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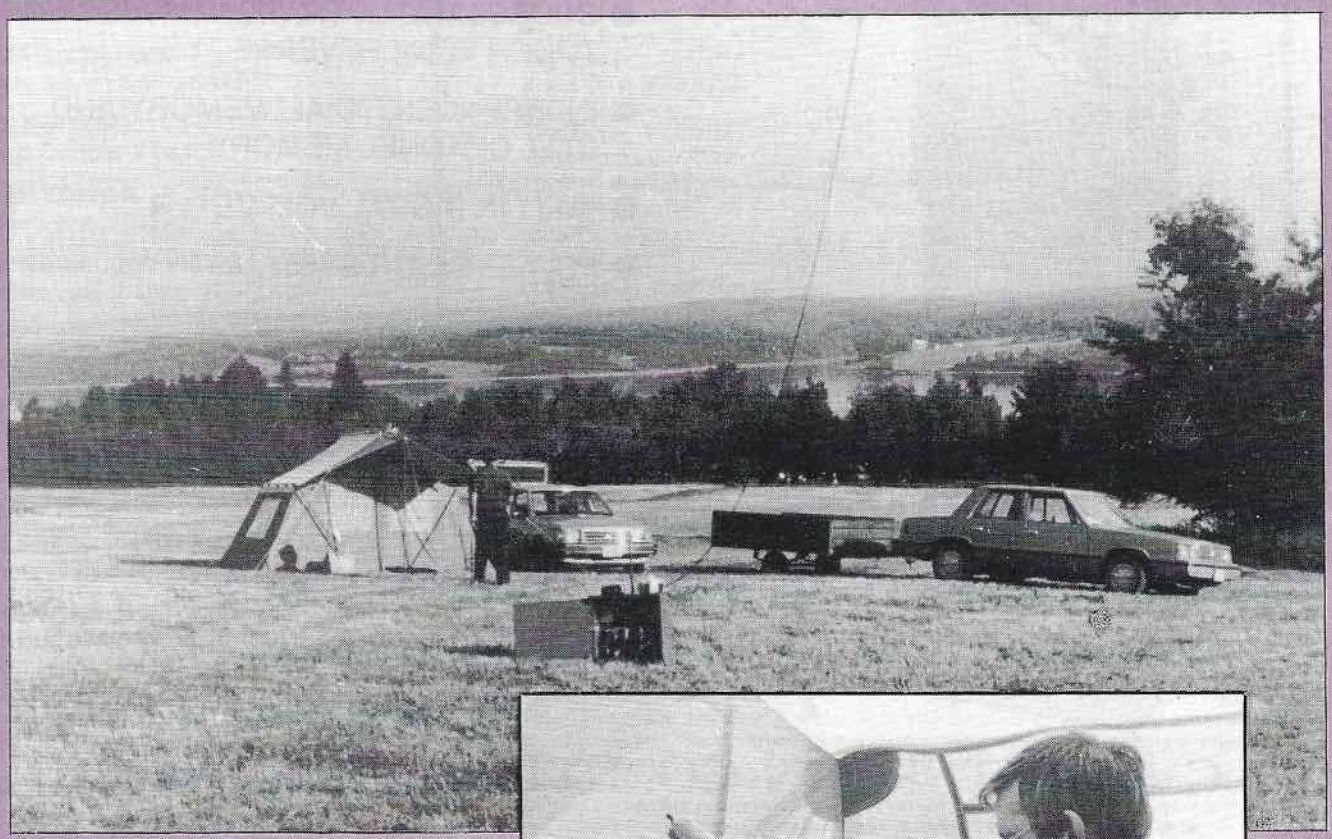
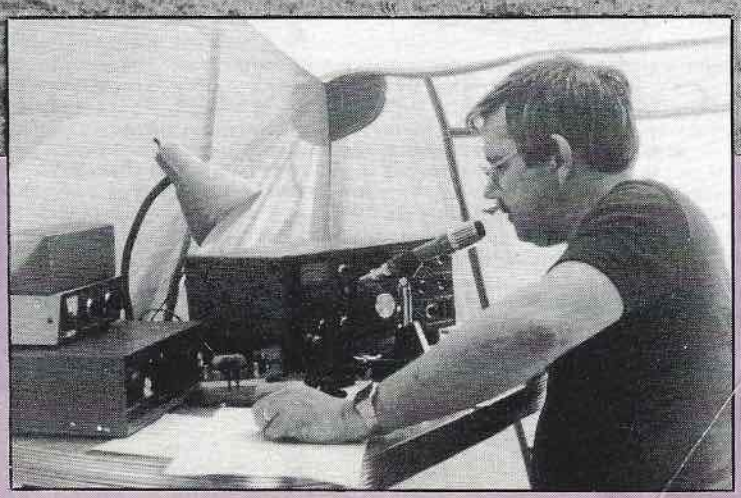
Barrie Radio Computer Meeting

— *Page 40*





Field Day

— *Page 14*

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EDITORIAL, VE3CES 3
LETTERS 4
FEATURES
DOC News— Audio Swamping Interference 5
A New World of Friendship 6
Producing an Amateur Radio Exposition, VE2JT 8
Comment réaliser une exposition radioamateur 9
Flash, Boom, Zap!, VE3CES 11
Try these 12
Field Day, VE3APG 14
Book Reviews 18
The DXer, VE3IHN 20
Algoma Radio Club Contract 21
How to send Morse Code, VE4AEM 22
Canada Contest 23
CROSSWAVES 27
MICROWAVES 28
CONTEST SCENE 33
FROM THE CLUBS 35
DX 37
PACKET RADIO 40
TECHNICAL
160 Metre Grounded Grid Amplifier, VY1CW 42
Audio Distribution System, WA2DHF 43
20 Metre Phased Verticals, VE4ANY 44

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WHAT IS CARF?

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

QUA CARF

If we could but see...

BY JOHN ILIFFE
VE3CES

Editorials these days in the Amateur press seem to be exclusively dedicated to the thought that the Amateur service is fast losing members to the other technical hobbies, computers for example, or just to the television set. The reasons given range from not enough evangelism on the part of existing Amateurs on to the breakdown of the traditional family structure.

We have seen letters to the editor in *TCA* suggesting that the requirements for the Amateur ticket should be lowered because there is nothing technical any more in it, this is just a retiree's hobby and the exam should reflect the idea that a retiree should be able to pass without much effort or he won't bother.

Much to my dismay, the DOC seems to have adopted the idea and is currently investigating simplification of the rules.

That the average age of Amateurs is rising is easily proven, just drop around to any club and have a look. There will be about 10 per cent or less of the members under 30 years old, and about half will be 50 or over. Compare that with the Forties and Fifties when most Amateurs were under 40.

I contend that there is nothing different now from the 'good old days.' During the Second World War the armed forces trained vast quantities of radio operators for tasks that ranged from spectrum surveillance to naval radio operators to operators for the squadrons of tanks and infantry divisions that fought in Europe and North Africa. Forced to learn the techniques, it is no wonder that a few of them, a very few, decided to use that knowledge when they returned home as their hobby. It is that group who are now old and dropping out.

The rate of Amateurs joining the hobby from the general population is probably nearly the same as it always was, at least within my experience of the last 25 years. The first class I ever taught, at the Peel club in 1972, had one teenager. The latest class, at the York Region club this year, has two teen-agers enrolled.

For the majority of us however, the early years of our lives are devoted to the active pastimes, sports, searching for a mate, finding a career and getting established in it. These are things that cannot wait for the leisure of older age.

As a father of three I can testify that cubs, scouts, soccer, baseball, and community duties cut substantially into any free time that could be devoted to radio. I have so many partially completed radio projects in the basement that I could hold a flea market there. As the family grows older and leaves home I hope to pursue my air time more and maybe finish a project or two.

I will just be becoming a Ham then, but I will no doubt be classed by the editors and doom-sayers of our hobby as one who is past it, another example of the greying of Amateur radio!

TCA welcomes contributions to this column of opinion.

LETTERS

BOUQUETS

Looking forward to another year of superlative *TCA*s. Sure makes selling memberships easier!

73, John VE3CES

I am writing to express my appreciation to CARF for their support of Canadian activity in the 1984 CQ WPX CW contest and the plaque that they have graciously sponsored. The same award for VC3IY in the 1982 running of the WPX CW seems to have gone astray but this was received in excellent shape.

73 to all the CARF gang.

Jim Roberts VE3IY

FUN ANYTIME, FRIENDS ANYWHERE

On the 7th of June I put on my second Amateur Radio display at the Fr. Bressani Catholic High School in Woodbridge. More students than last year visited the display, some coming also from other schools. They were interested in Amateur Radio activities and possibilities. The slogan of this year's display was: "Fun anytime, friends anywhere."

One of the visitors put down his impressions. I hope you can publish them in *TCA*. I am sending you also a black and white picture of the display taken by the reporter of the regional *York Times* newspaper which published a story about the display in July. *(See Page 6...Ed.)*

All the best to you

73, Fr. Eugene Baggia VE3OQT

FROM THE HURON SHORE

The summer brought a lot of visitors to the area and the local repeater VE3PER has been busy with visitors using it, getting information, having rag chews, and generally enjoying the fine beaches and resort activities of Southampton and Port Elgin. Some of the strangers heard were Barb VE3OQD, Dave VE3NKK, Fred VE3GCP and probably others who I didn't hear or have forgotten.

The PERT (Port Elgin Repeater Team) were engaged in a money raising effort on the evening of Aug. 13 on the beach, cake sale, crown and anchor, and bingo raised $595.00. Amateurs in attendance were VE3—HIR, OQD, HSE, MAI, NEG, BIS, OVH, CAC, EFX, NKK, MTU, OVL, BDA, DGP, KPT. Thanks to all for a real good response.

The summer's here on Lake Huron are the best, we have an increase in population of about 500% so we expect a few summer-people Amateurs as well, Terry VE3NED, Greg VE3NXB, Ian VE3MAE, all have cottages along the Lake Huron shore line.

The summer brings lightning storms: our repeater took a jolt and was without tone access for a while. Gerry VE3CAC our resident engineer took care of the problem with a chip provided post haste by Terry VE3CAB, thanks for a good job, Gerry. We are all sorry to see Andy VE3LCA move to Darlington. Andy is one of the best Amateurs it has been my pleasure to meet and I'm sure we will all miss his dependable contributions to this Amateur community.

So the good old summer time draws to an end again. Now that I'm retired we go south to Florida for the winter, and so do many other Amateurs. Some who say they will be trying it again from this area are VE3OVL, VE3BDA so will hope to have them visit us there.

Until next time this is VE3BLS reporting from the Bruce Co. area of the Amateur community of southern Ontario. 73 Dick BE3BLS

CERTIFICATES

Certificates have been mentioned more than once in recent issues of *TCA*. Here is another, for those ardent CW people, that does not require membership dues or a fee. An SASE is always appreciated of course! It is issued by the Society of Wireless Pioneers Inc., (SOWP), W. Conley Smith K6DYX, 67 Cuesta Vista Drive, Monterey, CA. 93940. Membership is for life for anyone who joins whether they maintain annual dues or not. You will not receive their publications such as the SPARKS *Journal* however, unless paid up.

Their last certification test was in October 1985 when conditions were not too good. Copying on a vintage typewriter, in itself quite noisy, even using earphones was impossible so it meant resorting to a 'stick.' Actually four self-propelling lead pencils were kept handy during the half hour session. After 5 minutes warmup at 40 wpm it was possible to copy 57 words then 110 words between bouts of QRM/QSB of the 45 wpm run. Following submission of the original hand written text, my certificate was received by return mail even though I am not a member.

The SOWP also conducts weekly code practice at 0330 UTC Sunday on 3525 and 7025, call K6DYX, & 0130 UTC Sunday & Wednesday on 3523 and 7023, call W1NJM. Once a week is hardly enough to keep your hand in so we are looking for more high speed code during the week. Locally we can brush up during QSOs with Al VE6AXW who spews forth the original landline Morse and the macaroni radio stuff with equal ease on bug or homebrew keyer at speeds up to 60 wpm. Moe VE6BLY

SILENT KEYS

MARY DRUMMOND VE3IYY

I first met Mary in 1977 when she joined an Amateur radio class that I was teaching for the Peel Amateur Radio Club in Brampton.

Mary had been in the service during the war and she and her husband Robert, now VE3ROB, had decided to both get their Amateur tickets. Since she had learned the code during her war service, Mary was able to assist the slower learners in the class and allow the rest to proceed at a greater speed and avoid boredom.

This desire to assist was evident in everything that Mary did. The first year after obtaining her ticket she was the Field Day co-ordinator for PARC, and she served for two years as a club director, showing tremendous energy in all the projects she undertook. In particular, Mary was the guiding force behind furnishing and decorating the club rooms in the old Brampton courthouse, and making that somewhat damp and uncomfortable basement into a pleasant place to be.

Mary was also active in her church and her community, having taught swimming to the disabled for many years until her 65th birthday. She was an active volunteer with the Sunnybrook hospital.

Mary Drummond died at the end of June this year, and will be sorely missed by her many friends, and those who benefited from her works. —VE3CES.

Judson Pulford Henderson VE3AF died May 16, 1986. My acquaintance with him started back around 1923, and he spent many painstaking hours trying to make a Ham out of me. Without waxing too sentimental, I must concede that VE3AF was one of the formative influences in my technical experience.— Jack Hewson VE3AG.

Lyall McDermid VE4PA.

George Anderson VE4CK.

DOC News

Audio Swamping Interference

1. WHAT IS AUDIO SWAMPING? Audio rectification or audio 'swamping' is a form of interference which involves the introduction of strong undesired radio signals into an amplifying element of a receiver or other equipment containing an audio amplifier with the result that this element is driven into non-linearity and the receiver itself exhibits aural and/or visual distortion.

2. WHAT DOES THAT MEAN IN PLAIN ENGLISH? Audio swamping is the result of strong radio signals 'getting into' a receiver or amplifier.

3. HOW COMMON A PROBLEM IS IT? Very Common. Record players and stereo amplifiers, tape recorders, intercom systems, electric organs, AM and FM radios, hearing aids, telephones, PA systems, televisions and similar electronic equipment can all experience audio swamping. About 50% of complaints received by the DOC involve swamping interference and the number is increasing.

4. WHY IS IT INCREASING? Swamping is related to strong radio signals and when radio transmitters and home entertainment equipment are brought closer together, it follows that more problems will occur. Smaller building lots, apartment and condominium living, the increased use of electronic home entertainment equipment, and the proliferation of GRS (CB) radio transceivers are all trends which contribute to the increasing incidence of audio swamping. Newer solid state electronic units are actually more susceptible to this problem than older tube-type equipment.

5. WHAT ARE THE SYMPTOMS OF SWAMPING? Voices, either clear or garbled are heard and one side of a conversation seems to be involved. With tunable receivers interference appears right across the dial. For television sets both the sound and picture may be interfered with on all channels. Volume controls may not change the level of the interference. Such symptoms are likely indicative of swamping.

6. ONLY 'LIKELY'? Yes, almost all such cases involve swamping but there are other interference problems which have similar characteristics. Two broad categories for these problems are (a) spurious emissions and (b) non-radio transmitter sources.

7. HOW DO 'SPURIOUS' AND 'SWAMPING' SYMPTOMS VARY? Spurious emissions appear only at specific locations on the radio dial. In the case of television, some channels (often channel 2 and/or channel 5) are affected but others are not.

8. WHAT ABOUT 'NON-RADIO TRANSMITTER' SOURCES? These are too numerous to describe here but interference apparently not related to a radio conversation may involve something other than a radio transmitter.

9. WHAT DOES THE DOC DO ABOUT INTERFERENCE? As the regulatory body in Canada for the radio spectrum, the DOC investigates interference problems to ensure that no regulations are being broken. In addition to this service, the DOC often provides technical information to spectrum users in order to help them eliminate problems. This role is purely advisory however, and the actual cure of interference of problem as well as the cost of cures, is entirely the responsibility of the user.

10. IF SWAMPING OCCURS WHAT DO I DO? Either live with it or correct the fault(s) that cause it.

11. WHAT FAULTS ARE INVOLVED? Inadequate shielding/filtering within the electronic device which exhibits the interference. That is to say faults within the tape recorder, stereo, electronic organ, etc. which receives the undesired signal.

12. BUT WHAT ABOUT THE TRANSMITTER INVOLVED? Even if the radio transmitter is operating within the terms of its licence swamping may still occur. Unless spurious signals (See #7) are involved there is often nothing that can be done at the transmitter short of turning it off.

13. BUT MY RECEIVER WAS FINE UNTIL THE TRANSMITTER STARTED. Yes, but only because there were never any strong radio signals near it. Even expensive stereos and televisions often are built wihout adequate shielding/filtering because the manufacturer assumes that very few will ever be close to transmitters and shielding/filtering every unit would put his product at a cost disadvantage with his competitors. Today, as more and more swamping problems occur (See #3 and #4), this is becoming an inadequate excuse for avoiding action which, at the point of manufacture, would add little to the cost of entertainment units.

14. SHOULDN'T MANUFACTURERS CORRECT THE FAULT THEN? There is currently no law which would require the manufacturer to do so. However, many reputable manufacturers will supply information and even some of the necessary components to shield/filter their projects. A letter to the manufacturer stating that your device appears to be highly susceptible to radio frequency interference and describing the symptoms may result in assistance. The DOC in conjunction with equipment manufacturers is now working towards voluntary standards for equipment immunity. In the long run, a regulation requiring improved shielding/filtering design in stereos, electric organs, and other amplifying equipment would help clear up the problem.

15. DO I HAVE TO PAY FOR THIS PROBLEM CREATED BY A TRANSMITTER? In all likelihood, yes. Remember, however, that the problem is not created by the transmitter. Local transmitter operation merely serves to bring to light a fault within the device receiving its signals. Blaming the transmitter for reception of undesired signals by an inadequately shielded/filtered receiver is analogous to blaming the weather for water damage due to a leaky roof.

16. WHO WILL DO THE NECESSARY WORK? Any qualified TV or Radio repairman should be able to make the necessary modification(s). The DOC is prepared to provide case by case advice to servicemen in instances where the standard solutions noted in the DOC publications fail to resolve the problem.

17. DO ALL SWAMPING PROBLEMS REQUIRE EXTENSIVE MODIFICATIONS? No. Each case is unique and in some instances merely repositioning external speakers, moving the electronic device (stereo, electric organs, etc.) or relocating the GRS (CB) antenna may clear up the problem by reducing slightly the received level of interfering signal. Other cases will require extensive modification... no two problems are the same.

18. IS FURTHER INFORMATION AVAILABLE? Yes. The following publications prepared by the DOC may be of interest:

For Better Television Reception.
How To Identify And Resolve Radio-TV Interference Problems
TRC19: Suppression Of Inductive Interference Cross Modulation And Swamping

■

A New World of Friendship

BY ROBERT DeGIORGIO

All across the world there reaches an intricate communications network, kept running by people who have never even confronted each other. It is a fine web entangling all those who have what it takes to be an operator. I am speaking of the Amateur radio or Ham communication network.

It was only recently that I met a man who was very much involved in this 'hobby.' Not only is he involved but he has taught others like me to practice the art of radio. It is my privilege to be learning the ropes and taking advice from him, for not only is he patient but he knows what he is doing. I have for the past year or so been involved with computer telecommunications, but have found that it is not on a par with radio. Although I can pass on and receive information for storage, it lacks the personal touch you get from listening to someone's voice as well as the obvious range restrictions.

I was very interested in the hobby when it was first introduced to me, but it had me hooked when I found that you actually speak to people. I was a bit reluctant to get started because I was intimidated by all the different codes including Morse code, not to mention the language difficulties. As I learned more and found that actual speech was used, and that the main language was English, I needed to hear no more. I was all ready to begin in this new endeavour.

To get me started, my friend asked me to help him set up his equipment at a local school as part of his yearly Amateur radio display. I was most honoured to give him a hand, and was shocked at all the work put into the construction of the antenna. There was much and still is much to learn, but in the end it is all worth it. When everything was ready, we hit the power switch and "let'er rip." In a moment we heard people speaking from far off countries. I was quite impressed and very delighted, for I love to travel and radio is the next best thing.

VE3OQT and friends at the Fr. Brassani Catholic High School Amateur radio display. Photo York Times.

I guess what has interested me even more is that with an Amateur radio set I can get the facts straight, on a crisis or event, from people who are not biased or committed to making the news interesting. In any crisis or incident anywhere in the world, Amateur radio operators broadcast information immediately so that any listener can know what is actually going on.

What really made me want to be an operator was the fact that all hams are a close-knit family, even though there has never been any visual contact between them. If you are a ham you're never lost, never alone and never without company. Like they say... "friends anywhere, anytime..."

Atlanta Antenna

In 1940 WSB radio in Atlanta, Georgia, made a wise decision. They set up the 640 foot radio tower for their 50 kW AM broadcast station in a 43 acre cotton field far from the city.

In 1985, the old cotton field was the last significant undeveloped property in the Atlanta metropolitan area. So a developer decided to build a 365,000 square foot shopping 'center' round the tower!

The WSB engineers supervised the project. All reinforcing and structural steel, all metal decking, electrical conduits and other metal items had to be bonded to the antenna's ground wire radials.

Oh, yes, the grounding system. This is 120 copper wires 640 feet long extending from a 48 foot square copper plate every 3 degrees round the tower. The grading contractor was permitted to remove only one quadrant of radials at a time.

The new building's metal parts were either welded or silver-soldered to grounding lines. Barrier walls were built round the tower anchor blocks, to protect them from damage. The new transmitter building was completely shielded by 6 foot wide rolls of 2 x 2 inch copper mesh.

I wonder how the VCR merchant in the new Mall is finding business?

—from EC & M, thanks to **VE7FFK**

MOVING?

If you're moving please let Debbie know your new address. Write her at P.O. Box 356, Kingston, Ontario K7L 4W2.

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Producing an Amateur Radio Exposition

BY MARK F. MACPHERSON
VE2JT

The Côte St. Luc Amateur Radio Association (SCLARA) was formed in January 1986 to provide an organization to obtain an amendment to an adverse municipal by-law passed by the Côte Saint Luc City Council in October 1985.

The 20 or so licensed Radio Amateurs residing in this city of 25,000 people, adjacent to Montreal, soon realized that they themselves had some responsibility for this sort of by-law being passed by the city council in the first place.

Like most Hams we had spent most of our time operating as individuals and had not done much to make Amateur Radio visible to the public in general, and the city council in particular.

Although many of us participate in national and provincial organizations and knew of the problems others were having, it was all very interesting and didn't touch us personally. The ignorance of the public and our politicians of the community services performed by Amateur radio operators, and the need for effective antenna systems to provide these services in times of emergencies, led directly to the passing of an outlandish by-law which limited the 'width' of an antenna system to ten feet!

