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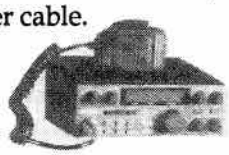

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Canada's Amateur Radio Magazine

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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 Communications Canada;
4. To promote the interests of Amateur radio operators through a program of technical and general education in Amateur matters.

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EDITORIAL

'Restructuring'

By Art Blick VE3AHU

A profound change will take place in the Canadian Amateur Radio Service with the introduction of 'Restructuring' later this year. These changes are not an overnight decision by the Department of Communications, but the result of 10 years of endeavour by the National Amateur organizations, other Amateur groups and individuals, and comments made by individuals and groups of non-Amateurs.

It all started in late 1980 when representatives of your national Federation made a presentation to DOC which pointed out that the good growth of the Canadian A.R.S. had virtually stopped in 1978 when new requirements, examinations and examination procedures were introduced. In the period 1972-1978, Amateur courses were held in communities across Canada, usually as part of Adult Educational Programmes, that took one semester (45 hours of classroom instruction) of high school to prepare candidates for the examinations, with a high percentage of students qualifying. This resulted in an annual average growth of about 2000 new Amateurs but, since 1978, growth had reduced to about 10% of the previous period as the new requirements now required a 2 semester course with a much lower percentage of students qualifying.

The results of this have been that many courses have been cancelled, many students do not finish the course (primarily due to outside influences), and some students require a further review course. The main thrust of the CARF presentation was that the requirements should be reduced to enable a good percentage of students to qualify after a course of one semester and that the Digital Operator qualification be reviewed to make a code-free, VHF only, certificate available to more people.

After several meetings of CARF and CRRL with the DOC, a proposal to Restructure the A.R.S. was published by DOC in 1985 and comments requested from Amateurs and non-Amateurs. This resulted in a new Restructure proposal being made in 1988. Details of this proposal, comments received and the 'restructured' requirements, and operating privileges for different classes, have, and will be, publicized— see *The Canadian Amateur* for information. A new edition of the DOC publication RIC-24 will give specific details, etc. with expectations that these new requirements and privileges will come into being in October 1990.

Restructuring, to be effective and lead to growth in our Service, must be supported by Amateur clubs across Canada. Now is the time for clubs to arrange for the conducting of Amateur classes starting in September 1990, to select competent instructors, consult with local Boards of Education for classrooms, to schedule class periods and prepare lesson plans based on the requirements to be given in the 1990 RIC-24. As the theory/ operating/ regulations portion are such that it will take 40-45 hours of instruction to complete, it will be necessary to hold Morse code instruction separate from this instruction, probably on a different night, or before or after the theory course.

Your National Federation will be publishing a 1990 edition of the Study Guides for the Basic and Advanced courses and of the Instructor's Guide to assist clubs and individuals in preparing and conducting courses. *The Canadian Amateur* and CARF News Bulletins will give information on these publications as they become available.

Revitalization of our Amateur Radio Service will depend on your participation in Restructuring. The best wishes and assistance of your National Federation go with you.■

LETTERS

AMATEUR RADIO IS APPRECIATED

The attached letter was received from the North Okanagan Cross Country Ski Club after several NORAC members provided 2 metre communication during their annual 30 km ski marathon. Those involved included: Bill Greene VE7WFG, Muriel Sanderson VE7EGB, Stu Thompson VE7BQY and Bob Lindley VE7BSL. Jim Smith VE7AON organized these communicators and skiied in the marathon.

Joyce Taylor's letter is proof that our public service efforts are appreciated.

Blake Tweddle VE7EFA
President, NORAC

On March 17th over 200 skiers were scattered out over a very large area from Silver Star Mountain resort to the farthest corner of the Sovereign Lake Trails. How reassuring it was to know that the 'radio men' were out there to keep the North Okanagan Cross Country Ski Club officials informed on the progress of the event. As I stood near the finish area and heard the announcer let us know the first skier was so many kilometres from finishing, my thoughts were, "The system is working." Yes, thanks to your most capable members who volunteered their time, the system did work and it was proclaimed a good event.

On behalf of the Marathon Organizing Committee and the skiers, thank you so much for your assistance during our 13th Annual Marathon.

Joyce Taylor
Competition Secretary

MANITOBA MUSEUM

The Manitoba Amateur Radio Museum is a relatively new unique museum devoted mainly to artifacts of Amateur Radio.

We are erecting a new building on the grounds of the Manitoba Agricultural Museum at Austin, Manitoba, starting in May of this year.

We are looking for support in the way of donations and/or equipment for the Museum. Any donations of this nature will be duly recognized: equipment on the display itself, and money on a plaque in the building.

This museum is located where 60,000 people visit each year, and we have a complete Amateur radio station operating during main events taking place on the museum grounds of the Manitoba Agricultural Museum.

We are committed to our purpose: collecting, preserving, recording and exhibiting articles of Amateur radio.

So please consider us if you have any artifacts of Amateur radio which would be worthy of this museum, and/or help us continue towards our above purpose.

Dunc Emerson VE4OD
President

MORE WHISKEYTOWN

I read with interest your recent article on the 'Whiskeytown Wireless Collection' *(TCA,* April 1990). In fact, this collection will be exhibited at the Nepean Museum beginning May 12 this year, in our rotating exhibit hall.

This exhibit features rarely seen cartoons, drawings and photographs from Canadian Military publications on the No. 19 Set to compliment the display, which surveys the development of the No. 19 Set and its invaluable contributions to Canada's military successes during the Second World War.

To add colour to this display, our friends at the Canadian War Museum have indicated their support by loaning us several Canadian Second World War posters of a general nature.

The Nepean Museum prides itself on being the only free museum in the Nation's Capital. I hope your readers will find time to visit us sometime during the exhibit's duration: May 12 to mid-August of this year.

Dan Hoffman, Curator

WORLD CLASS IRONMAN

The Valley Amateur Radio Communicators Group (VARCOM) and the Penticton ARC are providing communications for the World Class Ironman 90, which will be held in the Okanagan Valley on Sunday Aug. 26, 1990.

This year there will be 900+ participants in the Triathlon which consists of a 2.4 mile swim, a 112 mile bike race and a 26.2 mile marathon run.

As this is an all-day event (0700-2359 hrs), VARCOM will be organizing about 42 stations into four or five nets. Because of the hours and manpower involved, we would like to organize the operators on a shift basis, making it easier for everyone involved.

The purpose of this letter is to recruit Amateur Radio operators and their 2 metre equipment, for those who will be or plan to be in the South Okanagan Valley over the weekend of Aug. 25/26, 1990.

If you are interested, further information can be obtained from: VE7IH, VE7KC, VE7LG, VE7ALV, VE7EIR, VE7DMZ.

G.A. Holden VE7IH
Communications Capt.
Ironman Canada,
774 Ross Ave.,
Penticton, B.C. V2A 3A7

NEWS FROM LESMITH

As you are probably aware, we have supplied the Amateur market with quartz radio crystals for many years.

We enjoy dealing with Amateurs across the country and therefore are interested in expanding our line of products that we market to them.

In 1987, we incorporated a company, Ratek Communication Systems Limited, to handle any products that we do not manufacture. The people, address, phone and Fax numbers are the same as Lesmith Crystals.

We would like to participate in any club flea markets, whether this involves

SILENT KEYS

VE7AC— Jack MacKay of North Vancouver, B.C., suddenly April 26, 1990. Jack was retired after many years of service with the DOT as a radio operator and technician. Survived by his wife Velma and loving family and will be missed by his many Amateur radio friends.

VE7BBV— Jim Striker, well-known in Fraser Valley and area. Jim will be always remembered by his many friends. Born May 21, 1928, passed away April 10, 1990 in Agassiz, B.C.

VO1BJ— Andrew A. Burden on April 12, 1990. Andy was very active in all aspects of Amateur Radio and was a founding member of the Society of Newfoundland Radio Amateurs. He was an active member of the Exploits Valley Amateur Radio Club, the Grand Falls Seniors Amateur Radio Group and was one of the driving forces behind the local 9 metre repeater VO1JY.

Andy was also very active in community affairs, as a member of the Lions Club and Golf and Curling Clubs.

VE1LZ— Donald Bain died Dec. 18, 1989 in Tantallon, N.S. He was 69 and had been an active and well-known Amateur for 50 years. An RCAF veteran of WWII and retired from the CBC in Halifax.

VE7DTB— Duncan T. Black, veteran with the DOT and DOC passed away April 20, 1990. Duncan was retired after a successful career as a professional engineer, radio inspector and Deputy Regional Director DOC for the Pacific Region.

attending and displaying our products or providing information sheets to be given out from club tables or a draw prize.

Organizers may write to me or send a club newsletter in advance of any flea markets. This will give us an opportunity to participate.

Flea market information should be mailed to my home:

John Ratelle
192 River Oaks Blvd. East
Oakville, Ont. L6H 5N3

If individuals or clubs wish to be added to our mailing list and receive up-dated catalogues, please write to the following address:

Ratek Communication Systems Ltd.
P.O. Box 846,
54 Shepherd Rd.,
Oakville, Ont. L6J 5C5

DOC EMPHASIZES RESTRUCTURING TO TAKE EFFECT OCT. 1, 1990

At DOC's invitation, CARF and CRRL took part in a telephone conference to discuss the progress made in the restructuring of the Amateur radio service.

We were told that the new regulations required for its implementation had been approved within DOC. Only Department of Justice and Privy Council Office approvals and Governor in Council signature are now needed. The new syllabuses will be released by July 1, 1990, and will include new sections on good operating practices.

DOC emphasized that the restructuring *will be implemented on October 1, 1990.* DOC thus quashed the rumour to the contrary that has been circulating across Canada and especially in south-west Ontario for the past month. The existing structure will stay in effect only until Sept. 30, 1990.

All DOC Offices have now been informed in this regard.

PROGRESS BEING MADE ON BAND DEREGULATION

In the same conference with DOC, CARF and CRRL were advised that the new regulations relaxing restrictions on the use of the Amateur bands have been sent to the Privy Council Office for their approval and then signature by the Governor in Council.

LETTERS TO THE EDITOR

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

LICENCE PLATES

Regarding the inscription of the words 'AMATEUR RADIO' on the licence plates: Could I suggest to even go further with this good idea. Canada has two official languages, and these two words are very compatible, in both of them... Why not have them on all Canadian licence plates and on all provincial licences? Thank you.

En ce qui a trait aux mots 'AMATEUR RADIO' sur nos V.A.: Puis-je suggérer d'aller plus loin avec cette bonne idée. Le Canada a deux languages officielles, et ces deux mots sont compatibles. Puis-je suggérer de les adopter dans toutes les provinces du Canada. Merci.

Joseph Tondreau VE2JHT

THE M PREFIX

Was pleased as ever to receive my *TCA*. Noted with interest the box on page 23 re: new U.K. callsigns with the prefix 'M' pending.

The bit at the bottom, "Remember when U.K. last used 'M' calls in the early days..." For the information of anyone interested, the U.K. used 'M' callsigns immediately after World War II. It was quite possible they are issued during the war, but we didn't do too much transmitting in those days. I certainly recall working a lot of four letter (ships) 'M' calls right after the War and have my old radio logs to back that up.

Dave McMillan VE3MIM

■

Shack of the Month

VE3ARR— Over 53 Years with the same call.

Automated Weather Stations in the Arctic, 1941-44

By Bob Brown NM7M

In two earlier articles, consideration was given to ionospheric disturbances during WWII and another matter, the establishment of an ionosonde on Spitzbergen in '42. If one looks back at those times, there were other interesting matters related to the events which took place at Spitzbergen in the summer of '42. Those touch on weather observations and radio communications across the span of the North Atlantic, from Canada to the U.S.S.R. and, since I think you'll find them interesting, let me unfold the tale.

We pick up the story again as the Allied forces attempted to re-occupy Spitzbergen by Operation Frithamn in the summer of '42. Their landing site was to be at Barentsburg, putting them on collision course with the German Luftwaffe which had a meteorological station 20 miles to the northeast, near Longyearbyen.

The manned station had been there since late '41, just after Canadian Forces evacuated the Norwegian and Russian populations of Spitzbergen, and was operated over the winter months by a team of four. In the summer of '42 a changeover to an automated station was to be carried out.

The effort in May '42 involved a number of flights carrying in technical personnel as well as supplies and the new equipment.

One of the flights sighted the *Isbjorn* and *Selis* on their approach to Barentsburg and the threat posed by their presence prompted the disastrous air attack on May 13. In any event, the automated station, termed 'Krote', was set up and, once it started providing data back to Norway, the German personnel were evacuated from Longyearbyen by air. Those who survived the air attack on the *Selis* and *Isbjorn*, wounded or unharmed, were able to walk across the bay ice and take refuge in the settlement evacuated eight months earlier. They found shelter, food and clothing in those buildings and thus the continued presence of Allied forces on Spitzbergen was assured.

However there was no radio equipment to replace that lost in the sinking of the two ships. Instead the only means of communication that remained was an Aldis Lamp snatched from the bridge of the sinking *Isbjorn*. With that and some batteries found in the abandoned settlement, Lt. Cmdr. Glen, Major Whatman and Sgt. Skribeland of the Norwegian Forces could only wait at a likely site for an opportunity to signal their condition and needs to an Allied aircraft.

It was not until May 25, however, that a Catalina aircraft was able to reach Barentsburg. After proper identification, signals were flashed back and forth and the location of the survivors established, as well as the extent of German activity in the area. Thus, starting with just Morse Code signals from that feeble, blinking light, the rescue of the wounded and the reinforcement of the Allied forces were set in motion.

Those same efforts served to bring an end to the German activity in that area within two months. Thus, with fresh Norwegian troops and supplies landed in early July by Operation Gearbox I, patrols soon located the automatic weather station and shut it down. Further, the German airfield near Longyearbyen was quickly rendered inoperable. In addition, the Germans lost a key person in their meteorological program, Dr. Erich Etienne, when a Junkers 88 was shot down while investigating the loss of signals from the automatic station.

But to continue: the activity by the Luftwaffe near Longyearbyen was only part of the German effort in Spitzbergen, indeed across the entire North Atlantic. Independently, and in the same period, the German Navy operated a weather station at Signehamna, further north on West Spitzbergen. The operation was larger, involving six members in the party, and more comprehensive in that VHF radiosonde ascents were carried out in addition to surface measurements.

The measurements from both stations were transmitted back to Norway, about 1000 km away. But the logistics of such operations were very demanding, on one hand requiring the landing of heavily-laden aircraft on surfaces of unknown condition and, on the other, the risk of naval attack on the surface vessels which supplied the hundreds of heavy cylinders of hydrogen needed for the balloon ascents. Thus, after several disasters and encounters with Allied naval forces, both German services turned to automatic stations for their weather data.

One system developed by the German Navy, termed WFL, was deployed on land as far west as the shores of Labrador and east to Novaya Zemlya. Indeed, one such instrument was found in 1981 at Martin Bay, south of Home Island in the Labrador Sea, and is shown in an excellent article by Alec Douglas in the December '81 issue of the *Canadian Geographic* magazine (and reprinted in *TCA* last month, Ed.). Another system for use at sea, termed WFS, was put on buoys which could be anchored in depths up to 100 m.

Those instruments, and similar ones used by the Luftwaffe, carried temperature and pressure sensors and their observations transmitted by HF radio several times a day. The transmitters operated in the 3-10 MHz range and Navy version radiated 40 watts power from a 5 metre vertical antenna while that of the Luftwaffe used a horizontal dipole. The lifetime of those installations depended on the size of their battery pack. Nine months for the land-based WFL and two months for the sea-based WFS. Before dealing with those matters in more detail and the meteorological instrumentation itself, it is important to look at the HF radio link of the instruments with Norway.

The distances involved ranged from as little as 545 km for Bear Island in the Barents Sea to 4125 km from the coast of Labrador. Those operations took place in the period 1942-44, near the end of Cycle 17 when the sunspot number was declining from 35 to 10. With the aid of modern computer programmes, one can turn back the clock, as it were, and re-create the propagation conditions which were in effect at the time.

But to do that, the operating frequencies need to be known and the times of day when transmissions took place. In that regard, the writer is aware of four frequencies used during the fall of 1943: 3.94 MHz from Labrador, 5.55 MHz from Bear Island as well as 6.52 MHz from South Cape and 8.340 MHz from South-East Land, both on Spitzbergen. Those instruments sent temperature and pressure data in coded form for a few minutes at a time during six transmissions per day. The last three stations, all in the area of Norway, transmitted at times like 0100, 0400, 0700, 1000, 1300 and 1800 GMT. The cycle of transmissions was maintained by a

Continued on next page ►

clock/timer in the instruments.

For the automated stations, the choice of the operating frequency was of vital importance. In that regard, now using HF propagation programmes, one can say that 3.94 MHz was a poor choice for the instrument on the Labrador coast, ionospheric absorption in the D-region being very great for all but a few transmissions each day for such a low frequency and long distance. Indeed, that conclusion is consistent with the statement of Dr. Herman Person, writing in *Polarforschung* (1948), who noted that two instruments were installed in Labrador without any results.

In a similar manner, the choice of 8.34 MHz as an operating frequency for the instrument in the southeast Land of Spitzbergen would have been a poor one for a short (875 km) high-angle F-hop as it was very close to the highest MUF. Of course, there are always fluctuations about averages in such matters but frequencies closer to the Optimum Working Frequency or FOT, 85% of the MUF for a path, would have been a better choice for reliable communications.

Those cases raise the question of frequency allocation by the Germans. In that regard, there was one unit, Zentralstelle fur Funkberatung or 'ZfF' which made the allocations during WWII. Given the benefit of hindsight and decades of research on radio propagation, it is clear that they made some poor decisions, at least for some field operations from isolated sites.

Measurements of temperature and pressure, particularly at sea level where the daily variations are much smaller than those in radio-sonde ascents through the atmosphere, presented quite a technical challenge. The technique used in the automated weather stations involved coded transmissions which were derived from a rotating aluminum drum with about 400 grooves cut on its surface. Thus, the aneroid pressure elements and bi-metallic temperature elements carried long arms with sharp, pointed contacts at their ends and they rode on the drum which was anodized with a coded pattern along its length. Part of the drum was missing, allowing the long arms to float free during part of each revolution.

In operation, the grooved drum rotated at 1-2 rpm and the pointers riding in the grooves gave a sequence of contacts, first a reference mark and then followed by a digital code for the temperature and then by another one for the pressure.

The six transmissions per day were initiated by a clock/timer and after the transmitter's tubes had been brought to temperature for about a minute, the coded transmissions began, contacts made on the rotating drum actuating a keying relay and the temperature/pressure information transmitted as CW signals. The transmissions lasted about 4 minutes, long enough to give several repetitions of the digitized codes at a low data rate, assuring they could be copied with a minimum of ambiguity given the fact that signals were always received in the presence of noise.

An installation required several components such as batteries, vibrator and HV power supply, clock and transmitter, temperature and pressure sensors and the antenna. All had to operate in a hostile environment, temperatures as low as -40°C and the winds and snows of the Arctic. The land-based versions had a total mass of about 1,000 kg, most of that weight being iron-nickel batteries.

In that connection, the attempt of one installation on South Cape, Spitzbergen involved an aircraft accident where a landing gear collapsed and the starboard wing tip hit the ground. With that, the battery pack was heavy enough to be used as a counter-weight at the other wing-tip to right the aircraft, permit its repair and return to service.

There were differences in the configurations of the instruments, the German Navy's instruments were placed in cylindrical containers so they could be loaded and unloaded through the hatches of U-boats while those of the Luftwaffe were in rectangular containers. The WFS and WFL instruments are also included sensors for windspeed and direction; the Luftwaffe temperature and pressure sensors were placed in simple instrument shelters as their experience showed that the wind data was unreliable, largely influenced by the nature of the local topography.

Probably the best weather information was obtained from the German Navy's manned stations, those carrying out radio-sonde ascents. The logistical price for that information was quite high, however, as not only annual supplies for the station crew were required but also those for the radio-sonde flights.

In the early part of the operations in the Arctic, hundreds of hydrogen cylinders were brought in by surface vessels; later, that proved to be quite risky and just too great for the cargo capacity of the U-boats. Thus, chemical materials were carried in bulk by U-boat so as to permit local generation of hydrogen for the balloon flights. That involved supplies of caustic soda, aluminum chips and a special cylinder where the two could be combined in the presence of water. The writer has seen that technique used on Macquarie Island, south of Tasmania, in the early '60s, but in the Arctic during WWII, it had its problems, water being frozen in the dead of winter.

All in all, there were many interesting technical problems in the gathering of weather information from such remote sites. But getting the information back by radio posed continuing problems, even for manned stations. Thus, on some occasions, direct transmissions to Norway were not possible and relays required via another German installation in the Arctic, East Greenland to Spitzbergen or vice versa. When such a difficulty was noted in a radio log, the historical record generally shows a geomagnetic storm as the cause.

The same problems continue today in the Arctic and Antarctic; however, our technology had made great strides, vacuum tubes being superseded by solid state technology and HF radio replaced by UHF satellite links. Thus, remote sensing is much more reliable than it was in the years of WWII. But when one has solved a problem or come close to it, it's always good to look back over the rocky road to its solution. If nothing else, the aches and pains of the trek seem to be put in a better perspective.

