern equipment is often manufactured to interface with computers, and this will be presented in an RTTY and Computer Control Demonstration. You'll see the application of computers to communications receivers and what can be achieved.

At the Propagation seminar, the

basics of shortwave propagation will be explained and the audience will be invited to share their observation of solar and propagation activity. An Antenna Seminar will provide demonstrations and tips on building mediumwave and shortwave antennas.

Manufacturers and Dealers will form a panel for an Equipment Forum, and in the Club Forum ANARC clubs will tell you about their activities and specialties.

Tom Williamson, veteran DXer and member of the Convention host club, the Ontario DX Association, will take us on a tour through Fifty Years of DXing.

Highlights will include Sunday morning workshops and the Saturday evening banquet with well-known author, publisher, designer and monitor of the radio spectrum, Bob Grove as guest speaker.

Details are available from ANARCON '87, P.O. Box 232, Station Z, Toronto, Ont. M5N 2Z4.

Proper Care and Use of Transmitting Tubes

BY BILL RICHARDSON
 VY1CW

Contrary to popular belief, tubes are going to be with us for many years to come, especially when high power levels are required. Tubes have been abused for years, but with the increasing difficulty, and rising cost of tubes, Amateurs are going to have to pay closer attention to how they care for these cherished bottles.

All tubes have maximum ratings for their various operating parameters. Some of these ratings can be safely exceeded, but others must be adhered to if maximum efficiency and life are to be realized.

Plate dissipation is one rating that has been exceeded by equipment manufacturers as almost standard practice. Swan was an example of a manufacturer who flogged sweep tubes in most of their transceivers. As long as key down time was limited to 20 to 30 seconds, good performance and reasonable tube life could be expected. When key down time was excessive, the result was usually heard and seen, leaving little doubt as to what had happened. Many amplifiers were built using four or six sweep tubes. Most sweep tubes have dissipation ratings of 18 to 33 watts per tube. When these amplifiers were operated at 1000 to 1200 watts input, the tubes had to dissipate 400 to 600 watts, or four to six times what they were designed for. As long as SWR was low, compression levels were reasonable, and tuning was accomplished rapidly, they performed reasonably well.

Plate dissipation is a rating that tube manufacturers set for continuous operation. Experience and common sense will dictate by how much these ratings can be exceeded. Amateur sideband service will usually allow them to be doubled or tripled fairly safely.

Maximum plate voltage ratings in most cases should be strictly followed. Above these limits, internal elements of the tube can arc over, often with

disastrous results to the tube and sometimes to the power supply. Some tubes seem to accept overvoltage. The venerable 813 is a case in point. They will run at 500 to 800 volts over their maximum rating with no problems.

Some tubes are available as pulse rated. These will be designated with a PR in the tube number. 4-1000 and 4-400 tubes can be found as 4PR-1000 and 4PR-400. Maximum voltage ratings are much higher than standard, often to 20 to 30 kV. This is only for pulse service where duty cycles are very low. During manufacture, great care is taken to eliminate sharp edges on the internal elements. Tubes will often be rated as to the tube's position during use most cases this is vertical. When operated in a horizontal configuration, internal elements can sag when they become heated, with resulting shorting of the elements.

Maximum plate current is one parameter that the Amateur has some control over. The proper tuning procedure for the individual amplifier should be closely followed. The goal is: maximum power out with minimum plate current. Glass envelope tubes pose no great problem since the colour of the plates can often be monitored. In a home brew amplifier, an inspection port covered with glass should be incorporated during construction. In this way, any sudden or abnormal change can readily be seen. Many tubes such as 4-400 and 4-1000s, will operate normally with the plates cherry red. The problems start when the plates turn orange and then white, and start giving off blue sparkles.

Filament voltage is the most overlooked rating in amplifier construction. Filament voltage should be within 5% of the manufacturer's ratings. When home brewing an amplifier, an accurate AC voltmeter should be included. As an example, the filament voltage for a 4-1000 should be within 7.13 and 7.87 volts.