In February CSLARA adopted a constitution which established a clear mission for our group:

> 'Publicize Amateur Radio and its benefits to the community and to provide a focus for community service and emergency communications. In addition, work to attract new Radio Amateurs to ensure continuity of this service.'

Passive communication with the public is not enough and we must have a coordinated active programme if we are to succeed in putting ourselves across. Our hobby is under attack from many quarters at present, particularly in the legislative arena with some impetus from commercial interests who are always eyeing the spectrum privileges that we enjoy. The only chance that we have of countering this threat is tough publicity at all levels.

This means that we should not rely solely on our national and provincial organizations. They must focus on the higher levels of the political process. The municipal level must be covered as well. Furthermore, that is where we all live, and thus that is where the awareness of the public must start.

COMMUNICATING WITH THE PUBLIC

The Active approach to publicity demands that we, as Amateurs, develop some skills at communicating. Yes, COMMUNICATING! Are we not already skilled given our hobby? Unfortunately we as individuals and as a group often do not communicate well when we are not in front of a microphone or key working through a radio transmitter.

However, the rudiments of public communications are similar to Amateur radio activities, and we can learn them, at least well enough to get through to the public.

First, an active publicity campaign must have a clear objective with which the members of your club agree. Secondly, one person must be designated as the spokesman for each event, for news is a series of events. Thirdly, it must be a team effort as one person cannot do everything. A good active program is an excellent team builder.

In dealing with an event, the benefits of Amateur radio to the community must always be stressed, as hobbies in themselves do not often make news. For example, attracting new Amateurs should be secondary as interested individuals will respond to a cause very well and will become 'hooked.'

An active publicity programme implies that one must look for the news in your club activities or design activities that will be news. This may sound like work, but the rewards are worth it, both in meeting the objective of increased public awareness, and the positive affect on the morale of your club.

An exposition can be anything from a one table exhibit in a public park to several displays on a common theme at another exposition.

Our exposition, called 'Radio Amateur Expo 86,' started modestly enough in concept, but with thought and effort grew to 12 exhibits and displays in a large shopping mall, held on a Saturday. This site and time was chosen to achieve maximum coverage when the mall traffic was at a maximum.

THE KEY TO SUCCESS

The scale of an exposition depends on the enthusiasm and resources of

Page 9

Mike Ross VE2DUB setting up his 10 GHz exhibit at the Côte St Luc exposition.

Comment réaliser une exposition radioamateur

A la surprise de certains et au chagrin de tous, les évènements nous rappellent que le droit à l'antenne ne figure ni dans la constitution ni dans l'Evangile... Cette omission n'est hélas pas passée inaperçue aux municipalités et aux propriétaires.

Le pire n'est pas toujours sûr, dit-on. Un doigt de sens des responsabilités, une once d'initiative et une bonne livre de génie des relations publiques peuvent ensemble aboutir à une recette efficace comme le montre l'article de VE2JT, Mark MacPherson, Président de l'Association Radio-Amateur de Côte-Saint-Luc (CSLARA), formée dans cette ville de 25 000h en banlieue de Montréal.

La vingtaine d'amateurs de la ville ne s'étaient encore guère inquiétés de faire valoir leur image et la valeur de leurs services communautaires auprès du conseil municipal en place. Mal leur en prit. Un arrêté municipal, ésotérique et inattendu, limitait subitement à trois mètres la 'largeur' des antennes, laissant les membres du CSLARA dans une situation décourageante.

Pas pour VE2JT toutefois! En une brillante démonstration concrète, digne d'une étude de 'cas' pour école de gestion des entreprises, il nous livre en détail sa méthode de solution du problème, hors démêlés juridiques longs et coûteux, avec les seuls moyens des membres du radio-club et de leurs amis, afin de combler la lacune à l'origine du désastre, c'est-à-dire l'inattention des radio-amateurs pour la scène municipale, aussi importante dans les faits que la législation fédérale, dont se chargent nos associations nationales.

Paradoxalement pour des radio-amateurs, c'était en effet la communication avec leur ville qui s'avérait leur point faible. Pour VE2JT, le procédé le plus performant pour établir une visibilité propice au CSLARA passait par la participation active à une importante manifestation locale: une exposition.

Pour réussir, les techniques de relations publiques et le bon sens allaient être mis à l'oeuvre : définition des objectifs, nomination d'un porte-parole du club, recrutement d'une équipe d'action chargée de projeter et d'éxécuter la mission dans tous ses détails avec l'enthousisame indispensable pour suppléer au faible effectif, obtention d'un emplacement, négociation d'un contrat, recours aux aides extérieures, coordination et surtout: publicité.

Le but de toute l'opération consistait en effet à projeter le maximum d'éclairage sur le club à l'intention des autorités. Le Maire et le Conseil Municipal furent invités en premier. La chance sourit aux audacieux: Côte-Saint-Luc est jumelée avec Ashkelon (Israël), les maires des deux villes se connaissent. Que voilà un QSO spectaculaire! Un sked fut organisé le 19 avril. Malgré les risques de ridicule, la propagation se montra bonne fille et le QSO avec Ashkalon fut réalisé!

Tous les procédés et concours susceptibles de frapper et d'impressionner officiels et grand public furent systématiquement mis à contribution et bien entendu fort remarqués: démonstration d'un centre d'écoute mobile du DOC, présence des services techniques de Radio-Canada, participation d'opérateurs malvoyants de l'Association Montréalaise des Aveugles, démonstration de liaisons sur hyperfréquences, présentations du CARF, des Cadets Grenadiers, exposition de matériel commercial prêté par des concessionnaires, exploitation de la station VE2CJA, passage de vidéo-clips de la CRRL et du RAQI, inscriptions d'étudiants pour les cours d'automne dispensés par le club en vue de la licence, utilisation publique du répéteur VE2JRS.

L'article de VE2JT constitue à la fois une somme complète de toutes les recettes de succès des efforts de visibilité de nos activités envers les autorités locales et le grand public mais aussi et surtout une leçon d'enthousiasme et de courage, qualités aussi nécessaires à déplacer les montagnes que les arrêtés municipaux malencontreux. Avis aux découragés d'avance.

—Résumé par Bernie VE1/F9MH.

■

Page 8

the club sponsoring it. In our case what we lacked in numbers, we made up in enthusiasm, which as it turned out, was infectious if the number of outside volunteers who eventually pitched in was any measure.

We were fortunate, in CSLARA, to have a mixture of successful entrepreneurs and technically accomplished people, dedicated to the success of the venture. I cannot stress enough the need for teamwork to get things done. The members of the Exposition Committee were well-versed in each others' roles so one person could readily take over where the other left off without missing a beat. Another key to success of this sort of venture is allowing enough time for contingency planning to offset Murphy's Law.

The first hurdle to be crossed by our Committee was to get the space in the mall tied down. When our project leader approached the mall, they were most supportive, because they are interested in good public relations and drawing more traffic through the shopping centre. This fitted with our objectives very nicely, so it appeared that we had deal.

When we read the contract that the mall wanted us to sign, we discovered that although we would have the space free of charge, the mall management wanted a million dollars of liability insurance to ensure that their risk was covered. The premiums for this are not insubstantial, particularly for a club such as ours with a limited membership.

The CSLARA executive hit on an idea that was to solve our problem and enhance our association's capabilities. We applied for recognition as a recreation group under the auspices of the City of Côte Saint-Luc.

We discovered that the Director of Recreation was extremely interested in adding Amateur Radio as an activity within the Recreation Department. CSLARA was officially recognized in March, just in time for us to execute the contract with the mall. We were covered under the City liability insurance.

ORGANIZATION

It is important to have a project leader for the event, who will chair the committee, and coordinate all activities with organizations external to the club. He also ensures that all details are considered relating to gathering and setting up the displays.

These tasks must be delegated to the other members so the project leader does not get stuck with most of the work. Burn-out and disenchantment is a distinct possibility for those who become overburdened.

More in December TCA!

ATTENTION

CARF

MEMBERS

NOMINATIONS FOR 1987

Nominations for 1987 are now required from full voting CARF members of the Federation.

All six positions of Regional Directors become vacant June 1987. Each nomination must have five full CARF member names and addresses on the nomination letter, as well as the candidate's signature, that He or She accepts the nomination.

Deadline of receipt of nominations is December 31, 1986.

Please address all nominations to the CARF Office, Attention Secretary, Box 356, Kingston, Ont. K7L 4W2. Send via Registered Mail to ensure prompt delivery.

The position of Director is the most important office within the Federation. Directors represent YOU, the voting member. Directors set policy, vote on all major decisions and appoint the executive to carry out YOUR wishes.

Exercise your privilege... **SELECT and VOTE.**

George Sansom VE3LXA
Secretary

Flash Boom Zap!

BY JOHN ILIFFE VE3CES

Friday, Aug. 15, 1986, started as a typical warm, clear summer day in the Newmarket area. By noon, high, hazy clouds on the horizon foretold late storms. By three o'clock the rain had started, a light drizzle at first that slowly built to a crescendo that dropped record volumes of water on the area.

One witness, in the south end of town, said that it looked like a malevolent god had decided to throw lightning bolts at some target in the north end. Unlike most lightning, which jumps from cloud to cloud, these bolts were hitting the ground at a rate of several per minute. Between five and five thirty, three houses were hit. In one, the bathroom curtains caught fire, in another the porch roof.

At precisely 5:14:27 (the clock stopped) the tower at VE3CES met what must have been the progenitor of all lightning bolts.

The two metre antenna, nearly 60 feet in the air (or the mast, eye-witness reports vary on what took the hit), suffered a direct hit. Damage assessment is still incomplete since each piece of equipment can only be checked as the next preceding one is repaired, and currently every available power supply is out of service.

What makes this particular event of interest to Amateurs is that almost all the activity took place on the ground system of the tower, station and hydro.

GROUNDING

When you live atop a hill with no nearby trees or hydro lines to absorb a lightning strike, you have a tendency to install sufficient grounds. In this case, the tower is grounded by two 8-foot stainless steel rods, placed about a foot outside the concrete base and connected with number 2/0 (two-ought) copper wire.

Connection to the tower is by a lead battery terminal on one side and by an immense copper flange connector made for the purpose on the other. The ground rods have the normal ground rod clamps. All cables from the tower (except the UHF TV, more about that later) terminate on flange-type cable connectors which bolt to the aluminum watertight box that terminates the conduit from the shack.

From there the cable goes underground in a 2" conduit to the shack. Each cable is coiled inside the box to take up excess that would otherwise be inside the shack. The range is from one to 11 turns between the ground flange and the conduit.

The rotator cable has a similar connection and choke coil, but has no ground connection. The aluminum box is grounded by being fastened to the tower with an angle aluminum saddle.

On the day in question, the main station rig, a Ten Tec Corsair II, was not connected to any antenna, but rather was connected to a dummy load in the shack through a short direct piece of cable. It was not connected to any antenna switches. The two metre antenna, at the highest point, was disconnected and its cable ended in a terminator fastened to the tower at a height of 46 feet.

The cable normally feeding the two metre antenna was abstracted for the 20-metre dipole for the CARF contest and was still connected to it, at 40 feet. The main station antenna, a four-element 15-metre yagi, was connected to an experimental six-metre transceiver. The bench supply was connected to the six-metre test rig also.

THE STRIKE

As you can see, with the exception of the six-metre test, the station should have been considered adequately protected, and probably better protected than the average Canadian station. In general, a grounded tower is considered to be immune to direct strikes because it drains an area around it of any excess charge.

The lightning bolt hit the tower and fractured the lead ground connector, causing one ground rod to become isolated from the tower. (Observation number one: buy and use the correct hardware for the job at hand). The other ground rod was apparently incapable of dissipating the load and the bolt went for greener pastures. It entered the shack, crossed the coax to the six-metre rig and entered its front end on an RCA connector.

There is little sign of damage here as the connector was well tightened to the circuit board. The bench supply was connected by a clip lead and alligator clip (a big alligator clip) to the ground foil near another RCA jack. All foil in the vicinity of the clip lead, on both sides of the board, vapourized.

The top of the board was designed as a ground plane and had no pattern etched in it, rather a continuous layer of copper. There is a half-inch circle of it missing. The nut on the RCA connector nearby has a large chew out of it and the washer underneath has been cut in half. The clip is scorched and teeth are burned off it.

Upon entering the bench power supply, the lightning destroyed several tantalum capacitors and the regulator IC, blew the fuse and on/off switch into fragments and left for the Ontario Hydro ground system. On the way the shack fuse box intervened.

The shack is fed by a 30 Amp, 230 volt line which is split into four 15 Amp, 115 volt lines at the test bench in a standard fuse box. All four fuses in this box were blown, one was physically destroyed, and scorch marks were seen throughout the box. The main box 30 Amp breaker blew.

NEXT, THE TEN TEC

Cats are curious, as they say, and I can vouch for the fact that so are lightning bolts! This one indulged its curiosity by following the AC line to the Ten Tec rig and looking into the power supply. The Ten Tec was still connected to the station ground, which is a set of buried radials in the back yard not directly attached to the tower ground system.

No matter, a nice path exists through the power supply, rig, and ground line of the rig. Damage to the Ten Tec power supply was the loss of all the copper traces off a circuit board that connects the line cord to the 115/230 volt switch. Two .02 µFd capacitors on this board disappeared in the ensuing action. The missing traces are about ¼" wide and 2" long.

The fuse was reduced to sand, except for the end that fits in the extractor on the fuse holder, which was welded to the extractor. The over-voltage sensor circuit was knocked senseless. Damage to the rig is still undetermined. (Observation number two: Connect all the ground systems in the shack together, then there will be no place to develop a potential. Do it well away from the station equipment.)

Bell telephone uses good engineering standards. They provide a ground for their telephones. The telephone was sitting on a shelf under

Page 12

Try these!

RECENT DOC EXAMINATION QUESTIONS

1. What turns ratio should a transformer have in order to match a source impedance of 500 ohms to a load of 10 ohms? (Round off to nearest whole number.)

1. Quel est le rapport (nombre de tours) d'un transformateur afin d'adapter une impédance d'entrée de 500 ohms à une charge de 10 ohms?

2. In figure 1, what is the value of R1?

2. Se référer à figure 1. Quelle doit être la valeur de R1?

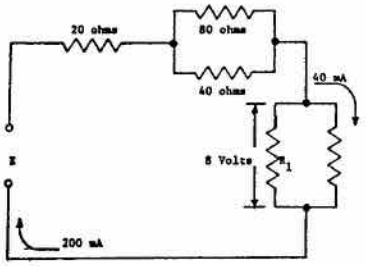


FIGURE 1

3. Two capacitors (a 2 μF and a 10 μF, each rated at 450 WVDC, are connected in series across a source of e.m.f. of 400 volts. What would be the voltage across each capacitor?

3. Deux condensateurs (2 μF et 10 μF) pouvant supporter une tension de service nominale de 450 V c.c. chacun, sont montés en série aux bornes d'ue source de f.é.m. de 400 volts. Quelle est la tension aux bornes de chaque condensateur?

4. In figure 2, if the wiper of potentiometer R1 was gradually moved from position 1 to position 2, how will the reading of the voltmeter be affected?

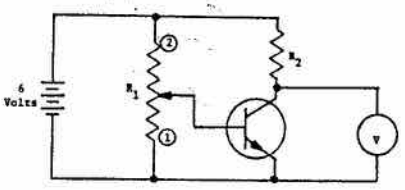


FIGURE 2

4. Dans le figure 2 si le curseur du potentiomètre R1 est graduellement déplacé de la position 1 à la position 2, expliquez comment la lecture du voltmètre sera affectée?

5. Briefly discuss classes 'A,' 'B,' and 'C' amplification and list one advantage and one disadvantage for each class.

5. Décrivez brièvement les classes 'A,' 'B' et 'C' d'amplification et indiquez un avantage et un désavantage de chacune.

6. Explain the beta characteristic of a transistor.

6. Expliquez la caractéristique bêta d'un transistor.

7. (a) What is meant by the radiation resistance of an antenna?
(b) What is the value of the impedance at the centre of a half-wave dipole antenna?

7. (a) Qu'est-ce que la résistance de radiation d'une antenne?
(b) Quelle est la valeur de l'impédance au centre d'une antenne demi-onde?

8. (a) What component of the radio wave determines its polarization?
(b) What layer of the ionosphere is used for long distance communications, and Why?

8. (a) Quelle composante de l'onde radio détermine sa polarisation?
(b) Quelle couche de l'ionosphère est utilisée pour les communications à grande distance et pourquoi?

9. (a) What is left when you remove the carrier and one of the sidebands from an amplitude modulated signal?
(b) Give a brief description how the above is accomplished?

9. (a) Que reste-t-il après qu'on a enlevé l'onde porteuse et l'un des bandes latérales d'un signal modulé en amplitude?
(b) Décrivez brièvement comment accomplit-on ces deux opérations.

10. Why may frequency multipliers not be used to bring a low frequency carrier oscillator to the higher desired transmitting frequency in SSB?

10. Pourquoi les multiplicateurs de fréquence ne peuvent-ils pas être utilisés afin d'augmenter un oscillateur basse fréquence à une fréquence d'émission plus élevée en bande latérale unique (BLU)?

11. Which two amateur bands are most likely to cause interference to the FM (98-108 MHz) broadcast band and why?

11. Quelles sont les bandes d'amateur les plus susceptibles de causer du brouillage à la bande de radio-diffusion MF (98-108 MHz) et pourquoi? ■

---

the six metre rig, but with a piece of RG58 from the tower draped over it. Apparently the current left the cable, although I can see no evidence of damage to the cable, and grounded through the telephone jack box. There are scorch marks on the interior of the jack and the telephone doesn't work any more. Even the bell won't ring. It is no longer a bell telephone.

The UHF-TV head end preamplifier also ceased to function, and the fuse associated with its power supply blew. A digital clock upstairs, and not on any of the affected circuits, no longer has time for me.

THE LESSON

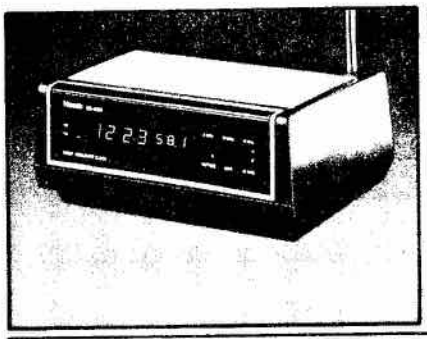
I have catalogued my misfortune in great detail because I believe my station was better protected against lightning than the average. Through 17 years of hamming, and 12 of unattended RTTY autostart operation on 2 metres, I had never had anything more serious than the loss of a front-end FET to blame on lightning. As a result I was a bit blasé about the whole thing. A post hit inspection revealed the ground rods were a bit loose, and following a tip in *Ham Radio* magazine I have replaced the connectors here with stainless steel tractor clamps (the type used on plastic water pipes). Three on each rod will provide a non-slip positive connection to the tower ground wires. The aluminum terminator box at the entrance to the underground conduit now has its own 2/0 copper wire instead of relying on the tower to provide a path. But, and I believe most important, all ground systems will be connected together.

Often, especially in contests, you see operators continuing to operate during thunderstorms. Consider what would have happened had I been in the shack at the time. Even if by some miracle I had avoided electrocution, there must have been tremendous danger in flying glass from the open fuses on the bench power supply. The copper from the six-metre project plated itself onto the shelf under where the rig had been sitting, and right above where the operator would have been, is one 4" diameter scorch mark. Certainly I have gained a better appreciation for the dangers of lightning.

Thank God it hit the radio tower. Can you imagine the damage this lightning bolt could have done to the house had it hit it?

And finally, this article is by way of apology to VE3DQB, your editor, for the promised article on the six metre rig project, which will now be somewhat delayed! ■

FREE high tech catalog



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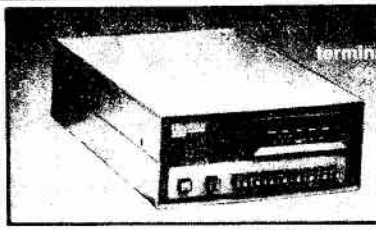

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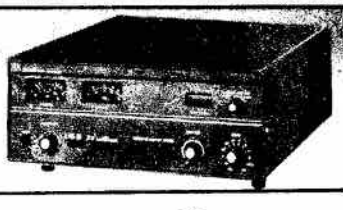

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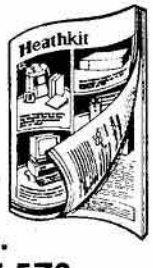

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Field Day

BY BRENT TAYLOR VE3APG
(continued from October issue)

STATION SETUP

Pick a location which allows you the maximum amount of room permissible under the contest regulations, and use as much of that room as possible. If you plan to run two transmitters on the same band try to position the antennas a half or full wavelength apart to minimize interference. Tents or trailers should probably be placed in a circle with the generator in the middle. If you plan on some outdoor lighting, try using yellow lightbulbs which will be less of an attraction to insects.

MODE SELECTION

Very few clubs are large enough to provide for all modes on Field Day. Choices must be made. If you're going to have one transmitter on each band, make every effort to stay on CW as much as possible. There are plenty of CW stations to work when the band is open, and remember you get twice as many points on CW as you do for phone.

As far as RTTY is concerned, it is probably unwise to commit an entire station to that mode. Each transmitter you use at any one time puts you in a higher, more competitive, category. If you are dedicated to getting on RTTY, you must weigh the advantage of the extra mode against the disadvantage of the higher transmitter count.

If you have enough rigs and bodies then it's probably worth using phone for at least part of the contest. It also gives more opportunities for everyone to contribute... face it, there are only so many crackerjack CW ops to go around! Try, however, not to get carried away on phone at the expense of prime CW operating time.

EXTRA POINTS

There are several ways to qualify for bonus points. The easiest way to get a quick 100 points is to copy the W1AW Field Day message, broadcast many times throughout the contest period. Another way is to get an article in your local newspaper before the event. Another 100 points are up for grabs if you make at least one satellite contact.

There is also extra credit making at least 5 contacts using naturally generated power. The power doesn't have to be generated during the contest. If you like, you can hook up a solar panel to a car battery several weeks before Field Day and bring the battery with you to the contest. Other points are available for traffic handling, message originating, etc.

The 80 m tent, with the Saint John river valley in the background. (All Photographs by VE1APG.)

STRATEGY

Make hay while the Sun shines. The contest only lasts for 24 hours so you've got to pack as much quality operation time into your effort as possible. A transmitter should never sit idle. If one particular band isn't producing then take that transmitter off the air and try another band, say, 2 metre FM.' In these times of low sunspot activity, there are seldom more than two or three bands open at any one time.

Instead of operating in the 10 or 12 transmitter category, try running fewer transmitters and have them hooked up to multiband antennas. That way you can follow the band openings throughout the day and night. This method lets you stay on the most active bands while using less equipment.