Finally, I want to especially thank Doug Burrill VE3CDC, Roger Graves VE7FPT, Mathias Bjerrang JW5NM and Ulf-Dietmar Ernst DK9R, for their generous assistance in providing source materials. ■

SINGLE OP AWARD

Congratulations to Gus Samuelson VO1MP, winner of the CARF sponsored Trophy for single operator all band in the 1989 CQ WW WPX CW contest. CARF News Service

Interference to VCRs

By Bill Walker VE7BWS
ex-VE3BW

Over the last couple of years I have noted lots of comments from Amateurs concerning 2M transmissions and VCRs.

Despite the interest by Amateurs in this area I have not seen any articles on the resolution of this problem and I would like to address the issue.

In order to understand the problem, it is also necessary to know a little about CATV or, as most of us call it, Cable Television.

Since the majority of television viewers in North America use CATV as opposed to conventional antenna systems, VCRs are designed with CATV as the primary signal source. As with many television sets, stereos and other consumer electronic gadgetry, VCRs are generally built with the first consideration being price and immunity to interference is often relegated to a lesser priority.

CATV, of course, is an excellent transmission medium and, since it is essentially a closed medium, its susceptibility to outside interference is not generally a problem.

As we are aware, CATV often delivers more than the 12 basic VHF channels (2-13) and with the proliferation of UHF stations, cable companies must find extra channels in order to deliver those bonus stations.

They have a slick delivery system called Mid-Band and it works this way. Since UHF signals are difficult to transmit down a cable due to line losses at UHF frequencies, the UHF and sometimes the extra VHF signals are converted to mid-band signals by a special heterodyning method.

Mid-band channels usually range between 120 MHz to 174 MHz which, of course, includes your 2M band! Because those mid-band signals are being transmitted down a shielded cable, there are no problems, provided of course the cable remains well shielded. If the shielding is poor, all kinds of rotten things happen, such as radiation from the CATV system.

The radiation story is beyond the scope of this article and someday perhaps I can discuss it.

Getting back to the VCR, you can see that it should be able to receive all of the VHF channels including the mid-band channels equally, in order to produce consistent quality signals without major retuning. Obviously, the VCR must have a very broad front end in order to process all of the channels equally.

It is important to bear in mind that since the television channels are nicely separated by frequency on the CATV system, you could almost say that the cable system provides the selectivity needed to make the VCR work.

Up to this point, we have discussed only CATV and we have not found any real problems with VCRs provided the CATV system is secure and isn't leaky. But now consider that same VCR when it is connected to a conventional antenna arrangement. The antenna isn't too selective and receives many signals.

Normally we expect the television set to sort out what it needs by using its built-in selective tuner. But when the VCR is connected to the television set, the set is usually permanently tuned to channel 3 or 4.

Now the tuner no longer selects stations and we are depending upon the VCR to do our channel selection. Because the VCR is not a very selective device, we should expect tuning problems! We should expect a non-selective device to perform poorly when it is being fed with signals which are not organized in the same manner as CATV signals. By now you should be getting the picture (pardon the pun).

The strong 2M signal comes barrelling down the antenna lead into a device which readily accepts it and the result is an overloaded VCR. Well, that's reasonable isn't it?

A local VHF transmitter within 100 feet or so of the television antenna must produce a stronger signal to the antenna than the television station 40 or 50 miles away. Even though television stations are very powerful, their signals are attenuated by the 'square of the distance'.

The VCR cannot handle the 2M signal and a neighbour is upset. The Amateur has to consider a course of action which will get the neighbour 'off his case'.

Here are a few suggestions.

1. Find out if your neighbour has a problem when:
(a) you are on high power,
(b) your antenna is beaming directly at his home.

The solutions are easy enough. Or are they? By far, the best idea is to follow the CATV companies' example. When the CATV company doesn't want you to watch a pay channel (which is usually being carried on mid-band) they simply put a band reject filter on the line coming into your home and remove it when you pay for the channel.

The filters cost about 20 bucks and they work like a charm! All you do is connect them in front of the VCR and go back to being an Amateur again. The filter which eliminates the 2M band from entering the VCR is known as Channel E and may be purchased from Acunet Data Systems Inc., 377 MacKenzie Ave., Unit 5, Ajax, Ont. L1S 2G2.

Now I don't want to suggest whose responsibility it is to buy or fit the filter. Personally, my neighbour's goodwill is worth far more than 20 bucks to me. You now have a sure-fire remedy and, depending upon the vagaries of human nature, the matter is no longer a life-and-death situtation.

But before you start espousing your newfound knowledge and begin talking about the filter, it may be a good idea to check if the affected VCR has a built-in filter. The certain tip-off here is to look for a switch that says CATV or Antenna (sometimes Normal is used instead of Antenna). If you should be so lucky, switch over to normal and the mid-band frequencies will not enter the VCR.

If your complainant is on a CATV system, just explain the problem to the CATV people and they will check your neighbour's service for ingress.

Depending upon the circumstances, you may still find it smart to be neighbourly by lowering your power if the ingress is within tolerance and cannot be easily further reduced. ■

Amateurs in Search & Rescue

By Moe Lynn VE6BLY

Our *Edmonton Journal* carried a short story about a special kind of people needed for Search and Rescue missions. All my experience has been while airborne as pilot-in-command on numerous searches. It appeared this story deserved a follow-up with the possibility Amateur Radio might be included somewhere down along the line.

My first reply came from Kenneth Hill Ph.D., Search Director of the Waverley Ground Search and Rescue (WGSR). He is quite a busy person, so it was not surprising I had to wait almost two months. University of Alberta here in Edmonton is his alma mater having done his graduate work here between 1971-76. He not only wrote a three-page reply but also included the latest copy of their newsletter *Callout* and one previous issue.

They have a modular training program which is taken at one time by interested participants spread over a weekend plus one night of lecture and discussion. The modules are only an introduction to the skills set out and are followed up with training exercises scheduled as needed. He continued with a breakdown of each module, namely: Woodslore, Searcher, Advanced Searcher, Team Leader and Search Management. Actually the whole program sounds much like that given by the Military when training patrols to search, find and destroy the enemy. As is most generally known of the course, various levels of first aid are also covered by their own qualified instructors.

Amateur Radio certainly is involved with WGSR in a big way, according to Don VE1AMC whose letter arrived about ten days after the one from Prof. Ken Hill. Don advises they are in the process of revamping parts of their training program and as soon as it is done he is prepared to put together a more complete information package. This would more than likely appeal to Amateur Radio Clubs as opposed to an individual inquiry. My main purpose was to inform readers of *The Canadian Amateur* radio magazine of another facet of Public Service not heretofore mentioned in Western circles.

Don went on to say that Waverley offers a number of courses, exercises and programmes. These in turn are augmented by memorandums of understanding and mutual support agreements with other organizations. The end result is a very flexible but powerful structure that can seek and accomplish goals in short or long term endeavours.

One search they had about a year ago lasted over five days and involved upwards of a thousand people All primary communications for the operation were either on the Amateur radio or commercial systems managed by Amateur radio operators. In terms of lives saved, Don went on to say, Nova Scotian Amateurs have set an example that other regions of the country would be hard pressed to match.

About 23 volunteer ground search teams have formed the Nova Scotia Ground Search and Rescue Association. An interim slate of officers was elected and a by-laws committee expects to have by-laws approved at the April 21 meeting of the Association in Shubenacadie. An editorial in the March issue of WGSR *Callout* weighs the pros and cons of a provincially-oriented Association. In closing off the Editorial one thing is clear: the primary concern has to be the LOST person. Seems as if no matter how honourable your intentions are, politics raises the other side of the coin in an ever-greater sphere.

Clubs wishing more information are invited to write: The Waverley Ground Search & Rescue Team, P.O. Box 516, Waverley, N.S. B0N 2S0. On the west coast there is Search & Rescue Society of British Columbia, P.O. Box 187, Victoria, B.C. V8W 2M6. The latter also publish a good periodical of Canadian content called *SAR News*. No prices or membership dues were mentioned anywhere in either letter so far received. Sounds like a great way to brush up on some long idle skills, help out like you were going overseas with CUSO or IARN or whatever. Tell them you saw it in *The Canadian Amateur* radio magazine! ■

Note of Interest

By Moe Lynn VE6BLY

The May issue of *Radio Electronics* carried a letter to the Editor regarding Consumer Assistance. Readers of *The Canadian Amateur* may also find it interesting and informative.

Signatures to the letter were Sally Browne, Executive Director, and Stephanie L. Browne, Staff Director. It is a programme being put in to place by the Electronics Industries Association's Consumer Electronic Group (EIA/CEG). They represent major manufacturers of audio and video systems, telephones, VCRs, TVs, personal computers and home office products. The programme is in place to help individual consumers who are having difficulties in resolving complaints with manufacturers. Their office acts as an arbitrator in disputes between the consumer and (member or non-member) manufacturers.

There is a standard procedure to follow:

First try to resolve the complaint at the retail level where you first bought the equipment.

Failing that, get in touch with the manufacturer using the warranty card address.

Should you not be satisfied with the way the manufacturer has treated your complaint, you should then contact EIA/CEG by mail or phone. (Collect calls are accepted only on safety-related problems. This latter should not very likely apply to a Canadian consumer, although we are not specifically mentioned.)

Further details are expected following dispatch and receipt of a reply, if any, to my inquiry.

Consumers are to be aware and prepared to supply name, address and phone number, the product's brand name, model and serial numbers, date of purchase, dealer's name and address, service history including itemized invoices and work orders. Be prepared to submit a brief, concise statement of the problem and what it is you are seeking to satisfy.

All complaints will receive individual replies and EIA/CEG forwards the complaint to corporate personnel who are in a position to handle it and then follows it to its conclusion.

The EIC/CEG also publishes consumer-education pamphlets if you send an SASE to EIA/CEG, P.O. Box 19100 Washington, DC 20036 for their Consumer Publications List which gives titles and postage costs for their pamphlets. ■

2304 MHz
Another Challenging Band

By Vic Doty VE3LNX

Since my last article I hope everyone has had a chance to explore the 33 cm band and find out just how good that band can be. I also hope a few of you will see that if we don't try to utilize some of the UHF frequencies that they will start to disappear... I might add very quickly, if we don't do something to generate more activity. You know how the saying goes: "If you don't use it you will lose it."

Well, enough of that, let's get on to the topic at hand. This time I hope to be able to stir the interest of a few more people and to get you to investigate the 13 cm or 2304 MHz band. As you probably have guessed, the activity is considerably less on this band, but this is no reason not to investigate the possibilities. This is a challenging band. Let me tell you about some of my experiences on it.

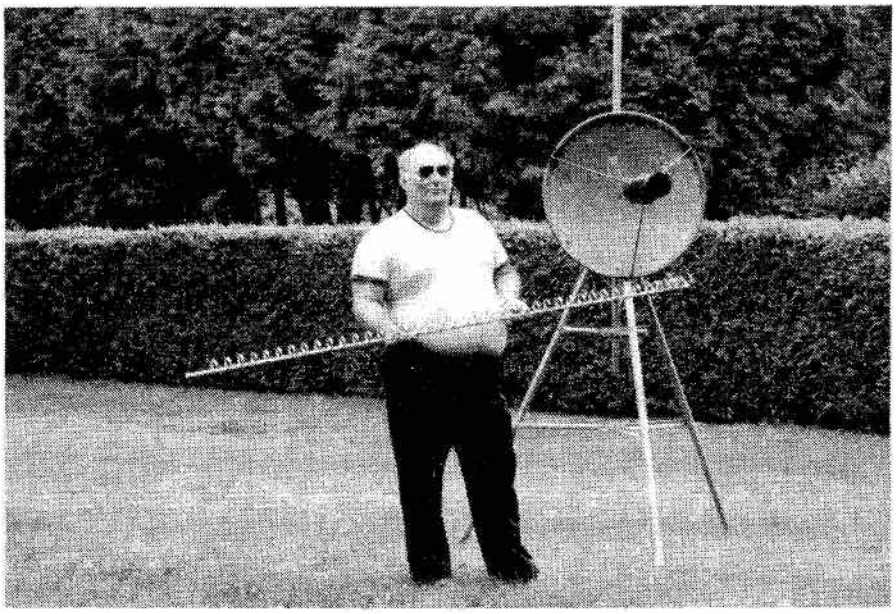
Although the propagation on 13 cm is usually not very good in the winter months you would be surprised at the distance that can be worked with very low power, even in January. In the January 1990 VHF Sweepstakes I was able to work WB3JSU/2 near Rochester, N.Y. from my home QTH east of Toronto. This is a distance of about 150 km in a straight line. They were having some minor problems with the final amp and were only able to reach about 500 mW, instead of the 25 or more watts that they usually run. Even with that low power I was able to work them with a good 5/1/9 signal for one more new grid square for the weekend. Unfortunately my total QSOs on 13cm in the January test were very sparse because conditions were very bad all around. Several of the local stations in the Toronto and Buffalo areas were not active.

I am using the SSB Electronics 2304 MHz transverter with a 144 MHz IF.

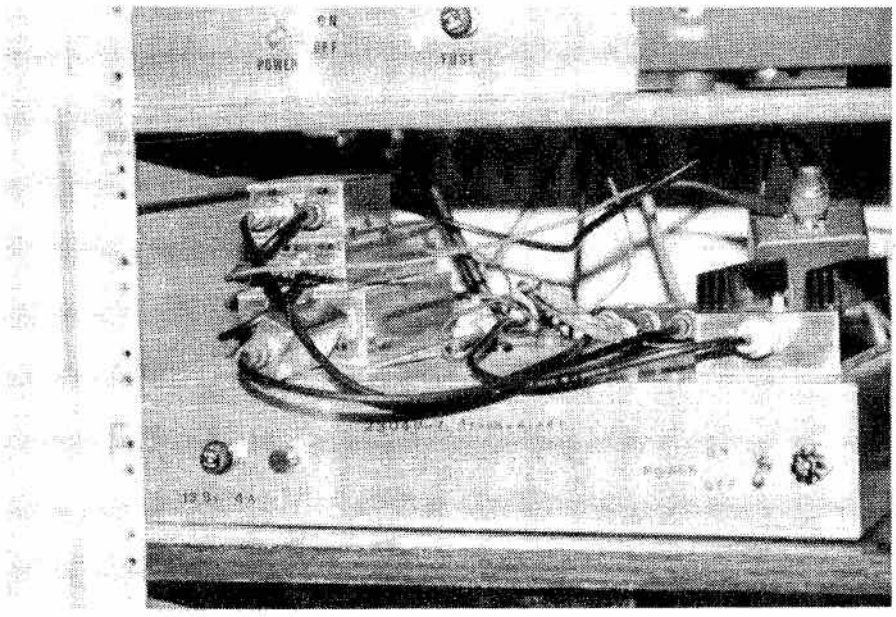
As you can see from the photos, the transverter consists of three pieces of equipment connected by cables. The output power of the exciter is 500 mW. This is fed into a 5 watt brick which drives a single home brew 2C39 tube amplifier for 25 watts output. The exciter and brick amplifier is conservatively designed and stands up very well (except when 120 VAC is applied directly to the unit; I will tell that story another time!). That whole lineup is now available as a complete unit from Hans Peters VE3CRU in Toronto.

The equipment shown in the photos is completely 100% a junk box special. Unfortunately there is no longer a supply of the cavities that I used with that particular 2C39 unit, but as that unit and its twin are the only two of their kind known to be in captivity and have those strange things called TUBES in them, I expect most readers will be more interested in the solid state drivers.

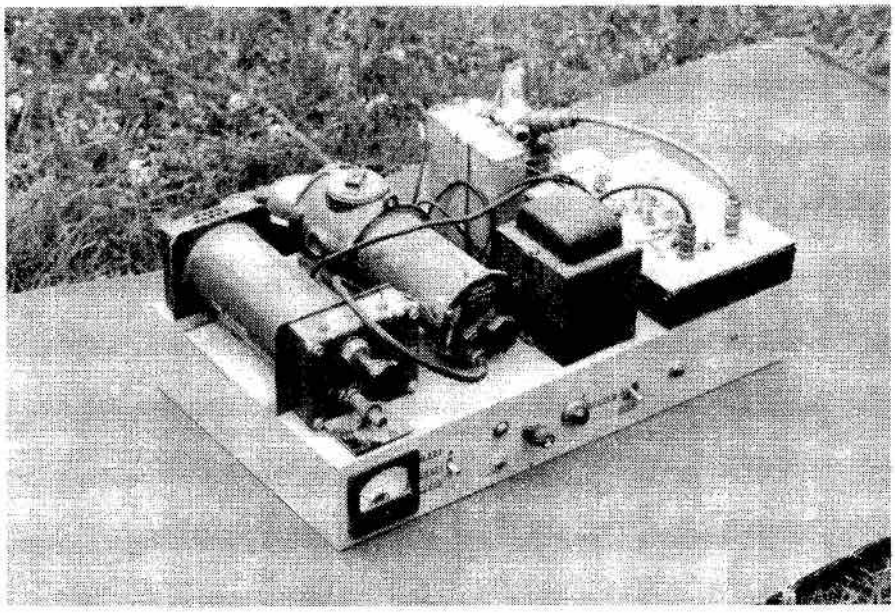
The two homebrew units were assembled in the summer of 1982 with a large amount of help from Bob VE3ADJ and have been working very well ever since. Both units have been used as portable rover stations for several years. When the units were first put on the air I was not sure what the output power was; those were in the days when I didn't even



The author, holding one of his 2304 45 element yagis.



Homebrew 2304 MHz transverter.



Homebrew 2C39 tube power amplifier. Note the surplus cavities used to tune it. Photos by VE3CES.

own a half decent watt meter let alone a BIRD. I called on a very good friend, Mike VE3DKW, to drop by with some test equipment borrowed from his place of employment. We found that for 10 watts in on 144 MHz I had a total of 400 mW output on 2304 MHz.

Initially both units were designed to be operated from 120 VAC, but as things usually go a couple of years later the rover station was expanded to cover 13 cm as well. The big problem then was to get the unit to work from a 12 VDC source. The solution to that problem was a $3 investment in a Heathkit voltage inverter picked up at a Philadelphia Pack Rat convention. Before that I had tried portable generators rented or borrowed, but the inverter solved those problems.

If you can be persuaded to do a little exploring on this neglected band, the biggest advantage is in the antenna.

A large amount of gain can be had with a not-too-big antenna. This simplifies things for apartment and city dwellers who suffer from a lack of space. I am using four 45 element loop yagis and they hardly take up as much tower space as a single 11 element yagi for 2 metres would. You can see from the photo that a 45 element loop yagi is not very large, and it delivers a fair amount of gain. The gain can run as high as about 14 dBd. (14 dB over a reference dipole or about 25 times power gain.) With four of these yagis, and allowing for cable losses, the antenna gain at my station is about 18 dB over a dipole.

Before I had the loop yagi there was the snow slider antenna. Several people who saw the antenna could not understand why I would store the snow slider (the kind children use to slide down snow covered hills) on the side of my tower in the summer! I finally convinced them that it was really an antenna.

I made my first DX contact with W8YIO in grid square EN72 (296.5 miles) on Oct. 3, 1982 with that dish, 400 mW and 65 of 7/8" heliax. (Notice the different definition of 'DX' on the microwave bands!) The following year Lew and I ran skeds for six weeks straight and were able to hear each other on an average five nights out of seven during the whole time period, but by that time I was running higher power (5 watts) which made things much easier.

After you decide on some equipment, what should you use for feedline? That is a very important decision. The preferred feedline is 7/8" LDF heliax with N connectors, unfortunately a very scarce item most of the time. With the usual HAMgenuity and the contacts that a lot of Amateurs seem to have that shouldn't be a big problem for the person who really wants to become active.

If anyone wishes to ask some questions concerning the 13 cm band I will be willing to answer all questions to the best of my ability and also provide information about equipment, antennas and feedline. I would appreciate an SASE.

By the way, there is no truth to the rumour that I am using a multicoupler to put my microwave oven online and keying the final even though the signal sometimes sounds that way, Hi Hi.

Vic Doty VE3LNX
R.R. 2 Ororo,
Ont. L0B 1M0

903 MHz continued

Well, it has been a few months since anything has been said concerning the 33 cm band, so I thought it was time I brought the subject up again.

I have not heard of any new stations getting on the air on this band and if anyone new is on and currently active I would appreciate hearing from you wherever you are.

Unfortunately last year there were no really good openings (Texas, Florida or California). This is in contrast to three years ago when we had the big opening to the southern United States. I guess the big problem in that opening was the lack of knowledge about the 33 cm band. I remember asking several stations about 33 cm gear, some had heard about that band but knew nothing about it, some had never even heard about it, so much to my disappointment I didn't make a single contact on 33 cm during that particular opening.

As I was saying, even though last year was not a really great year, there were still the normal openings that you could work stations in the 200 to 300 miles range in nearly any direction and from this QTH that means a contact anywhere between Ottawa, Maryland, New Jersey, West Virginia and Michigan with a fair amount of dependability for weak signal work.

I probably mentioned this last time, but nearly all the activity on 33 cm is weak signal except for fast scan TV activity in the Buffalo and Rochester areas. (At least, of which I am aware. Please drop me a line if you have anything else so I can include it if I write another article!)

I am hoping to have a very good season on the band this coming summer and I am also looking to up my grid square count to the 50 mark. At present it stands at 39 and with a little luck and some persistence I should be able to get the rest without too much problem.

If anyone is thinking about getting on 33 cm this year I would like to hear from them. If I can be of any assistance I would be glad to offer what assistance I can. Please include an SASE if you write.