Most ceramic tubes are very critical on filament voltage. The 4CX250 and 4CX1000 should be operated at exactly 6.0 volts for HF use. When these tubes are used at higher VHF frequencies, their filament voltages are lowered slightly. With all ceramic tubes, the cooling air flow must come on with the filament voltage to prevent damage from overheating of the filaments. This is a good idea with any amplifier. For that matter, every amplifier should be equipped with an air flow switch that will shut down the amplifier if anything happens to the air flow.

Screen and grid dissipation ratings are very important with ceramic tubes. When these tubes are used, the screen voltage should be taken from the plate voltage supply. This assures that the tube will shut down before the screen is destroyed if the plate voltage fails. For example, the 4CX250 has a grid dissipation of 2 watts and a screen dissipation of 12 watts. These levels can be exceeded almost instantly if the plate supply fails and the screen supply is still on. In ceramic tubes, the internal elements are very small and closely spaced. This is why they are usable at high VHF frequencies.

The most important consideration with any type of tube is cooling. Very little has been published about seal temperatures. If the seals become overheated and break down, instant destruction occurs. In large transmitting tubes, these limits are usually 150 degrees C for the base seal and 200 degrees C for the plate seal. Tubes like the 4-400 and 4-1000 are designed to be used with finned plate connectors to aid heat dissipation. These connectors should not touch the glass envelope when cold since expansion after heating can cause the glass envelope to crack or the plate seal to break.

Tubes designed for use with air system sockets should only be used with the appropriate socket and chimney. This will provide for the

proper airflow over the tube. Chimneys are getting very hard to find. For 4-400 tubes, the chimneys from dual mantle Coleman lamps work well. For 4-1000 tubes, the bottom can be removed from a gallon pickle jar with a bottle cutting kit. These make very durable chimneys and they are inexpensive.

I have operated many 4-400 tubes at maximum ratings with high capacity muffin fans blowing across them. To date no problems have been encountered. I would not want to try this with 4-1000 tubes though.

For ceramic tubes, an airtight under chassis area with air forced into it through the tube sockets is the only practical means of cooling. Most tube

manuals list the air requirements for each type of tube. Blowers should be of good quality and have a speed of at least 3100 RPM. Lower speed blowers do not perform well when operated against back pressure which this arrangement will have. A good rule of thumb for air flow past a ceramic tube is: a piece of writing paper when placed over the chimney, should noticeably lift from the chimney. For glass envelope tubes, the more, the better, short of blowing the tube through the top of the cabinet.

One final point for consideration is spacing of components within the amplifier. Tubes should be at least one half of their diameter from the cabinet.

All high voltage wiring should be routed far enough from the tube that heat will not cause breakdown of the insulation. Plate chokes should also be separated from the tube far enough that no melting or breakdown can occur.

With a bit of care, tubes will continue to provide us with many years of economical high power service. Lastly, remember whenever you see one of those big bottles at a flea market, grab it. You never know when you might want to build a bigger amplifier. Now, if I could just find a couple of sockets for 4-1000s, what an amplifier I could build. Oh well, it would be illegal anyway.

NEW STANDARD FOR AM RADIO

Communications Minister Flora MacDonald announced in March the selection of the Motorola C-QUAM system as the single transmission standard for AM stereo broadcasting in Canada.

The new standard took effect March 31, and radio stations using competing systems will be permitted to continue stereo transmissions for one year. The announcement ends several years of uncertainty and stalled development of AM stereo in Canada, resulting from the promotion of incompatible systems by competing equipment manufacturers.

The Department of Communications first authorized experimental stereo broadcasts on the AM band in September 1982. At that time, four different stereo systems were vying for the market. Subsequent competition reduced the number to two. Future steps include measures to improve audio quality of AM broadcasts, such as proposed standards for audio pre-emphasis and band-limiting.