One way to include SWLs and prospective Amateurs in Field Day is to ask them to set up a monitoring station. Remember, you are categorized on the number of transmitters you have on the air, not receivers. There are surely SWLs out there who would be happy to assist in setting up a monitoring station. They could alert you to sudden band openings, copy the W1AW message for extra points, or travel from tent to tent helping with logging and duping.

You should use the lowest power possible to do a good job. You don't have to run QRP, but a 100 watt station will have a better multiplier than a 1 kW station. As far as getting some of those bonus points, try the following: When you attempt to make your 100 point satellite contact, take your least productive transmitter off the HF bands at the same time. This enables you to stay in your transmitter category without bumping yourself into a more competitive group. The same applies for your 'five QSOs with natural power' attempt.

Every transmitter should be manned by at least two people. One to do the actual operating and the other to take care of the logging and duping, which are just as important! Another way to save some strain on the physique (especially eyeballs) is to sit on one frequency and call 'CQ Field Day.' Doing this forces the other stations to check *their* dupe sheets to see if they have already worked you.

Conversely, if you try the hunt 'em and work 'em method, you'll find yourself constantly checking your dupe sheet to see if you have already called the other station. Computers can be very handy for logging and duping, but you really shouldn't rely on them. What if your generator coughs and you lose everything in your memory? Unless you have also made a manual dupe sheet, you're stuck!

There are several more ways in which to improve your score. I have hardly scratched the surface in this article. If your club is like most, you probably won't be out for a huge score anyway. If you get too serious, you stop having as much fun, and if that happens, you will notice your attendance (and score) drop the following year.

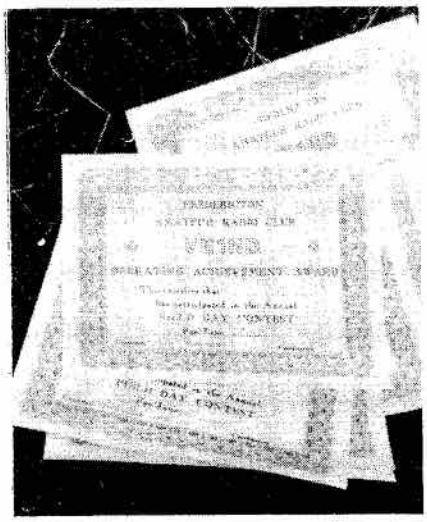
WORK TOGETHER

Finally, more than anything else, you must recognize that Field Day is a team effort. A happy team is a productive team. Try and provide your team with a few comforts. Designate someone to keep a fresh pot of coffee handy at all times. Take a short break for a BBQ Saturday night. Continue with a pancake and sausage breakfast the next morning. Have enough bodies on hand so that everyone gets a chance to rest once in a while.

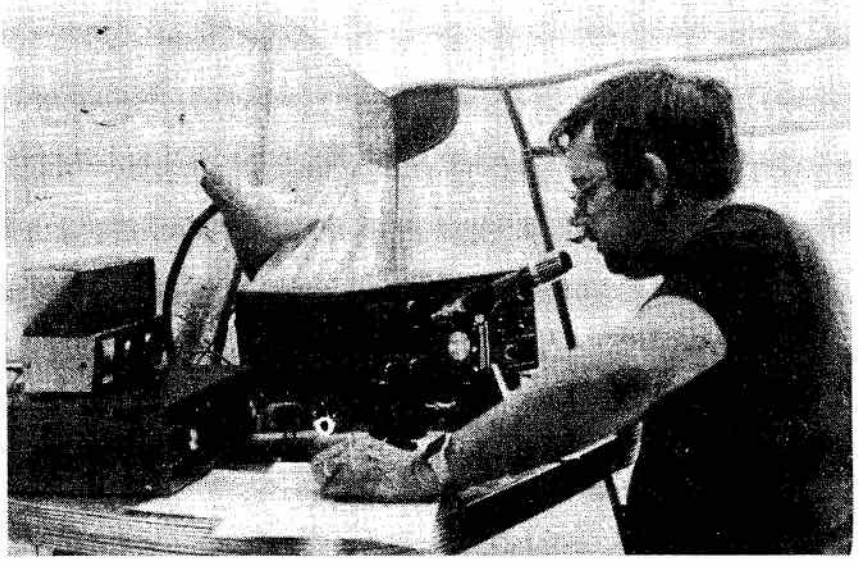
One really excellent idea our committee had was to present attractive certificates to those helping out with the Field Day effort. Also, don't forget to write letters of thanks to those non-Amateurs who may have donated time or equipment.

Make sure your site has public access. Designate someone to give a tour of the operation should visitors drop by. You will be doing much for the betterment of our hobby by involving the public in events like Field Day.

The time to start planning for Field Day 87 is right now. Form a committee, have meetings through the winter, and be ready when the snow leaves in the spring. We're in the planning stages for next year right now. We're going to have a good crowd, a better score, and even more fun!



WD8MJB dropped by, and borrowed the 40 m dipole to call home to Michigan.



Don VE1BRW operating the Kenwood equipped 40 m station.

THE JACK RAVENSCROFT CASE

The appeal hearing date should be announced in October, and a verdict could be reached quickly or sometime next summer. The importance a case such as this one and the ramifications for all licensed transmitter owners may well cause a considerable delay to final judgement. Both lawyers will have a day and a half to argue their case before three Appeal Court judges in Osgoode Hall in Toronto.

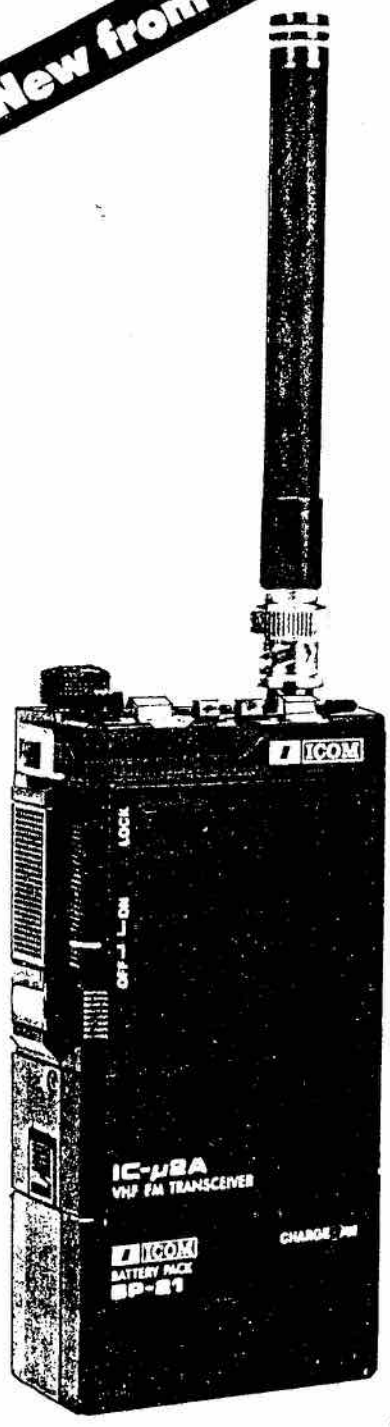
Current total donations to the JRSD Fund approximate $55,000, and have come from almost 1300 separate donors. Response to an editorial in *QST* and numberous volunteer efforts at flea markets and commercial raffles have resulted in donations and letters from all across the U.S.A., Australia, Finland, Sweden, Holland and the U.K.

—CARF News Service

New from ICOM

IC-μ2A/T

2-Meter Handheld



SPECIFICATIONS

GENERAL

Frequency Range:	140.000-163.000MHz
Antenna Impedance:	50 ohms
Frequency Stability:	±15ppm (-10° to +60°C)
Memory Channels:	10
Frequency Resolution:	5kHz
Power Supply:	7.2V - 13.8V DC
Polarity:	Negative GND
Current Drain:	
Standby	23mA
High	550mA
Low	220mA
Size:	2.3"W x 5.6"H x 1.1"D
Weight:	8 oz.
Operating Temperature:	-10° to +60°C

TRANSMITTER

Output Power:	High: 1W (2.5W opt.); Low: 0.1W
Modulation:	FM: Variable reactance modulation
Max. Deviation:	±5.0kHz
Spurious Emissions:	-60dB
Microphone Impedance:	600ohm electret
Operating Mode:	Simplex and duplex
Subaudible Tones:	32 tones built-in

RECEIVER

Sensitivity:	FM 12dB SINAD -12dBu (0.25μV)
Squelch Sensitivity:	FM Threshold -20dBu (0.1μV) FM Tight -12dBu (0.25μV)
Selectivity:	±7.5kHz
Spurious & Image Rejection:	60dB
Audio Output:	0.25W (8ohms @ 10% distortion)
AF Output Impedance:	8 ohms
Receiving System:	Double conversion superheterodyne
IF Frequencies:	16.9MHz; 455kHz

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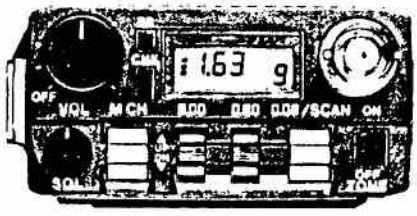

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The idea behind the Pakratt is very simple. One controller that does Morse, Baudot, ASCII, AMTOR, and Packet, and works both HF and VHF bands. Of course the decoding, protocol, and signal processing software must be included in the unit, and connection to the computer and transceiver have to be easy. The unit also has to be small and require only 12 volts, so it will work both in the shack and on the road.

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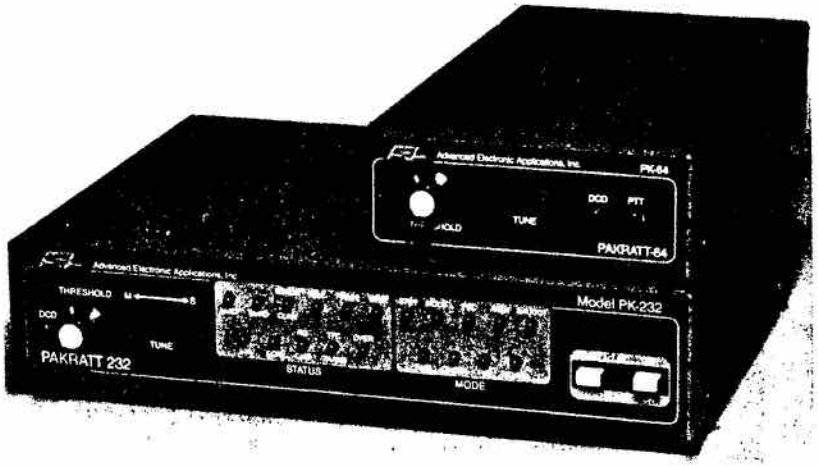
PAKRATT™ Model PK-64



PAKRATT™ Model PK-232

Third, Performance and Features

The real measure of any data controller is what kind of on-air performance it gives. While the PK-64 and PK-232 use different types of modems, both give excellent performance on VHF. The optional HF modem of the PK-64 uses independent four-pole Chebyshev filters for both Mark and Space tones, and A.M. detection. The HF option can be factory or field installed.

The PK-232 uses an eight-pole bandpass filter followed by a limiter discriminator with automatic threshold correction. The internal modem automatically selects the filter parameters, CW Fc = 800 Hz, BW = 200 Hz; HF Fc = 2210 Hz, BW = 450 Hz; VHF Fc = 1700 Hz, BW = 2600 Hz.

The PK-64 uses on screen indicators to show status, mode, and DCD (Data Carrier Detect) while the PK-232 uses front panel indicators. Both units use discriminator style tuning for HF operation. And that's just the tip of the iceberg. Features like multiple connects on packet, hardware HDLC, CW speed tracking, and other standard AEA software features are included in both the PK-64 and PK-232.

Fourth, AEA Quality and Price

Not many manufacturers like to discuss quality and price at the same time. AEA thinks you want high quality and low price in any product you buy, so that's what you get with the Pakratts. Ask any friend who owns AEA gear about our quality. The people who buy our products are our best salespeople. As for price, the PK-64 costs $369.95, or $539.95 with the HF option. The PK-64A, an enhanced software unit with a longer flexible computer cable, costs $449.95 or $619.95 with the HF option. The PK-232 costs $539.95 with the HF modem included. All prices are Amateur Net and available from your favorite amateur radio dealer. For more information contact your local dealer or:

Prices and specifications subject to change without notice or obligation.

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Book Reviews

LANDMOBILE AND MARINE RADIO TECHNICAL HANDBOOK, BY EDWARD M. NOLL, 1985

$24.95 from Howard W. Sams & Co. Inc., 4300 West 62nd. St., Indianapolis, Indiana 46268, U.S.A.

Long ago, your reviewer spent hours with advanced scientific books, trying to understand the concepts they explained. Fortunately for him, an Ariadne gave him early in life a thread to guide him through the maze:

"A failure to understand the works of these men was attributed by the disciple to dullness on his own part, not to the ignorance, incorrectness or even muddle-headedness of the ancient authors he studied."[1]

The clew, stated positively, is: if, after careful study, a concept is not clear, *try another text.*

Most of us Amateurs latch on to one of the handbooks to learn the elements of radio. Those available vary wildly in quality. In all of them you will find a little ignorance, incorrectness or even muddle-headedness. The best are not perfect.

Like many, I have been trying to learn the burgeoning field of radio and electronics as I go along. I had never found a clear description of a Darlington transistor pair, or its principle of operation. So when the volume under review came to hand I looked up Darlington in the index, and referring to the page I found: "In the normal operation of a transistor, the emitter junction is forward-biased and conducts. Input resistance is low... The Darlington-pair approach is to use the input resistance of a second transistor as the emitter resistance of the first. The input stage then operates with a highly degenerative emitter circuit and a resulting high input impedance."

The result of trying another text, one clearly written and illustrated, is comprehension.

Overall, this text is clear, accurate and understandable. Errors are few: in Figure 7-6 the ground image of the Marconi antenna is illustrated but not identified, there are a few typos and misspellings.

Amateurs will find much of interest in this volume. Particularly, chapters 3 (Solid State Fundamentals), 4 (Modulation Systems), 6 (Test equipment and Methods) and 7 (Antenna Systems and Interference).

—VE3DQB

[1] *F. Sherwood Taylor, Inorganic and Theoretical Chemistry, Heinemann, 1936, p 11.)*

ONTARIO COMMUNICATIONS HANDBOOK— 1985

Ministry of Transportation and Communications, Communications division, Downsview, Ont. M3M 1J8, $4.00

This, the first edition of a neat little pocket handbook, to be updated at two year intervals, was developed in response to many inquiries received by the ministry, relating to communication services in the Province of Ontario. It purports to provide a comprehensive overview of broadcast and telecommunication services. The publisher claims to have developed "the first really comprehensive source or reference book of its kind," and indeed there is a wealth of information assembled in its 139 pages.

For example, and of interest to readers of *TCA*, amongst some of the more exotic services in existence, an entire page has been devoted to the General Radio Service (CB Radio), with three paragraphs devoted to a description of the service and the type of equipment used and a brief but adequate description of the regulatory structure governing its operation.

Having been suitably informed of the existence and activities of the GRS, your reviewer searched onward to find what had been said concerning the Amateur Service and discovered, with surprise and concern, that neither 'Amateur' nor its meaty synonym 'Ham' are anywhere to be found in this publication which lays claim to being a comprehensive reference source. Errors and omissions are inevitable, but it is strange to find a well-known service, actively in existence for over three-quarters of a century, can be overlooked completely. Perhaps the inherent reticence of the Amateur population has once again been invoked to ensure that we remain invisible.

So I wrote the ministry concerned and in my letter pointed out, with some satisfaction, that a sister ministry of the Provincial Government had fully endorsed an Amateur emergency preparedness network as an official back-up for emergency communications and that the Federal agency, Emergency Planning Canada, had given the same network a similar endorsement. A few other pertinent details caused me to receive a somewhat embarrassed reply in which the Manager of the Telecommunications Policy Office gave his assurance that the Amateur Radio Service indeed will appear in any future revision to the Handbook.

Notwithstanding this lapse, the little handbook at small cost gives quick reference to many facets of the communication world. While it would be considered superficial by serious, in-depth researchers, it certainly provides a take-off point leading to lesser known systems.

All-in-all, an interesting source of information touching on a variety of communication services that are available. No doubt, future revisions will increase its value, and the present authors can be congratulated on a good first effort.

W.R. Campbell VE3KLK

THE RADIO AMATEUR AWARDS DIRECTORY OF THE WORLD.

$10.00 from Garry V. Hammond VE3GCO, 5 McLaren Avenue, Listowel, Ont. N4W 3K1.

Anyone who pursues Amateur radio to the slightest degree finds himself the owner of a growing pile of postcards, many with foreign stamps on them.

They can be hoarded in a shoebox, or displayed on a wall, or they can be used to collect bigger bits of paper called awards.

There are lots of awards. VE3GCO has put together a list of 250 of them, in a convenient three-ring binder format. Some look easy, some extremely difficult, at least from North America.

The book consists of copies of the original literature sent out by the awarding body. The awards are generally arranged in alphabetical order by country: this puts the German awards partly under D (Deutsch and Diplom), not under G. Some smaller awards are squeezed in where they will fit, Finland's OHA award fills a space in the German section. So browse through the book!

Many of the entries include checklists. Several useful Award Application forms complete the volume.

In all, a most useful book. — VE3DQB

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TEN-DAY MONEY-BACK GUARANTEE

The DXer

BY IVOR NIXON VE3IHN

On certain bands these days, notably 75m phone, there is developing an increasing animosity between hams of differing operating philosophies. Most of the hostility is directed at DXers and takes the form of jamming by means of white noise generators and intentional tuning-up where and when it will create the most interference, rag-chewing in the DX window, and caustic and often obscene comment.

As is so often the case, this state of affairs arises from inadequate communication, even though communication is the name of the game for hams. What is needed is more understanding on the part of non-DXers of what DXing is all about, which this article will attempt to impart.

Unfortunately, DXers leave something to be desired when it comes to communication, since it is characteristic of their particular obsession that contacts do not often last more than 30 seconds, and they rarely talk to non-DXers with whom they have little or nothing in common. In an attempt to bring the two factions together, I gladly expose myself to the wrath of both sides by attempting to explain the unique characteristics of DX work.

In the first place, it must be realized that DXing does not respond to any of the common operating rules which govern almost all other forms of Amateur activity. Take reports for instance. You all know that normally S9 means an extremely strong signal, S6 means good strength, Q4 means readable with only a slight degree of difficulty, etc. In DX work, on the other hand, the definitions are entirely different:

Q1 - not used
Q2 - not used
Q3 - not used
Q4 - I can only make out the odd word
Q5 - perfectly readable when the QRM and QRN goes away and if my S9 line noise were not present
S1 to S5 - not used except by novice DXers
S6 - I can occasionally tell there is a station there
S7 - You're not moving my meter but I'm absolutely certain you're there
S8 - S1 on my meter - beautiful signal
S9 - S2 on my meter - right up there with the best of them
S9 + 20 - I need your QSL card for 5B DXCC
S9 + 30 - Don't you wish you had a three-element 75m beam, you pikers?
S9 + 40 - My God, I haven't heard this country since 1977— PLEASE QSL FOR SURE!! Who else would give you a report like this?

Operating protocol is also quite unlike that governing other forms of ham communication, and is rigidly observed. DX clubs regularly hold examinations to establish qualifications for membership and compel applicants to take an oath of compliance. It goes like this:

10— BV1SN, this is WC6ZZZ (repeated 2-7 times)*
20— Thanks for coming back to my call— your report here on Catalina Island is 5 & 8— my name is John— Juliet Oscar Hotel November— over over
30— (other station transmits for 11 seconds, giving 5 & 8 report)
40— BV1SN, WC6ZZZ returning. FB Yang, but I didn't receive my report— please repeat. Your report again is 5 & 8— that's one two three four five, one two three four five six seven eight, 5 & 8, much better than last night, QSL, Yang? over over
50— (other station repeats everything)
60— Roger roger, Yang— fine business and thanks for the 5 & 7 report
70— Won't hold you, many others calling
73— All the best for the Chinese New Year from WC6ZZZ
75— Resume free-for-all

* If you talked to him last night and remember his name, it is permitted to use it when calling as it may make him believe you're an old friend or even his QSL Manager.

Any significant deviation from the above will result in ostracism and even expulsion from the local DX club. Also typical of unacceptable behaviour are the following sub-routines:

64. Yang, I need a quick antenna comparison; I put up three new slopers on top of my 165-foot tower this afternoon. Please tell me how my signal is affected. This is No. 1, No.1, No. 1, Now No. 2, No. 2, No.2, Now No. 3, No. 3, No. 3, No. 3, now back to No. 1, No. 1, No. 1.
66. (other station transmits for 9 seconds)
68. OK Yang, that's tremendous - sure appreciate it
69. GOTO 70

or:

62. Yang, I have a friend on frequency who has been trying to work BV for years— I'd like him to give you a call. Go ahead, WC6ZUZ.
63. (WC6ZUZ calls seven times)
64. (DX station does not answer)
65. WC6ZZZ: call him again, Hank
66. (WC6ZUZ calls seven more times)
67. (nothing heard from DX station)
68. WC6ZZZ: well, Yang, I guess his 5

Terms and Conditions of Service of the Algoma Radio Club

The Algoma ARC has devised a service contract for organizations that would like to take advantage of Amateur radio in their activities. *TCA* thanks the Algoma club for their permission to reprint the contract for the benefit of other clubs.

CONTRACT

The Algoma Amateur Radio Club is indeed willing and able to provide a radio communications service to service clubs and to community events. Prior to the acceptance of such a request, the following terms and conditions should be fully understood.

a) The organization must submit a written request outlining the type of event, location(s), date and starting time(s), approximate finishing time, the extent of communications requirements ie, duties, responsibilities etc. The request for service must be submitted at least two months prior to the event in question and, should be followed up with the appearance of the event organizer(s) at a regular monthly Radio Club meeting to finalize details.

b) If sufficient volunteer radio operators can be enlisted from the club membership to provide the requested service, club involvement may be accepted by majority vote.

c) Terrain at the event site(s) must be suitable, and accessible, for the provision of efficient and effective radio cmmunications. This may include access to Amateur service radio repeaters. All such criteria will be taken into account by the club membership prior to final acceptance.

d) It will be understood that The Algoma Amateur Radio club responsibility at any public event will be to provide a message handling service relevant to event business and will in no way include radio traffic of a commercial nature. Emergency communications will be provided if necessary.

The organization named for whom The Algoma Amateur Radio Club provides services agrees to indemnify and save harmless The Algoma Amateur Radio Club from all liability arising from such services. We hereby agree to accept the gratuitous services by The Algoma Amateur Radio Club upon the terms and conditions set out above.