Vic Doty VE3LNX,
R.R. 2, Orono,
Ont. L0B 1M0

Contest Results, 1989 Canada Winter Contest

By Jeff Parsons VE3IWF

The 1989 Canada Winter Contest will most likely go down in CARF history as the only contest to ever be held twice in the same year. The unfortunate error with the date this year caused more than a few problems. Comments like those of Ray VE3NBE were common: "I called CQ VE Test for over five hours and only got 47 QSOs." There were several entrants who operated on different weekends, and mysteriously enough managed decent scores. With only 34 logs received, this also must be one of the lowest levels of participation in this contest.

Enough of the bad news... let's give some credit where credit is due to the brave souls who managed some pretty impressive scores despite the limited activity. First place in the All Band Mixed category and highest point count overall went to Robby Robertson VE7ARS with a tremendous score of 177,144 points.

Robby piled up the points with 22 VE QSOs, and all the ed. wants to know is why a few more of them didn't throw their logs in the mail! Second place overall went to Tony Salvadori with a 'close but no cigar' score of 167,268 points. Tony out QSOd Robby, but it was the Canadians and multipliers that made the difference. Honourable mention and a hearty well done goes out to third highest score overall, VO2AA. This was George's first entry in a contest, and he racked up 79,170 points from Goose Bay. Other class winners include Gus VE6GUS in the All Band CW (did you give up on 80 metres this year, Gus?). All Band Phone went to Howard VE7HAM. 10 Metre honours went to Doug VE7DRA, 20 Metres to Wayne VE7EQA. Geoff VE3XRT took 40 Metres and with a single entrant this year in 160 Metres, John VE3NXA gets a certificate. In the Multi-op categories, the crew at VE6NOV took the class, and VE4VCA was the only entrant in the multi single class (and, I might add, only one of the two VCA/TCA stations who submitted logs!).

Class winners from each call area will be receiving a newly designed and multi-coloured certificate shortly. We have officially retired the old green ones forever.

Next year, we are looking forward to a single and definite date, slightly changed scoring and exchange format, and certainly more overall participation, especially by VEs who have never tried a contest before. See you in December! ■

Vince VO1SO, Single Band 10M

1989 CANADA WINTER CONTEST RESULTS

CALL	QSO'S	VE'S	OTHERS	TCA/VCA	MULT	TOTAL
ALL BAND MIXED						
VE7ARS	343	222	121	10	61	177144
VE3NXQ	465	206	259	3	53	167268
VO2AA	563	73	490	2	29	79170
VE3TCA	73	50	23	1	21	12852
VE3OXX	27	17	10	4	12	3480
VE3CYS	11	4	7	0	5	340
ALL BAND CW						
VE6GUS	99	56	43	1	23	17296
K6XD	37	7	30	0	5	950
VE3NBE	47	6	41	0	4	896
NO1ZZ	7	2	5	0	2	80
ALL BAND PHONE						
VE7HAM	168	99	69	1	30	38580
VE6GK	109	68	41	2	18	15912
VE2GMT	87	51	36	5	20	15080
VY2ZV	29	17	12	2	7	1806
WK4F	7	7	0	0	5	350
SINGLE BAND 10 METRES						
VE7DRA	310	42	268	1	9	13608
VE3SDX	251	50	201	0	9	11736
VE6MAA	125	28	97	0	9	6012
VO1SF	246	10	236	1	5	5320
VO1SO	122	10	112	1	4	2272
VE3NPY	137	3	134	0	3	1698
YU7KM	1	1	0	0	1	10
SINGLE BAND 20 METRES						
VE7EQA	21	19	2	0	7	1386
W5BU	7	1	6	0	2	68
SINGLE BAND 40 METRES						
VE3XRT	99	91	8	4	13	13286
VE7KD	66	56	10	2	12	7680
VE4FP	43	43	0	2	16	7520
VE3HLW	19	19	0	2	5	1150
SINGLE BAND 160 METRES						
VE3NXA	35	3	32	0	2	316
MULTI OP - SINGLE TRANSMITTER						
VE4VCA	171	123	48	3	26	38532
MULTI OP - MULTI TRANSMITTER						
VE6NOV	73	64	9	4	28	21168
DA2CF	102	85	17	2	15	14370
VE7CBA	30	30	0	3	14	5040
CHECK LOG						
VE8CM	MANY THANKS					

The Lister Generators

By Bill McLauchlan
VE7DDL (sk)

In eager anticipation, we watched the huge crates being unloaded from the RCAF DC-3 that had just landed on the ice strip at Baker Lake, N.W.T. It was December 1948 and the ice that was way beyond the minimum 3' thickness needed to support the plane. Cradled in the scraper blade of the D-6 Caterpillar, the boxes were lowered onto a makeshift stone boat in preparation for the last leg of their journey— destination was RC Signals Radio station power house.

Up to now we'd been using a little ONAN gasoline driven generator. It worked pretty well, but was prone to fits of gasping and wheezing when we fired up our 500-watt long wave transmitter. We used the transmitter for CW communication with Yellowknife and Fort Churchill, and also as a homing beacon for incoming aircraft. This last task involved sending 30 second long dashes, and it was during these heavy load periods that the tiny ONAN would complain loudest. It got so we had to switch everything else off when our beacon was on.

Today, however, all this was to change, the crates contained two new generators. Lister diesels, they were 18-2s (18 horsepower, two cylinders), and they were each capable of delivering five times the output of our puny ONAN! We finally got them bolted down to the concrete pads which had sat vacant since being poured by the Royal Canadian Engineer's crew, the summer before. Then, all we had to do was connect the engines to the oil tank and fire them up. That was quite a job in itself. Each generator had a massive steel flywheel on one end of the crankshaft, and the electric alternator on the other end.

There was a crank that fitted into a slot on the flywheel. Before cranking this monster over however, you had to back off two valves on the engine body to decrease the cylinder compression. If you neglected to do this, you could deal yourself a heavy injury straining to turn the crank! Once the compression release valves were opened, you cranked the flywheel until you heard the fuel injectors go 'creak creak', then you'd close one of the compression valves. If all went well, you'd then hear 'thump creak thump creak'— this was one cylinder firing, the other was loafing. The other valve was then closed, and if you were lucky, the 'thump thump thump' would gradually increase in tempo until the built in governor took over and the engine was running at the right speed.

Well, we all had to have a go at it, because we never knew when any one of us would have to fire it up— right? The cook wasn't all that convinced, but he finally agreed to give it a try. Weighing only about 90 lbs. soaking wet, he had quite a job getting the flywheel to go fast enough to start the 'creaking' bit, and when he did, he wasn't quite swift enough to close the valve, so things just kind of died off! After he flubbed it several times, we relented, I cranked the flywheel over and he closed the valve and with the first 'thump creak' he heard, he hurried off back to his kitchen!

Oh, things were looking up after that day! No longer did the lights dim in step with the transmitter keying. (We used to be able to copy the outgoing weather reports by watching a light bulb. Ah the sheer luxury of it all!) Another big plus was that the engine room was always nice and warm, so we moved our chemical toilet out there. For years, this odiferous 'honey pot' had plagued our existence. Situated in a back corner of our living quarters, it had to be packed through the common room, through the kitchen, out the back door, and its contents dumped 50 yards downwind, usually. (On one memorable occasion, the summer breezes shifted direction while our visiting CO was having supper!) The dumping area, in true Army tradition, was taped off and signed 'Foul Ground'. It was all of that!

About a month passed, then someone noticed an ominous crack in the concrete floor between the two generator plants. Fascinated, we watched the crack gradually widen. Then the power plants started to lean inwards, reaching towards each other, as it were. Our Listers were listing! A message to Edmonton reported this development. HQ responded, "Increase the amount of lube oil in the crankcases and keep us informed." The Listers finally stabilized at about 15 degress of plumb each.

On hearing this, HQ decided to send an officer up to personally inspect the phenomenon. Maybe they didn't believe us, or maybe the officer just wanted to escape his desk for a week. He'd have to stay seven days because we only got one flight per week.

Where was he going to sleep? We struggled with this weighty problem for awhile and finally worked out a 'warm bed' solution. If I relieved Hank after his 8-hour shift, he'd sleep in 'my' bed. I'd bed down in Mike's bed when he relieved me. Finally, nobody would own a bed, and we'd all have taken a crack at everybody else's. The captain could sleep in my bed for the week. We'd be glad to see the Captain go home!

He arrived, inspected the engine room, agreed that the Lister's were indeed leaning toward each other (at 13^0 not 15^0) and he settled down for his week's rest. Things went fairly well, as he was a decent chap and didn't hardly pull rank at all. The evening before his return flight was to arrive was given over to a little merriment. He'd brought two bottles of scotch and had saved them for the occasion.

Well on into the evening he excused himself and headed out to the engine room. Turned out he found the 'honey bucket' full to overflowing, so he manfully yanked the pail out of its container and out the door with it. Only problem was that the snow drift on the door end of the engine room was about eight feet high. We'd carved steps into it but they were a mite slippery. He made it to the top step, when a combination of slick stair treads and a sudden blast of wind caused him to lose his footing! He, and the bucket tumbled back down into the engine room. He wasn't hurt but he sure didn't smell very good! He came glowering back into the common room, his uniform dripping and reeking, he snarled, "Howinh--- am I gonna get on the plane in this outfit?" Grabbing what was left of the second bottle of scotch he lurched off to bed— MY BED! Next morning he'd calmed down a bit. His uniform was still unwearable, of course. He and I were about the same size, so he borrowed by best uniform. He looked kind of odd as a corporal, but he solved that by scissoring off the epaulets from his uniform with the three 'PIPS' of a captain and stapled them to the epaulets of my battledress. That looked even funnier, but I guess it salved his ego!

When I left Baker Lake in 1949, the Listers were still going strong, and still leaning toward each other at a constant 13 degrees! ■

Glass and Light beams may replace the Silicon Chip

By Louise Kehoe
Financial Post

Researchers at AT&T's Bell Labs would like to rename California's Silicon Valley, Silica Valley— after the main ingredient in glass.

They reckon this would reflect the importance of the latest milestone on the road towards replacing silicon chips with glass lenses, mirrors and 'photonic' devices, which process light beams instead of electrons.

What AT&T unveiled last week as "the world's first digital optical processor" performs computational calculations using laser beams and lenses rather than the much slower electrical signals and electronic chips.

And that shows, say the researchers, that by the year 2000 it may be possible to build an optical supercomputer between 1,000 and 10,000 times as powerful as today's electronic computers.

The achievement "is analogous to the flight of the Wright Brothers first airplane," says William Ninke, director of the Information Systems research laboratory at Bell Labs. "That first flight didn't go very far, and it only carried one passenger, but it was based on solid engineering."

LESS POWERFUL

Similarly, the first digital optical processor is less powerful than the average personal computer, but it demonstrates a new technology with enormous potential, he ways.

"Five years ago, when we started to work, people thought we were loony," says Alan Huang, head of the optical computing research department where the processor was built.

He believes his demonstration of optical computing will spur renewed efforts worldwide to pursue the potential of 'photonics', as this emerging field of technology is known, after the stream of photons in a ray of light.

Most other researchers in the U.S., Japan and Europe have attempted to develop 'hybrid' technology combining electronic and optical components which promises more immediate results. AT&T is alone, Huang says, in trying to build a fully optical processor.

WIN THE RACE

"We have broken the psychological barrier. We have demonstrated that it can be done," says Huang. "Now we will find out whether America has the stamina to win the race for commercialization." The leading challengers will be Japanese: NTT, NEC and Fujitsu. "They had been watching our research— noting every excruciating detail."

Huang is not alone in worrying that American companies may not make the most of optical technology research achievements. A 1988 report by the National Research Council (U.S.A.) warned that the U.S. was running the risk of losing out to Japan in the commercialization of photonics and called for a national programme bringing together researchers from universities, government and industry to spur commercial development of the technologies.

Like several recent calls for government support of U.S. high tech research, this one went unheeded.

"Researchers are an endangered species in America," says Huang. "In Japan there is excitement and curiosity about science. Here we have to keep in mind short term results and the bottom line."

Nonetheless, Huang credits AT&T with providing strong support for his work: "I have more resources than I can use."

AT&T is keen to promote more research in photonics. "We could go it alone, but it would take longer," Huang says. "We have removed a lot of the risk by demonstrating that it is possible to perform digital optical processing."

Optical technology shows great promise in overcoming the "electronic computing bottleneck," says Huang, referring to the problem of feeding signals on and off electric chips. He likens the hindrance to that of traffic entering and leaving New York's Manhattan Island. Although there are a number of bridges, traffic jams often occur.

Despite the fact that electronic chips continue to become faster, denser and more sophisticated, their performance in computer systems is limited by the speed at which data can be fed from one chip to the next.

The latest electronic chips have dozens of pins— or metal leads— through which signals are fed in and out. A significant portion of the chip surface area is taken up by the circuits driving these input and output channels.

Optical components, in contrast, need no such leads. Laser beams can be split into arrays of thousands of light signals, which can travel through a lens to an optical device accepting multiple inputs at the same time. The effect is analogous to letting Manhattan drivers fly onto or off of the island, rather than restricting them to the bridges.

This makes optical components especially attractive in the field of parallel computing, in which several signals are processed simultaneously.

The first commercial spinoffs from this experimental work should come soon, exploiting the inherent advantage of optics— that light beams travel faster than electrical signals.

Optical links could replace the wiring currently used to link circuit boards in computers within five years, say the AT&T researchers.

Then perhaps in 10 years time, it should be possible to create optical links between individual electronic chips. It will be about 15 years, they reckon, before a fully operational photonic computer becomes a commercial product. ■

via *Teleparc*

WAVO

WAVO (Worked All VO) sponsored by SONRA is available to any Amateur not resident in Newfoundland and Labrador operating from one call area who can show proof of two-way contact with 40 different stations operating fixed, portable or mobile in the Province. One of these stations must be using a VO2 (Labrador) prefix.

QSL cards are NOT needed as proof of contact. The log book entries must be certified by an Executive member of a recognized club, or two other Amateur radio operators. The submitted list of log book entries must include the call of the station worked, date, time, band, mode, signal report received from the VO station, and the signal report given to the VO station.

No endorsements for SSB, CW, etc. are available. Applications should be sent to Maurice VO1FG, Awards Chairman, P.O. Box 501, Carbonear, Newfoundland A0A 1T0.

CARF News Service

Around the Bay Race

The Hamilton ARC provided public service communications for the March 25, 1990 Around the Bay Road Race in Hamilton. Peter Maher of the Toronto Olympic Club, won this year's race with a time of one hour and 35:54 seconds.

The Amateur Radio Emergency Service group established the net control station VE3DC at Sir John A. Macdonald High School prior to the 11:30 a.m. start of the race. VE3DC used an Icom IC-27H 2 metre transceiver, 12 ampere power supply and a 5/8 magnetic mount. A complete backup station was also available. Two operators were assigned to net control duties, and one operator to liaison with race officials. The net was established on the club repeater VE3NCF (146.760 MHz). Transmissions were also made to the public address system on simplex frequencies. Status reports were provided to the spectators on the progress of the runners.

Three operators were assigned to mobile vans that were used to provide assistance to race officials and to pick up exhausted runners. Because of the cool weather, several runners required assistance of the vans. The operators in the vans used 2 metre handheld radios and quarter wave magnetic mounts. The remaining operators were assigned to various water stations and key positions on the race course. This included Joseph Brant Hospital and the critical area of rolling hills on Northshore Boulevard in Burlington and Dundurn Castle in Hamilton.

The Around the Bay Road race had over 1,300 runners registered for the race. It involves coordination of the Hamilton and Burlington Police Departments and many volunteer agencies. The radio operators are granted 'Official' status for the race and were provided with identification signs and a fluorescent green race hat. This annual event allows members of the club to meet their objective of providing public service communications; to practice communications in a directed net and to practice mobile operation within a net.

The following are recognized for their participation: Stanley VE3GFE, Doug VE3OCT, Roger VE3ATW, Fiore VE3OQG, Ken VE3OIN & XYL, Jack VE3JTR, Jim VE3PH, Brian VE3IBP, Bill VE3KYC, Kurt VE3PUI, Rolly VE3MWG, Gerry VE3ACA, Louise VE3LOI, Fred VE3GCP and Stuart VE3SMF.

Via Hamilton ARC

AIR SAFETY OFFENDER IMPRISONED

Communications Canada reports that a resident of Oliver B.C. pleaded guilty to four counts under the Radio Act. The accused was convicted on April 4, 1990, and received a three month imprisonment sentence.

The DOC assisted the RCMP in recovering a stolen radio transmitter from an unlicensed operator using it to make unauthorized transmissions to pilots and redirect air traffic at a local airport in early October 1989.

"Our main concern was getting the transmitter off the air as soon as possible," says Jim Whiteside, District Director for the Okanagan. "The potential danger in any non-professional or illegal radio transmitter talking to aircraft pilots is that the pilots may be misdirected or confused and make an error. It is difficult enough for pilots to fly under the best of conditions without someone misleading them."

Possession, installation and operation of most radio apparatus without a licence, or in the case of broadcasting, without a broadcasting certificate, as well as knowingly sending or transmitting false or fraudulent messages, calls or radiograms, are contrary to specific sections of the Radio Act and punishable by law.

— Communications Canada

Social Events

DRYDEN CAMP 807

Dryden, Ontario, Camp 807 will be held this year at Aaron Park on Thunder Lake, Aug. 3, 4 and 5. Talk in on VE3DRY repeater 147.240+.

This is a family event, sand beach, good swimming area, baseball diamond, barbeque, nature trails, etc. Trailers, tents, or commute eight miles from the town of Dryden.

OKANAGAN VALLEY HAM-FAIR

This event will be held Sept. 1 and 2 at Camp Dunlop, Lakeshore Road, Kelowna, B.C. (Okanagan Valley). Sponsored by the Okanagan Valley Hamfair Society, it features: contests, commercial dealer displays, tech talks, giant fleamarket and boat anchor auction, packet forum, QCWA meeting, refreshments, lots of prizes!

Talk in: 146.92 Penticton, 146.82 Kelowna, 146.88 Vernon. Contact: Orin Beebe VE7BEE, Box 477, Penticton, B.C. V2A 6K6 or Doug McIntyre VE7APS at 764-8637.

BRANTFORD FLEA MARKET

The Brantford Amateur Radio Club presents its Flea Market on Sat., Aug. 11 from 8 a.m. to 1 p.m. at Woodman Park Community Centre, 492 Grey Street, Brantford, Ont.

Admission $3 (children under 12 free); Door Prizes, Refreshments, Auction Sale; large, bright indoor sales area; free parking. Call Don VE3SIM (519) 879-6427 or write Eric Levison VE3DSL, 37 Magnolia Drive, Paris, Ont. N3L 3M9.

Call in Frequencies: 146.520 (simplex), VE3TCR (147.150-147.750), VE3TCR (443.025-448.025).

MOOSE JAW MUSEUM

The Moose Jaw Western Development Museum features transportation and communication. In the southeast part of the museum there is a display of the British Commonwealth Air Training Plan, featuring a Word War II hanger painted in the original green with a Harvard and a Mark I Anson on the tarmac. The lean-to on the hanger houses the link trainer and the wireless section.

The Moose Jaw Amateur Radio Club has provided the labour and part of the building supplies to build and decorate the wireless section. This is a room about 20 by 30 feet in which a display of World War II communication equipment has been arranged. At the present time we have a good display of radio transmitters, receivers and test equipment, and also part of a radar set. But we need other units to complete the display. We need the 1154, 1155 set, the AT1-AR2, the AT5, some AT12 equipment, direction finders, and base receivers like the AR77 and the old HRO.

If you know of any source for any of these items, please contact any member of the Amateur Radio Club, or the secretary, W.B. Green, 1033 Grace St. Moose Jaw, Sask S6H 3C2.

—VE5AV

Your Health and Noise

By Moe Lynn VE6BLY

Noise can be defined as unwanted or harmful sound. Whether diffused or not, it can permeate the brain and leave ringing in the ears which is the way your ear tries to tell you of the pain it is being subjected to. Scientists and sound technicians measure the height of sound using decibels (dB). Threshold of hearing is dB measured in an 'Anechoic' (noise- and echo-free) room. Rising to:

10 dB for rustling leaves,
15 dB is a quiet whisper,
30 dB found in a country home,
32 dB for very soft music,
40 dB your quiet radio at home,
45 dB average residential street, minimum noise,
54 dB in an average office,
60 dB equals to background music,
65 dB conversation between 2 people, three feet apart,
70 dB loud music,
80 dB very loud music,
88 dB heavy street traffic or 10 hp outboard motor,
90 dB a child's scream,
96 dB a heavy truck at 90 feet,
100 dB boiler factor, subway train, thunder,
110 dB hammering on a steel plate 2 feet away,
115 dB engine room of a submarine at sea,
130 dB threshold of pain,
135 dB F18 at takeoff (80 feet from tail).

Hearing protection in Alberta is mandatory at noises of 85 dB, other provinces have similar legislation except the Territories and noise does not have the same effect on all people. What will give one a temporary loss could mean permament disability to another.

Lowell Ponte wrote in a recent *Reader's Digest* of a Montreal factory worker only 36 years old who lost 50% of his hearing when a fellow worker slammed two pieces of metal together accidentally, creating a 145 dB noise instantly. He also mentioned that Audiologists have predicted almost as many people will be wearing hearing aids as the number of people wearing contact lenses by the year 2000 AD.