WANTED

Provincial contributors— *The Canadian Amateur* will feature a different Province or Territory each month, but we need one person to represent each area and collect enough material to fill two or three pages once a year. The possibilities are endless, giving you a chance to present your part of Canada and the World. (Yes, we have readers in Australia, N.Z., Britain, the U.S. and many others.)

If you are interested, contact the Editor via the CARF office or your regional director.

Another antenna for 2 metres

BY RICHARD MOORE VE3LRB

The antenna described here is very simple and economical to build. While it won't compete with multi-element yagis, it can provide very reasonable performance.

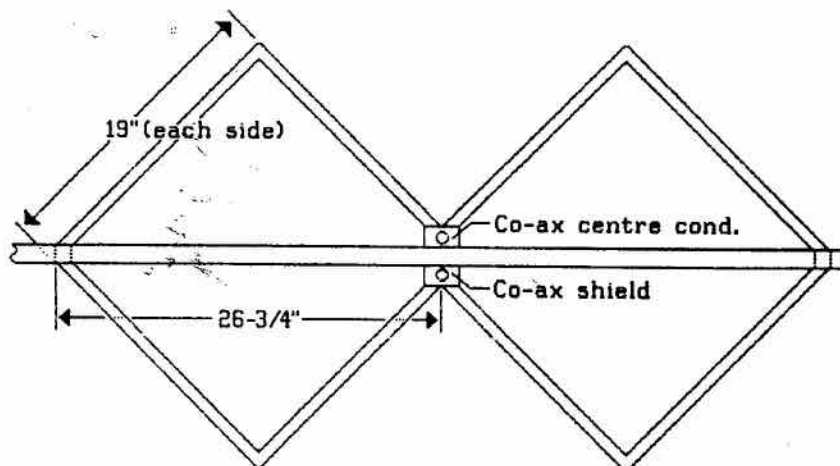
The antenna consists of two quad loops driven in phase. The resulting radiation pattern will be bi-directional with strong nulls off the sides. Gain should be 2 to 3 dB over a dipole. Two of these antennas could be built and mounted at right angles to each other to provide omnidirectional coverage.

The boom is 143 cm long and should be of nonconducting material. A few centimetres should be left protruding from one end for mounting. If wood is used for the

boom, it should be well waterproofed. The element is made from one piece of still wire, 386 cm long. Aluminum ground wire is suitable. Allow a couple of cm of extra wire for making the connections to the feedpoint. The feedpoint can be a piece of styrene or plexiglass with two bolts drilled through the plastic.

The antenna can be fed directly with 52 ohm coax and the elements can be bent to alter SWR. Connected as shown, the antenna will provide vertical polarization. The feedline should leave the antenna horizontally for one wavelength if possible.

I have had the antenna in use for some time and performance has been very acceptable.



Component Curve Tracer

BY R.J. PASTUCH VE3FSN

When one mentions component curve tracers, images of racks full of expensive equipment come to mind. These instruments can measure virtually all components plus some that haven't been developed yet.

The project described here will measure most common components, can be built in a few minutes, and costs very little.

CONSTRUCTION

None of the components used are critical. The transformer can be any small transformer. Current required is only 2 mA. A transformer from a small transistor radio works well. Components can be assembled on a terminal strip and then mounted in a small enclosure with the transformer.

CALIBRATION

Connect the curve tracer to an oscilloscope. This will be a good place to use that old 500 kHz scope that you have been meaning to throw in the garbage or take to the next fleamarket. Set the horizontal input selector on the scope to external input. With nothing connected to the test terminals, you should obtain a horizontal line on the CRT. Press the calibrate switch and adjust the scope vertical and horizontal gain controls and the centering control to obtain a straight line tilted at a 45 degree angle. If the line tilts in the opposite direction to that shown in the diagram, don't worry. This is a function of the scope and does not affect the obtained results.