Signed_____

Organization_____

Date _____

watts isn't getting out today, hi! Thanks anyway!

69. GOTO 70

Something else not generally realized is that DX stations (namely, all those outside of North America) do not conform to the commonly-accepted (i.e., North American) standards either for equipment or operating procedures. For example, they invariably use full-duplex transceivers so that calling them when they are transmitting is perfectly logical and does not mean that the calling station is not copying. While some distant stations operate split frequency, and others go by call areas, both of which are much more efficient in terms of QSOs per hour, most do not, and for a very good reason. The unintelligible chaos which results from several dozen or several hundred stations calling simultaneously enables the DX station to fill out his log, have a sip of coffee, visit the WC and/or take the odd phone call between contacts, and extends the life of the vocal cords or wrist.

The essential fact that we sometimes fail to realize is that DXers are primarily and fundamentally postcard collectors; radio is only a means to this end and is rarely used for any activity that does not result in a new addition to the collection. The exalted status enjoyed by the holder of 350 postcards makes him the envy of all his fellows (except at the office where he is looked on as being a few bricks short of a full load).

On the other hand the question is often asked: of what earthly use is another W8 QSL card to a 9U1? The fact is that in addition to being a major source of revenue to post offices all over the world, QSL cards function as a major source of fuel in many backward countries. Some hams in little-known African states, for example, have been known to keep their families warm during the entire rainy season using QSL cards as a substitute for camel dung when the latter is scarce or too squishy to burn.

It is unfortunate that many individual DXers, once they leave the club meeting, often revert to cannibalistic tactics typical of their ancestors. It is considered quite fair to adopt the credo: "If you can't work him yourself, make sure nobody else works him." And it is widely accepted that the strong are entitled, perhaps even expected, to trample on the weak. However as in most primitive societies this seemingly callous behaviour actually results in a strengthening of the species, as the weak fight back by the acquisition of new amplifiers and beams, thus injecting new vigour into the hardware industry and underwriting new development. Those who are genetically unable (because of the size of their wallets or any other deficiency) to keep up this struggle eventually succumb to weak tubes and end up tinkering with computers. This has engendered the saying: "Old DXers never die, they just QSB away."

Similarly list operations are widely sneered at because they give the weak the same opportunity as the strong, thus emulating the welfare society by propping up those who lack the means or the will to compete.

Nevertheless, don't underestimate their capability of closing ranks when some real or fancied danger threatens the welfare of the group. Certain members of the species, for example, function as policemen when a nest frequency is left unguarded, to ward off trespassers, so that the main pack can concentrate on the prey. And woe betide the heedless rag-chewer who get too close to the herd's territory.

In summary, I hope that this exposé will lead to a greater understanding and tolerance of DXers. We should, after all, bear in mind that most of the time they are solitary and inoffensive members of our fraternity, spending most of their time listening and joining packs only when a desirable quarry rears its head. And even then they inhabit only a small portion of the available frequencies, and are rarely aggressive except when their territory is invaded. While we may have little or nothing in common with them, they do contribute to the diversity that makes our hobby so unique. And above all, they are considered by most sociologists to be human beings. Just like us. ■

How to send Morse Code

BY LOU CURTIS VE4AEM

The DOC has announced a new procedure that will allow candidates for Amateur and Advanced Radio certificates to be examined by three advanced hams. It is called attestation.

Personally, I like the idea. It is an opportunity for the Ham Radio fraternity to put their skills where their mouth is. Most Amateurs are adamant about not wanting CW or wireless telegraphy dropped. I am also one who would like to see code continue; because I have got messages through where it was no-go on voice.

Many Hams do not want Morse Code dropped from the examination for the wrong reason. They insist that it will keep undesirables out. This is not a good reason. Wireless telegraphy should be kept because it is a skill that is useful and it can be fun and give a lot of satisfaction. But CW must be upgraded both in sending and in receiving.

There is a great deal of sloppy, erratic CW cluttering the airwaves and particularly at 5, 10, and 15 wpm. The student who has just got his ticket, and has been exposed to ARRL W1AW perfect sending soon finds himself bewildered and frustrated by the jitter-bug, untidy fists pounding out code.

HOW'S YOUR CODE?

One of the best ways to find out how bad your code really is, is to try to teach it. And a good way to correct your sending is to tape what you are sending and then see if you can read what you have punched out. You may be in for a shock!

It makes more sense to send nice clear, well-spaced CW at 10 wpm than it is to splutter and make many mistakes. Then, too, it will take less time to get your message across.

A manual I have says that unless your code sending is very, very good you should use an electric keyer. How, I ask, are you going to inspire others to use a straight key, if you can't use one yourself? And, if you cannot demonstrate how simple and easy it is to use a straight key?

Most problems with a straight key stem from a stiff, cramped position of the right arm. Many operators I know are 'pooped' after 30 minutes using a straight key on the air.

I learned the hard way. I had never witnessed an operator who could use a straight-key with ease and without fatigue until I met and saw Bill Yankewicz VE4ANY in action. Bill could send CW for hours and never seem to tire, even at great speed.

Bill was a fighter pilot in the navy. He was also a commercial radio operator in the north. Through his expertise he was able to get through several important messages in the Mexico tragedy. He is a member of our Senior Citizens Radio Club, VE4WSC. He is also an engineer and he is always willing to share his knowledge. Bill loves working CW.

THE STRAIGHT KEY GRIP

After watching the ease with which he handles a straight key, I asked him to show me how...

The method by which he operated the key was to place the right index finger on the top of the key and the second finger just under the lip of the key; only the point of the elbow rested on the table, the hand and forearm rotated inwards toward the body. The thumb just hung loose and flexible.

It took a while for me to get the hang of it; but I find that now I have much better control and do not weary after half an hour. I find this method a far superior way to transmit CW on a straight key.

The correct key-hold is vital, and it is essential to understand that tension begets more tension. Therefore, if we try to control something that we can't really control, it only creates anxiety and nervousness when we get on the air. For, when your arm becomes tense and cramped, your mind is also affected.

Tapes are fine but it is far more inspiring to hear and observe a good CW straight key operator— One picture is worth a thousand words.

Whatever method you choose to hold the key, all tension must be avoided. Strain of any kind will trigger anxiety and nervousness. Having taught violin for many years, I understand how tension can work havoc with a pupil's nervous system. Violin playing is far more complicated than handling a straight key and there are far more places where tension can develop but the principle is the same.

And, above all, don't tell a beginner that morse code is hard to learn or that you hate CW. Therefore, I appeal to experienced hams to clean up their own straight key sending and act as an Elmer to some fledgling ham. He will need that help and encouragement more than ever once he gets his ticket.

How I became involved was that no one wanted to take on the job of teaching code. But I have derived more than a little benefit from the experience. So, do not let inexperience stop you helping a new Amateur to get a good start on CW.

IN THE WEE SMALL OURS

While tuning around Our frequency in the band We were delighted to note, not for the first time, the many other non-club multi-operator Amateur radio station licences, like Our own, which have been issued not only here, but throughout the English-speaking world.

"We always come up at this time," said a WA2 station. "Our antenna is beamed straight at you," stated a VK3 station (as if matters could have been otherwise). "We must QRT now," lamented a G4 station.

At one point We were unusually assailed by a JY1 station which insisted upon using the first person singular. Rather taken aback by this, We naturally assumed that this was due to unfamiliarity with Our language.

We are, Sir, respectfully yours,
J. F. Hardwick GM4ALA
J. F. Hardwick GM4ALA
—from *Radio Communication*

POLICE MONITOR

The Sureté du Québec (Quebec Provincial Police) now monitor channel 9 on 11 metres outside the metropolitan areas. Quebec has joined many other provinces in offering this service to motorists.

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

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

DISCOUNT PRICE OF FT-767GX IS LESS THAN PRICE OF FT-757GX + FP-757HD + FC-757AT AND INCLUDES ALL 3.

List $2899
CALL FOR LARGE DISCOUNT !!

FT-767GX

General Coverage Receiver plus VHF/UHF

The FT-767GX receives from 100kHz to 29.99999 MHz continuously and transmits on all HF amateur bands. Optional 6m, 2m and 70cm modules add these VHF and UHF amateur bands: with all modes. The band modules plug right in, with no need to unscrew panels on the transceiver.

High Performance Receiver Design

The HF receiver front end utilizes cascaded pairs of high Idss JFETs for the switchable RF amplifier and balanced first mixer, providing wide dynamic range with operator's choice of direct mixer feed or RF amplification. The receiver design is an up-converting triple superheterodyne, using the latest wideband RF amplifier technology for excellent receiver performance on all bands.

High-Stability Frequency Reference

The PLL includes as standard a modular temperature-compensated crystal oscillator (TCXO) to minimize frequency drift. Reference osccilator stability is ±3 ppm from −10 to +50°C.

Clean Transmitter Output

The HF final amplifier consists of push-pull MRF422 transistors with rated dissipation of 290 watts each, operating at 24 VDC to provide 3rd order IMD of −35dB (@14 MHz, 100W PEP). Originated by Yaesu in the FT-980, this configuration is now copied in more expensive rigs. VHF and UHF band units include their own linear RF power modules.

TX Shift and All Mode Monitor

The carrier point of the SSB transmit signal can be adjusted by a front panel TX Shift control, while the operator uses the IF monitor to select the optimum carrier point for his voice. This feature can also be switched off for a preset transmit audio response of 350–2900 Hz @ −6dB. The IF monitor operates in all modes.

Four Microprocessors & Custom Gate Array

One 8-bit and three 4-bit microprocessors offer a higher level of digital control and features than ever before, while custom gate array technology vastly reduces control circuit complexity. Revolutionary features include memorized programmable tuning steps for each mode, from 10 Hz to 99.99 kHz; digital wattmeter and auto-calculating SWR meters; and selectable VFO tracking, where both VFOs tune together (for convenient repeater operation). Ten memories include modes and a check function, where memory contents may be displayed without affecting simultaneous operation on a VFO. Band, memory and limited band scanning are also provided under cpu control.

Special Features for CW Ops Included

In addition to QSK operation and built-in iambic keyer, the FT-767GX includes a factory-installed 600 Hz crystal filter, audio peak filter, IF notch and Pitch control to set the receiving CW carrier frequency as you desire, and have your transmitted carrier match. All you need is your key.

Large Fluorescent Digital Display

The clearly readable display has a 3-step dimmer control allowing adjustment for optimum brightness under various shack lighting conditions. The digital display also shows power output in watts and SWR on all modes, and all bands including VHF and UHF.

100% Duty Cycle

Another widely copied Yaesu technique: through-chassis duct flow cooling allows continuous key-down transmission for up to 30 minutes. No external heavy-duty power supply required. The entire top half of the FT-767GX is diecast aluminum.

Built-In Automatic Antenna Tuner Included

Providing a 50-ohm match to the transmitter, the automatic HF antenna tuner includes one memory per band, storing previous settings for quick automatic recall when changing bands: if SWR exceeds 1.2:1 the tuner automatically rematches the antenna. Switches allow forced retune and bypass.

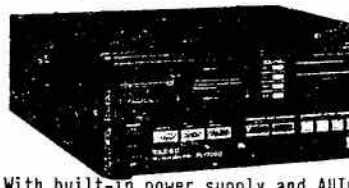
Enhanced CAT System

Yaesu's exclusive Computer-Aided Transceiver System offers external control from your personal computer. Bi-directional 4800 bits/sec serial I/O provides close communication between your micro and the main cpu in the FT-767GX, allowing external control and monitoring of frequency and mode-related functions. Allows you to add any features you might want, such as unlimited memories, special scanning systems, remote control and auxiliary station operation ... limited only by your imagination.

Much More

RF speech processor, all mode squelch, adjustable noise blanker, 3-position AGC time constant selection (plus off), marker signal generator, 20dB attenuator and RF preamp switches, special digital DATA IN/OUT jacks for packet tnc connections. A CTCSS Tone Squelch Unit and 1750/1800 Hz Tone Burst Generator are available as options.

FL-7000 SOLID STATE



With built-in power supply and AUT

SPECIFICATIONS

General
Frequency coverage (MHz):
1.8–2, 3.5–4, 7–7.5, 10–10.5, 14–14.5, 18–18.5, 21–21.5, and 24.5–25, 28–30 except USA version
Collector input power (final transistors):
(SSB) 1200W PEP (CW/FSK) 1200W DC
Continuous Full Power Transmission Period:
(SSB) 100% for 30 min.,
(Full Carrier) 100% for 2 min
Case size (WHD):
390 x 130 x 400mm
Weight:
30 kg (66 lb)
Supply voltage:
100/110/117/200/220/234V AC ± 10%
Power consumption:
1900 VA maximum (@500W RF output)

Linear Amplifier Section

YAES

DUAL BAND FM HANDIE TRANSCEIVER

FT-727R

THE MOST POPULAR HANDIE FOR SOME TIME TO COME!
2M & 440MHz for less than $200 More than 2M !!

DUE TO THE DEMAND WE SUGGEST YOU ORDER SOON, OR YOU MAY HAVE TO WAIT SOME TIME!

The FT-727R is a completely self-contained VHF and UHF FM hand portable transceiver providing up to 5W or 0.6W RF output on user-selectable channel steps across both the 2m and 70cm (FM) amateur bands. Twenty dual-function keys on the front panel give the operator 40 different commands for programming the CMOS microprocessor at the heart of the FT-727R, markedly simplified and improved over previous models. Ten standard memories are provided, four of which allow storage of independent transmit and receive frequencies, for odd repeater splits or cross band operation, with touch-key reverse. In addition to the ten memories, an independent 'dial' memory and call channel memory are provided for each band. User suitable repeater shifts can be activated on the dial or recalled memories.

The manual or auto-stop/resume scanning capabilities include step-programmable full or partial band or memory bank scanning; calling channel, select memory or dial priority scanning/monitoring, and other unique yet useful functions too numerous to list, but all programmable from the front panel keypad or remotely via the CAT" external computer jack. Even with all of these functions, operation remains simple: the CPU does the work for you, keeping the number of keystrokes to a minimum.

Operational battery charge life can be greatly extended over standard squelched reception when monitoring, with Yaesu's programmable Power Saver System (now with digital display timer), which only activates the receiver to check the selected channel momentarily at programmable intervals.

The liquid crystal display includes a 10-step bar graph meter to indicate received signal strength and relative transmitter output power. Revolutionary features include a built-in digital voltmeter to display actual battery voltage, a latching lamp switch to illuminate both the display and each keypad button (continuously, when necessary), and of course the mini-CAT System, allowing entry of all keypad functions from an external computer.

AVAILAB

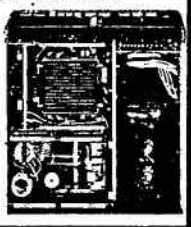
A NEW S
THE FUL
10 MEMO
AND A P
THINK !!

1987 AR
BIGGER A
NEW CHA
PACKET
STILL ON

1987 CALLBOOKS
AVAILABLE DEC
Due to duties
Price not firm.

HF LINEAR AMPLIFIER

st $2949 Call for SPECIAL!



Optional 4 pos Remote Antenna Switch FAS1-4R $149.00

TIC ANTENNA TUNER

Excitation power:
less than 100W for 1200W input
ALC voltage range:
0 to -9V
Spurious radiation:
less than -50 dB
Third order intermodulation distortion:
less than -25 dB
Input/Output impedance:
50 ohms, unbalanced

U

Automatic Antenna Tuner Section
Impedance matching range:
(1.8-2 MHz) 25 to 100 ohms, unbalanced.
(other amateur bands) 16 to 150 ohms, unbalanced.
Maximum feedthrough power:
600 watts
Insertion loss:
less than 0.5 dB when tuned to match
VSWR after matching:
1:1 to 1.2:1

FT-23R

300N

HT WITH ALL THE FEATURES OF
IZE HT's.
, SCANNING, OPTIONAL TTONE®
THAT's SMALLER THAN YOU
Get your order in now !!

ANDBOOK
BETTER
ON
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$26.00

Compact Size without Compromise

The FT-23R and FT-73R are ultra compact, microprocessor-controlled handies that offer the convenience of very small size and light weight without the limitations of features and performance that previously plagued tiny handhelds.

Rugged, Rain-Proof Construction

The transceivers are housed entirely in zinc and aluminum die-cast alloys, and battery cases are constructed of thick high-impact polycarbonate plastic, for professional-grade ruggedness: the photo shows a drop test from one meter to a hard floor.

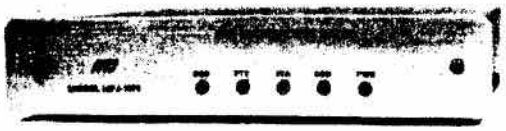
Rubber gasket seals around all external controls and connectors keep out dust and rain or spray, assuring years of reliable operation even in harsh environments.

Full-Feature CPU Control

Unlike "thumbwheel" type handies, the FT-23R and FT-73R include the latest microprocessor-controlled features: like ten memory channels which each store repeater shifts, CTCSS (Continuous Tone Controlled Squelch System) tone frequencies and tone encode/decode selections*; busy channel and priority channel scanning; 1MHz up/down stepping; plus a top panel rotary dial for memory and frequency selection. Seven of the memories can also be programmed for non-standard repeater shifts. The LCD (Liquid Crystal Display) shows six frequency digits, memory channel selection, and CTCSS tone frequency during tone selection*, and includes a bargraph S/PO meter.

AFFORDABLE PACKET RADIO

MFJ's TAPR TNC 2 clone in a new cabinet with added features...



MFJ-1270
$ 249.00

Join the exciting packet radio revolution and enjoy error-free communication...for an incredible $249.00. MFJ brings together efficient manufacturing and TAPR's (Tucson Amateur Packet Radio) leading edge technology to bring you top quality and affordable packet radio.

You get MFJ's highly acclaimed clone of the industry standard TAPR TNC 2. Its in a new cabinet and includes a TTL serial port and an easily replaceable lithium battery for memory back-up.

All you need is your rig, home computer with a RS-232 serial port and a terminal program. If you have a Commodore 64, 128, or VIC-20 you can use MFJ's optional Starter Pack to get on the air immediately.

You get interfacing cable, terminal software on tape or disk and complete instructions...everything you need to get on packet radio. Order MFJ-1282 (disk) or MFJ-1283 (tape), $39 each.

Unlike machine specific TNC's you never have to worry about your MFJ-1270 becoming obsolete because you change computers or because packet radio standards change. You can use **any** computer with an RS-232 serial port and an appropriate terminal program. If packet radio standards change, software updates will be made available as TAPR releases them.

Also speeds in excess of 56K bauds are possible with a suitable external modem! Try that with a machine specific TNC or one without hardware HDLC as higher speeds come into widespred use.

You can also use the MFJ-1270 as an excellent but inexpensive digipeater. You can use 12 VDC for portable operation or 110 VAC for fixed station operation.

It features AX.25 Level 2 Version 2 software, hardware HDLC for full duplex, true Data Carrier Detect for HF, 16K RAM, simple operation plus more.

Help make history! Join the packet radio revolution now and help spread this exciting network throughout the world. Order the top quality and affordable MFJ-1270 today.

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 feedline 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: 10¾ × 4½ × 14⅞ inches. Flip stand for easy viewing. Requires 12V for light.

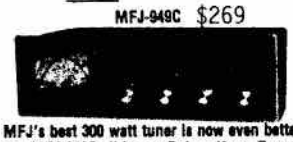
A 300 watt 50 ohm dummy load gives you quick tune ups and a versatile six position antenna switch lets you select 2 coax lines (direct or thru tuner), random wire or balanced line and dummy load.

A large efficient airwound inductor—3 inches in diameter—gives you plenty of matching range and less losses for more watts out. 100 volt tuning capacitors and heavy duty switches gives you safe arc-free operation. A 4:1 balun is built-in to match balanced lines.

Order your convenience package now and enjoy.

MFJ's Best VERSA TUNER

MFJ-949C $269



MFJ's best 300 watt tuner is now even better! The MFJ-949C all-in-one Deluxe Versa Tuner II gives you a tuner, cross-needle SWR/Wattmeter, dummy load, antenna switch and balun in a new compact cabinet. You get quality conveniences and a clutter-free shack at a super price.

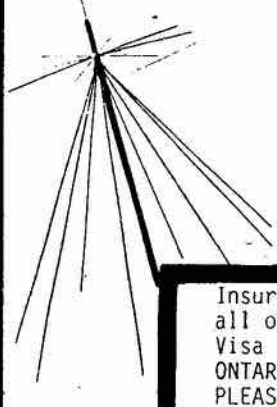
A new cross-needle SWR/Wattmeter gives you SWR, forward and reflected power—all at a single glance. SWR is automatically computed with no controls to set. Has 30 and 300 watt scale on easy-to-read 2 color lighted meter (needs 12 V).

A handsome new black brushed aluminum cabinet matches all the new rigs. Its compact size (10 x 3 x 7 inches) takes only a little room.

You can run full transceiver power output—up to 300 watts RF output—and match coax, balanced lines or random wires from 1.8 thru 30 MHz. Use it to tune out SWR on dipoles, vees, long wires, verticals, whips, beams and quads.

ICOM's AH-7000

Scanner Antenna $139 With 50' Coax and N Connectors on each End. Rx 25-1300MHz Tx 50 146 440 900 and 1200 MHz



MANY ARE USING THE AH-7000 AS A DUAL BAND ANTENNA FOR THE NEW DUAL-BAND XCVRS.

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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CANADA CONTEST

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

YEAR

0000Z to 2400 Z
CANADA DAY CONTEST
1 July 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.

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

OPTIMIZING FERRITE TOROIDS FOR EMC APPLICATIONS

Several articles have appeared showing how to apply the ferrite toroid in an attempt to eliminate RF from entering an appliance or control system via the line (mains), telephone drop wire or the cable television system. The Ottawa Amateur Radio Club and indeed several other clubs have had good success in the application of the toroid.

There are several advantages in using them, not the least of which is being completely removable should results be less than satisfactory. Toroid application represents a non-intrusive method of breaking the inductive loop formed by the hot side of the desired signal conductor and some undefined earth return. Toroids have almost no external field.

Another advantage of the toroidal choke is broad bandwidth when turns are correctly spaced around the core. A recent article in the RSGB publication, *Radio Communications*, June, 1986, contains important information if one is to maximize the frequency range of a toroidal choke. This article states that it is important to ensure the input and output turns are well spaced. On an FT 240-43 core (Amidon) a suitable spacing would be ½ inch. Tape the turns in place and tape the ends in similar fashion.

ANALYSIS OF TOROID PROPERTIES

John Simpson, VE3NJU and a member of the EMI Committee, was good enough to use a commercial network analyzer to characterize two core diameters. One type is made by Siemens and the other by Amidon. John is a professional in the field of EMI/EMC reduction and we appreciate the graphs he has prepared. Results are typical of what might be expected.