Studies have brought forth other poor health and sometimes fatal signs such as higher blood pressure, ulcers, higher cholesterol and abnormal heartbeats. People tend to get uptight around high noise levels resulting in stress, poor sleeping habits, fatigue, laboured breathing and the accompanying health damage. Certain drugs taken during exposure to loud noise can have damaging effects as well. Alcohol consumption and noise leads to a hearing loss that will last a lifetime. The noise barriers found along busy streets and highways are not just put there to spend money, and we should heed the warning against noises.

Computer chips have been developed to recognize a certain noise and automatically counteract with the same noise which leads to a cancellation creating a quiet zone. We need not wait for such remedies where a noise is controlled by the turn of a knob or slider control. Don't be afraid to wear an earplug or noise muffs. Cotton batting provides little protection, but foam plastic that expands to fill the ear canal provides at least 25 dB of protection.

Soon we may find that Medical Health Plans will not include people who have not taken any precaution or insist on listening to very loud music indoors. Compensation claims in 1987 reached about $160 million and you can be assured this will not be paid indefinitely with our present rising debt load. As far back as 1979 the United Nations claimed that noise was a menace to modern man and woman who are in danger of losing the battle against the noise then created. At that time health risks ranged from insomnia to heart trouble. Even Dr. Paul Donohue of *Edmonton Journal* fame agrees that loud music "doth have harms as well as charms."

It is not the once a day, two or three times per week that does the most damage because we often return to a quieter resting place and regain our hearing. BUT if you are one who is subjected to noise around 85 dB or even 65 dB for long periods without rest then you are prone to a permanent hearing loss. A Canadian Press story in the *Journal* recently stated that "one in 10 Canadians suffer some form of hearing loss" as found by Dr. Edgar Shaw, a researcher emeritus with the National Research Council. Almost half suffered hearing loss after being exposed to loud noises, he said. In Ontario, 15% of 7,335 permanent disability claims were for hearing impairment in 1988 alone.

Another Canadian Press report from Halifax stated that an audiologist here had concluded those frequenting local bars risk losing their hearing after a little more than half an hour of exposure. Tao Jiang, the industrial audiologist who made the report, says, "Music in bars reached an average 103.7 dB. This means anyone staying in that environment for more than 36 minutes is at high risk for hearing loss."

All this can also mean trouble for bar owners, as has been proven in the United States recently when some customers successfully sued bars for hearing loss. Even in Nova Scotia, the report goes on to say, "Bar employees are eligible for compensation if they can prove they incurred a hearing loss while working."

A sound survey carried out on 1969 by a Military Hygiene Technician in a radio room found 87-89 dB continuously and when one or more aircraft called through one or more of over 12 receivers, the noise was 95 dB. The base surgeon recommended that personnel take immediate action to protect their hearing by using either ear plugs or ear muffs, whichever is most practical in their work. Also, personnel should receive twice yearly audiograms of which a sum total of one was received in 10 years. Good news travels fast, but don't we often find that bad news spreads quicker? How long will it be before cities with anti-noise by-laws will bring them inside as they have done with the 'no smoking regulations'? To reduce noise pollution could mean we have to 'speak up for silence' if no other approach is found meaningful. ■

STOP PRESS ITEM!

ATTENTION: HAM RADIO SUBSCRIBERS

CARF has just received the news that Ham Radio Magazine has been sold to CQ Communications Inc. The last issue of Ham Radio will be June 1990.

All existing Ham Radio subscriptions will be fulfilled with CQ magazine. Subscribers to both magazines will be able to extend the CQ subscription or substitute with other titles in the CQ library.

CARF is not, at this time, the Canadian Agent for CQ, so all inquiries should be directed to CQ, not CARF headquarters.

CARF News Service

75 Metres
one thousand metres underground!

By Gerry King VE3GK

In 1951, when I was first licensed as VE2WK, I worked as an apprentice electrician for the Canadian Johns Mansville Corporation asbestos mines at Asbestos, Quebec. Locomotives were used to haul asbestos ore and maintenance equipment around 25 km of tunnels at about 1 km below ground.

To prevent collisions on the single track, engineers would turn on a red light when passing a stop. This light would stay red, warning any oncoming traffic to wait until the engineer of the leading train changed it to green two stops further down the line. There he would leave a red light to keep oncoming traffic back.

Stops were about 200 metres apart and two stops were always maintained between trains. There was a need for voice communications between the main dispatcher and the locomotive operators to replace the system of light signals that were risky and not very efficient. Radios were introduced mainly for safety purposes, but also to increase production.

The locomotives were self-powered by a series of batteries or drew power from trolley lines that provided about 100 volts DC. The special projects technician designed a simple AM rig that would operate on 100 volts DC and was rugged enough to withstand the conditions of an underground mining operation.

At that time, I was chosen to help because I was an Amateur, albeit not a very brilliant one. I learned about radio construction while working on this project.

After many tries, we came up with a simple AM transceiver, using six 50L6s— a 50-volt filament version of the 6-volt filament 6L6. We wired the filaments of two 50L6s in series, using 100 volts on the plates and slightly less on the screens. So started 75-metre, two-way voice communication in the underground mining operations.

Why 75 metres? Because I happened to have a 3.82 MHz crystal in my junk box! At three metres below ground level, all traces of RF at the surface disappeared, so we just went ahead and operated on 3.820 MHz for about ten years until the underground operations were shut down.

We were only able to effect communications where there were trolley lines, as we had to shock excite these lines to be successful. Our antennas were simple short wires, about eight feet long, located on the locomotive directly under the trolley line. We used a small matching network to match the 8-foot long single wire antenna to 3.820 MHz. Certainly not very efficient!

We encountered many problems with the radios at first because of the very rough environment and the objections of some of the locomotive crews. The production crews were in favour of the installation because it increased their tonnage and their pay-checks. However, the maintenance crews were very much opposed.

With radio communications, the dispatcher was able to locate these crews and keep tabs on them. They were so hostile that they would take the radios off and throw them away. We fought back by housing the radios in quarter-inch steel boxes welded to the engine frames. They overcame this by chaining the boxes to a strong anchor point, rolling their 5-ton machine down the track until they came to the end of the long chain— 'Bang!' everything would come off. We would find the boxes and radios in three feet of 'muck' in a clean-up car days later. Their answer to where and why was always, "Must have been the other shift."

Another method of disabling the units was to park the radio under a small waterfall. It took a while, but eventually 'short circuit city'.

The dispatcher's transmitter unit was a more powerful one, using an 807 in the final, modulated with a pair of 6L6s. The receiver was an old Hallicrafter.

Despite our 'troubles', safety and production were improved with the advent of 75 metre communications 1000 metres below ground! ■

The Rambler

TECHNICAL ARTICLES

The Canadian Amateur is always looking for technical articles. If you don't feel you can write a finished manuscript, just rough out your ideas and we will do our best to complete it for you.

We would also like your suggestions for technical topics for future articles. Technical questions are also welcomed and we will attempt to answer them in these pages.

Please send all contributions to the Technical Editor, whose address appears at the beginning of the Technical Section.

SWAP SHOP

FOR SALE: Heathkit SB-200, $550.00; Icom AT500 $550.00; Icom 2KL $2000.00; Jim Nazar VE4NC, 20 Main St., Flin Flon, Manitoba R8A 1J4. 204-687-5185.

FLORIDA QTH: For Rent, Indian Rocks, St. Pete's, 1 bedroom condo, Beach, Year Round Sun, Pool, tennis, hot tub. Contact Ron VE3NKS, week/monthly rates. Call: 416-875-2621.

FOR SALE: Trylon Tower A-200-56 $450, Beam TH6DXX $280, Rotor Ham-4 $150, Transceiver Drake TR7 $590, Amplifier Viewstar/Hammond PT1000 A $590, or complete station in excellent working order. Please call Albert VE3MUC, 416-756-0411 (Toronto).

FOR SALE: Old Amateur and electronic magazines. List available for two stamps. Jacques Blais VE2DQ, 4319 du Remous, Charny, Que. G6W 1A6.

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

POW Morale vs. Mortality

Wars produce unusual heroes and stories. In this case, the unlikely hero is a radio. The story is about the remarkable ingenuity and courage of the men who dared to create, use and protect it.

It all began when John P. Fleming of Chaffey's Lock, joined the Royal Canadian Air Force in 1940. Following pilot training, Sgt. Fleming was sent to England and posted to the Far East, attached to 242 Squadron of the RAF.

In February of 1941, Sgt. Fleming's Hurricane was shot down behind enemy lines, about 10 miles north of Singapore. Somehow he found his way through the jungle and along the coast, to his base in Singapore on the night before the city surrendered to the Japanese. Still, he managed to get to the Dutch East Indies.

Undaunted, Sgt. Fleming continued flying until March of 1942, when he was shot down again. This time he parachuted into a rice paddy, but was strafed from the air and shot in the arm. With the help of some Malaysian villagers, he found his way to a hospital.

It appears the flyer was destined to be one day early again. On March 3, the Dutch East Indies also surrendered. Sgt. Fleming was taken prisoner from the hospital and transported to the POW camp at Kuching, Sawawak, Borneo. He was to spend the next 3½ years of his life there.

Mr. Fleming related, "Life in the camp was grim. We literally worked from dawn to dark. Many people died of disease, but mostly because they were so weakened by malnutrition."

Did anyone try to escape? Mr. Fleming poignantly recalled, "The guards told us that for every man who tried it, 10 would be executed. That happened once, that I knew of. In any case, we were surrounded by dense jungle inhabited by head-hunters with blow-darts. Even the Japanese didn't venture out, unless they had to."

Circumstances obviously dictated making the best of their incarceration in the wilds of Borneo, which brings us to how the radio came into existence.

Shortly after his arrival, Sgt. Fleming met RAF radarman Len Becket. "Len had apprenticed in radio work since he was a boy of 15. By then he was over 30, and much older than the rest of us. About the same time, I got to know some of the Signal Corps people who were trying to put a radio together, without much success. We suggested they ask Len for help. He agreed, provided noboby would interfere. He didn't want anyone to hook it up to a transmitter. That would have been suicidal; the Japanese could detect that too easily. As it turned out, there were detection devices strategically placed in the jungle around the camp. The sole purpose of our wireless was as a receiver to monitor broadcasts."

In a few months, the ingenious Mr. Becket had assembled the radio, complete with its own generator. Like Dr. Frankenstein's monster, the set evolved from smuggled, scrounged and recycled materials.

Melted down foil linings from tea chests became part of a flywheel. Corrugated roofing sheets and automobile coils (secreted in by work parties) formed armature drums and field coils. Even civilian prisoners donated hearing aids to the cause.

"We needed something to hold tuning condensers in place," Mr. Fleming said, "so work crews brought it in in their mouths. They chewed it like gum and told the guards it was good for their teeth."

Sgt. Fleming was in charge of security for the radio. This involved anticipating patrols and surprise searches. He recalled, "By their frequent checks, we knew they thought we were up to something, so we had to have a good hiding place." Fortunately, the officers had special permission to build a hut for preparing infirmary food.

"To coincide with this we built an elaborate fireplace and an oven. The set was stored beneath this unit and a fire was maintained at all times. When we needed the radio, we raked the coals aside, then brought it up through the floor."

Apart from the obvious tension of possible discovery, which meant torture and ultimate death, operating the wireless itself was no simple task.

"The knob for the tuner was a brass button (from a uniform) stick. This worked quite well but needed constant adjustment during reception," he said. "For this reason, it required two people to get the most out of a broadcast".

Dick Peppler, a British Army man, was assigned to the task of recording messages, because he had an incredibly retentive memory. "While Len fiddled with the tuner, Dick transcribed the news and I kept watch."

When asked if they heard the voice of the infamous Tokyo Rose, Mr. Fleming chuckled. "Yes, but our favourites were the BBC short-wave broadcasts."

Amazingly, the three men continued their clandestine caper on a semi-weekly basis for the next three years. They were never detected by the authorities, nor the guards.

Keeping such an operation secret from the enemy and informers, when so many people knew about it, and for so long, definitely defied impossible odds. Even author Agnes Keith, in the civilian sub-camp was aware of it and mentioned the radio in her novel about Kuching entitled *Three Came Home.* (The book later became a movie by the same name and starred Claudette Colbert.)

There were over 3,000 people interned at Kuching during those horrible years. It had started with 2,400 prisoners. By the end of the war a mere 506 men remained alive, and only 104 of them were able to walk out when they were finally liberated by the Australians in 1945.

Why did these men risk mortality for a radio? Fleming modestly continued, "The newscasts let everyone in the camp know the progress of the war, and contributed immeasurably to the mental well-being and morale of all prisoners."

What has become of the three men in that story, and that wonderful radio? Fleming lost touch with Dick Peppler after their release, but he did maintain contact with Len Becker.

"Len returned to England with his radio. He said it worked there quite well. He brought it with him on one of his visits to Canada. I sponsored him for special research in Burlington, Ontario, and some years later he did classified work for the U.S."

"Eventually, he returned to England and we lost touch. He could be dead now. Len was one of those rare individuals who was able to weld theory to practice. Only someone like Len could have assembled that radio."

In 1946, John Fleming married Laurel Daly of Smiths Falls and went to work as a sales engineer in the Toronto area, until his retirement, when he returned to Chaffey's.

As a direct descendant of the first lockmaster (William Fleming) the veteran never forgot his roots, wherever he was. Does J.P. Fleming plan to write his war memoirs? "Maybe when I'm too old and decrepit to do anything else. Right now, I'm content to be out fishing and hunting. Chaffey's is a great place to live," he said. ■

Lanark County *Record News/Telepare*

NEW PRODUCTS

A LITTLE, SMARTER WAY TO COMMUNICATE

Qwint Data, Inc. is an Illinois Corporation which produces portable plain-paper communications terminals. Still the world's smallest plain-paper printing communications terminals, Qwint offers a range of features serving various markets: Packet Radio Systems, Portable Database Access Printers, Telex Machines, Printing Cosoles, Remote Receive-Only Printers.

In the U.S., major Qwint customers include ADP (portable printers for printing insurance claim estimates), RCA (report printers for telephone systems), Barrister Information Systems (law office computer systems) and Martin Marietta (military flight recovery data systems).

RadioRite terminals are also well-suited to the communication needs of people in remote areas not served by land lines, including islands, and other sparsely populated regions.

The Qwint RadioRite radio communications system combines the company's plain-paper keyboard printer with a 1200 BAUD error-correcting radio data modem, enabling the terminal to send and receive error-free printed messages via any standard radio transceiver, as well as becoming the choice for navigation and data processing systems being installed on ships because of their small size and durability.

For more information, contact Qwint Data, Inc., 333 Corporate Woods Parkway, Vernon Hills, Illinois 60061-3109.

TOROIDAL LOW FREQUENCY CHOKES

Toroid Corporation of Maryland had developed a line of toroidal low frequency chokes using the same core material of tape wound grain-oriented silicon steel as for its toroidal power transformers.

Like toroidal power transformers, the new low frequency chokes offer reduced size and weight, no audible hum and have smaller losses than chokes of stacked laminated steel. The low strayfield levels permits mounting the choke closer to sensitive circuitry. Three choices of mounting methods for labour saving one-screw mounting hardware are available.

A typical application is DC filtering in rectifier circuits with high voltage or high current requirements for which normal capacitor filtering would be bulky. Using the choke in rectifier applications, the power rating of the transformer can typically be reduced by 1/3 due to improved load characteristics. Using the new choke in any filter circuit, allows the customer to use lower capacitance values. As a result, the customer can use a low profile enclosure for the circuitry.

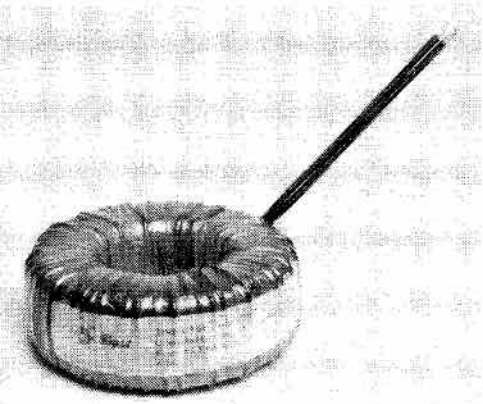
Toroid Corporation will design to customer specifications using five different standard core sizes. The smallest core size is suitable for filtering rectified DC up to 72 Watts at 60 Hz supply to the rectifier, while the largest size allows filtering up to 2600 watts. The dimensions for the smallest size are 2.8" OD x 1.3" height and 6.3" OD x 3.2" height for the largest, the weight is 1 lb. and 16 lbs. respectively. Toroid's design capabilities allow working from customer's DC data with full guarantee that prototypes of both the transformer and the choke will meet customer's specifications.

In lots of 100 pcs, a 1000 watt DC filter choke typically costs $45 each.

Other applications are reversible DC motor controls, where the a toroidal filter choke reduces the motor losses and improves the motor torque. The chokes can also be used in AC circuits as balancing transformers for current splitting and current combining, and as ballast reactors.

For furtrher information contact Toroid Corporation of Maryland, 6000 Laurel-Bowie Road, Bowie, MD 20715.

Toroidal Low Frequency Choke



Qwint Radio Data Modem

SOPRA

The Southern Ontario Packet Radio Association was formed in 1985 and has been a leader in the Packet community.

The SOPRA Network is one of the largest networks in Ontario, covering an area from east of Peterborough to west of Georgetown, south across Lake Ontario to New York state in the U.S.A. and north to Barrie including the Niagara area.

SOPRA operates an RBBS station for mail service to other BBS stations across Ontario and Canada. They also provide a conference link whereby multiple packet connections of many stations can communicate with each other at the same time.

Recently, a 450 MHz link to Winona from the SOPRA network was added and there are plans to add another 450 link to Peterborough to improve connectivity to that area. Future plans include a satellite link to Ottawa and other 450 or 220 links to other Ontario locations.

Your support is needed if packet radio is to develop and grow. Contact SOPRA at P.O. Box 56, Norval, Ont. L0P 1K0 to find out how you can become a member.

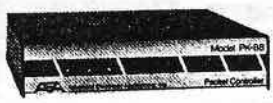
London ARC Newsletter

OPERATOR'S AID

Symbols and Abbreviations—*continued*

N	
N	modulation factor
n	nano (10^{-9})
nbfm	narrow-band frequency modulation
nbvm	narrow-band voice modulation
n.c.	no connection
NC	normally closed
NF	noise figure
NiCad	nickel cadmium
NL	noise limiter
NMOS	n-channel MOS
NO	normally open
npn	negative-positive-negative
nS	nanosecond
O	
OD	outside diameter
OM	old man
op amp	operational amplifier
osc	oscillator
OSCAR	Orbiting Satellite Carrying Amateur Radio
OTC	Old Timers' Club
oz	ounce
P	
p	pico (10^{-12})
P	power
PA	power amplifier; public address system
PAM	pulse amplitude modulation
PCB	printed (or etched) circuit board
PCM	pulse code modulation
PEP	peak envelope power
PEV	peak envelope voltage
pF	picofarad
ph	phone
PIN	positive intrinsic negative
PIV	peak inverse voltage
pk	peak
pk-pk	peak to peak
PLL	phase-locked loop
PM	phase modulation
p.m.	afternoon/night
PMOS	p-channel MOS
pnp	positive-negative-positive
ppi	plan position indicator (radar)
pot	potentiometer
PROM	programmable read-only memory
PRV	peak reverse voltage
PSK	phase-shift keying
PTO	permeability-tuned oscillator
PTT	push-to-talk
PSU	power supply unit
Q	
Q	figure of merit (tuned circuits); charge; quantity
QRP	low power (less than 10 watts input)
QTHR	address correct in *Call Book*
R	
R	resistance
RAM	random access memory
R/C	radio control
R-C	resistor-capacitor
rcvr	receiver
rev/min	revolutions per minute
RF	radio frequency
RFC	radio-frequency choke
RFI	radio-frequency interference
rhcp	right-hand circular polarisation
RI	Radio Inspector
RIT	receiver incremental tuning
RLC	resistor, inductance, capacitor network
rms	root-mean-square
RO	Radio Officer
ROM	read-only memory
rptr	repeater
RS	Radiosport Satellite (USSR)
RSGB	Radio Society of Great Britain
RST	readability-strength-tone
RT	radiotelephone
RTL	resistor-transistor logic
RTTY	radioteletype
Rx	receiver
S	
S	second; magnetic reluctance; Seimens
SAE	self-addressed envelope
SASE	stamped SAE
SCR	silicon-controlled rectifier
SHF	super-high frequency (3-30 GHz)
SINAD	Ratio of Signal to Noise and Distorting
SM	silver mica (capacitor)
SNR; S/N	signal-to-noise ratio
spdt	single-pole double-throw
spst	single-pole single-throw
SS	sweepstakes; spread spectrum
SSB	single sideband
SSC	AMSAT Phase III special service channels
SSI	small-scale integration
SSTV	slow-scan television
STSP	short-term special purpose (FM repeaters)
SWL	shortwave listener
SWR	standing-wave ratio
sync	synchronous; synchronising
SYNCART	synchronous satellite carrying Amateur Radio transponder
T	
t	time; temperature °C
T	period; temperature °K
TA	technical adviser
TCA	time of closest approach
TE	trans-equatorial (propagation)
tfc	traffic
THz	tetrahertz (10^{12})
THD	total harmonic distortion
tpi	turns per inch
T-R	transmit-receive
TTL; T^2L	transistor-transistor logic
TTY	teletypewriter (from Teletype, the trade mark of Teletype Corporation)
TV	television
TVI	television interference
Tx	transmitter
U	
UHF	ultra-high frequency (300-3000 MHz)
UJT	uni-junction transistor
UoSAT	University of Surrey educational/research satellite (Great Britain)
USB	upper sideband
UTC	Universal Co-ordination Time
uV	ultra-violet light
V	
V	volt; voltage
VA	Volt-Ampere
VCO	voltage-controlled oscillator
VCR	video cassette recorder
VCXO	voltage-controlled crystal oscillator
VFBO	variable-frequency beat oscillator
VFO	variable frequency oscillator
VHF	very-high frequency (30-300 kHz)
VLF	very-low frequency (3-30 kHz)
VLSI	very large-scale integration
VOM	volt-ohm-milliammeter
VOX	voice-operated switching
VR	voltage regulator
VSWR	voltage standing-wave radio
VTVM	vacuum-tube voltmeter
VU	volume unit
VXO	variable crystal oscillator
W	
W	watt; work
WAC	Worked All Continents
WARC	World Administrative Radio Conference
WAS	Worked All States
wbfm	wide-band FM
Wh	watt-hours
wpm	words per minute
ww	wire wound; wire wrap
wx	weather
X	
X	reactance; electrostatic field strength
xcvr	transceiver
XO	crystal oscillator
xfmr	transformer
xmtr	transmitter
xtal	crystal
XYL	wife
Y	
Y	admittance
YF	wife
Z	
Z	impedance; UTC time

Packet



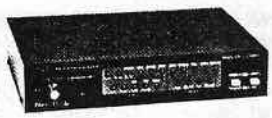
$199 **PK-88**

Packet Radio TNC

Unique operating features with a proven hardware and software design make AEA's PK-88 your best choice in packet radio--now with MailDrop, an 8KByte efficient personal Mailbox. The PK-88 also allows multiple single frequency QSO's, digipeating and networking. It's a superb value, packed with all the most needed packet radio features such as direct interface capability with NET/ROM and TCP/IP. In addition to all the features of a "standard" TNC, the PK-88 offers features not found in any other TNC:

- WHYNOT command - Shows reasons why some received packets are not displayed.
- "Packet Dump Suppression" - Prevents dumping unsent packets on the radio channel when the link fails.
- CUSTOM Command - Allows limited PK-88 customization for non-standard applications.
- Enhanced MBX command- Permits display of the data in I- and UI-frames, without packet headers and without packet headers or retried frames.
- Enhanced MPROTO command - Suppresses display of non-ASCII packets from Level Three switches and network nodes.