You may also find that the line might show as a slight double line. This is not a fault. It is caused by a slight phase shift in the scope amplifiers.

OPERATION

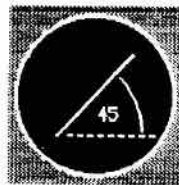
Components may be tested in circuit as long as the circuit under test is not powered. Diagrams are shown with the required component connections and test results. If test patterns vary from those shown, the component should be suspected. Practice with components that are known to be good will be good experience.

CONCLUSION

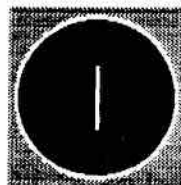
Test results with this device will not be lab quality but they should provide

a reliable means to test circuit components or to determine if that last batch of grab bag junk you got the great deal on is really worth having. It

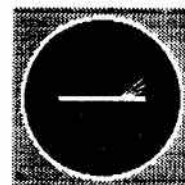
will also put that old scope to use rather than just collecting dust. If this is not reason enough to build it, it will really impress your shack visitors.



CALIBRATE



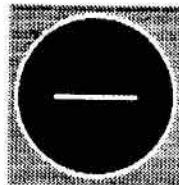
SHORT CIRCUIT



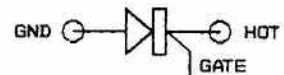
SCR
GATE OPEN



SCR
GATE TO GND



OPEN CIRCUIT



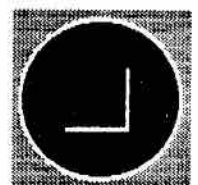
GOOD DIODE



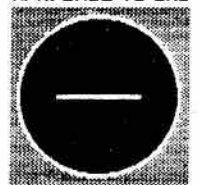
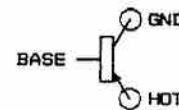
POLARITY REVERSED