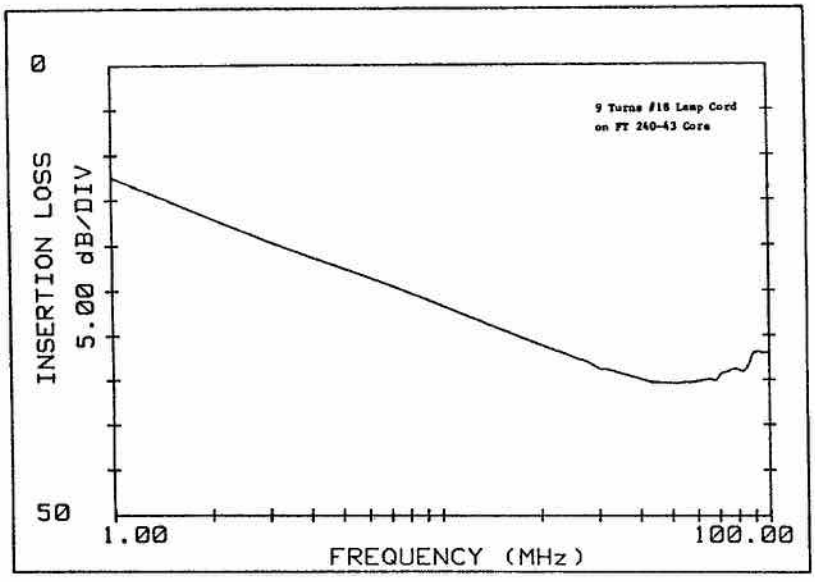
Frequency of measurement has been made from 1.0 MHz to over 100 MHz and it is interesting to see that as inter-winding capacitance increases, with more turns the lower frequency response improves, but high frequency resonances begin to appear and filter effectiveness starts to suffer.

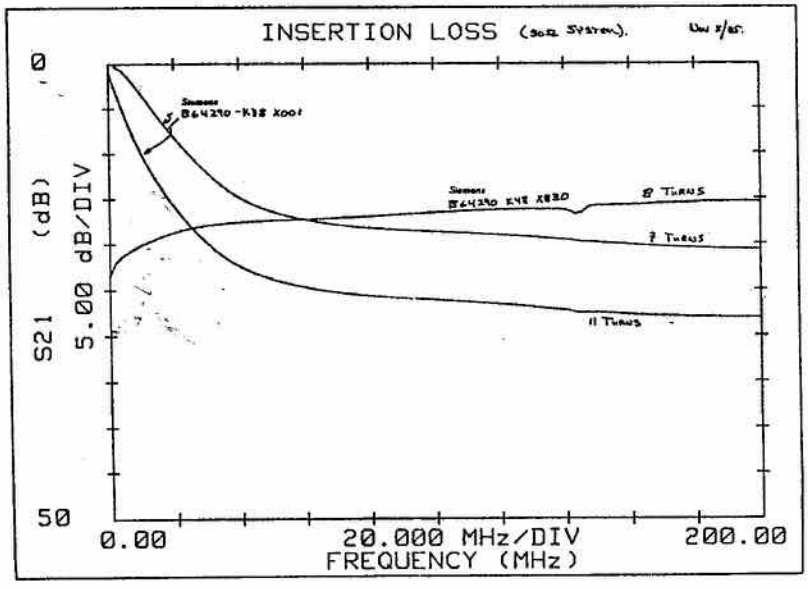
The measurement of most interest is that made using 9 turns of #18 lamp cord around an Amidon FT240-34 core (mu = 850). From the graph of Figure 1, one can see that this number of turns provides about 20 dB of attenuation at 3 MHz and increases to about 35 dB attenuation at 60 MHz. These are conservative losses because no two people will wind a core in identical fashion and get exactly the same results. The FT240-34 is sold under a different type number by Fair-Rite Corp. of New Jersey, but permeability is the same. A mu of 850 is probably close to optimum for line cords and cable TV drops for HF operation. Any higher mu could present stability problems.

SMALLER TOROIDS

The smaller diameter toroids are ones purchased from Siemens' rep. in the Ottawa area and are the size of small 'Lifesavers.' These have an initial permeability of 2500 and you can see from Figure 2 what happens when you vary the number of turns. One advantage to the smaller type is they are effective at VHF. Toroids will undoubtedly appear in many appliances in the years ahead. At least one Model Yamaha organ uses three toroids in the mains voltage input, not so much to eliminate incoming RF, but to stop digital circuit noise from being propagated to the line cord. The toroids are installed in such a way that each winding is in series with each side of the line and then both line conductors are wound in bifilar fashion to reduce common mode type currents. For a bilateral filter with such desirable attributes, it's hard to beat the toroid—

Page 28





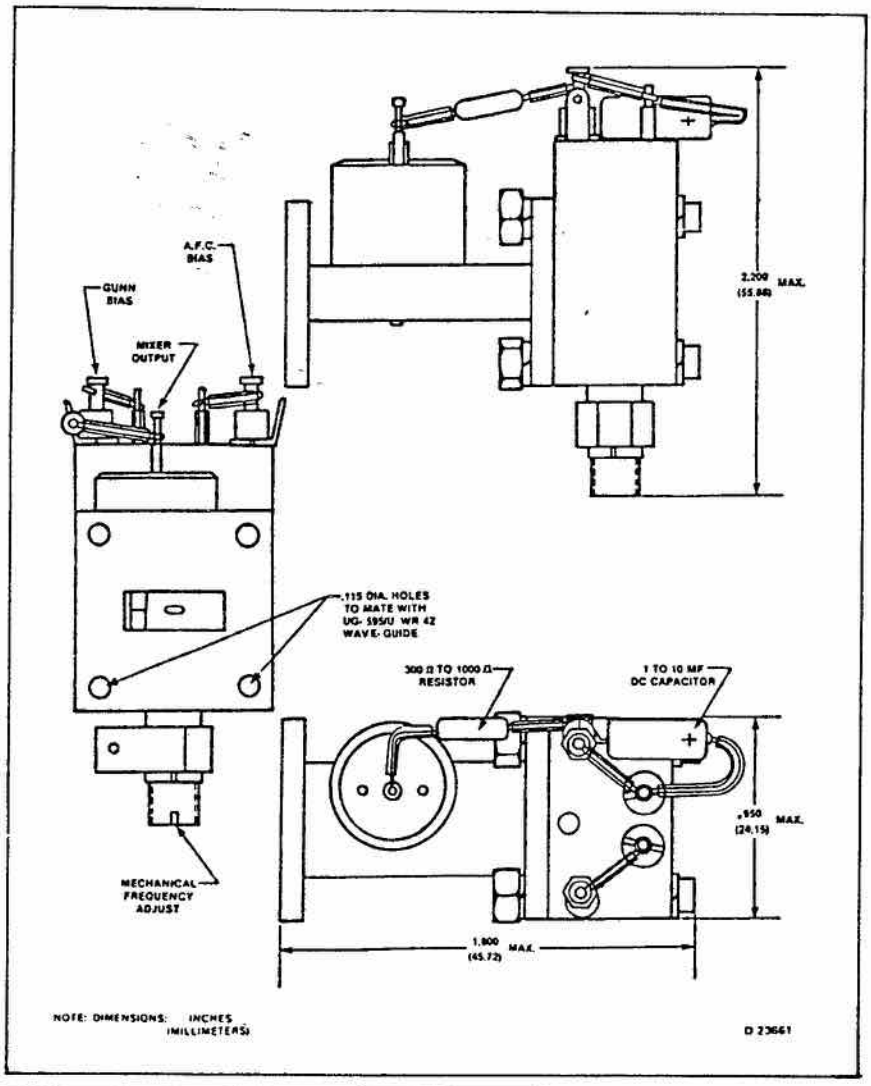
MICROWAVES

Michael Ross VE2DUB
988 Hudson, St. Bruno
Quebec J3V 3Y2

24 GHz GUNNPLEXERS

Advanced Receiver Research, the same people who brought you the popular 10 GHz Gunnplexer, now has a 24 GHz unit in production. "The MA-87820 K-Band Gunnplexer is a frequency modulated Gunn diode oscillator with a Schottky mixer diode mounted in a waveguide structure."—ARR.

With a center frequency of 24.125 GHz, the unit is mechanically tunable +/- 50 MHz with a tuning screw or electrically tunable over a range of at least 60 MHz. Gunn diode operating voltage is +6 VDC +/- 1.5 VDC with a maximum Gunn current of 650 mA. Varactor tuning voltage is 0 to +15 VDC. Frequency stability is listed at 500 KHz/degree C with a maximum noise figure of 12 dB. Power output is typically 25 mW with a minimum of 20 mW. That's twice the power of the old standard 10 GHz Gunnplexer! Price class is $369.60 U.S. Also available is their mechanically tuned 100 mW K Band Oscillator, the MA86791-M1J, $185 U.S. and K band horn antenna, the MA86552 at $29 U.S. If you already have a 10 GHz system, you can use the same IF for 24 GHz with minor modifications to the Gunn voltage output. Watch for more on 24 GHz in future columns. ■



A scientific hypothesis must live dangerously or die of inanition. Science thrives on daring generalizations. There is nothing particularly scientific about excessive caution. Cautious explorers do not cross the Atlantic of truth.

Page 27

a device the manufacturers should incorporate in every device sold that is sensitive to radio frequencies.
(First printed in Ottawa ARC's Groundwave —Editor.)

MORE CROSSWAVES

To Mr. S.N. Ahmed (DOC):

The current litigation and concurrent attention to the Ravenscroft case and its implication to features promulgated in EMCAB 1, Issue 2 has prompted this letter.

There appears to be good cause to make definitive measurements of radio fields in the vicinity of stations operating in the Amateur Service. The stations operated by Amateurs have for several decades been located in densely populated areas and by their very nature will continue. The data presented in EMCAB 1 issue 2, particularly the table on page 3, needs updating.

The topical question of appliance immunity levels may be more correctly approached by consideration of today's environment. As a minor correction to the frequency range, the lower limit should read, 'HF Amateur 1.8-30 MHz.' Separation distances of 10-100m are realistic in view of operation which is made from some types of residences.

VHF Amateur operation above 225 MHz is relatively sparse so these limits have not changed much since issuance of EMCAB 1, Issue 2.

The problem of immunity of radio sensitive devices while being one of proximity carries with it an expectation that some minimum immunity level is met. It has been the experience of this committee that almost all Amateur problems caused by lack of immunity have been the result of conducted energy and very little due to radiated susceptibility.

I am sure there will be many Amateurs willing to cooperate with the Department in making a series of statistically useful radiated field measurements. Should mandatory immunity levels ever be imposed the measurements so taken will have all the more meaning.

Please let me know if I may amplify this request further or may assist you in any way to obtain meaningful results. I look forward to hearing from you.

Yours truly, Ralph Cameron, Chairman, EMI Committee, Canadian Amateur Radio Federation.

DELHI SELF-SUPPORTING HAM TOWERS

DMX-HD 48 ..... $665.00
DMX-HD 40 ..... $569.00
DMX-HD 32 ..... $429.00
DMX-MD 40 ..... $495.00
DMX-MD 48 ..... $695.00
DMX-MD 56 ..... $715.00
Heavy Duty Mast $44.00
BBMB Thrust Bearing.... $32.00

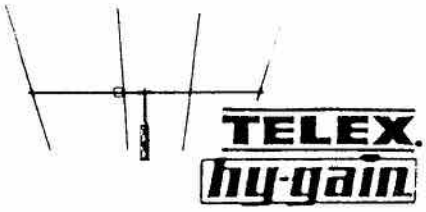
CABLE AND WIRE

RG-213 50 ohm coax ..... 75¢ft.
200-500 feet RG-213 ..... 65¢ft.
1000 ft. roll $550.00
RG8X coax 50 ohm ..... 50¢ft.
RG-58 50 ohm coax ..... 25¢ft.
#14 copperweld antenna wire .. 12¢ft.
Rotor cable ..... 50¢ft.

BENCHER

BY-1 Lambic paddle.. $79.50
BY-2 Chrome paddle . $94.50
ZA-1 super 1.1 balun .. $37.00

DELHI AND TRYLON ABC TOWERS



402BA 2el 40 mtr Beam $639.00
EX-14 4 el. 20-15-10 mtrs $678.00
TH7DXX 7el tri-band beam $995.00
TH5DXO 5 el. Tri-band Beam 869.00
TH3Jr. 3el tri-band $389.00
204BA 4el 20 mtr beam $589.00
205 BAS 5el. 2 mtr beam $749.00
DB-10-15 duoband beam $359.00
18AVT/WBS 10-80 mtr vertical .. $229.00
2BDQ Trap doublet 80&40 ..... $149.00
5DBQ Deluxe 10-80 doublet $269.00

cushcraft

A3 3el Tri-band $495.00
A4 4el Tri-band $599.00
A744 40mtr.adapter re A4 .. $149.00
R3 14,21,&10mtr. Ringo $495.00
AV5 10-80mtr. vertical $209.00

FM ANTENNAS

ARX-2B Ringo 2 mtr. $79.00
A147-4 4el beam $59.00
A147-11 11 el beam $95.00
A-147.20T twist $159.00
AFM-4D "four pole" $159.00

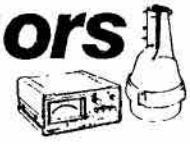
BOOMERS

215WB 15 el. 144-148 MHz . $179.00
32-19 deluxe 16.2DB $219.00
AOP-1 Oscar Satellite pack.. $295.00

Mosley

TA-33Jr. 10-15-20 M beam $389.00
TA-33 10-15-20 M 1 KW $495.00
CL-33 Classic Feed Tri-band $549.00
MPK-3 Conv. high power TA-33jr $159.00
RV-4C @ RV-8C Vertical $229.00
S-402 2El. 40 mtr beam $639.00

Rotors



CD-45-- 329.00
HAM IV-- 495.00
T2X-- 585.00

KENWOOD

The TS-940S is a competition class HF transceiver having every conceivable feature, and designed for SSB, CW, AM, FM and FSK modes of operation on all 160 through 10 meter Amateur bands, including the new WARC bands. It incorporates an outstanding 150 kHz to 30 MHz general coverage receiver having a superior dynamic range (102 dB typical on 20 meters, 50 kHz spacing, 500 Hz CW bandwidth).

The R-2000 is an innovative all-mode SSB, CW, AM, FM receiver that covers 150 kHz—30 MHz, with an optional VC-10 VHF converter unit to provide coverage of the 118—174 MHz frequency range. New microprocessor controlled operating features and an "UP" conversion PLL circuit assure maximum flexibility and ease of operation.

MFJ

MFJ-1229 deluxe interface $285.00
MFJ-1224 interface $159.00
MFJ-422 Econo c/w Bencher key $189.00
MFJ-941D Deluxe versa tuner $169.00
MFJ-949C Super deluxe tuner $249.00
MFJ-989 deluxe tuner $519.00
MFJ-901B Versatuner $98.50
MFJ-407 Deluxe keyer $119.00

YAESU

FULL LINE AVAILABLE

SPECIFICATIONS & PRICES SUBJECT TO CHANGE

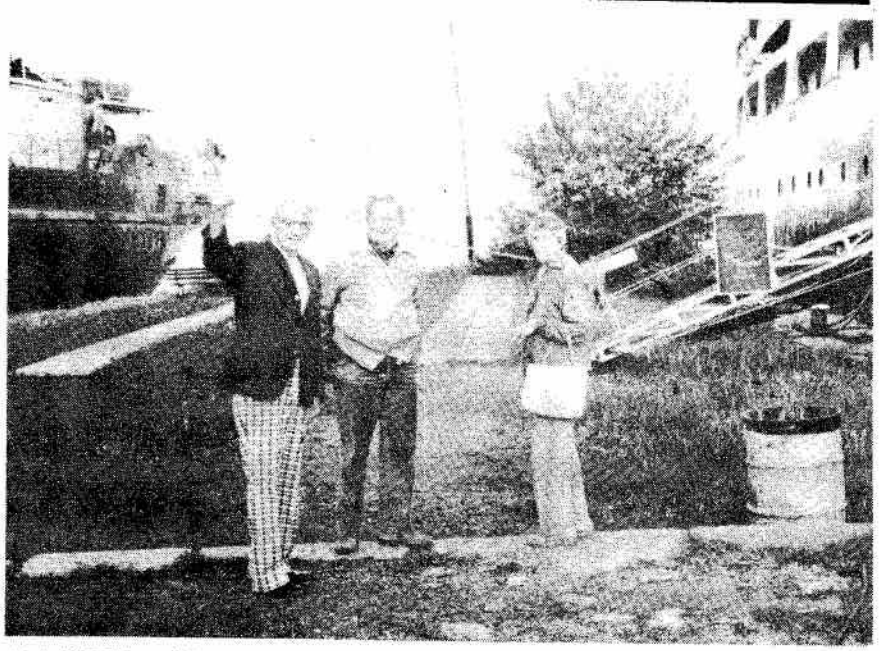
BARKER & WILLIAMSON

AKS-160 Extra short Dipole 160M $179.00
AC-1 Dipole connector $13.50
TR-40 Antenna traps 80&40M ..... $57.50 pr.
AT10 All band antenna (portable) $79.00
CS-3G 3 position Coax switch $47.00
CS-6G 6 position Coax switch $55.00
6 position Axial Mount $42.00
6 position Radial Mount $42.00

H.C. MacFarlane Electronics Ltd.

R.R. #2 Battersea, Ont. K0H 1H0, Phone 613-353-2800 VE3BPM
IN BUSINESS SINCE 1958
Open Monday to Saturday 7:30 a.m. to 9 p.m., Closed Sunday.
YOUR ONE-STOP HAM SHOP
ANTENNA SYSTEMS INSTALLED WITHIN RADIUS 150 KM; EXPERTISE FREELY GIVEN ANYWHERE!
Dealer for Delhi Towers, CDE Rotors, Hy-Gain, Mosley, Cushcraft and Hustler Antennas, MFJ and B&W products.

Social Events



Bob VE3SV and Norm VE3NFW, with Bob's XYL, prepare to board the Ice Breaker ALEXANDER HENRY for the June meeting of Kingston Amateur Radio Club, held at the Kingston Marine Museum at Kingston, Ontario. Photo by VE3NFU

THE NEWMARKET FLEAMARKET

The YORK REGION ARC invites you to attend the tenth edition of the Newmarket Fleamarket to be held on Sat., Nov. 8 '86 at Huron Heights Secondary School in Newmarket, Ontario, from 0900 to 1500. General admission is $3 per person (children under 12 are admitted free). Price of admission includes a chance to win some of the door prizes which will be awarded hourly. Doors open for the public at 0900. Vendors may have access to the site commencing at 0630. Tables are $5 each and as they have to be brought into the site they must be reserved in advance. Tables may be reserved by contacting Geoffrey Smith VE3KCE at 7 Johnson Road, Aurora, Ont. L4G 2A3 or by telephone at (416) 727-6672 after 1830. The York Region Board of Education has a NO SMOKING policy at all its schools, so those planning to attend must know in advance that all smoking must be done outside.

Refreshments will be available at the site. Talk-in station is VE3YRA which will be operating on 146.520 MHz simplex and through the local repeater VE3YRC, 147.225 MHz output/147.825 MHz input.

As an adjunct to the above affair The Radio Society of Ontario will be organizing seminars commencing at 1600 to be held at St. Andrew's College, 300 Yonge Street North, Aurora, Ont., about a ten minute drive from the fleamarket site. Following the seminar there will be a banquet at the College. For further information about the banquet, for which reservations are necessary, please contact Evan Herriott VE3IND, 8 Lindal Avenue, Scarborough, Ont. M1L 1W8 or by telephone after 6:30 at (416) 757-4284.

FUN AT KINGSTON

The Kingston Amateur Radio club operated the Canada Day contest from the Icebreaker *Alexander Henry*. The ship is a de-commissioned Coast Guard vessel that is now the property of the Great Lakes Maritime Museum in Kingston, Ontario.

As the feature exhibit of the museum, the ship is open to visitors during the summer months. Overnight guests are welcome to enjoy Bed and Breakfast at reasonable rates. All cabins are available including the Captain's suite. The KARC effort in the contest was operated by Rick VE3NWT, Jean VE3MNI, George VE3LXA and Pat VE3MPZ. Although our score was low we did have the opportunity to talk with many ship's visitors and found ourselves being ambassadors of CARF/CRRL and Amateur Radio in general. It was heartwarming to meet so many people who made comments such as: "My grandfather used to be a Ham and when I was a little girl his ham shack was the most magic place in the world" or "My daughter was stationed in Germany for four years and many Hams in Canada used to run phone patches for us."

This was a great experience, one which I hope we have the opportunity to repeat again many times in the future.

The Club also participated in Field Day from the same location. ■

CALENDAR

Oct. 27-Nov. 2: ON4CLM award. Details June issue.

Nov. 8: Newmarket Flea Market. Details this issue.

1987

Feb. 20-22: Guides on the air. Watch the YL column from October on.

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

Applications for DOC licence examinations Jan. 14, Mar. 18, May 20, Sept. 23. DOC licence examinations Feb. 11, Apr. 15, June 17, Oct. 21.

Publicize your get-together here. Write the Editor, TCA, P.O. Box 855, Hawkesbury, Ontario K6A 3C9.

Let TCA know about your events three months in advance to list them in the Calendar.

LICENCES CANCELLED

The DOC District Office in Edmonton, Alberta advises that all Amateur radio station licences that were not renewed for the current fiscal year April 1, 1986 to March 31, 1987, have been cancelled as of Sept. 1, 1986. The call signs associated with these licences will be released for re-assignment. This directive at this time only applies to Alberta. However, we urge any Amateurs that have yet to renew to do so immediately.

—CARF News Service

AUGUST HAPPY BIRTHDAY TO TRS-80 AND IBM-PC!

On August 26, 1977, Tandy introduced the Radio-Shack TRS-80, the first completely assembled, ready-to-use micro-computer. Its chief competition was Commodore's PET, also introduced in 1977. IBM didn't introduce their PC until Aug. 12, 1981. While microcomputing has become a multibillion dollar business, don't lose sight of the fact that it is still less than ten years old! Coincidently, the first mechanical computer patent was also issued in August. (August 21, 1888, for the Burroughs Calculating Machine.)