Multi-Mode



$499 **PK-232MBX**

Multi-Mode Data Controller

With over 40,000 units sold worldwide, the PK-232MBX is the world's leading multi-mode data controller. Combining all amateur data communication modes in one comprehensive unit, the PK-232MBX offers Morse Code, Baudot, ASCII, AMTOR/SITOR 476 and 625, HF and VHF Packet, WEFAX receive and transmit, TDM, as well as commercial standard NAVTEX automated marine information services.

All software is on ROM.

- 20 front panel status and mode LED indicators
- RS-232 compatible
- Exclusive SIAM™ Signal Identification and Acquisition Mode
- TDM Time Division Multiplex decoding
- PakMail™ mailbox with selective control of third-party traffic
- FAX printing - supports most printers
- Two radio ports
- Host mode for efficient program control of the PK-232MBX
- KISS mode for TCP/IP networking protocol compatibility
- 32K RAM lithium battery-backed
- Many features for the digital SWL

Keyers

The Morse Machine

$269 **MM-3 Keyer**

The Morse Machine has all the features you need in a memory keyer, including 2-99 WPM speed selection and over 8,000 characters of soft-partitioned memory. Twenty memories store your mesages...as short or as long as you like. Memory can be expanded to 36,000 characters. All memory is backed up by an internal lithium battery.

Comprehensive Morse training facilities are built-in. **A Proficiency Trainer** for random code group practice. **A Random Word Generator** which generates four-letter words and **A QSO Simulator** which allows you to call stations, answer a CQ or listen to realistic on-the-air QSO's.

The MM-3 also features automatic serial number insertion and incrementing in any memory message. Use the front panel knob to adjust your sending speed or enter a precise speed with the keypad, toggling between the two at any time. Exchanges can be expedited by having parts of your message sent at a higher speed. You can even add remote switches for four of the memories to send your response or call CQ. The MM-3 can also be programmed for automatic beacon use. The RS-232 compatible serial I/O port provides computer control of the MM-3 and monitoring of the Morse training features.

The keypad offers an easy-to-use method of quickly changing parameters to customize the MM-3.

Antenna Tuners

AT-3000 SOLD OUT

AT-300 $249

AT-300 and AT-3000 Antenna Tuners

For tuning perfection, choose AEA's AT-300 (300 watt) or AT-3000 (3 kW) antenna tuners. Quality and exceptional engineering are built-in for maximum performance and long operating life.

The low-pass design provides more harmonic attenuation for lower TVI and allows matching to a much wider range of antenna impedances than common high-pass designs.

The AEA tuners feature a frequency compensated dual-movement SWR meter for ease of tuning with a front panel power range switch. Minimal SWR is achieved by inductors with 18 (AT-300) and 20 (AT-3000) taps. AEA's exclusive patent pending CAM switch design on the AT-3000 provides accurate tuning. The built-in front panel antenna switch allows you to easily select two unbalanced (coax- fed) antennas, a dummy load or a balanced antenna.

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virtually any receiv
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are fed by coax cable,
lines or a single wire
connection to balance
1:4 balun is built-in.

Tuning Options.
panel switch control
you to switch betwee
coax-fed antennas (d
through the tuner). Y
also switch to a bala
or wire antenna. The
position allows you t
to a dummy load (such
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ICOM Spe

IC-900 2M/440MHz 25
IC-901 2M/440MHz 45
IC-2400 2M/440MHz 4
IC-3210 2M/440MHz 2
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IC-228A 2M 25W 21
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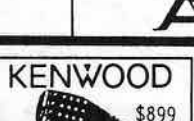

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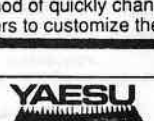

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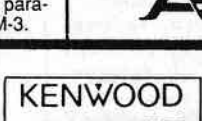

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ver, transmitter or transceiver from
th up to 300 watts of RF power.

HT-1 is compatible with almost ANY
g verticals, dipoles, inverted vees,
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alanced line
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u to switch
uch as AEA's DL-1500 dry dummy load)
connected coax antenna. In the BYPASS
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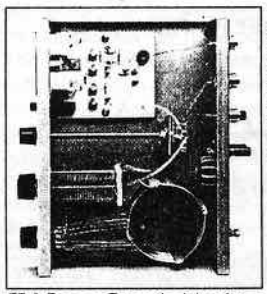
can be selected so that the tuner
is bypassed, but not the meter
circuit.


ET-1 Econo-Tuner inside view.

Dual-Movement Meter. The ET-1 features a precision dual- movement meter to simultaneously monitor power and SWR.

Once again AEA has achieved a significant engineering breakthrough with its high-performance, low profile HF IsoLoop antenna. Performance isn't compromised by its small size. Operate your favorite HF band (14 to 30 MHz frequency coverage) from areas with restrictive zoning ordinances or apartments and condos. Or take it with you on vacation... it's the ideal go-anywhere portable antenna. And it's the only antenna you need to cover 14 to 30 MHz. ONE antenna instead of numerous dipoles and without any traps!

150 Watts. Rated up to 150 watts, the IsoLoop transmits and receives on any frequency between 14 to 30 MHz. When mounted with the loop in the horizontal plane, the radiation pattern is omni-directional and horizontally polarized. Maximum radiation is at low angles which is ideal for DX operation. The IsoLoop may also be mounted with the loop in the vertical plane to provide a null in a desired direction. Tuning is provided by a precision stepper-motor and a small remote control box, the LC-1.

The IsoLoop does not need ground radials and its balanced, shielded feed-loop isolates the feedline from the antenna. The IsoLoop is well-isolated from the feedline. Like AEA's Isopole antennas, your signal is radiated by the antenna and not the feedline. With end-fed antennas, the outside of the coax becomes part of the antenna, resulting in noise and computer hash pickup and increased TVI problems.

High-Q Design. One of the unique features of the IsoLoop is its inherent High-Q. The IsoLoop can be considered a very sharp tunable filter that radiates. The narrow bandwidth suppresses harmonics from your transmitter reducing TVI problems. It also attenuates out-of-band signals from nearby transmitters that could overload your receiver.

Revolutionary. The AEA IsoLoop antenna represents years of research and development. Others may try to imitate the IsoLoop, but none can match the patent-pending design.

Compact. The IsoLoop is square, with rounded corners, and measures 32 inches on a side and weighs only 12 pounds. Because of the IsoLoop's small size, it makes a perfect attic or balcony antenna. It's also excellent for portable operation, recreational vehicles or camp-site use. A rotator is not necessary when used in the omni-directional, horizontally polarized mode.

AEA's IsoLoop™ HF ANTENNA

REVOLUTIONARY COMPACT DESIGN

pecials of the Month . .

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Frequency stability	Within ±10ppm 5 to 60 min. and within ±2ppm one hour after powered on	Weight	Approx. 8.5kg

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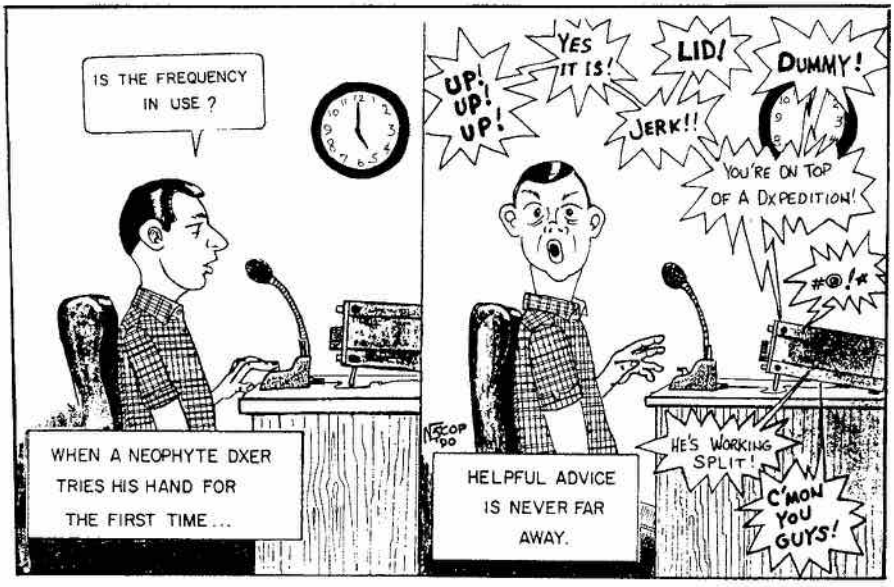
OPERATOR'S AID

Commonly used Symbols and Abbreviations

A	
A	ampere; amplification factor
AC	alternating current
A/D	analogue-to-digital
AF	audio frequency
afc	automatic frequency control
afsk	audio frequency shift keying
agc	automatic gain control
Ah	ampere hour
alc	automatic load (or level) control
AM	amplitude modulation
a.m.	morning
AMSAT	Radio Amateur Satellite Corporation
AMTOR	Amateur Teleprinting Over Radio
anl	automatic noise limiter
ant	antenna
AOS	acquisition of signal
ARA	Amateur Radio Association
ARC	Amateur Radio Club
AREC	Amateur Radio Emergency Corps
ARS	Amateur Radio Society; Amateur Radio Station
ASCII	American National Standard Code for Information Interchange
ATV	amateur television
avc	automatic volume control
AWG	American wire gauge
az-el	azimuth-elevation
B	
B	flux density; susceptance
BASIC	Beginner's All-purpose Symbolic Instruction Code (computer language)
b	byte (a group of bits or binary digits, usually eight)
bc	broadcast
BCD	binary-coded-decimal
BCI	broadcast interference
bcl	broadcast listener
bd	baud (bits/sec)
ber	bit error rate
bit	binary digit
BFO	beat-frequency oscillator
bpf	band pass filter
bw	bandwidth
byte	computer word, 8 bits
C	
C	Celsius, capacity, Coulomb
c	velocity of EM waves
CATV	cable television
CB	citizens band
CCIR	International Radio Consultative Committee
CCIT	Consultative Committee for International Telegraph and Telephone (ITU)
CCS	constant current source
cctv	closed circuit television
ccw	coherent CW; counter-clockwise
CD	Civil Defence
Ch	channel
cm	centimetre
CMOS	(or COSMOS)— complimentary-symmetry metal-oxide semiconductor
coax	coaxial cable or connector
COR	carrier-operated relay
CPU	central processing unit
CQ	general call to all stations
CRT	cathode-ray tube
ct	centre tap
CTCSS	continuous tone coded squelch system
CW	continuous wave (code); clockwise
D	
D	electrostatic displacement; flux density
D/A	digital-to-analogue
dB	decibel
dBd	antenna gain referenced to a dipole
DBDM	double-balance diode mixer
dBi	antenna gain referenced to an isotropic, a dipole has a gain of 2.14 dBi
dBm	decibel referred to 1 milliwatt
dBW	decibel referred to 1 watt
DC	direct current
det	detector
DF	direction finder; direction finding
DIP	dual-in-line package, 14 to 16 pins
dpdt	double-pole double-throw
dpst	double-pole single-throw
dsb	double sideband
DTL	diode-transistor logic
DTMF	dual tone multi-frequency
DVM	digital voltmeter
DX	long distance
DXCC	DX Century Club
E	
E	voltage
e	base of Naperian logs
ECL	emitter-coupled logic
ECO	electron-coupled oscillator
EHF	extra high frequency (30-300 GHz)
EHT	extra high tension
eirp	effective isotropic radiated power
EMC	electro-magnetic capability
E-M-E	earth-moon-earth (moonbounce)
emf	electromotive force (voltage)
EMI	electro-magnetic interference
EMP	electromagnetic pulse
EPROM	erasable programmable read-only memory
EUV	extreme ultra-violet radiation
EQX	equator crossing
erp	effective radiated power
F	
f	frequency
F	farad; Fahrenheit
FAX	facsimile
FCC	Federal Communications Commission
FD	Field Day
FET	field-effect transistor
FF	flip-flop
FM	frequency modulation
FMT	frequency measuring test
FMTAG	Frequency Management Technical and Advisory Group
fot	optimum working frequency
fsd	full scale deflection
FSK	frequency-shift keying
G	
g	gram
G	giga (10^9); conductance; magneto motive force
GaAs FET	gallium arsenide field-effect transistor
GDO	grid-dip or gate-dip oscillator
GHz	gigahertz
gnd	ground
H	
H	henry; magnetic field strength
HAAT	height above mean terrain
HF	high frequency (3-30 MHz)
HFO	heterodyne-frequency oscillator
hpf	highest possible frequency; high pass filter
HT	high tension
Hz	hertz
I	
I	current
IARU	International Amateur Radio Union
IC	integrated circuit
i-d	identification; identifier
ID	inside diameter
IF	intermediate frequency
IMD	inter-modulation distortion
I/O	input/output
IRC	international reply coupon
ISB	independent sideband
ITU	International Telecommunication Union
IW	Intruder Watch (Monitoring Service)
J	
J	Joule
j	indicator for reactive component of an impedance: (+j inductive; −j capacitive); joule
JFET	junction field-effect transistor
K	
k	kilo (1000)
K	kilobyte; specific inductive capacity; Kelvin; dielectric constant
kg	kilogram
kHz	kilohertz (10^3)
km	kilometre
kV	kilovolt
kW	kilowatt
kWh	kilowatt hour
L	
L	self inductance
LC	inductance-capacitance
LCD	liquid crystal display
LED	light-emitting diode
LF	low frequency (30-300 kHz)
lhcp	left-hand circular polarisation
LMO	linear master oscillator
LO	local oscillator
loran	long-range navigation
LOS	loss of signal
lp	long periodic; long path
LSB	lower sideband; least significant bit
LSI	large-scale integration
LT	low tension
luf	lowest usable frequency
lw	longwave; long wire
M	
m	metre (distance or band); milli (10^{-3}); mass
M	mega (10^6); mutual inductance
mA	milliampere (one-thousandth of an Amp)
mAh	milliampere hour
MARS	Military Affiliate Radio System
MATV	multi-access television
MF	medium frequency (300-3000 kHz)
mH	millihenry
MHz	megahertz (10^6)
mike; mic	microphone
mini-DIP	dual-in-line package of 8 pins
mi/h	miles per hour
mi/s	miles per second
mix	mixer
mm	millimetre
MO	master oscillator
MOS	metal oxide semiconductor
mod	modulator
modem	modulator/demodulator
MOX	manually operated switching
ms	millisecond
m.s.	meteor scatter
m/s	metres per second
MSB	most significant bit
MSI	medium-scale integration
MSTV	medium-scan television
MUF	maximum usable frequency
MUX	multiplex; multiplexer
mV	millivolt
mW	milliwatt

·CQ DX·CQ DX·

Paul Cooper VE3JLP, RR 2 Metcalfe, Ontario K0A 2P0
613-821-2167



I liked this one in a recent issue of QRZ DX.

DAYTON 1990

My annual pilgrimage to the Dayton Hamvention is now just a happy memory although the shack looks a mite more impressive with the addition of an antenna tuner unit. However, I didn't spend all my time poking around in the flea market or inside the Hara arena looking at the new rigs and accessories. As most of you know, the Dayton Hamvention has a very extensive programme of technical forums (I suppose that should be 'fora', how's your Latin?) which includes two half-day sessions of particular interest to 'CQ DX' readers, the Contest and the DX Forums. This year I gave the contest sessions a miss.

I have, in the past, sat in on these and been treated to impressive slide shows of some of the top 'multi-multi' stations in the world. It's not unusual for these stations to have 10 or more masts over 100 feet high! The mind boggles at the cost of these operations, particularly when you realize that they are devoted solely to the task of working the big contests, while the rest of the time these dream stations are gathering dust.

I spent most of my time covering the DX forum and found it very informative, occasionally even entertaining. These sessions usually start with one or two presentations by officials involved in the DXCC program. Don Search W3AZD, who runs the program for the ARRL, always gives a run down on the latest changes to the Countries list and answers questions from the floor on various DXpeditions... have they been approved... that sort of thing. We also get the odd comment from members of the DXAC.

This year our own member on the Committee, Garth Hamilton VE3HO, filled us in on the latest news concerning the changing status of Abu Ail, J2/A, that tiny uninhabited island at the Southern entrance to the Red Sea. In a gap between presentations I took the opportunity to meet Garth and put a face to the name I see so often on DXAC material.

Later in the morning I heard part of the Colvin's presentation on their trip to Russia and, best of all, an excellent talk and slide show in the 3Y5X DXpedition. In the next few paragraphs I'll cover all these items, trying to pick out the things I think you'll find interesting.

Don Search and his colleagues filled us in on the DXCC Program. In 1989 the DXAC were asked to rule on adding 11 new countries to the program. Only three were finally approved, namely: Walvis Bay, Conway Reef and Banaba Island.

The ARRL is considering 'field checking' of QSLs for the initial application for DXCC.

This would be similar to the arrangements used for checking applications for the WAZ program, run by *CQ Magazine*. An informal show of hands at the Forum showed that 60% were in favour, 40% against. It's interesting to speculate why anyone would oppose this sensible proposal to ease some of the massive workload that the DXCC group at Newington has to handle.

The DXAC is requesting that Amateurs make more use of 18 MHz. After 10 years there are still a few commercial stations using frequencies in this band despite the fact that it is exclusively for Amateur use. The feeling is that if the band gets busy enough these commercial stations will get fed up with the QRM and move off our frequencies. (By the way this is not a suggestion that anyone should deliberately QRM these commercial stations!)

The DXAC is studying 'Disqualification Criteria for DXpeditions'. This has been prompted by the general shambles we all heard on the Bouvet Island DXpedition's transmit frequencies. It has been suggested that if someone recorded this disgraceful behaviour on the part of a few, mainly U.S., Amateurs and then played the tape back to the next WARC meeting the whole Amateur position there would be undermined. Amongst other factors to be studied are things like 'Pile-up management' and something called 'Frustration Factor' (!).

The famous, short-lived DXpedition to North Yemen of last year has still not been approved by the DXCC desk as the documentation has not yet been sent in.

Reading between the lines of Don Search's very diplomatic reply to a question from the floor, I think that no documentation will ever be submitted on this one and so those of you who worked 4W will unfortunately not get any credit towards your DXCC total.

Not far from 4W is the uninhabited island of Abu Ail. As I mentioned earlier, Garth Hamilton gave us a brief rundown on its changing (?) DXCC status. The trouble is that the sovereignty of this island and its neighbour, Jabal at Tair, has never been determined. For many years the British Government has been the 'Managing Government' of something called 'The Red Sea Lights Agreement'. This agreement between 15 contracting governments has left the operation and maintenance of two lighthouses on these islands with the British Government. The U.K. and most of the 15 governments have now decided that the lights are no longer needed and so they will be resigning from their roles as lighthouse keepers effective March 31, 1991.