PNP: BASE TO GND
NPN: BASE TO HOT



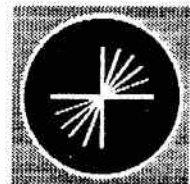
PNP: BASE TO HOT
NPN: BASE TO GND



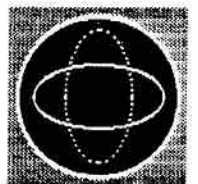
BASE OPEN



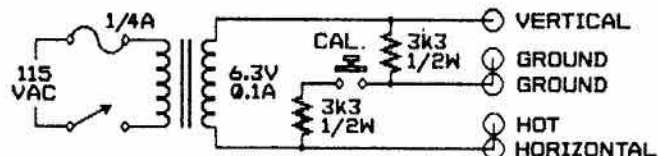
ZENER DIODE



RESISTANCE

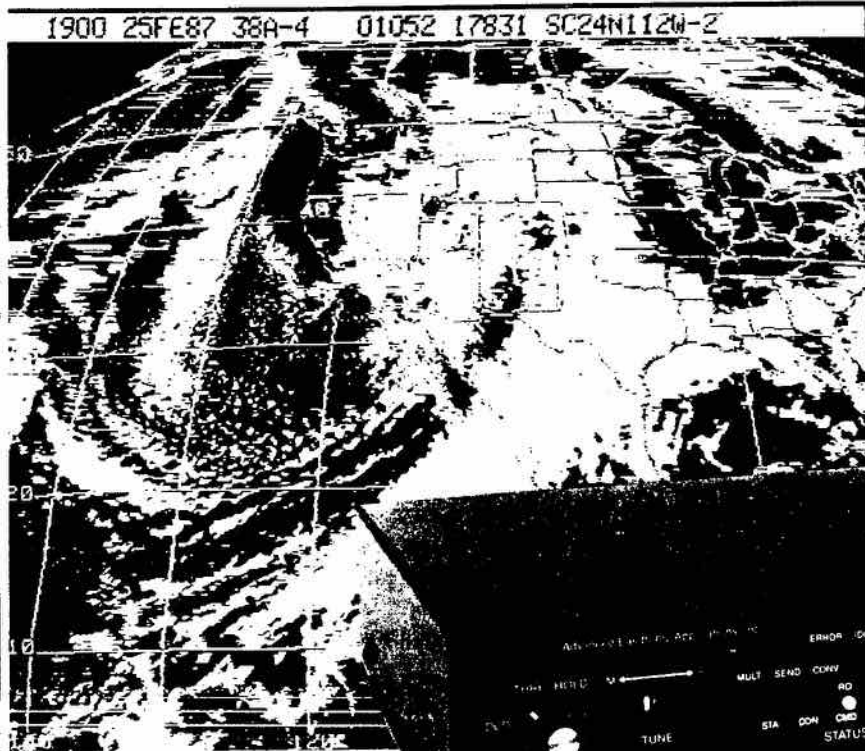


CAPACITANCE



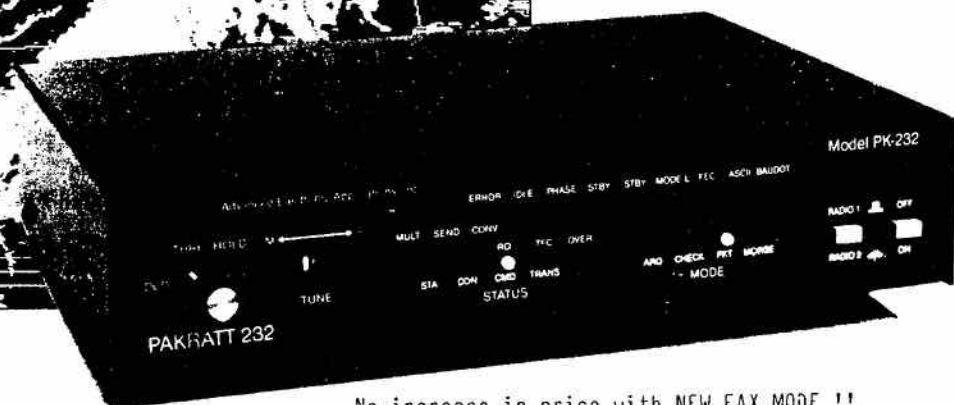
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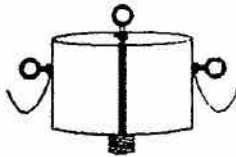
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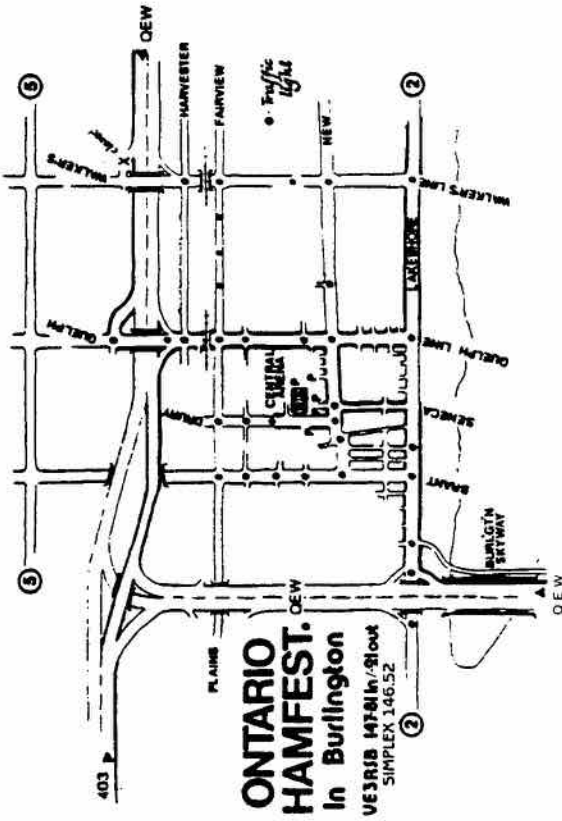
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