From *W5YI Report*, Aug. 15

KENWOOD

ITEM	LIST	CASH	ITEM	LIST	CASH	ITEM	LIST	CASH
AT130	269.00		SW100B	99.00		TM211A	659.00	629.00
MC60A	149.00		SW2000	229.00		TM2530A	699.00	679.00
MC80	89.00		SW200A	199.00		TM2550A	769.00	749.00
MC85	179.00		SW200B	199.00		TM2570A	899.00	869.00
PB21	43.00		SWC1	49.00		TM401B	639.00	619.00
PB21H	63.00		SWC2	49.00		TM411A	759.00	729.00
PB26	65.00		SWC3	55.00		TR2600A	579.00	559.00
PC1A	119.00		SWC4	72.00		TR3600A	599.00	575.00
PS430	259.00		SWT1	55.00		TR751A	989.00	949.00
PS50	349.00		SWT2	55.00		TS440S	1639.00	1599.00
R2000	999.00	949.00	TH21A	349.00	339.00	TS440SAT	1849.00	1779.00
SM220	729.00	699.00	TH21AT	389.00	379.00	TS711A	1399.00	1349.00
SMC30	60.00		TH41A	369.00	355.00	TS811A	1629.00	1589.00
SP940	155.00		TH41AT	409.00	395.00	TS940S	3069.00	2969.00
ST2	170.00		TL922	2199.00	2099.00	TS940SAT	3399.00	3289.00
SW100A	99.00		TM201B	579.00	529.00	TW4000A	1029.00	989.00

ICOM

ITEM	LIST	CASH	ITEM	LIST	CASH	ITEM	LIST	CASH
AH2	906.00	879.00	IC1271A	1749.00	1699.00	IC47A	789.00	759.00
AH2A	718.00	699.00	IC12AT	665.00		IC48A	665.00	649.00
AH7000	137.00		IC271A	1229.00	1199.00	IC490A	949.00	919.00
AT100	571.00	539.00	IC271H	1499.00	1469.00	IC4AT	485.00	449.00
AT150	571.00	539.00	IC27A	622.00	599.00	IC735	1449.00	1419.00
AT500	752.50	699.00	IC27H	665.00	649.00	IC745	1521.00	1489.00
BC35	101.00		IC28A	622.00	599.00	IC751A	2250.00	2199.00
BP2	64.00		IC28H	665.00	649.00	ICR7000	1593.00	1559.00
BP3	48.50		IC290H	829.00	799.00	ICR71A	1376.00	1349.00
BP4	19.00		IC2AT	385.00	359.00	PS15	235.00	
BP5	87.00		IC2KL	2599.00	2499.00	PS25	167.00	
BP7	101.00		IC3200A	855.00	829.00	PS30	434.00	
BP8	101.00		IC37A	699.00	679.00	PS35	285.00	
IC02AT	579.00	539.00	IC3AT	485.00	449.00	PS45	198.00	
IC04AT	639.00	599.00	IC471A	1419.00	1389.00	PS55	285.00	
IC120	839.50	799.00	IC471H	1769.00	1725.00			

KANTRONICS

2400-TNC	299.00	KPC-2400	519.00
CHALLENGER	159.00	UTU	349.00
INTERFACE-II	399.00	UTU-XT	559.00
KPC-2	369.00		

ICOM DAY!
Sat. Oct 11
ICOM PERSONNEL
PRIZES

BUTTERNUT

HF2V	209.00
HF6V	219.00
TBR-160-S	79.50
TLK	24.50

TELEX/HY-GAIN

105BAS	339.00
12AVQS	129.00
14AVQS	169.00
155BAS	529.00
18AVTWBS	269.00
18HTS	1099.00
18VS	77.00
204BAS	649.00
205BAS	899.00
214BS	109.00
218S	499.00
23BS	49.00
25BS	65.00
28BS	89.00
64BS	165.00
7-1	369.00
7-2	829.00
7-3	519.00
BN-86	49.00
CD45II	309.00
EXP-14	799.00
GPC2A	59.00
HAM-IV	499.00
HDR300	1099.00
QK710	199.00
T2X	599.00
TH2MKS	449.00
TH3JRS	489.00
TH5MK2S	999.00
TH6-TH7	399.00
TH7DXS	1149.00
V2S	109.00
V3S	109.00
V4S	129.00

SONY

AIR-7	439.00
AN-1	129.00
ICF-2002	339.00
ICF-2010	499.00
ICF-4910	129.00
ICF-6800	879.00
ICF7600A	159.00

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Hobbytronique Inc.

YL News & Views

Cathy Hrischenko VE3GJH
56 Stockdale Cres.
Richmond Hill, Ont. L4C 3S9

GOTA

It is official now. GOTA, Guides on the Air! This will be an annual event held the weekend following Thinking Day. 1987 dates are Feb. 20-22. This is a joint sponsorship, CLARA-Canadian Girl Guides.

The suggested frequencies are around: 14.133, 7.150, 3.775.

Those interested in making sked contact Susan Harvey V010I for the east coast provinces and me, Cathy Hrischenko VE3GJH, for other parts of Canada. We need a coordinator for the west coast.

I'd like to suggest to some of the operators that have never done this before to take a few minutes and show the girls a bit about your station. Explain how they will operate.

Try to have someone take pictures and if possible get your local newpaper over for pictures and a write-up. We both can use the publicity.

This is actually being sponsored by CLARA (Canadian Ladies Amateur Radio Association) and the Girl Guides of Canada but we need the help from all of you. OMs have been most helpful.

In the past, I would like to say the East, especially Newfoundland, has done a fantastic job, thanks to Susan V010I.

So let's make this official year a great one. You GOTA get on the Air for GOTA— Feb. 20-22, 1987.

CLARA'S 20TH

The 87 Celebration committee for the 20th birthday celebration for CLARA had their first committee luncheon meeting on Sept. 11, 1986— exactly one year preceeding the '87 CELEBRATION. A toast was drunk to success. A full schedule is underway and as soon as plans are completed they will be published. This is a good time to meet your old friends and make new ones. Bring your OM along to join in the fun.

We're looking for prize donations, so if you'd like to donate a prize, contact Cathy VE3GJH.

Remember the dates: Sept. 11-12-13, Sheraton Parkway Hotel, Richmond Hill for CLARA '87 Celebration.

VE3CNE— LADIES' DAY

Aug. 27, 1986 was Ladies' Day at the Canadian National Exhibition in Toronto. The booth was hosted by YLs the whole day.

The pre-season CLARA 20 metre net was held from VE3CNE with net control Cathy VE3CNE. Mary VE3COH has done this for the past few years, but due to circumstances beyond her control, couldn't make it on the last day and asked me to take her place.

We had a good 'assortment' of check-ins from across Canada, England and Africa. About 23 in all. A lot of questions by on-lookers were answered, messages taken from visitors to be passed around the world. A few asked for information about becoming Amateur Radio Operators.

All in all it was a successful day and I'd like to thank the following YLs for their attendance in the booth that day: Jan VE3BII, Thelma VE3CHT, Doris VE3BBO, Audrey VE3ILT, Irene VE3AUR, Audrey VE3CCO and me! (hi). If I've missed anyone it's because you didn't sign the CLARA autograph book that we use each year at the Ex. THANKS! and see you all next year.

While at the Caravan 1986 my daughter Dot VE3HUO and I both received our Newfie Birth Certificates. Our initiation certainly was different and we were the only YLs to receive them. Lots of men though!

Still looking for mother-daughter YLs and families.

That's it for now. 73, 33, 88, as the case may be. ■

Cathy, our YL editor, had to go back to hospital in September for more work after her 1985 car accident. I'm sure she'd appreciate a few cards while she's convalescing.— Editor.

SWAP SHOP

FOR SALE: 1 Standard Radio Products Mod. CPR2 - 24 and 12 volt 10 amp Power supply DC $90.00; 1 Heath Capacitor tester model Mod. CT-1 $25.00; 1 KW2000B transceiver with 1 Power Supply and built in speaker 1 HW107 Super match (3 units plus Key, phones and Shure mike Total $500.00. 1 MFJ Mod. MFJ Antenna tuner $10.00; 1 SC1000 compressor $10.00; 1 SB200 Linear amplifier $400.00; 1 Bank of 3 speakers $25.00; Cecil Murton VE3YD, 21-14 St. Toronto, Ont. M8V 3H8.

FOR SALE: Assembled HW-8 QRP rig c/w Pwr. Supply $75.00; Icom 2 metre rig with CES Micropad $100.00; Heathkit Micoder Mic. (not working) $25.00; Heath HA 202A 40 watt 2 metre amplifier (mobile) $50.00; Kenwood TR2400 2M H.T. with soft leather case and D.C. Quickcharger $250.00. Doug Lehman VE2DEE, 27 Breakenridge Ave., Dollard des Ormeaux, P.Q. H9G 1E9, 514-626-0036.

FOR SALE: Model 20 Atwater Kent antique radio also Pro 2020 programmable scanner. If interested contact VE4DO, 204-827-2410.

FOR SALE Complete Station, Collins KWM 2 Transceiver, 516 F-2 Power supply, 312B-3 speaker, SM-2 Mik, Mosley TA33 Jr. 10-15-20 M Beam, Ham IV rotor, 60 ft. coax, Heathkit Cantenna Dummy Load, SWR meter. $650. A Kantor, RR 1 Mactier, Ont. P0C 1H0. Phone 705-375-2704.

WANTED Transceiver, Mint Condx Only. Kenwood 530 or 820 or similar preferred. Within driving distance of QTH. Also needed: manual or operating info for John Fluke D.C. Differential Voltmeter Model 801. Adrian McManus VE3AYA, RR 1 Wyoming, Ont. N0N 1T0. Phone 519-845-3517.

WANTED Drake R4C and T4XC, high serial numbers, must be mint with no mods. Also interested in HF 'Legal Limit' amplifier. I can arrange shipping. Keith Mahon VE3NLM, 441 Hill St., Holland Landing, Ont. 416-898-3953.

FOR SALE HW-100 Transceiver with Power supply HP23A, Dummy Load 'Cantenna' HN31, Coaxial SW HD-1234, Vacuum Tube Voltmeter IM-18 with RF probe PK-3, Handheld Microphone GH-12A (above all Heathkit), Drake MN-4 Antenna Matching Network, Hy-Gain Vertical Antenna 18AVT/WB-A, Drake Line Filter LN4, Antenna Rotor CDE Model AR-22R (manuals for the above), E.F. Johnson Low Pass Filter, Headphones, Speaker 10" with metal case, telegraphy key, Digital Elec. Clock, Ham Desk (homemade), Troubleshoot & Repair Book for Ham Equipment. VE3CEL Bill Begley, 7 Beaver Bend Cr., Islington, Ont. M9B 5P7 (416-621-7059).

WANTED Hallicrafter HT 32B transmitter must be operational and in original mechanical and electrical condition. No modification. D.W. Green VE7FLA, RR 1 Pender Island, B.C. V0N 2M0. 604-629-6343.

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. This feature is for the use of members wishing to trade, buy or sell personal radio gear. It is not open to commercial advertising.

John Connor VE1BHA
18 Deerfield Dr., Apt. 1112,
Nepean, Ont. K2G 4L2

CONTEST SCENE

Wow, where does the time go? Here we are back for another month already.

The first item to cover this month is the results from last year's CQ WW DX Phone Contest. As you may remember, conditions were extremely good, especially at this point in the solar cycle. And the results show that a lot of people took advantage of the propagation.

Taking home the Canadian single op all band trophy was John VE6OU/3 with 3.2M! You can tell conditions were good when you consider that the Canadian record, set in 1979, is only about 300k higher than John's score.

Ten metre accolades go to Reg, VE1BNN who rolled up 110k, working 76 countries in the process. Fifteen went to VE3NBE with 241k followed by VE2PJ with 238k.

Twenty metres saw lots of activity, and VE7IN came out on top with 294k. As well, Earl gets a trophy for his efforts. Close behind was VE8RCS operated by VO1PJ, scoring 237k. I am sure that the 1000 people who worked 'RCS for Zone 2 were very appreciative of this effort.

Forty metres was definitely not the hotbed of activity that it has been the past few years. In fact, the only entrant was VE2FU, who came up with a very respectable 122k.

One of the big stories of the year was 80 metres. Yuri, VE3BMV has done it again. All Yuri could manage was a new world record with 383 thousand points, consisting of 1600 QSOs and 89 countries. (Whimper.)

However, while Yuri was nailing down his new record, VE3NNR was taking one away from him on 160 metres. Yuri had held the Canadian record on this band since 1976. But 'NNR set a new mark of 47 thousand points, which was also good for the number two spot in the world.

The multi-single trophy went to VE3BVD for their 5.8M point effort, while VE7ZZZ continued their multi-multi efforts of the past few years with a fine 3M score this year. Well done, everyone. Let's hope that Canada did as well this year.

Incidentally, just to show how good conditions were, let me briefly mention the number one single op all band score from the States. John Dorr K1AR demolished the previous record from 1983 with just over 4 million points. Sort of makes you wonder what he could do with sunspots.

Oh, should I mention what you missed if you weren't on? How about BT1BK, multi-single from China with 3200 QSOs. I didn't think you wanted me to tell you. I won't even mention 9U5JB (2700 QSOs) or XQ0ZFZ (Juan Fernandez, 3300 QSOs).

As always, I encourage you to show your support for the contest by picking up a copy of *CQ* for the complete results.

CQ CW CONTEST

The CQ CW Contest should be only a few weeks away as you read this (the Post Office willing). Therefore, I have included for reference a list of the current Canadian records.

Also, if you are looking for a Zone 2 QSO in the contest, keep an ear out for VE2LJ.

CLAIMED SCORES

Our last item this month is a quick look at the high claimed scores for this year's WPX SSB Contest. Several calls show up there which have a rather familiar ring to them. Looking at single op all band we find VE6OU/3 with 4M, VE3XN with 3.7M; on 20M we find VE1NG with a staggering 4M score. Forty metres has XL7SV with 3.5M. Lastly, 80 metres lists an incredible, insane 2M score from... who else, VE3BMV. The final results for that contest should make for some interesting reading.

All of which brings us to the end for another month. My mailbox is usually empty, so feel free to send contest results, pictures, blank cheques, or anything else that you feel I might find interesting. Next month, we should have the results for last year's CQ CW Contest.

CANADIAN RECORDS
CQ CW WW DX CONTEST

CATEGORY	CALL	SCORE	YEAR
All Band	VE3IY	2,607,795	1981
28 MHz	VE3BMV	504,063	1980
21 MHz	VE3BMV	653,856	1981
14 MHz	VE3BMV	662,454	1982
7 MHz	XN3BLV	436,100	1984
3.5 MHz	CY3BMV	102,828	1977
1.8 MHz	VE3BLV	30,258	1976
MS	VE3PCA	3,711,956	1981
MM	XN3BVD	2,996,269	1984

NOTE: Does not reflect 1985 results

CANADIAN RESULTS 1985 CQ WW PHONE

CATEGORY	CALL	SCORE	QSOS	ZONES	CNTRYS
SINGLE OP,	VE6OU/3	3,161,239	2734	119	320
	VE3XN	2,118,869	1841	116	327
ALL BAND	VE1NG	1,443,456	1510	90	294
	VE1CEE	839,540	1165	68	192
	VE5RA	601,445	973	87	160
	VE1CGV	234,962	478	54	128
	VE3EXA	170,177	396	41	110
	CH4AIY	151,043	435	40	35
	VE2FJH	145,299	472	34	85
	VE7CMN	83,426	318	40	78
	VE7FTC	61,732	237	33	59
	VE7HLS	39,449	151	41	62
	VE3EZU	23,814	90	33	65
	VE8JW	15,283	210	15	14
	VE7IQ	7,686	54	27	36
28 MHz	VE1BNN	110,638	408	18	76
	VE1AGZ	2,581	30	11	18
	VE2AEJ/3	576	14	7	9
21 MHz	VE3NBE	241,839	708	24	93
	VE2PJ	238,204	723	23	90
14 MHz	VE7IN	294,314	1166	29	72
	VE8RCS	236,829	1000	23	66
	VE7BIK	219,100	865	30	70
	VE5ADA	97,281	490	20	61
	VE6KS	73,610	324	24	61
	VE6VW	44,064	273	25	56
	VE2MR	27,158	146	20	54
	VE7GDX	21,976	110	24	58
	CH4AKN	16,944	157	13	35
	VE3NYT	3,268	33	13	25
7 MHz	VE2FU	122,006	499	27	79
3.8 MHz	VE3BMV	383,040	1629	25	89
	VE1LI	92,956	679	16	52
	VE1AIH	68,619	348	19	70
1.8 MHz	VE3NNR	47,390	672	14	21
	VE3OME	26,375	526	10	15
	VE2DVI	3,906	56	3	6
MULTI-SINGLE	VE3BVD	5,895,539	3793	141	472
	VE3XO	5,349,456	3433	141	465
	CH4ALO	799,659	2091	57	132
	VE3UOT	581,880	2238	73	187
	VE4AA	303,645	803	49	106
	VE3JW	207,125	504	48	121
	VE3FEA/M	1,392	48	17	21
MULTI-MULTI	VE7ZZZ	3,252,515	3920	111	254

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APEX GRAPHICS, SASKATOON

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TD-2005/HD	$137	+ 7.90	1500FSX*	$ 4,195	26.00
TD-160	$ 57	+ 6.90	EV-700*	$ 889	9.00
GD-6/500W	$ 99	+ 6.90	EV-700DX*	$ 1,590	18.00
GD-6/2KW	$199	+ 7.90	#303	$55	6.90
GD-8/500W	$119	+ 7.90	#300	$101	6.90
GD-8/2KW	$219	+ 7.90	#1211	$63	6.90
GD-7/500W	$129	+ 8.90	#1213	$74	6.90
GD-7/2KW	$229	+ 8.90	#1217*	$ 69	6.90
GD-9/500W	$149	+ 9.90	105PSX*	$ 139	7.00
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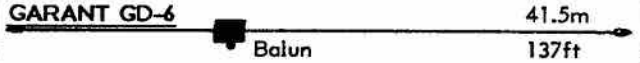

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GARANT GD-6

OUR SATISFIED CUSTOMERS COMMENT ON THE GD-6:

VE3BYH, Richard: "Just a note to tell you that your GD-6 that I purchased in fall does a fine job for me with better signals than ever."

VE2ANG, William: "GD-6 arrived in perfect condition. It is set up as inverted-V. SWR was OK on 40, 20,and 10, but I had to reduce overall length to 133ft. to get the SWR down on 80."

FRANK HUGHES, editor of TCA MAGAZINE has tested the GD-6. He wrote in TCA: "I would recommend the GD-6 to anyone who needs a general purpose antenna. My salient impression is a delightful freedom from adjusting an ATU (antenna tuner, matchbox) on changing bands."

THE CNIB, Canadian National Institue for the Blind wrote in their newsletter: "We have experimented with three types of multiband antennas that do not require an antenna tuner or ground. ... Use of one of these antennas will permit multi band operation with only one antenna. The three antennas we have tested are (1) Garant Windom GD-6/GD-8 sold by Garant Enterprises. Model GD-6 should be used if 15 and 30 meters are not required, or model GD-8 if all bands are required (functional on all bands). ... If you have the space, we recommend the Windom (GD-6/GD-8) as first choice, but it requires at least 137 feet. It can be installed either as a horizontal or inverted vee. The GD-8 covers all 8 amateur bands, including 12 and 17 meters."

QST and the ARRL lab have tested our GD WINDOMS before they accepted our advertisements in QST for the GD-6, GD-7, GD-8, and GD-9.

George Morgan VE3JQW
687 Fielding Dr.
Ottawa K1V 7G6

From the Clubs...

THE SYMPOSIUM

I'm sure you have heard about the 1987 CARF/CRRL Joint National Amateur Radio Symposium by now, and will be hearing much more about it over the next few months, but let me just run over the details again.

The purpose of the symposium is to provide a forum where Amateurs can say what they think and debate ideas about Amateur radio regulations and operation. As a result, they can make their views known to DOC, and, at the same time, obtain the correct interpretation of regulations and policy from DOC.

The 1987 symposium will be held in Saskatoon with the Saskatoon ARC acting as host. As always, the symposium will be open to all interested in attending.

The symposium will be held during the annual Saskatchewan Hamfest and will be an excellent opportunity to discuss national issues in a friendly atmosphere.

Plan to attend and participate. If you have any suggestion for topics that you feel should be considered, get in touch with Norm Waltho VE6VW as soon as possible.

FIRST FIBRE OPTIC CABLES

Satellites now used for international and intercontinental communications are being challenged by fibre optic technology.

The U.S. Cable and Wireless Company is now laying the first of two privately-owned trans-Atlantic fibre optic cables between New York and London.

The Overseas Telecommunications Commission is involved in submarine fibre optic cable, planned to run between the U.S. mainland and Japan via Hawaii, being funded by a consortium of countries.

Australia and New Zealand will be linked by fibre optics within five years. In Australia, fibre optics are playing a major role in the country's telecommunications infrastructure.

The USSR promised in February 1985 to remove the intruder UMS from the 15 and 20 metre bands. We are still waiting.

— Amateur Radio

The New Zealand Association of Radio Transmitters was 60 years old last July. Congratulations to them!

PORCUPINE HILLS AMATEUR RADIO TRANSMITTING SOCIETY INC.

Six years ago a survey of Amateur radio operators in the Lethbridge area revealed that many of them were senior citizens. A meeting was then called to discuss making application for funds under the New Horizons Program for the purpose of establishing a radio repeater station.

The Porcupine Hills Amateur Radio Transmitting Society was organized in late 1978 with John Erickson VE6NB elected President, Harry Harrold VE6TG Vice-president and James McKenna VE6HO Secretary-treasurer. Directors of the group were Joe Kurtin VE6JI, John Row VE6WZ, Elizabeth McKenna VE6APD, Walter Jordon VE6FS, Elwood Irwin VE6ZI, Harvey Read VE6AVV and Claude Oram VE6LH who agreed to take care of the installation of equipment and technical problems. Several of these senior Amateur radio operators were licensed as far back as the early 1930's.

A two metre repeater would offer greater opportunity for seniors to communicate with one another, to upgrade their skills, and to encourage others to become interested and involved in this fascinating hobby.

An application, signed by all members of the group, was then forwarded to Don Mayne of the New Horizons office in Edmonton. In March of 1979 we received a cheque for $8,218 which meant we could now go ahead with setting up our own repeater.

THE REPEATER

Permission was given by the Alberta Government to use their 150-foot tower and radio shack on the Porcupine Hills, 25 miles south west of Claresholm. The elevation is 6000 feet providing excellent signal coverage throughout much of Southern Alberta and part of Northern Montana.

The antenna and equipment was installed late that summer, and a station licence obtained. On Nov. 11, 1979 the repeater was in operation under the call letters VE6ROT (Radio Old Times) with an input frequency of 146.13 MHz and an output frequency of 146.73 MHz. First class commercial equipment was purchased, which normally operates from a power line on the site. However if power fails the repeater will operate for weeks from a set of heavy duty storage batteries which are automatically kept fully charged. The switchover from power line to batteries is automatic, and the equipment requires a bare minimum of maintenance.

Since going on the air this radio repeater is recognized to be a real success and has provided the opportunity for many operators to talk to one another. This is especially true when through infirmity or illness individuals have been forced to spend time at home or in hospital. By means of small portable transceivers communicating with other hams then became a blessing.