As far as the DXCC is concerned, the island's status will remain unchanged

Continued on next page

by the departure of the British light keepers. We must await a move by one of the neighbouring countries to assert their sovereignty and then await the reaction of the international community. Only then will there be a possibility of Abu Ail being deleted from the DXCC countries list.

For me the highlight of the DX Forum was the presentation by Kaare Pederson LAS2GV on the 3Y5X DXpedition. This is the same group that put Peter 1st Island on the air three years ago and they have continued their tradition of bringing back an excellent photographic record of their visit. Their shots from a helicopter which flew around the island before they landed showed what an inhospitable place Bouvet is. Clearly the only sensible way of landing a DXpedition is by helicopter and this was what they used to ferry in the five tons of equipment they needed to operate for the ten or so days they were there.

They did try an experiment by landing from a large rubber inflatable dingy. It was hopeless, several of the crew were dumped in the water during the exercise... good job they were wearing survival suits.

The photographs also covered the animal life on the island. We were shown several pictures of elephant seals— massive, somewhat ugly creatures— lolling about on the beach. One shot of a tightly packed group of these animals was referred to as an elephant seal pile-up while another close-up of a snarling seal's face drew the comment from Kaare that this one thinks he has got into the log!

Just a few facts and figures. The DXpedition cost about $300,000 and netted a total of over 47,000 QSOs. We were shown the statistics of the contacts, by bands and by countries and I managed to note down the fact that 42% of their QSOs were with U.S. stations, 15.5% with Japanese and 2.1% with VEs. (That suggests about 1000 contacts with Canadian stations.)

In reply to questions from the floor, we learned that the cards were about to be sent out. Apparently they did experiment with entering some of their contacts, about 4,000, directly into a lap-top PC with a logging program. Where will they go next? That's a difficult question, Kaare said, as Bouvet "is a tough act to follow." I guess we would all say Amen to that!

Looking back on the whole presentation I realized that what was really significant was what was *not said.* There was no mention whatsoever of the outrageous behaviour of those Amateurs who sat on the 3Y5X transmit frequencies. Was Kaare too polite to bring it up? I don't know. And why wasn't it raised from the floor at question time?

COOPER'S BEEFS

A small complaint this month but perhaps it's something you've experienced too. It concerns the high cost of QSLing direct. My records showed that I had never received a card from Grenada, J3, so I sent off a card for a contact I made last year. Being a conscientious fellow I went to the latest issue of the *Call Book* and looked up how many IRCs were required for an airmail reply from J3. I was disgusted to note that the book said four, but I swallowed hard and bought the IRCs, adding a note to my card explaining that I was kicking myself as I was actually in Grenada only two months ago when I could have mailed the card, with SASE, for only $1. Yesterday I received my J3 card however, when I examined the envelope, I saw that it had been mailed in the U.S. where just one IRC will buy the necessary stamp.

What happened to my other three IRCs? Well the DX station does have other expenses, I know, so I suppose I should be pleased to get the card and forget about the IRC imbalance. However pocketing the equivalent of $3 for sending me a card does seem a bit much to me!

This might be an appropriate time to remind some readers that just one IRC is almost never enough to pay for return postage from DX countries. All that one IRC buys you is return postage *by surface mail* for a standard letter. I guess it goes without saying that not many of us are interested in sending or receiving letters that do not go by air. It might take almost as long on the journey as a card takes through the bureau system!

The bible for how many IRCs you need for an air mail reply is the latest issue of the *Call Book* and it varies from two, for most European countries, to a high of five for places like Singapore. With IRCs now costing over a dollar Canadian it makes you realize just how expensive the hobby could get if you decided to send all your requests for cards by direct mail. A 5 Band DXCC could end up costing you, in postage, almost as much as a brand new HF rig!

A51JS BHUTAN

A Post Script on Jim Smith's DXpedition. It seems that most people had great difficulty in working although he did make a total of 15,000 contacts. *QRZ DX* reports that his low power, 80 Watts CW and simple vertical antenna made working into North America a frustrating business.

What openings there were followed the classic 'DX Edge' pattern zipping across the U.S. at the speed of the sunrise with signals hard to read due to flutter and the opening to any particular location only lasting about 30 minutes in any 24 hour period. He never had any extended openings into the U.S. on 10 or 15. He said of 20 metres: "Almost every U.S.A. QSO on 14 MHz was sheer hard graft and without the cooperation of the U.S. DXers themselves, things would have been very bleak. Incidentally some of the signals were outstanding and a genuine S9 plus." So there you are. If you didn't even hear him you have a good excuse!

BITS AND PIECES

Novice Exams— We note that the FCC thinks that the current arrangements for the Novice examination in the U.S. result in 30% cheating.

7Q7 Malawi— Good news from *QRZ DX* that Malawi is on the air again. The last operator there was Les 7Q7LW but he returned to the U.K. several years ago. Now we have another Les 7Q7LA active and the rumours have it that some other stations may soon be putting 7Q7 on the air as well. Look for Les on 28.020 MHz at 1600 UTC and 14.010 MHz at 2130 UTC.

ZS8MI Marion Island— Peter, who has put Marion Island back on the air with a bang over the last year, has just returned to South Africa. However do not despair, if you didn't work him. We understand that his replacement ZS6AEN, will be active as ZS8MI starting in May.

Thanks are due to the following sources for some of the material appearing in this column *QRZ DX,* W4MLA, W6XM and W0ZV. ■

UNLICENSED 'AMATEUR' RADIO OPERATOR FINED

Operating Amateur Radio equipment without proper licences cost an Ottawa businessman $200 in fines. The operator pleaded guilty recently to two charges laid under the Radio Act (the law in force at the time of the charge). A Provincial Court Judge levied a $100 fine for each of the two counts.

Inspectors from the Ottawa District office of the DOC laid charges Dec. 14, 1988, following an investigation and subsequent seizure of equipment September, 1988. The investigation followed numerous complaints by area Amateur Radio operators.

The spectrum management sector of the DOC is responsible for the regulation of the radio frequency spectrum and must ensure that the Radiocommunication Act and related regulations are respected by all users. (From Information Services, Communications Canada.)

Editor's note: Charges laid in the U.S.A. by the FCC produce more cost effective fines of $1,000 each.

CARF News Service

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Send Letters to the Editor to: *The Canadian Amateur,* Box 356, Kingston, Ont. K7L 4W2.

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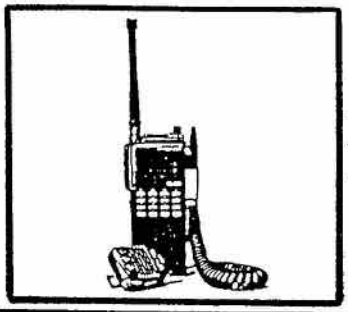

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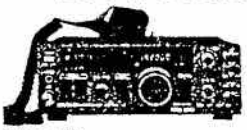

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CONTEST SCENE

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CONTEST CALENDAR
July 1 CARF Canada Day Contest
July 14-15 CQ WW VHF WPC Contest
July 14-15 IARU HF World Champ
July 20-21 World Champ.
July 20-21 World Radiosport Team Chp.
Aug 4-5 ARRL UHF Contest
Aug 25-26 All Asian CW Contest
Oct 27-28 CQ WW SSB DX Contest
Nov 24-25 CQ WW CW DX Contest
Dec 30 CARF Canada Winter Contest
Courtesy John Dorr K1AR and CQ Magazine

1989 WPX CW RESULTS

The May issue of *CQ* contained the results of this contest, and the Canadian scores are reprinted below. Congratulations to Paul XK1CYL for his record-breaking 14 MHz score of 3 Meg. Paul enjoys the singular distinction of being the only record-breaker in this year's contest, although the scores of VO4MP and CJ7SV came close.

Propagation, or rather the lack of it, was the principal soapbox comment, but despite this, Paul managed to place second worldwide on 14 MHz. All-band entrants VO4MP and VE5OU/3 placed 6th and 14th worldwide, and Multi-Multi VE7ZZZ made the box in 8th place.

CANADA				
VO4MP	A	3,208,444	1984	493
		(Op. VO1MP)		
VE2ZP	A	1,886,424	1305	498
VE6OU/3	A	2,882,832	1634	551
VE3KP	A	1,326,732	1024	418
VE7SZ	A	991,224	968	351
VE3TEE	A	10,664	65	62
VE3PYA	A	455	13	13
VE3KKU	28	29,992	136	92
VE2AEJ/3	A	17,632	100	76
VO5AC	28	6,364	60	43
		(Op. VO2AC)		
XK1CYL	14	3,016,142	1959	586
		(Op. VE1CYL)		
VE3NBE	14	17,520	80	80
VE3HOL	14	4,700	53	47
VE3NYT	7	29,128	68	68
QRP				
VE7EKS	21	288	13	12
MULTI-OPERATOR				
CJ7SV	MS	3,334,526	2191	554
VE7ZZZ	MM	2,441,710	1660	530

DAYTON

Dayton was its usual fabulous self, and as in years past, there was plenty to see and do related to contesting. The regular Saturday Contest forum was faster-paced than usual, with presentations ranging from slide shows of a couple of contest expeditions, of contest stations built by some people, to discussions of contest software and the legendary 'Worked all Hamvention' Contest. This contest lasts only ten minutes: people run around with logsheets exchanging callsigns with as many people as they can. It's amazing just how similar it sounds to a real contest.

I had the pleasure of meeting the illustrious John VE6OU/3, and had the chance to see the 'before and after the ice storm' pictures of his station. John has a fair amount of work ahead of him, but should be back as loud as ever come October. VE7s OR and SZ were also present. They are the MS team who have begun making big scores in the WWs under OR's call. They are neighbours, and rather than dodge each other in the contests, they joined forces.

One of the nicest things about Dayton, from a contester's point of view, is the hospitality suites. Run by various DX and Contest clubs in Stouffer's, a downtown hotel, they provide a chance to meet and chat with the faces behind the callsigns that enter your log contest after contest.

Dayton is a great experience for the hard core. With 30,000 attendees and thousands of flea market spaces, it is a recipe for a lot of fun, a lot of walking, a lot of spending; in short, an orgy of ham radio, which should satisfy anyone... until next year.

SOFTWARE

In case you haven't heard, Ken Wolff K1EA has written what has become the standard in contest software, CT. CT version 6.14 was available at Dayton, and all six variations support multi-multi entrants in the CQ WW, ARRL DX, CQ WPX and the CQ VHF WPX contest. Now K8CC has written software called NA which closely emulates CT, but supports a number of domestic contests, including ARRL SS, NA Sprint, NA QSO Party, and the IARU HF Championship. Both pieces of software do a superb job, and run on IBM compatibles with at least 640K of RAM. They are well worth investing in. Drop me a line if you're interested in getting more details.

PACKETCLUSTER

PacketCluster, a software package written by AK1A, was the motivator for recent changes to the CQ WW and ARRL DX Contests, where a second single-op all bands class was added. This new class allows entrants to use information from DX spotting nets to find new multipliers. VHF FM repeaters dedicated to the sharing of DX info have been around for years in the larger centres. PacketCluster represents the refinement of this idea, by using packet radio to report and disseminate this information silently, and hold it in a database. It also allows one to predict propagation, and perform a variety of other useful DX and contest-related functions.

PacketCluster and CT agree with each other to the extent that they allow spots to be compared with your contest log automatically, and alert the operator to the availability of needed multipliers. *The Canadian Amateur* reported the PacketCluster operating in lower mainland B.C., and there may be another in the Niagara Peninsula. One is being contemplated in the Ottawa area, to supplement their VHF FM DX repeater on 146.85 MHz. Watch this space for further developments.

ON-SITE CONTESTING

Well, I got it wrong. There will be on-site Amateur Radio Contesting at the Goodwill Games in Seattle this July. Regrettably, they will not coincide with the IARU HF Championship as originally hoped. Instead, they will take place on the weekend of July 21-22, with a number of U.S., Soviet and other Amateurs signing /WG after their calls. They will be operating from similarly-equipped stations in the Seattle area, and they will be looking to make contacts with YOU. There will be awards offered to off-site participants who work the on-site entrants, but I have not yet seen the rules. Watch *CQ* or *NCJ* for more details.

THE SUMMER

For a few sick minds out there, summer is the time to do antenna work. For most of us, summer is when you put off your antenna work because the WWs are still months away. With the doldrums of summer, and more attractive outdoor activities to hold one's attention, even contesting takes second place. There are a few interesting things to check out, such as the IARU HF Championship, the Worked All Europe Contests, and the possibility of the ultimate (dictionary definition) St. Paul Island DXpedition. Have a great summer, and good luck in the pileups. ■

HELP WANTED
The CARF Office needs the current addresses of the following Amateurs, listed by name and last known address. Let Debbie know at P.O. Box 356, Kingston, Ont. K7L 4W2.
John Hier VE3LWG, 680 Auburn Cres., Burlington, Ont.
E. Brazill VE8SB, FSI Dewline 570A Ferry Rd., Winnipeg, Man.

ARES AMATEUR RADIO EMERGENCY SERVICE

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

DISASTERS VS. EMERGENCIES

In the Alberta Public Safety Service journal *Insight* for December 1989, we find the following thought-provoking item:

"Emergencies are serious events which require a co-ordinated response to protect the health, safety or welfare of people, or to limit damage to property. Disasters are not just large emergencies, but differ substantially in nature.

"Disasters are disruptive and cause organizations and systems to break down. The recognized stages of response after a disaster are:

- confusion (individual response)
- decentralized response
- co-ordinated response
- cleanup
- recovery

"Disruption is a key feature of the confusion and decentralized response stages after a disaster."

EMERGENCY COMMUNICATIONS

This column has frequently stressed the importance of handling emergency communications in an organized, professional manner. Bruce Eggers WA9NEW, writing in *Worldradio* for April 1990, put the case in a most compelling manner. He says:

What follows are three different ways to accomplish the same thing. Chet WA4ABC is at an emergency shelter and Sam K4ABC is at the Red Cross Chapter house. Contact has been established through the Net Control Station. You might hear:

Case 1:

"Sam, I've got a diabetes victim here and she's going to need insulin pretty soon. Can you help?"

"Sure thing, Chet. There's a medical supplies coordinator around here someplace. I'll take care of it."

"Thanks, Sam."

Case 2:

"Sam, can you get Joe Smith on the mike? Tell him Bob Jones, the Shelter Manager here, wants to talk to him."

"Roger. Wait."

"Bob, this is Joe Smith. What can I do for you?"

"Joe, I've got a diabetes victim here, June Jones, who's going to need insulin within a few hours. Can you help?"

"I think so, Bob. Let me make a couple of calls and I'll get back to you."

"Thanks, Joe."

Case 3

"Please copy my number 16 Priority W4ABC figures 13 Shelter 2 Raleigh 1238 Nov 28 going to Medical Supplies Coordinator Red Cross Chapter House break

"Victim June Jones will need insulin by four this afternoon x-ray Please advise break Bob Jones Shelter Manager"

"Roger 16"

Now you tell me, which is the most effective way to move a message from an originator to an addressee? If you can't come up with a dozen things wrong with the first example and quite a few with the second, you aren't ready.

So what's wrong with Case One? Well, let's assume Sam knows at which shelter Chet is located. Who's in charge of that shelter? Who's the victim? Who's the medical supplies coordinator? What does 'pretty soon' mean? When was the request made? Who's going to follow up? What if Sam leaves? What if Chet leaves? Who knows the request has been made? What happens if the victim mentions the problem again to another volunteer shelter worker later? Will another uncoordinated request for insulin be made? Who's responsible for getting the insulin to the person who needs it?

Amateur radio operators are just that, OPERATORS. Amateur radio operators should NOT be directing efforts, coordinating activities, interpreting messages or assuming responsibility for relief actions. If you're an Amateur radio operator and you're also a shelter manager, a medical supplies coordinator, etc. you MUST keep track of which hat you're wearing when you're on the air. And keep in mind, while YOU may not think you're assuming responsibility for some action, if you say "I'll take care of it" you just did!

Is it OK to just pass the mike over to someone else and let them do the talking? Well, that's certainly better than the exchange in Case One. What's wrong then with Case Two? It wasn't all bad. The Shelter Manager has spoken directly with the Red Cross official to whom he wanted to get the message and that individual has assumed responsibility for action. Sam and Chet are in the clear— or are they?

Things are hectic. Joe Smith is likely to get quite a few pulls on his reins before the day is over. Joe leaves the mike, three more life threatening issues consume him for the next hour, then he remembers that he was supposed to do something about insulin for somebody at a shelter. But there are six shelters in operation. He remembers the guy in the blue hat with the funny letters on it at the radio. But the guy in the blue hat isn't there anymore. There's another guy at the radio. He's got a red hat. Let's see if he can figure it out.

You want to guess how long it might take to unravel this one? What if the shelter manager where June Jones is located has been relieved? Remember, Bob knew that Joe's working the insulin problem so he forgets to mention it to Sue, who's relieved him. Sam knew that the medical supplies coordinator had the problem in hand, so he forgets to mention it to the next Amateur who relieves him (the guy in the red hat).

With hundreds of people scattered around in six different shelters, what's the chance we're going to be able to figure out that it was June Jones in shelter two who needed the insulin by four o'clock?

Let's look at Case Three: OK, so it's going to take time to write all that out. But if the job's worth doing, it should be worth doing right the FIRST time. If it's serviced properly, both operators have it in writing, both have recorded the other's call and the time of the traffic and both have it in their station log.

If Sam thinks he should, he'll take the time to write the text of the message and the signature on a note pad to give to Joe, the medical supplies coordinator. But the serviced copy stays with the station.

Now, when Joes gets all tied up with higher priority work and the 'guy in the blue hat' isn't there any more, the message is. When, where, what and who are instantly recoverable. And if Sam is really doing a super job, he's filed the messages which require follow-up action separately, just so he can check on them before he leaves. The shelter manager did say, "Please advise."

If you're not sure how to pass traffic, read the operating manual. As for help on your local 2 metre repeater. Check in on a local or section NTS net. Get involved. But don't just sit back and wait for the next emergency to happen and then use the excuse that you can't help because you don't understand what's going on with all that 'net control' and 'please copy my number 32 priority' stuff that you hear. If you don't know how to operate effectively and efficiently on a net, stay off until you learn. And remember, you don't learn by talking, you learn by listening. ■

RSGB QSL

The RSGB QSL Bureau has moved to RSGB Headquarters, P.O. Box 1773, Potter's Bar, Herts, EN6 3EP England.

CARF News Service

YL News & Views

Cathy Hrischenko VE3GJH, 2 Dalmeny Road, Thornhill, Ontario L3T 1L9

It is with sadness that I tell our readers that two YLs, Lee Wilson VE6BRN, and Helen Wren Ward VE3CHP, who recently became Silent Keys.

Lee, VE6BRN (ex VE3IGW) lost her battle with cancer on March 15, 1990, in Edmonton. Her OM Bob VE6BRO kept in touch with us during her illness via the CLARA net.

Helen VE3CHP became ill in Florida, and after a short illness, lost the fight against cancer in Hospital in Kingston. Helen was the widow of my cousin, Dick Wren VE3ATL.

Both ladies will be greatly missed. Our sympathy goes out to both families.

TOT CELEBRATE 25 YEARS

About 70 people attended a banquet and entertainment at the BoPeep Restaurant in Scarborough as the Trilliums and the Scarborough ARC celebrated together. Three of the founding members were introduced: Jean Evans VE3DGG, Doreen Aston VE3FUR and Ivy Smyth Post VE3IV (then VE3EZI).

Attendees from outside the greater Toronto area included Doreen VE3FUR and Ken Aston, Roy VE3BNV and Thelma VE3ARG Tuttle, Cliff VE3AST and Betty VE3ASZ Peterson, and Susan VE3BEC and Joe VE3BXN Barabas.

Thelma Woodhouse VE3CLT received a plaque from the Scarborough ARC for her work as Secretary for the club for nine years. Audrey McDermott VE3CCO received recognition for being TOT President for six years.

A number of past-presidents were also in attendance: Jean VE3DGG, Irene VE3AUR, Thelma VE3CLT and Audrey VE3WJD. It was a pleasant evening to visit and meet old friends.

It is said that 'E' is the mark of excellence. There is one Ontario family who has definitely earned an 'E'. It all started with Lloyd Kubis VE3ERQ many years ago. He stood alone with his callsign for a few years, and then his daughter Wendy joined him as VE3ERT. The next in line was nephew Kim VE3EXP, then his son Bob VE3ERI. Most recent to join the ranks is Wendy's OM Frank VE3ERL, and Frank's mother, Marion VE3ERN!

Special congratulations go out to Gwen Burnett, who celebrates 60 years in Amateur Radio this year. Gwen received her call in 1930 and was the first Canadian YL to receive a VE call.

TECHNICAL QUESTIONS?

Questions of a technical nature may be directed to the CARF TECHNICAL EDITOR. Please include SASE.

Over the years Gwen has been honoured numerous times. She was the first Canadian YL to be active on RTTY. She was the first VE to qualify for the QCA award for two-way communication with 25 countries, an award issued by the British Amateur Radio Teleprinter group in 1966. Gwen held first place in Canada in the Alexander Volta DX RTTY contest sponsored by the SSB RTTY club of Italy in 1967. She has served as editor and secretary of the Canadian Amateur Radio Teletype group. Gwen is the type of friendly person who is always willing to help. She still has daily CW skeds and sometimes gets on the ONTARS Net. Happy 60 years in radio, Gwen, and may you enjoy many more.

That's it for now. I appreciate your comments and ideas for this column.

73/33/88, as the case may be! ■

Inter-Provincial Amateur Radio Network

The Inter-Provincial Amateur Radio Network (IPARN) is pleased to announce the start-up date for the full time operation of the satellite network. On June 15, 1990, IPARN will come up on Anik C2. This will mark the beginning of the permanent presence of IPARN on the satellite.

The initial system configuration will consist of the B.C. Network which covers an area including the Lower Mainland or greater Vancouver and Fraser Valley region to as far north as 100 Mile House in the Southern Caribou. Included also are all three major highways: the Hope Princeton, the Coquihalla and the Trans-Canada.

Via the Anik satellite, the B.C. system will interconnect directly to the Alberta (SARA) system. The impressive coverage of the SARA system includes: Calgary, Lethbridge, Medicine Hat, Brooks, Red Deer and east to the Saskatchewan border. Signals are also heard south to the 49th parallel and as far west as the B.C.-Alberta border.

The full-time operation of IPARN in western Canada will be the precursor of a programme to expand across Canada in an orderly fashion. A major network under development in Saskatchewan is standing by to become an integral part of IPARN and efforts are underway to meet this objective.

Membership in IPARN is $36 per year. For additional information contact:

Inter-Provincial Amateur Radio Network,
P.O. Box 3156, Langley,
B.C. V3A 4R5
William D. Blake VE7CQ,
President. ■

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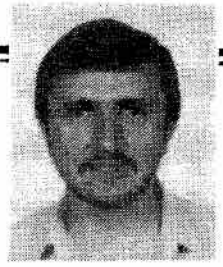
Listening To The World

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



My spring trips to various hamfests in Eastern Ontario and Quebec have been very successful. I enjoyed having the opportunity to meet many of the readers of this column in person. I am very pleased to see how many Amateurs have been spending a lot of time at the dials listening to the wide variety of signals that are available on general coverage equipment. I certainly hope that this column will continue to supply you with new targets for you to listen to on the bands.

Reception conditions continue to vary from day to day, but overall reception has been better than it has been in many years. I am also encouraged by the number of you who have decided to become members of the Canadian International DX Club, Canada's national radio monitoring club of which I am the President.

We already had a number of Amateurs in our membership, but with the number of new members who have joined as a result of the club's appearance at various hamfests and through the interest in this column, our number of Amateur members has increased. Remember, if you would like to see a sample copy of the CIDX club bulletin, *The Messenger*, you can receive one for $2 sent to my address as indicated above.

COUNTRY OF THE MONTH

Our focus of attention this month is a country with one of the largest and most impressive international broadcasting organizations in the world today. The country is France and the international service we'll look at is Radio France International.

Although only broadcasting in 12 languages, Radio France International (RFI) is by far one of the most respected broadcasters in the world, with one of the largest networks of shortwave transmitters. The Radio France network of both domestic and regional stations is huge, with hundreds of longwave, mediumwave and FM stations operating for French speaking listeners throughout Europe.

The foreign service operates mediumwave transmitters in Toulouse, Strasbourg, Cyprus and Kunmin, China. This in addition to their complex series of shortwave transmitters 12-100 kilowatt, 8-500 kW and 1-4 kW transmitters at Allouis and Issoudun, France, plus foreign relays: 1-500 kW at Moyabi, Gabon; 1-500 kW at Montsinery, French Guiana; 1-300 kW at Yamata, Japan; and 1-120 kW at Beijing, China. RFI was one of the pioneer broadcasters to make use of foreign relay stations to achieve world coverage with their services.

The programming of RFI focuses most of its attention on topics of interest to French-speaking language programming is probably the most varied of any international broadcaster covering news, press reviews, music, sports, science and technology, and cultural programming, to name just a few.

The programming is of the highest quality, both in production and content. Although not nearly as complex, the RFI English service is also most interesting. RFI's English service broadcasts complete roundups of world and French news, daily reviews of the French press, sports news and special reports on major events. A full roundup of African news is broadcast daily in their 1600 UTC broadcast. A weekly total of 25 features on French, African and international political, cultural, scientific, economic and social affairs as well as French language lessons.

The broadcast schedule of RFI is long and detailed, and you would be best served by writing to RFI to obtain their most recent broadcast schedule. I'll detail the English services for you here.

There are four broadcasts per day in English which you can check in Canada: 0315-0345 UTC on 11995, 11705, 9800, 9790, 9745, 9550, 7280 and 7135 kHz. 9800 kHz might be your best bet, as this is the relay from French Guiana. The second broadcast is 1230 to 1255 UTC on 21645, 21635, 17650, 15195, 15155, 11670 and 9805 kHz. The third broadcast is from 1400 to 1425 UTC on 21770, 11925 and 7125 kHz. The final broadcast is from 1600 to 1655 UTC on 17850, 17795, 17620, 15360, 12015, 11705 and 6175 kHz.

This will give you many different opportunities to hear RFI in English and, looking on these same frequencies on either side of these times in English, you should easily find the French service if you understand the language.

Radio France will welcome your reception reports and will respond with a QSL verification card. Please remember when you write to include your comments or opinions on their programming. You may also ask to be put on the mailing list for the programme schedule. You can write to RFI at: RFI, B.P. 9516, F-75016 Paris, France. If you have the opportunity to visit France, you might wish to visit the studios of RFI at 116 President Kennedy Avenue in Paris.

PIRATE RADIO

Unlicensed pirate radio stations have been with us since the beginnings of radio broadcasting. You may be familiar with pirates in Amateur radio, but here we'll focus on the pirate broadcasters who inhabit the rest of the spectrum. Although illegal, these stations often produce some of the most unique and interesting programming on radio today. Unfortunately these stations are elusive, with their frequencies changing regularly and their schedules sporadic.

Pirate stations generally feature programming in the entertainment field, with satire and comedy being one of the mainstays of the broadcasts. Unfortunately some of these pirates have taken to broadcasting offensive and often controversial programming. Also, there are those pirates who are nothing more than nuisances on the bands, broadcasting nothing but heavy metal or hard rock music with little or no commentary or statements to make; simply a case of kids playing radio broadcaster.

The hunt to hear pirates has become a subject of great interest to many radio monitors. In fact, a member club of the Association of North American Radio Clubs (ANARC) deals exclusively with the world of pirate broadcasting. The club is called the Association of Clandestine Enthusiasts (ACE). They publish a monthly bulletin detailing the activities of pirate broadcasters. Sample copies of the bulletin and details of the club can be obtained for $2 from ACE, P.O. Box 11201, Shawnee Mission, Kansas 66207.

As pirates obviously do not keep regular transmission schedules, tracking them down can be difficult, but there are a few important points to keep in mind to help you in your search. The majority of pirate activity takes place on weekends at night, that is Friday, Saturday and Sunday evenings. Holidays are also popular days for pirates with almost any special holiday attracting a number to the airwaves. Three of the most active days for activity each year are April 1, Halloween and Friday the 13th.

The other most important factor is where to look on the bands. There are two portions of the HF spectrum which seem to have been designated as 'the pirate bands'. Your best bets for hearing pirates will result from checking out the frequency ranges of 6200 to 6250 kHz and more importantly 7400 to 7450 kHz. Two of the most popular frequencies over the

last year or so have been 7415 and 6240 kHz. I personally have heard many pirates here over the last few months.

Probably the most difficult task in addition to tracking down these stations, is trying to QSL them. Due to the underground nature it is often a complex routing to get your report to the station and your confirmation in return, but this is all part of the challenge.

Some of the pirate station names alone are interesting enough to make you try to chase them down. One of the longest running and most entertaining pirates on the air is Radio Clandestine. Other stations include the Voice of Laryngitis, Munchkin Radio, Radio Free Willy, Radio Garbanzo, Samurai Radio, the Voice of Stench, and WYMN-Women radio. The pirate radio scene in North America is probably in one of its most active periods. There were over 110 different stations reported over the last year alone. In addition to North American pirates, a number of European pirate stations have also been heard in North America in the last six months.

North America's foremost authority on pirate radio broadcasting is George Zeller of Cleveland, Ohio. Mr. Zeller has put together a publication for the last two years entitled *The Pirate Radio Directory*. This 72-page book discusses basic techniques for hearing shortwave pirates. He shares tips for tracking them down, plus shares his techniques for QSLing these elusive stations.

This book lists every North American pirate widely heard throughout 1989 and early 1990, including station names, formats, frequencies, station histories and QSL addresses, where available. The details are complemented with photos of several pirate QSL cards.

I have had the pleasure of meeting Mr. Zeller on several occasions and it is always fascinating to hear his stories on his experiences with the pirate broadcasters. If you have an interest in pirate broadcasting and would like a copy of this unique publication, *The Pirate Radio Directory*, simply send a cheque to me for $9.95 and the book will be on its way to you without delay.

Finally this month, I'd like to give you some advance information on the upcoming Association of North American Radio Clubs (ANARC) annual convention. This year the event will be held in conjunction with the Tidewater Amateur Radio and Computer Fair in Virginia Beach, Virginia on the weekend of Sept. 14, 15 and 16. If you would like to receive an information package about the event which expects to attract thousands of radio hobbyists, just send me a self-addressed stamped envelope and I'll send you the information as quickly as possible. I have recently taken over as Interim Coordinator of ANARC and I look forward to having the opportunity to meet many hobbyists at this spectacular event.

Hope to see you there. To everyone, have a great summer. Until next month. ■

MESSAGE FROM CARF NEWS SERVICE

We NEED more input from YOU! I would like to urge those clubs or organizations that receive the bulletin that I rely solely on your support for the material in these bulletins. I would like to hear from all of you. Let me know what you or your club is doing; many Amateurs would like to know. We are here for you; however we must hear from you in order to continue issuing these bulletins. Send your correspondence to the office at Box 356, Kingston, Ont. K7L 4W2.

VE3VCA

CARF would like to invite Amateurs who are in the Kingston area to come operate the club station, VE3VCA. If you'd like to visit the station, just contact the CARF Office and make an appointment.

QRP

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

Among enquiries by phone and letters lately the theme seems to be 'What is available for beginners'. Up until now it was assumed all new Amateurs came from a Club-sponsored class and were not included as newcomers. The theme is more likely, 'We are planning to purchase equipment including aerials and know nothing about either'! This attitude is not surprising, especially for someone living in a city. Copious words have been written on antennas, how to erect them, etc. We all know the most effective antenna is a beam but again, which one, how high, location near power lines, trees, buildings and so on. Running QRP you need a beam or must be satisfied with fewer contacts if you use an inferior antenna. A poor ground will rob plenty of dB, as will poor or old solder connections.

EQUIPMENT

Build your own while there is still time and use your extra energy to put up a good wire antenna. You can use a vertical on the ground without a myriad of radials but be prepared for a lot of noise and weak signals. If you must buy a transmitter and receiver, then shop around your club first. Beware of the 'old guy' with new equipment and lots of money because he wants a 'new' price for his 'old' boat anchor full of tubes and transformers. You would do better buying used equipment from a reputable radio dealer in your area or by shopping around among those who advertise in *The Canadian Amateur* radio magazine.

OPERATING

Actually QRP work is, without a doubt, the best training ground for new operators because they end up as the cream of the crop when the chips are down. No number of simulated exercises will teach you the actual way to approach handling traffic in poor propagation, thoughtless interference and stations wanting to 'help'. This is of course, excepting you, as a newcomer; your interest is in Morse code operating and not VHF CB style. Working the live CW portion of any HF band will make you a satisfied progressive Amateur. You also become a more welcome addition to the Amateur Radio Service.

Speed is not needed while on QRP, and any more than five watts puts you in the 'hog market' if you are trying to work DX. Keep your earphones on and listen, listen, listen, for a weak CQ or DX station. Don't hesitate to send your own short CQ CQ CQ de VE ... QRP VE ... QRP VE ... QRP and some more listening. You may have to tune around because some stations are still using crystals for transmitting. He or she may be lurking on either side of your listening frequency.

Use the International calling frequencies for QRP— 3560, 7030/40, 10106, 14060, 21060, 28060 kHz for starters. Be aware during changing conditions that you, and you alone, may be all the other station can hear. Not all the high power hog market types will ignore your signals and are not embarrassed at your low power signal. As a matter of fact, quite a few stations operating from a rare DX location will pause and ask for QRP only, so be on your toes. As well there are quite a number of domestic stations that tune around for weak signals in hopes that it is a QRP station just starting up.

To increase your CW speed it is necessary to tune in someone sending about 30 words per minute which you should just listen to by ear and not try to write anything down. After a few minutes of stimulating your brain, you will start picking out short words such as 'and', 'the', 'it' and other simple words. Then tune around for some speed you think is just right and try copying it by hand. Work across town or wherever your signal happens to be reaching and practice your newly-learned skills. Any comments from the high power crowd should be ignored or countered with the Australian QRP slogan: 'We do more with less'.

QRP NEW ZEALAND

Matt ZL1ATW sent in a letter (Airmail $1) because he had worked a VE6 station who referred him to *The Canadian Amateur* QRP column. He uses a Ten-Tec Argonaut 509 or his Argosy with a Windom antenna. Besides these two commercial sets he has a homebrew 80m CW transceiver at 1.5 watts output. He belongs to the VK CW Operators QRP Club having 34 as his membership number. He holds the Club distance records on five bands. 3.5 MHz is 1375 miles @ 1.5W, the rest are 2.5W, 7 MHz 12,400 miles, 14 MHz 12,520 miles and 28 MHz 13,550 miles. The mileages, as he pointed out, were calculated by the Club President.

His Mosley TA 33JR 3 element beam has been idle for five years, during two moves, awaiting re-erection. Matt is interested in hearing from active VE-QRPers and anyone needing a ZL QSO. His address is Matt Meenach ZL1ATW, 223 Te Tomo Street, Te Awamutu 2400, New Zealand. Drop him a line and tell him you saw it here!

QRP QUARTERLY

As to be expected, it has not taken the Amateurs very long to come up with modifications to the Heathkit HW-9, the latest QRP rig in kit form. In this April/May/June Quarterly, two mods are mentioned, Digital Readout and a remedy for drift.

Mike WB8VGE, who writes the QRP column in *73 Magazine*, is accepting ideas for the third edition of his book, *Hot Water Handbook*. Anyone with an HW-8 may be interested in this article, 'Super RIT for the HW-8' by Rulon VanDyke KA5BCD. Tom WD9IWP takes the ARRL to task for suggesting a section of 40 metres which includes 7040. This frequency has been known for years as the QRP calling frequency and for other ops as a meeting frequency. If a power restriction was introduced as on 30 metres it might be feasible to allot a 20 kHz section, but not for use by Kilowatt Valley. Hal WA5JAY designed a 40 metre transceiver to fit a DB25 pin bottle and is presented by Mike WA8MCQ. PCBs are not used, but wafer layouts for VFO, Xmt and Rcvr are shown with a schematic and you take it from there. Again, another full page of Members' News by Fred W5QJM and, as always, it's very interesting.

The Idea Exchange column by Mike WA8MCQ carries the HW-9 models plus an offer for miniature 10 to 1 turns dials. Alan WA9QJM has a suggestion for an antenna tuner using no switches, tapped coils or roller inductors which he calls the Omega Tuner. In his words: "It is an unorthodox yet simple all-purpose tuner that will delight any antenna experimenter. It will load just about anything that vaguely resembles an AE and do a fine job of it."

The last article is entitled 'The Balun: Separating Fact From Fiction'. Too thick for me, but there you have it nonetheless. Herb VE1AMP wrote for a copy of *Far Circuits* sheets.

73 Amateur Radio for November and December last year carried two fine articles by Mike WB8VGE on the pros and cons of 'Direct Conversion Receivers'. Both HW-7 and 8 use DC receivers, so anyone looking for improvements should write Mike and reserve a copy of his third edition. He offers a copy of the new book to anyone who submits anything that is used in this edition.

UPCOMING CONTESTS

These are listed in the *QRP Quarterly* from ARCI.

July 15 (2000-2400Z) - Summer Homebrew Sprint

Aug. 12 (2000-2400Z) - Summer Daze Sprint
Oct. 20 (1200)-21 (2400Z) - Fall QSO Party
Dec. 2 (2000-2400Z) - Holiday Spirits Homebrew Sprint

That splurge of activity should round out the 1990 season in fine style. We are still looking for VE participation in the net held each Sunday at 1900Z on 14060 +/- QRM. It has been noticed that TCN, the gang from ARCI who meet at 2330Z each Sunday on 14060 +/- QRM locate themselves one and one half kHz up from 14060. Lately there have been two or three stations meeting on the same frequency for their weekly chin wag and pay no attention to the weaker signals because very likely they are not aware that those signals are communicating with one another. Sorry there is not a large schematic PCB layout for even the ONER in this issue to spoil your summer holidays. If you see anything along the way that might interest your 'fellow' reader, kindly make notes or send the article into our Editor-in-Chief for proper distribution among his hirelings. ■

TCA COPIES

Copies of articles from *The Canadian Amateur* from Vol. 1 No. 1 Jan. 1973 are available. One article per issue $2 post paid.

The National Associations brief DOC on WARC '92 agenda

CARF and CRRL, in a jointly prepared and comprehensive brief, have advised DOC that Amateur radio should not be on the agenda of WARC'92. DOC agrees with this position. A growing number of countries feel that the agenda of WARC'92 should be strictly limited to a few radio services. Here are the highlights of the brief.

The brief particularly addressed the matter of spectrum for HF broadcasting which is getting a lot of attention. It noted that the easing of political tensions among nations should result in an easing of HF broadcasting problems and the need for additional spectrum for this service.

The joint brief stressed Recommendation 511 of the HF Broadcasting (HFBC) WARC'87 which stated that, "no radio service should be adversely affected by the frequency spectrum extension being sought by the HF broadcasting service," and asked that these words be included in the agenda of WARC'92.

It also emphasized that part of Resolution 517 of the HFBC WARC'87 which said that before any additional spectrum is allocated to a service all technical measures should first be taken by this service to ensure maximum spectrum utilization efficiency.

CRRL and CARF, in the brief's conclusions, said that any proposals to WARC'92, that would reduce in any way the spectrum allocated to the Amateur service or seriously impair the operational capabilities of the radio Amateur Services would not be acceptable and should be strongly resisted. Also, it was suggested that, if required, a complete review of the allocation table could be undertaken by a General WARC called for 1998 or 1999 to deal with needs after 1999.

Thanks are due to Don Fraser VE3CDF and Matt Irwin VE3MJI, both active Amateurs who have had ITU WARC experience, for their work in the preparation of the joint brief and their monitoring of Canadian Preparatory Committee's work. ■

CLUB CORNER

J.P. LeBlanc VO1SK/VP9LA, Box 356, Kingston, Ont. K7L 4W2

New newsletters keep arriving. This time I want to welcome the *Reflector* from the Halifax Club. The issue contained a very informative article on the value of Amateurs in provincial search and rescue teams.

Going over the various club newsletters, I've noticed some cooperation between clubs in the sharing of resources. Many smaller clubs who do not have a newsletter of their own have a monthly column in the newsletter of a nearby club having one. In this way, readers of the newsletter not only get local but regional news of what is going on in our hobby. Nearby clubs are also setting up joint field day stations.

A few years ago, I had a very interesting conversation with a fellow Amateur who preferred to be called an 'Amateur' rather than a 'ham'. What do you think? Drop me a line with your comments. Even better, at your next club meeting, take a few minutes for a show of hands for or against and let me know the results.

During the four days of the Moncton International Cashpiel (MIC), over 400 contacts were logged. The station operated 43 hours with 23 operators on a schedule basis. The MIC was the richest curling competition ever held anywhere. Through Amateur radio, Moncton received much favourable publicity and the event was a great start for Moncton's 100th Birthday opening celebration. Moncton Amateurs were authorized to use the XM1 prefix during the month of April.

THEY DID IT!

The Charlottetown Seniors Amateur Radio Association recently was informed by Health and Welfare Canada, New Horizons program, that their request for a contribution to set up an Amateur Radio Station in Charlottetown has been approved. The station will be installed in the Red Cross building and will contain a two metre repeater with phone patch, HF equipment complete with a beam antenna, a computer, multi-mode interface and a gasoline powered generator for emergency use.

The Orchid City Amateur Radio Club of Kelowna, B.C. has received a Senior's Lottery grant of $10,000 to install a repeater. They are also expecting a further grant from New Horizons to cover costs of the $30,000 project.

LIGHTS, ACTION ROLL IT

The Niagara Peninsula Club in St. Catherines held the grand showing of their new video entitled *Making Contact*. The professionally filmed, edited and produced video by Dan Braun of Niagara College shows a good variety of Amateur Radio modes, equipment and services which are explained by Pam VE3PTR, Len VE3BGH, Bill VE3OZT and Harold VE3NCD. Dan was presented with a plaque for his contribution to the club and Amateur radio in general.

ANTENNA WARS

From the newsletter of the Peel ARC we learn that the proposed City of Brampton ordinance covering antennas and dishes has been amended to exclude Amateur radio antennas.

Unfortunately, VE6BJW is still fighting City Hall on a disagreement in regards to antenna height and the case is now in the Alberta Court of Appeal. Although his lawyer VE6BB is fairly certain of a win, they have set up a trust fund to help defray the costs which are already near $3,500, even with an extremely friendly lawyer.