The concept of linking a number of repeaters together by means of ultra high frequency equipment was a new advancement in the art of radio communication, and several such systems were already in operation in Canada and the United States. Talks were initiated with repeater groups in Calgary, Three Hills and Milk River leading to the decision to link a number of repeaters together throughout the province.

This would provide even greater opportunity for more seniors in Alberta to become better acquainted and to exchange information and greetings. Test transmissions from our repeater in June proved conclusively that linking was feasible and practical.

THE LINK NETWORK

Of our original group, two of our directors had resigned for personal or health reasons and five others, VE6HO, VE6TG, VE6JI, VE6DT and VE6WI, had passed away. A meeting was called at the home of the President, VE6NB, to reorganize and then discuss the matter of linking. The following officers and Directors were elected: President— John Erickson VE6NB, Vice-president— Charles Tyrrell VE6PV, Secretary-treasurer— Bill Laing VE6COM, and Directors Ken Schneider VE6CHO, George Peat VE6IP, Elwood Irwin VE6ZI, Walter Middleton VE6UW, Bill Savage VE6EO, Villa Jean Tyrrell VE6VJ and Jim McKenna VE6SU. Claude Oram VE6LH again is our technician. It was unanimously agreed to join the linking network and to apply to New Horizons for additional funds with which to purchase the necessary equipment. At a meeting with Don Mayne in Lethbridge, our application was formally approved and in late August we were extremely happy to receive a cheque for $9,565. All of the needed radio equipment is now on order and will be installed early this spring.

— John Erickson VE6NB ■

Paul Cooper VE3JLP
RR 2 Metcalfe Ont.
K0A 2P0

·CQ DX·CQ DX·

INTERNATIONAL DX CONVENTION, PART TWO

SAN FELIX ISLES

I wonder how many readers worked the San Felix Isles expedition of September 1984. Of those of you who did, how many had difficulties getting a card back? Well now all can be revealed as one of the main organizers of this effort, Mickey Gillerstein CE3ESS gave an interesting talk to the convention on the CE0AA expedition.

From the beginning the main problem in launching this project was getting permission from the Chilean navy to operate from the islands. Apparently they are a military base and the navy was adamant that only naval personnel could visit them. After banging their heads against this brick wall for some time, the expedition organizers hit on the brilliant idea of finding two Chilean Amateurs who were also in the navy and persuading the authorities to post them to San Felix, for a limited period anyway!

It sounds crazy but this is exactly what eventually happened. Two navy signallers, who were also hams, were posted there for 60 days and allowed to spend a lot of time on the Amateur bands. During their time there they made about 31,000 contacts, 6,000 on CW and the balance on phone. Neither of the two operators had any experience in handling phone pile ups and their knowledge of English was very limited, hence the list operation on phone.

With their naval experience of CW, they were apparently able to handle code contacts on their own. After the success of the expedition itself, it is a disappointment to learn that there were major problems with processing the QSLs. It seems the Chilean mail system has been unable to deliver safely foreign requests for cards to the expedition headquarters. It sounds as though someone has been intercepting the letters and stealing the IRCs or green stamps inside.

Anyway it's good to hear that a new scheme has been worked out. Requests for cards should go to N6AHV who will confirm the details once a week on a sked with CE3ESS. Mickey will then mail out the cards direct to these Amateurs. It sounds like a good arrangement, so let's hope those of you with outstanding requests will get results via this new route.

DX FORUM

The balance of the afternoon was filled with two other presentations, K3ZJ, David Siddall's talk on a Taiwan DXpedition and last but by no means least a DX Forum. David's well-illustrated chat on his trip to Taiwan with Senator Barry Goldwater K7UGA has been well-covered in the June issue of *CQ Magazine* so I'll not try to cover that ground again.

The 'DX Forum' consisted of a panel of experts on stage ready with brief statements and standing by to answer questions from the floor. The line-up was impressive, the lead speaker being Don Search W3AZD, who is in charge of the ARRL DXCC desk. The other panel members included Ellen White W1YL/4, who writes "How's DX" in *QST;* Bob Winn K5KNE, the editor publisher of *QRZ-DX;* Hugh Cassidy WA6AUD, DX columnist for *CQ Magazine* and several other experts I didn't recognize.

After very brief words of introduction from each panelist, Don Search took over the mike. He explained that the ARRL DXCC desk has been more than a little embarrassed by a backlog that had built up at Newington in the handling of applications for certificates and endorsement stickers. We were then treated to a long and rather rambling history of the unit's staff problems which, we were all relieved to hear, have finally been sorted out. A full staff have now got the backlog down to three weeks.

Don now moved on to more interesting subjects such as will either Aruba, in the Netherlands Antilles, or 4U1VIC, in Vienna, achieve DXCC status? In the case of the UN organization in Austria it seems highly unlikely that the precedent of similar stations at the ITU in Geneva and the United Nations in New York will help. Rule 5b of the Countries List Criteria will apply, notwithstanding the precedents. Aruba looks more promising provided you are very patient. While it will not be granted status now since its links with Holland have not yet been completely severed it will gain recognition in 1989 when it is scheduled to become completely independent.

Questions on these two 'Countries' and others occupied most of the rest of the Forum, the big disappointment was that Don Search, having taken the podium to answer earlier questions on Aruba and 4U1VIC, stayed on his feet for the rest of the session and our illustrious panel sat there like the proverbial 'bumps on a log' not being given the opportunity to say a single word! This was most unfortunate as I'm sure they would all have had some interesting comments on many of the topics raised.

DXING FROM THE CAPE VERDE ISLANDS

Saturday's activities ended with a bang with the grand banquet. In fact the 'banquet' part of the evening was perhaps the least memorable aspect of the session although the food was quite adequate. The gathering provided the opportunity for the two clubs to fit in a number of other items including introduction of their new slates of officers, the presentation of various awards and finally the banquet speakers, Julio Vera Cruz D44BC and Jim Nieger N6TJ, who spoke on DXing from the Cape Verdes.

This joint presentation was a happy choice for the banquet which was, of course, attended by a great many YLs and XYLs. We all learnt a bit about this rather barren group of islands, off the West African coast, struggling towards economic self sufficiency. Jim Nieger went down to the islands for one of the major CW contests and obviously had a great time operating there.

To give us an idea of what the conditions were like, he brought along a tape he had made of a typical pile-up and he played a short burst of it over the PA system. Like the other hams in the audience, I listened attentively trying to pull a few call signs out of the chaos when I was suddenly aware of the ladies, our wives and girl friends, sitting there listening to this completely incomprehensible racket which filled the whole hall.

I wondered what they were thinking. Perhaps that at last they had proof of what they had always suspected, that we radio Amateurs must all be a bit mad! Julio spoke on the state of the hobby in the islands where there are now only two licence holders. Apparently before independence there were a dozen or more Amateurs but, when the break with Portugal came, islanders had to choose whether they would become citizens of the new country of Cape Verde or return to Portugal. It appears that the majority of hams there plumped for Portugal, hence the present tiny population of Amateurs.

YASME EXPEDITION

Sunday morning saw the wind-up of the convention with a slide show and talk by Lloyd and Iris Colvin, K6QL and K6KG. What new can one

Page 38 ►

say about the famous globe-trotting couple who this time were talking about their recent trip to Africa? The statistics were, as usual, impressive. They had made a total of 50,500 contacts from seven countries using the call signs W6KG/ZS, ZS3/W6QL, 7P8KG, 3D6QL, A25/W6KG, W6QL/Z2 and 9J2LC. They have now operated from so many countries, over the years, that they were able to issue a challenge.

They asked listeners to a Johannesburg radio talk show to phone in with a country they had *not* operated from. In the course of a three-hour broadcast and a great many phone calls they were only able to award a prize to four callers!

Talking of the Colvins, it occurs to me that there can't be many readers of this column who haven't added at least one new country thanks to a contact with Iris or Lloyd. Their talk, copiously illustrated with slides, left one feeling not a little exhausted.

Where do they get the energy to travel to these exotic locations and then spend so much time, while there, on the air handing out those precious contacts? In similar circumstances I'm afraid I'd spend most of my time enjoying the surroundings, soaking up the atmosphere, just fitting in a bit of operating now and then.

Well there it is, the 37th International DX Convention at Visalia, California. A gathering, I think, just about any DX enthusiast would enjoy attending if they could spare the time and money to get here. See you at Visalia next year!

ANNIVERSARY AWARDS

The two major DX award programs are both celebrating 50th anniversaries, the Worked All Zones (WAZ) in 1986 and the DXCC in 1987. Both sponsoring organizations are offering special certificates to mark the occasion. In the case of WAZ, *CQ Magazine* offers awards for a WAZ with all the contacts made in 1986. Congratulations to Jerry Fiore N4JF for being the first DXer to qualify. He worked all 40 zones, got QSLs back and submitted them to the awards manager by Feb. 27.

Think about that, at the low end of the sun spot cycle Jerry worked 40 zones and got the cards back in 58 days. *CQ* rightly refers to this as an extraordinary achievement! The DXCC award will be much easier, in brief you must work 100 DXCC countries during 1987, any band any mode, send the details to the DXCC desk using a special form, enclose $5 and they will send you a special certificate. Note: you do not send QSLs in for this award. Full details are in the September issue of *QST*.

BITS AND PIECES

9N Nepal— Father Morin 9N1MM seems to have been the only regularly active station from Nepal for a long time so it's nice to read in the *DX News Sheet* that 9N1MC, Krishna, has been heard daily recently. Try 14.195 MHz at 1100 UTC or 14.175 MHz at 1400 UTC. Rumour has it that Krishna is the Minister of Communications in Nepal which would explain the suffix.

G England— Did anyone catch GB2TV on Sept. 20 or 21? This was a special station celebrating the 50th anniversary of the world's first public, high definition TV service. Yes, the BBC started regular transmissions from Alexandra Palace, in North London, in 1936 with a 405 line system. This news comes as a bit of a shock to some of our friends south of the border!

TZ Mali— Look for Dennis TZ6MG around 2330 UTC on 14.200 to 14.260 MHz. He plans to be there for at least nine months and your QSLs should be addressed to 'PA3656 Netherlands Radio 41' via the Netherlands bureau.

I Italy— Too bad 10 metres is dead most of the time as some Italian Amateurs have put an interesting robot station on the air on 28.195 MHz. Running either 2 or 20 watts to a ground plane antenna it transmits "IY4M Robot QRV." Should you hear it, transmit your call sign twice carefully and if the machine hears you it will ask for a signal report then send you a report and greetings in English or one of several other languages... what will they think of next?!

T7 San Marino— While not on the 'Ten most wanted countries' list of many DXers, T7 is still pretty rare so I was pleased to find T77C on 14.025 MHz at 1915 UTC. My QSO was on Aug. 23.

C3 Andorra— This is another tiny country which isn't heard that often on the bands, so it's nice to hear that Dave VE2ZP logged C30AAN on 7005 MHz at 0117 UTC recently.

VQ9 Chagos— At the end of August I found quite a pile-up on 14.025 MHz at 1820 UTC. It turned out to be VQ9QM with quite a respectable signal. It's encouraging to hear these distant parts of the world still coming through on 20 even with the cycle at its minimum.

Zone 2— If you are working for a WAZ certificate you will already know that Zone 2 is the most difficult North American zone to contact. Here's some suggestions for Zone 2 stations that are currently active. Look for VE2LJ at the low end of the CW subbands, 10 through 160, QSLs should go to VE3JDO. On 20 metres VE8HL can sometimes be found on 14.025 MHz at 1830 UTC while on 80 metres VE2FGG on 3.507 MH at 0200 UTC is worth a try.

POSTSCRIPT— THE 20 METRE BEACONS

First of all, an apology for repeating my paragraph on this useful service in the September column after you had all read it in the July/August issue! There are some gremlins at work here between my place, the editor's home in Hawkesbury and the printers. Canada Post is not helping by taking as long as ten days to move my column 60 miles east to Frank's place, and that by special delivery too.

In the long run, the editor and I would like to move copy in digital form either over the phone lines or perhaps on two metres... wonder if that would be breaking the DOC rules on what can be sent over the Amateur bands? That's all for the future, of course, meanwhile I have found that Canada Post will guarantee delivery next day, for a mere $5! I shall just have to get the column finished earlier in the month, I suppose, but this does create problems as far as giving readers reasonably up-to-date material for the 'Bits and Pieces' section.

The editor asked for an explanation, in simple language, on how to receive these beacons. It turns out that Frank usually finds the frequency swamped with QRM, very often packet or RTTY and I admit that this is a problem. My guess is that there are still many Amateurs, world wide, who don't realize that these nine beacons are permanently using this frequency, 14.0996 on my TS-830s, and assume the frequency is unoccupied.

The low power of the beacons probably contributes to the problem, together with the obvious fact that at any one time of day or night many of them are not audible due to adverse propagation. However I find that, more often than not, I can pick some of them up. They are never strong here, S1 to S3, but they still provide that useful check on those nine paths to your QTH. I wonders if many readers are using the beacons? Your comments would be welcome and if there are enough of them I'll pass them on to NCDX Foundation, who sponsor the service.

My thanks to the following sources for some of the material appearing in this column: *QRZ DX, CQ Magazine, QST, DX News Sheet* and VE2ZP. ■

THE SUNSPOT CYCLE

A small sunspot appeared during the week of Sept. 29, in a high northern latitude. This is the first of the new cycle seen here. — VE3DQB

PACKET RADIO

Brett Delmage VE3JLG/VE3PAK
2-1370 Kingston Ave., Ottawa
K1S 8L2

Second Annual Barrie Packet Radio Symposium

On Sept. 21 more than 130 Amateurs attended the second annual Packet Radio Symposium and Fleamarket at Georgian College in Barrie, Ontario, presented by the Hex 9 Packet Radio Group and the electronics division of the college. Judging by the satisfaction of the proceedings and desire to attend next year expressed by those in attendance, this is now the packet radio event of the year in Canada.

Barrie is centrally located in Ontario and is within a reasonable driving distance (seven hours or less) of a large Amateur population. It is sufficiently distant from Toronto that that negative feeling, "Toronto is the centre of the province," is not usually felt by anyone attending. (Those of you in the rest of the country can bash us here in Ottawa— we get to bash Toronto!) Amateurs attended from Southern Ontario (Toronto, London, Kitchener— Waterloo...), Sudbury, Ottawa, Montreal and Northern New York State.

A Friday night get-together over coffee and donuts provided a relaxing opportunity to meet the operators from the other end of the network, four or five digipeaters away. Many also took time to meet Harold Price NK6K in person. Harold is well known for his work on Amateur satellites (UOSAT-OSCAR 11) and packet radio (TAPR TNC firmware and vaporware) and was an invited speaker.

Saturday's activities commenced at 0900, with the opening of the fleamarket. One thing for certain— the symposium will not be known for its fleamarket. Perhaps all the good stuff found good homes at fleamarkets earlier in the summer. The VE3ULR linked repeater group operators had an attractive display and were busy explaining repeater operations and selling memberships. Linked analogue voice repeaters— fancy that! Their network is as large as the packet network was a year ago.

A number of activities ran concurrently with the fleamarket. Tables and chairs in the adjacent area provided a convenient spot for small groups of packet operators to chat and discuss common items of interest.

The Hamilton and Area Packet Network (HAPN) set up several stations to demonstrate their plug-in packet Radio Adapter Card and accompanying software for the IBM PC and clones, and their newly developed 4800 bps modem. A 138K byte colour satellite photograph was transferred from one station to another in short order and subsequently displayed. Their card was described in some detail in the August issue of *Ham Radio* magazine. More information, including price and delivery can be obtained by sending an SASE to HAPN, P.O. Box 4466, Station D, Hamilton, Ont. L8V 4S7.

At 1100 Bev VE3NP presented a beginner's introduction to packet radio. The session was appreciated by those who attended and in response to comments received, the organizers are planning to increase its length next year.

After lunch the main program began with an entertaining slide show by NK6K. He reviewed areas of current major development in Amateur packet radio, primarily in the U.S.

Later in the program Harold also presented a technical discussion, "Turnaround Time— Packet's Black Hole." The effects of various transmitter and receiver characteristics and TNC timing parameters were studied. It was noted that the Japanese manufacturers are beginning to design radios for packet operation, incorporating faster turnaround time and connectors with signals provided directly to the modulator and from the demodulator. Members of HAPN pointed out the timing improvement that could be realized by going into the radio and taking audio for the TNC directly from the demodulator, bypassing the squelch circuitry. It was also observed that those obtaining audio for the TNC from after the squelch circuitry (ie. speaker jack) could improve performance by opening the squelch or just operating it at the threshold, as the release time typically increases greatly with the position of the knob.

John VE3DVV of HAPN reported on the work done by the group on the PC adapter card and 4800 bps modem, and the planned switch by all stations within the HAPN LAN to the new modems.

Eric VE3NUU, chairman of the Western New York-Southern Ontario repeater council reported on the work he had performed coordinating packet frequencies, including assignment of LAN frequencies to specific areas, to minimize interference. Out of his presentation came a proposal to create an association to coordinate activity and share information throughout the province, in areas of common interest such as frequency usage, digipeater address assignment and networking standards. After some discussion by those present, it was agreed to form the 'Ontario Packet Association,' a very informal organization, with representation from each group.

Dave VE3FGK, president of the Southern Ontario Packet Radio Association (SOPRA) reported that SOPRA's membership had increased by 300% since July 1985, to 60 members. SOPRA now operates several digipeaters, including TORONT, HALTON, OSHAWA, BURLIN and GUELPH.

Some discussion of the use of place names as digipeater addresses followed. Dave pointed out that the DOC had confirmed that their use was legal, providing that the station identifies with a callsign at least every 30 minutes while transmitting. He also mentioned that the concept had originated with ATTICA (NY) and was adopted after some discussion by their members, as it seemed to be a useful operating aid.

Gord Fraser VE3HSF presented a formal paper titled 'Digital Communication and Emergency Work.' He identified the present low state of readiness of Amateur digital communications and discussed how it could be improved. His paper is being circulated through local packet radio groups and PBBSs, and you are encouraged to obtain and read a copy and discuss the issues with other packet operators. We will return to the topic in an upcoming column.

Don VE2AGW brought news from the most distant area represented at the symposium, Montreal. Since the last symposium the number of Montreal operators has exploded from 2 to 49, 3 digipeaters have been brought online and mini PBBS established on the 145.09 MHz LAN frequency.

Reports were also presented by WB2OIF of GLB Electronics, Paul VE3KOI of the VE3KOI PBBS, Toronto, and Dave VE3KMV of the Ottawa Amateur Radio Club Packet Radio Group.

The proceedings were videotaped. Both printed transcripts and videotapes will be available. Send an SASE to HEX 9, P.O. Box 151, Orillia, Ont. for details. ■

160 M Grounded Grid Amplifier

BY BILL RICHARDSON
VY1CW

When the removal of the low power restrictions on top band was announced recently, the desire for signal improvement led to the amplifier presented here. A power output of 1000 watts can be obtained with parts easily attainable in Canada, and at low cost.

The 813 tube is used in this amplifier since it provides good efficiency and is very forgiving when inadvertently abused. In this amplifier, two tubes are used, although three tubes can be used providing a larger filament transformer is employed. Three tubes will present an input impedance of close to 50 ohms while two tubes will show 110 ohms and will require a tuned input circuit.

A tuned input is a good investment in any case, as it will assure better spectral purity, require less driving power, and reduce distortion of the driving signal. Spectral purity of this design is well in excess of DOC Commercial requirements with the second harmonic being down 44dB and the third down 65 dB at full output as measured on a Hewlett Packard 8551B spectrum analyzer.

Layout will be left to the individual constructor. It is suggested that cardboard templates of the various components be used to determine parts placement before drilling and mounting is started. A 35 cm by 43 cm chassis will allow plenty of room without cramping. A simple method of chassis construction will be described in a future issue, with the suggested power supply for this amplifier.

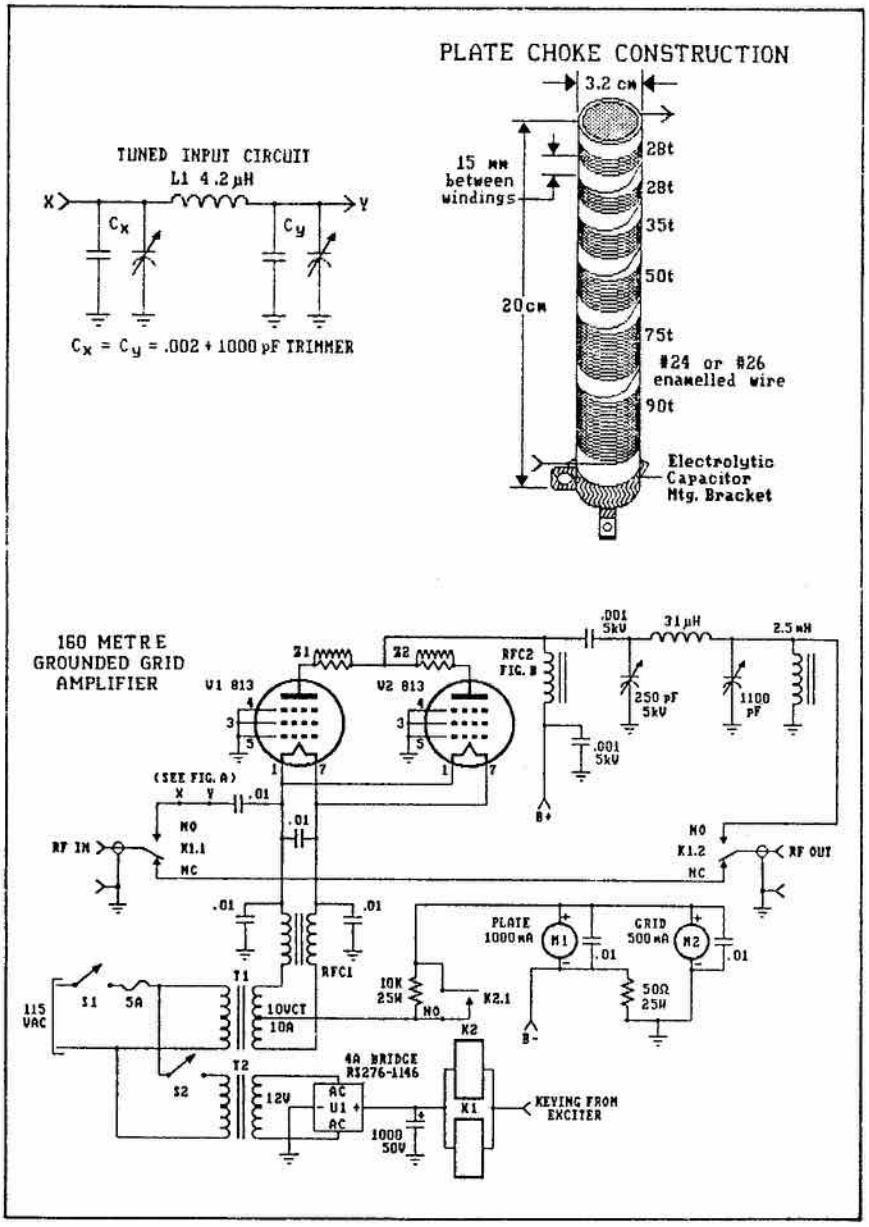
In the first amplifier built, a roller inductor was used as it was planned to operate on other bands. This was soon changed to a fixed inductor when it was found that with the infinite number of LC combinations available, the tank circuit could be set to act as a doubler. Even if settings appeared correct, if the optimum setting was not used, spectral purity suffered. Bands other than 160 can be incorporated if a suitable band switch and necessary tank circuit values are used. The 813 has a maximum usable frequency of 30 MHz but above 15 MHz, efficiency falls off very rapidly.

There are no difficult areas in constructing this amplifier once the parts placement has been determined. All high voltage wiring should be at least number 18 test probe wire. Coaxial cable is not safe at these voltage levels, and most problems will be with arcover due to poor insulation in the high voltage circuits. All ground connections to the tube sockets are made with heavy wire or thin strapping. Bypass capacitors are not used at the sockets since both RF and DC are at ground potential.

The filament choke is bifilar wound with number 12 insulated wire over 6.5 inches of the ferrite rod. Plastic cable clamps are then used on each end of the rod to mount to ceramic standoffs. The plate choke is wound as shown in the schematic on a ceramic insulator. Plastic rod can be used, but it has been found that the plastic will distort under high heat conditions found in amplifiers.

An antenna relay was liberated from an old Motorola VHF rig and although the contacts are not as large

Page 43



Audio Distribution System

BY STEPHEN MENDELSOHN
WA2DHF

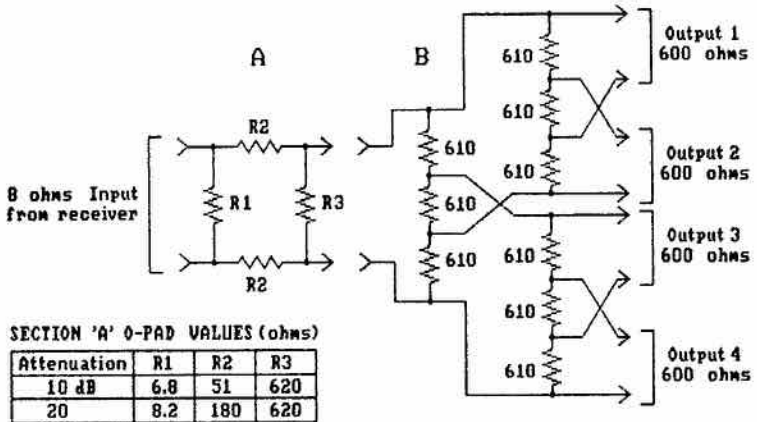
Frequently hams are required to do public service work of one type or another. He may be required to take the audio from his transceiver to feed tape recorders or input audio to a commercial video tape recorder. These devices all use a 600 ohm balanced input.

All Amateur equipment has an output of 8 ohms unbalanced, and the trick of designing an audio multiple output distribution system, or 'mult box' as it is known in the broadcast trade, is to match the drive impedance with the load impedance.

Levels are the second thing that creates a problem. The input to most broadcast equipment is either 'mic' level which is -45dB to -60dB at 600 ohms, or 'line' level which is -10dB to -25dB at 600 ohms. The output of Amateur equipment will vary from 6dB to -10dB at 8 ohms unbalanced. Now that we have all of the required data, how do we make it all work together?

If you take the output from your Amateur rig headphone or external speaker jack and apply it to a piece of broadcast equipment, the result will be hum and distortion. This is because of impedance mismatch between the two pieces of equipment, or to use antenna terminology, the SWR is high. The hum is caused by a lack of isolation between the two pieces of equipment. What we need is a device that will provide isolation, will match impedances and provide a resistive load, and drop the output level of the ham rig to the required 'mic' level input for the broadcast unit. This requires two different types of audio pads. Each pad is designed using common resistors that can be assembled on a standard perfboard using 'flea' clips to allow connections to be made to the equipment.

SCHEMATIC: AUDIO ATTENUATOR - SPLITTER



SECTION 'A' O-PAD VALUES (ohms)

Attenuation	R1	R2	R3
10 dB	6.8	51	620
20	8.2	180	620
30	8.2	560	620
40	8.2	1.8k	620

Section 'B' of the pad is designed to take the single input and produce four outputs at 600 ohms with a 12 dB loss between the input and output. In each case, the four outputs will be isolated from each other, and have the correct output level. All resistances are 610 ohms for this section.

The resistors are all standard value, half-watt types that can be found in most junk boxes or should be obtainable from most electronics component suppliers. Layout is not critical though leads should be kept short to lessen the effect of RF being picked up.

In most cases, the broadcast equipment will be clipped to the Amateur equipment with small alligator clips. It would be wise to have an assortment of audio style plugs available.

This should allow you to provide interesting material for local news media for special events and emergencies plus providing good 'PR' for Amateur radio and your local club. ■

Page 42

as would be desirable, no problems have been encountered after many hours of use. A fan for cooling is a must if speech compression is used. The fan should be mounted so that the airflow is across both the tubes and the plate choke.

Upon completion of the amplifier, double and triple check the wiring for any errors. Once satisfied that everything is where it is supposed to be, apply filament voltage and three minutes later, high voltage. Assuming that disaster has not struck, idling current should be 80 to 100 mA. Let the amplifier idle for a few minutes to see if any arcover or thermal problems are going to develop. Drive of 20 to 30 watts can now be applied and the plate and load capacitors adjusted for maximum power output. With an SWR bridge between the exciter and the amplifier, set the tuned input circuit for minimum SWR. Full driving power of 100 to 130 watts can now be applied and the plate and load capacitors once again adjusted for maximum power. Plate current will be around 650 to 800 mA and the tube plates will show a red glow after several minutes of use at full output.

All that remains is to try it on the air. I am sure a large difference will be noticed in received reports and that elusive top band DX will be a little easier to snare.

PARTS REQUIRED

2 813 Tubes, sockets, and plate caps.
1 7.5 inch by .5 inch ferrite rod.
1 250 pF, 3kV variable capacitor.
1 1100 pF air variable capacitor.
1 Hammond 167S10, 10VCT, 10 amp filament transformer.
1 Radio Shack 4 amp full wave bridge rectifier, RS 276-1146.
10 feet, number 18 test probe high voltage wire.
6 .01 µF, 1.6 kV disc ceramic capacitors.
2 .001 µF, 5 kV disc ceramic capacitors.
1 12 volt, 1 amp transformer.
1 1000 mA meter. 1 500 mA meter.
1 1000 µF, 50 volt, electrolytic capacitor.
1 30 to 50 ohm, 25 watt resistor.
1 2.5 mH RF choke.
1 43 µH inductor. This is available from Arttz Electronics, Box 222, Airdrie, Alberta T0M 0B0. He lists it as 43 µH but it is actually 31 µH. Many other interesting items are listed in his catalog for anyone doing any home brewing of electronics.
1 DPDT relay.
1 double pole high voltage connector.

20 Metre Phased Verticals

BY BILL YANKEWICZ
VE4ANY

This array was designed to obtain gain, directivity, and maximum radiation efficiency for specific purposes. Many accepted practices and theories have been changed to accomplish these goals. Vertical arrays are usually employed to attain very low angle radiation for DX use. I wanted to work states along the border, and this design has accomplished this purpose, as well as working very well into Europe.

The array described here was designed and built using mainly junk box and recycled material. Utilizing either a broadside or an endfire configuration, the preferred pattern can be chosen at will. Many good signal reports have been received from both DX and local contacts while running only 20 watts output on 20 metre CW.

Three verticals, all home built, are used. All are in 1 inch aluminum tubing, 16.3 feet long, and resonant in the CW portion of the band. Two verticals are used for each configuration. When antennas 1 and 2 are used, a broadside, in phase, bidirectional pattern results. When antennas 1 and 3 are used, an endfire pattern with gain and front to back rejection, is the result.

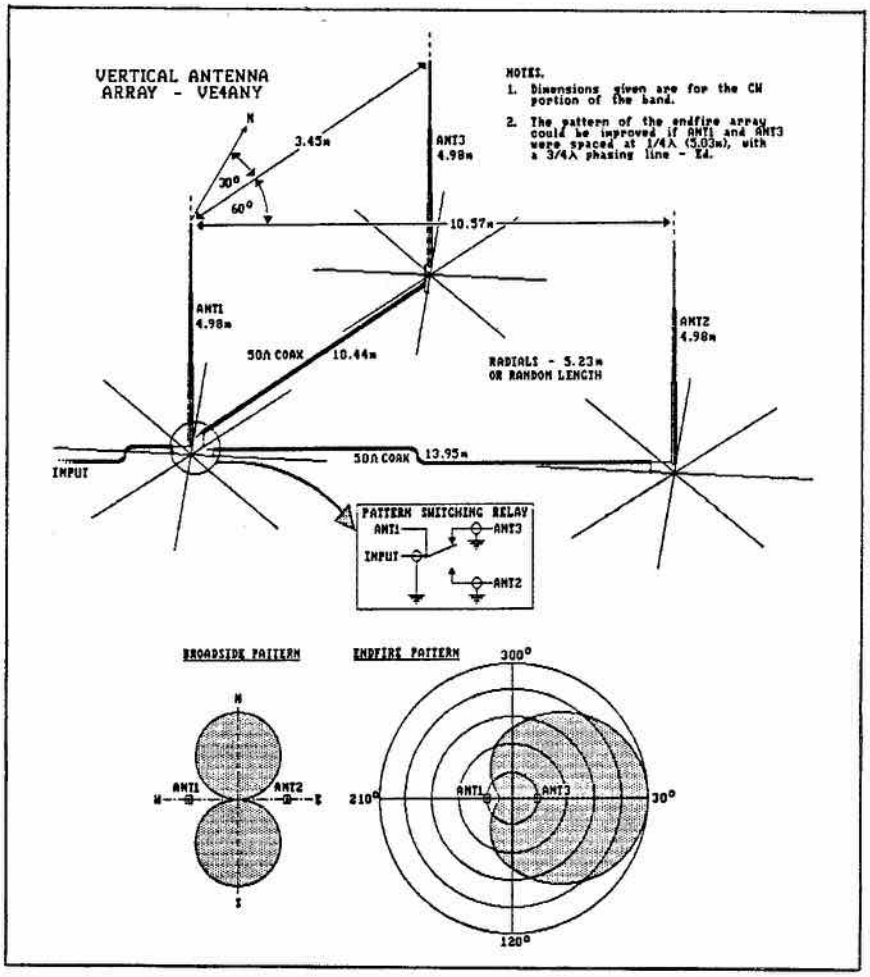
Each vertical is mounted by clamping the base of the antenna to a 3/4 inch steel pipe, driven into the ground. These mounting pipes are 5 feet long, with 1 foot protruding above the ground. The protruding portion is covered with plastic garden hose and then wrapped with electrical tape, to insulate the base of the antenna. Two stainless steel hose clamps are used to bind the antenna to the support pipe. Radials are used under only two of the verticals.

The broadside configuration, consisting of antennas 1 and 2, is used for north-south directions, and antennas 1 and 3 for Europe.

Detailed near field radiation characteristics were not plotted. SWR curves showed readings of 1.2:1 in both configurations. A transmatch has been used for operation on 40, 15, and 10 metres.

The radials are mounted above ground to allow them to be removed so that the lawn can be mowed. They could be buried with little difference, if any, in performance. Radials were constructed from stranded aluminum ground wire.

The radiating elements can be assembled of two sections of tubing. The phasing lines are important since they control the pattern of the array. All dimensions are shown in the accompanying diagrams. This array should provide a basis from which much experimenting can be done to obtain desired results.



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KENPRO KT-220ET	VHF FM TRANSCEIVER MODEL ST-20T
General	
Frequency Range	142.000 to 150.995 MHz
Type of Emition	F3
Memory Channels	10 Channels
Antenna Impedance	50 ohms
Power Source	9.6V Nicd battery pack 9V Dry battery pack D.C. 8.4-16V
Transmitter	
RF Output Power	5.0 Watts (H), nominal at 12V 3.5 Watts (H), nominal at 10.5V 0.5 Watts (L), nominal at 10.5V
Modulation	Frequency modulation
Maximum Deviation	± 5 KHz
Transmit Spurious	– 60 dB
Microphone	Electret Condenser Microphone
Receiver	
Receiving Methods	Double superheterodyne
I.F.	1st 16.9MHz 2nd 455KHz
Sensitivity	Less than – 0.25uV at 12dB SINAD
Band Width	± 7.5 KHz at 6dB down
Selectivity	± 15 KHz at 60dB down
Audio Output Power	400mW at 8 ohm

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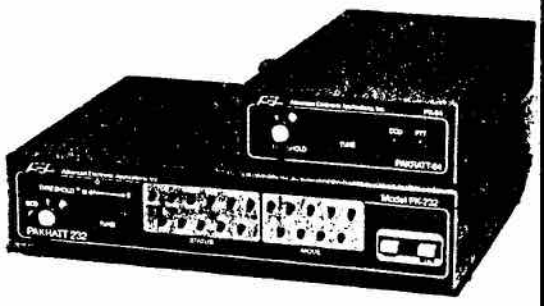
First, A Good Idea

The idea behind the Pakratt is very simple. One controller that does Morse, Baudot, ASCII, AMTOR, and Packet, and works both HF and VHF bands. Of course the decoding, protocol, and signal processing software must be included in the unit, and connection to the computer and transceiver have to be easy. The unit also has to be small and require only 12 volts, so it will work both in the shack and on the road.

Second, Computer Compatible

It doesn't matter what kind of computer you have, we have a Pakratt for you. The PK-64 works with the popular Commodore 64 or 128, and the PK-232 works with any other computer or terminal that has an RS-232 serial port. The PK-64 doesn't require any additional programs. Simply connect to the computer and transceiver and you're on the air. The PK-232 needs a terminal or modem program for your computer. The one you're using with your telephone modem will work just fine.

PAKRATT™ Model PK-64



PAKRATT™ Model PK-232

Third, Performance and Features

The real measure of any data controller is what kind of on-air performance it gives. While the PK-64 and PK-232 use different types of modems, both give excellent performance on VHF. The optional HF modem of the PK-64 uses independent four-pole Chebyshev filters for both Mark and Space tones, and A.M. detection. The HF option can be factory or field installed.

The PK-232 uses an eight-pole bandpass filter followed by a limiter discriminator with automatic threshold correction. The internal modem automatically selects the filter parameters, CW Fc = 800 Hz, BW = 200 Hz; HF Fc = 2210 Hz, BW = 450 Hz; VHF Fc = 1700 Hz, BW = 2600 Hz.

The PK-64 uses on screen indicators to show status, mode, and DCD (Data Carrier Detect) while the PK-232 uses front panel indicators. Both units use discriminator style tuning for HF operation. And that's just the tip of the iceberg. Features like multiple connects on packet, hardware HDLC, CW speed tracking, and other standard AEA software features are included in both the PK-64 and PK-232.

PACKET CONTROLLERS and Accessories:

A.E.A. PK-232 $559; PK-64A $459; PK-64 $369; PK-80 $369; PM-1 $299; HFM-64 $169
KANTRONICS KPC-2400 $559; KAM $559; KPC-2 $369; Modem-2400 $259
M.F.J.-1270 $249. Extra 5 pin flat cable $12

KDK FM-240 $449.00

- Superior features, simpler to use for 2 meters, MARS, CAP
- Compact size for better fit in today's automobile
- 16 fully programmable memory channels, plus priority call channel 2 VFOs for today's user
- Subaudible encode and decode standard for today's 2 meter bands
- Subaudible frequency programmed by freq. no chart needed
- Speech synthesis option for voice VFO with TouchTone Speaker Mike Voice Synth. $59

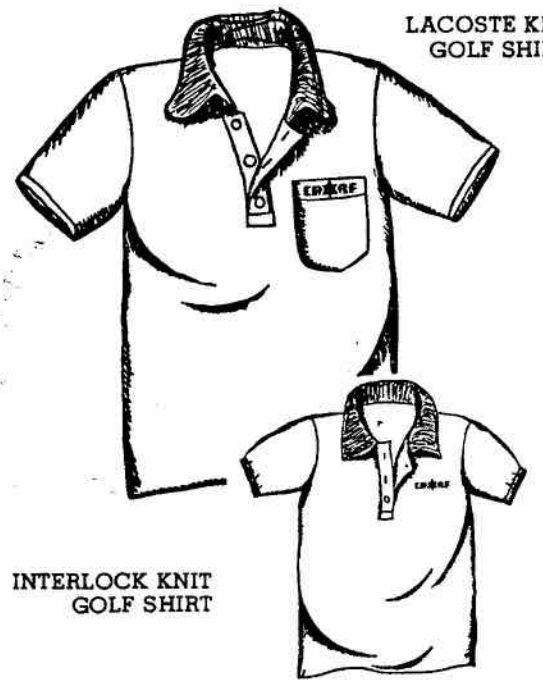
Specifications KDK FM-240 (and FM-740)

General	
Supply Voltage	13.8v ± 15%, negative ground.
Consumption	Transmit: 1.5A @ 5w, 5.5A @ 25w Receive: 4A @ 0 sig., 6A @ max volume
Temp. Range	– 10 deg. C to 60 deg. C.
Dimensions	40H x 140W x 170D mm (Body only)
Weight	1.0Kg (Body only)
Transmitter	
Freq. Range	FM-240 142.000 - 150.00 MHz (FM-740 440.00 - 449.975 MHz)
Output	High = 25 watts, Low = 5 watts (High = low (Low = 1W) (FM-740 High = Low)
Modulation	Variable reactance frequency modulation
Max. Deviation	± 5KHz
Spur. Emmis	More than 60dB down from carrier
Duplex Offset	Programmable ± .1 to 12.7MHz (set at ± .6KHz ex factory)
Tone	Programmable 74-250.3 (34 EIA tones) Encode and Decode
Receiver	
Int. Freq	1st = 10.7MHz, 2nd = 455KHz (1st-21.4MHz 2nd 455KHz)
Sensitivity	Better than 12dB SINAD @ .2uV
Squelch Sens	Better than .15uV
Bandwidth	+ 6KHz @ – 6dB
Selectivity	+ 12.5KHz @ – 60dB
Image Ratio	Better than 70dB
Audio Output	More than 2w, 8 ohms load, 10% THD
Standard Accessories	
Speaker Microphone	Speaker = 8 ohms, Mike = Condenser type. SM-34A. UP/DOWN plus tone encoder.
Power Cable	2 meters, with 7A fuse.

BOMBER JACKET

WARM-UP JACKET

LACOSTE KNIT GOLF SHIRT



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ZIPPERED SWEATSHIRT

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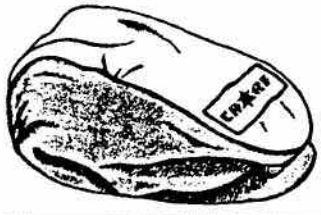
GATSBY CAP



WINDCHEATER JACKET

PULL-OVER SWEATSHIRT

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Men's Small = Ladies' Med.

▒▒ = Not Available

	MEN'S					LADIES'				UNIT COST	CALL YES/ NO	TOTAL
	S	M	L	XL	OS	S	M	L				
BOMBER JACKET Blue					▒▒	▒▒	▒▒	▒▒		$34.95		
White					▒▒	▒▒	▒▒	▒▒				
WARM-UP JACKET Blue					▒▒	▒▒	▒▒	▒▒		$29.95		
White					▒▒	▒▒	▒▒	▒▒				
WINDCHEATER JACKET Blue					▒▒	▒▒	▒▒	▒▒		$34.95		
White					▒▒	▒▒	▒▒	▒▒				
ZIPPERED SWEATSHIRT (with hood) Blue					▒▒	▒▒	▒▒	▒▒		$22.95		
White					▒▒	▒▒	▒▒	▒▒				
PULL-OVER SWEATSHIRT (with hood) Blue					▒▒	▒▒	▒▒	▒▒		$21.95		
White					▒▒	▒▒	▒▒	▒▒				
CREW-NECK SWEATSHIRT Blue						▒▒	▒▒	▒▒		$18.95		
White						▒▒	▒▒	▒▒				
V-NECK ACRYLIC SWEATSHIRT Blue					▒▒					$24.95		
White					▒▒							
LACOSTE KNIT GOLF SHIRT (with pocket) Blue					▒▒	▒▒	▒▒	▒▒		$18.95		
White					▒▒	▒▒	▒▒	▒▒				
INTERLOCK KNIT GOLF SHIRT (no pocket) Blue										$18.95		
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2-Meters. For 2-meter coverage, ICOM offers the IC-02AT and IC-2AT handhelds. The versatile IC-02AT covers 140.000–151.995MHz, the IC-2AT 141.500–149.995MHz...both include frequencies for MARS and CAP operation. The IC-02AT features an LCD readout, 32 PL tones standard, DTMF, direct keyboard entry, three watts output, (optional 5 watts output with IC-BP7 battery pack), 10 memories and three scanning functions. The IC-2AT, the most rugged handheld on the market, has a DTMF pad, 1.5 watts output and thumbwheel frequency selection. The IC-2A is also available and has the same features as the IC-2AT except DTMF.

220MHz. To get away from the crowd, ICOM has the IC-3AT 220.000–224.990MHz handheld with 1.5 watts output, thumbwheel selection and a DTMF pad.

440MHz. For 440MHz operation, ICOM has two handhelds available, the versatile IC-04AT and the IC-4AT. The IC-04AT and IC-4AT offer full coverage from 440.000–449.995MHz. The IC-04AT includes an LCD readout, 32 PL tones standard, DTMF direct keyboard entry, three watts output, (optional 5 watts output with IC-BP7 battery pack), 10 memories and three scanning systems. The IC-4AT has a DTMF pad, thumbwheel selection and 1.5 watts output.

1.2GHz. ICOM announces the IC-12AT 1260.000–1299.990MHz handheld, the first 1.2GHz handheld available. The IC-12AT features 10 memories, an LCD readout, DTMF direct keyboard entry, two scanning systems and one watt output.

Accessories. A variety of interchangeable accessories are available, including the IC-BP8 800mAH long-life battery pack, HS-10 boom headset, CP1 cigarette lighter plug and cord, HM9 speaker mic (for IC-02AT, IC-04AT and IC-12AT), leather cases, and an assortment of battery pack chargers.

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