SLED DOG DERBY

I received a note from Cec VE3HEV, president of the Minden ARC, detailing their involvement at the sixth annual Sled Dog Derby. A total of 700 dogs were involved in the races with entries as far away as Alaska and Idaho. Drivers and teams battled for a total purse of $22,000. Taking part were Phil VE3APL, Brent VE3EJW, John VE3POJ, Cec VE3HEV, Dan (SWL), Bob VE3LLE, Reg VE3DTU, Nick VE3LLJ and Lee VE3NLE.

Cec also enclosed a copy of the program which contained some interesting information on the races. The race has its own theme song, *Catch the drift* which was recorded by a local group— Bart Hilhorst and The Rabid Dog. There is also a whole page containing tips for spectators (i.e. leave your pets at home, don't feed the dogs, picture taking with a flash is a no-no, and of course, dress warmly). It looks like a great time was had by all.

CAMP 807

The Amateur Radio Society of Dryden will be hosting the annual get together of Amateurs in Northwestern Ontario, Manitoba and Minnesota. This year is very special for Dryden because the town is celebrating its 80th birthday. Camp 807 should attract well over 125 Amateurs and their families.

BIG BUCKS

The Kenora Board of Education is planning on establishing a state-of-the-art Amateur radio station in Beaver Brae Secondary School. Estimated cost is $15,000 and completion date is set for the fall of 1990. This is part of a one million dollar communications centre to be added to the school.

TELETHON

The Peterborough club provided communications from the CHEX-TV studios for the annual Rotary Telethon. Taking part were Karl VE3AFP, Bob VE3RHG, Harold VE3NZL, Orville VE3JTM (and Mary), Larry VE3NTQ, Lisa VE3BBU, Bill VE3MCC, Drew VE3AAU, Ollie VE3MT and Rick VE3IQZ.

ANOTHER FIRST?

During a recent Mall display by the Quinte Amateur Radio Club in Belleville, Ontario, Ed VE3EDG had a packet radio QSO with an air mobile station flying between Kingston and Belleville. This may be another first.

SIBLEY SKI TOUR

Seven members from the Lakehead Amateur Radio Club provided communications for the 13th Annual Sibley Ski Tour. For the first time, a 9-element beam was used at the net control site which allowed full coverage of all checkpoints as well as phone patch capability. This proved to be an asset as the reports were passed back to town on the patch and the results were aired on radio station CJLB (1230) with credit given to the club.

CALGARY HAPPENINGS

As always, the Calgary Club has been very busy. A new ATV repeater is getting a lot of use from local Amateurs experimenting with this new mode. The club recently signed a memorandum of understanding with the City of Calgary and believe they are the first Amateur club to do so with a major city department in Canada.

The club provided communications for the first car rally of 1990— the Calgary Winter Rally 1990. A total of 19 Amateurs, some accompanied by their wives or girlfriends, took part and the usual good job was accomplished. Cal VE6LZ and Hermanna VE6JI did the scoring from their van, this time

equipped with a cellular phone and portable fax machine. The results, intermediate and final, were sent to eight radio and TV stations for immediate broadcast; since the rally was officially part of the Calgary Winter Festival.

VE8 NEWS

It is not too often that I get news from the North of Canada; but in any case, this is the type of news I enjoy seeing. Yellowknife Amateur Terry Keim VE8TF came across an accident near Kakisa on Highway 2. The occupants of the rolled vehicle were very cold as the temperature was minus 37, but thankfully they were not hurt. Several messages between Keim and the RCMP were passed via the newly-established high frequency Amateur net. The messages handled were very important to the accident victims and they were grateful to Keim and the Amateur radio system. Also helping were Mark VE8IAM and Stewart VE8CM. Way to go, guys.

HELPFUL HINT

From the newsletter of the Burlington ARC, why not publish a few extra copies of your club bulletin and send or personally deliver them to local high schools and community college electronic or science departments?

AWARDS

Congratulations to Skip VE3BBS and Linda VE3NHX for picking up the Amateur of the Year Awards from the Thunder Bay Club. I'm sure they are well-deserving of this award.

BRIER NEWS

The Labatt's Brier, or the Canadian National Curling Championships, have come and gone... a real challenge for the Algoma Amateur Radio Club, and also some 1,200 other volunteers. From all reports, they met the challenge and did a terrific job. The club was invited to take part in October 1989 and a committee was set up under Brent VE3OTL to plan training and operations. The club was on display and comments received from the National Executive and local committee indicated an outstanding job was done.

CLUB PROFILE

The Manitoulin Radio Club was formed in April 1988. The four founding fathers were Oscar VE3OPY, Mike VE3CHS, Doug VE3DBK and Allan VE3AJB. The membership has now grown to 40 Amateurs and the club supports three repeaters. Not bad for only two years of operation. According to Allan VE3AJB: "It is the participation from everyone that makes the club go. We are still open for new ideas and members, but we're mostly here to have a lot of fun."

WHICH ARE YOU?

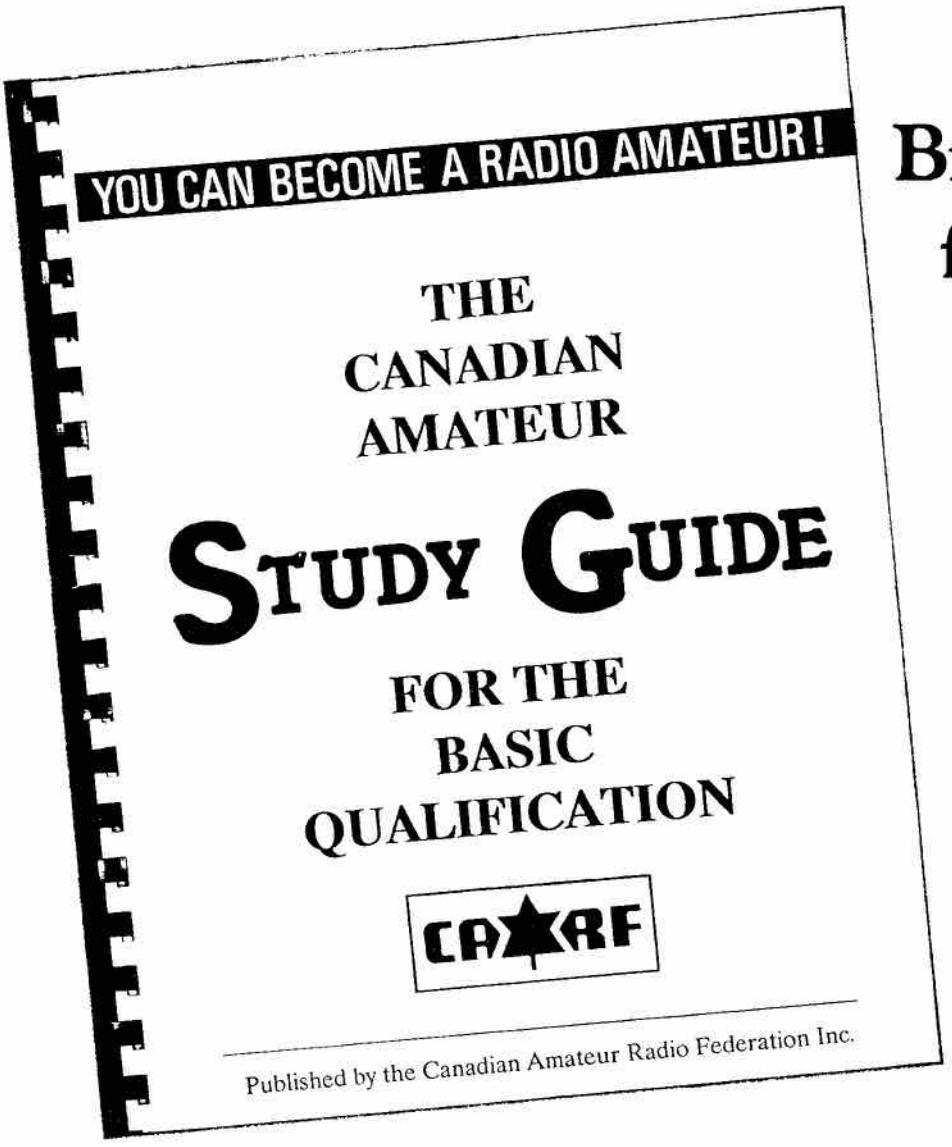
submitted by Jim VE1CHI

Are you an active member
The kind that would be missed,
Or are you just content
That your name is on the list?
Do you attend the meetings
And mingle with the flock
Or do you stay at home
And criticize and knock?
Do you take an active part
To help your group along
Or are you satisfied to
Simply say you 'belong'?
Do you ever volunteer
To help the guiding stick?
Or leave the work to just a few
Then talk about the clique?
Come out to the meetings
And help with hand and heart
Don't just be a member
But take an active part
Just think this over, member
You know right from wrong
Are you an active member
Or do you just belong?

Halifax ARC *Reflector,*
Tom VE1CES, Editor

TECHNICAL ARTICLES

The Canadian Amateur welcomes technical articles. Please send them to the Technical Editor, Bill Richardson VE6PN, Box 68, Grimshaw, Alberta T0H 1W0.



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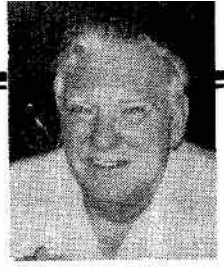
LOOKING AROUND



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

Many years ago I obtained a VHF Field Strength Meter, type I-95-AM, from the surplus market. This instrument tuned from 100 to 160 MHz and consisted of a whip antenna connected to a high-grade variable tuned circuit with a vacuum tube, powered by dry batteries, functioning as a detector and DC amplifier feeding a one mA meter. Batteries were not included (90V and 1.5V types required) and the instrument gathered dust for several years. A need for a 2M FX meter arose in the late '60s, but no 90V battery, so the tube circuits were removed and replaced with a diode/transistor circuit, see Fig. 1 that served the purpose well.

Recently I wanted to check out a portable, 3-element YAGI beam for 2M constructed using parts from a television antenna (this will be discussed in a future column). A fresh D cell was inserted into the FS Meter but no readings were obtained. When the circuit was checked, it was found that the base lead of the transistor had become disconnected. I fixed the same and used the FSM to check out the antenna.

This led to the enquiry as to how good the meter amplifier circuit was and the test circuit of Fig. 2 was used to check it out. A 5000 ohm potentiometer is strapped across the output of a 5V DC power supply with the variable resistance arm fed to the input of the amplifier circuit through an accurate meter.

The one used is the Simpson Model 270 VOM that has a 0 to 50 uA scale. The ground terminal of the amplifier is attached to the appropriate output of the power supply, i.e. for the transistor type amplifier, to the positive output as this circuit requires a negative input, and to the negative output for the JFET amplifier described below.

With the variable arm of the pot at amplifier ground and Gain control (if used) of amplifier at maximum, slowly adjust variable arm of pot until full scale deflection (FSD) of the amplifier meter is achieved. Read the value of the series input microammeter and this will be the sensitivity of the amplifier meter circuit. As an example, the 1 mA meter in the FSM transistor circuit showed FSD with 50 uA current input.

The test results indicated that the 0-1 mA meter had the sensitivity of a 50 uA meter, a useful improvement. Germanium transistors are no longer readily available, so I decided that a meter amplifier, using a JFET (MPF 102) should be constructed if a 'modern' FS meter was to be discussed.

Circuits given in various articles of *73* and *Ham Radio* magazines were consulted and, after some experimentation, the circuit of Fig. 3 resulted and tested with various meters. Results obtained were: a 50 uA meter had sensitivity increased to about 0.75 uA; a 150 uA meter had sensitivity of 1 uA; a 500 uA meter, of 1.5 uA; and a 1 mA meter, of 3.5 uA.

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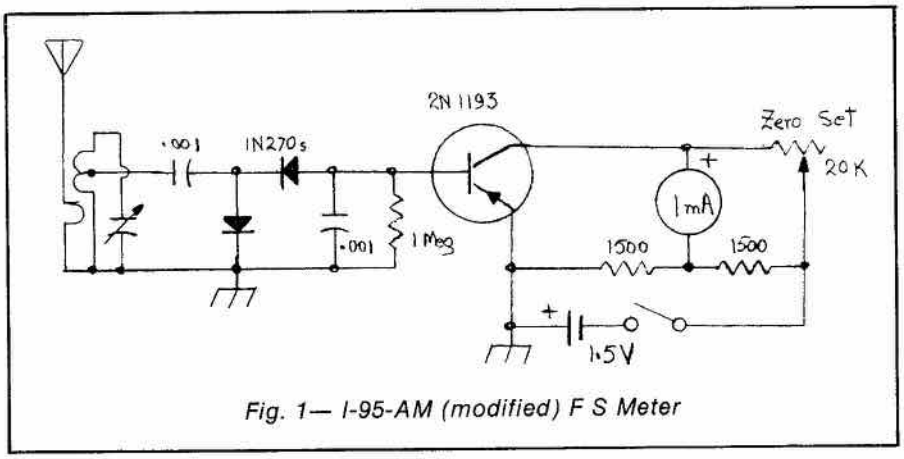


Fig. 1— I-95-AM (modified) F S Meter

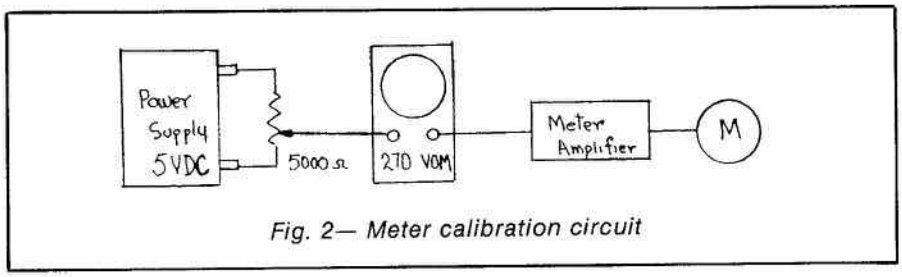


Fig. 2— Meter calibration circuit

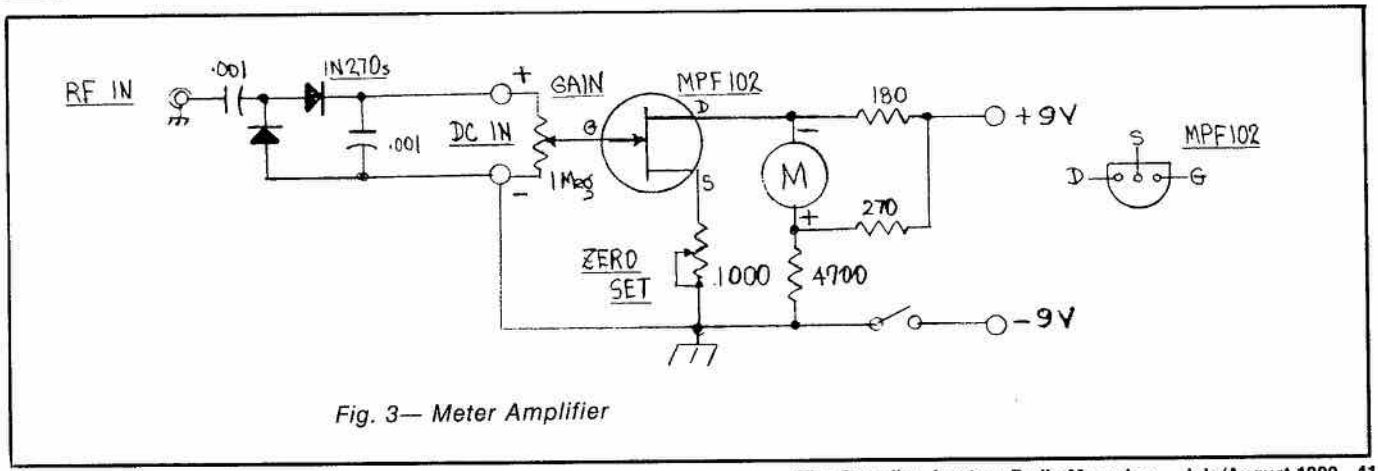
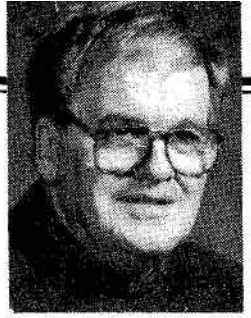


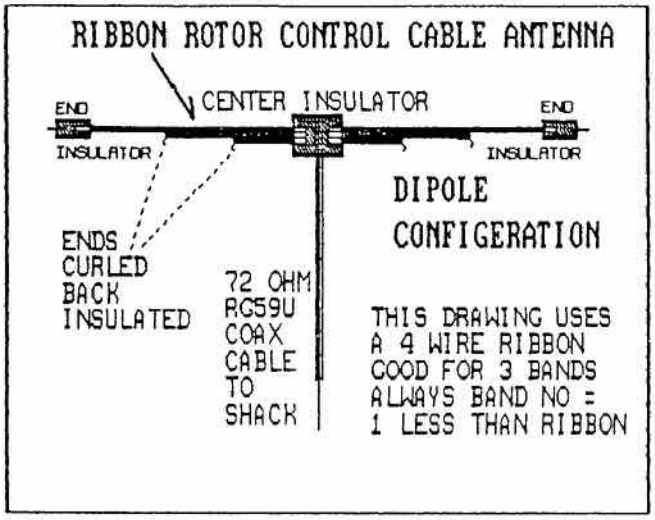
Fig. 3— Meter Amplifier

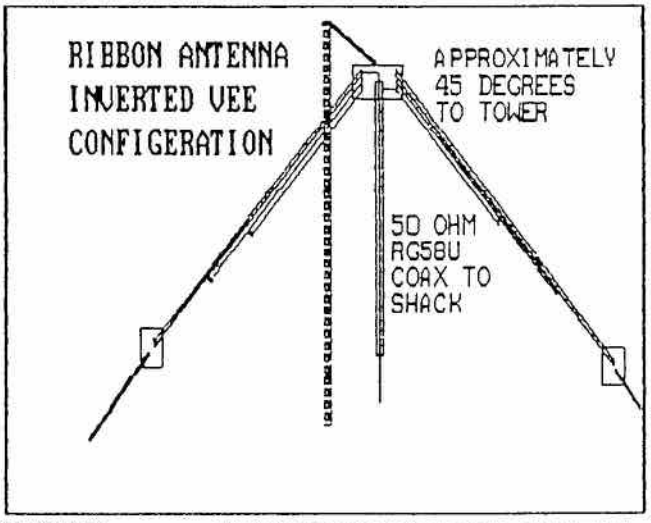
ANTENNAS

THE GAIN GAME by GERRY KING VE3GK



A simple Multi Band Antenna using ribbon rotator control cable





This antenna has been described many times in the past. However, I feel it's worth reviewing for new Amateurs who are just getting started. Also it could be a fun antenna for old timers to explore the new 12, 17 and 30 metre bands. I have included a model and approximate dimensions for this particular array.

It could also be classified as a light-weight portable antenna, capable of handling about 200 watts of output power for vacation-type operating. By using the enclosed formula it can be made to work on different bands.

LOOKING AROUND *(cont'd)*

The components were mounted on a small piece of Vero board and the board installed together with the Zero Set and Gain controls and battery (9V), Input and Output connectors, in a small metal box.

The amplifier box can be used for many purposes, in addition to basic meter amplification, as addition of an external tuned circuit, applied to the RF Input connector, will serve as a sensitive FS Meter with range determined by the tuned circuit. Low voltage AC and RF circuits can be checked either by direct connection to the RF Input or by using an RF probe connected to the DC Input, etc. Note that the scale of the output meter should be calibrated, according to the input meter readings, as it will not be linear. ■

USING FOUR-WIRE ANTENNA ROTATOR CONTROL CABLE

The reason only three bands can be accommodated with a four-wire ribbon is that the top two wires should be connected in parallel to handle the weight of the array. If five-wire cable is used, four bands can be used, etc.

TUNING

The tuning is simple— first concentrate on the top pair of wires for minimum SWR, then the next and so on. Start long, be prepared for some interaction, and hopefully, only subtracting lengths will be necessary. Just peel away the unwanted cable under the two top conductors. I prefer the inverted Vee configuration because of its centre support and lower input impedance.

If the angle out from the support structure is about 45° the input impedance is usually around 50 ohms, a good match for modern day 50 ohm output rigs. Lightweight RG58, 50 ohm coax cable, can be used for the feedline for the inverted Vee and RG59, 72 ohm cable, for the dipole.

The centre conductors should be fed through the middle insulator with the insulation still on for added strength. They should be knotted, then stripped, twisted together, soldered, connected to the coax feedline and weatherproofed. The ends of each underneath dipole should be curled back to provide extra insulation on the ends because of the relatively high end voltages.

THREE BAND ANTENNA FOR THE 12, 17 AND 30M BANDS USING 4-WIRE ROTATOR WIRE

Dimensions:

12 Metres 24,890-24,990 MHz = 18.8 ft, e.g. 468/24.890 = 18.8

17 metres 18,068-18,168 MHz = 25.9 ft

30 metres 10,100-10,150 MHz = 46.3 ft

(Dimensions for the low edge of each band)

The total length of each dipole, before final pruning, can be determined by dividing the frequency, in MHz, of the low edge of each band, into 468. The answer will be in feet, longer than you need, but a good starting length. ■

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TECHNICAL SECTION

Bill Richardson VE6PN, Box 68, Grimshaw, Alberta T0H 1W0

Sealed Lead-Acid Battery Charger/Float Charger

By A.R. Williams VE6AXW

See Figure 1 for this constant voltage/float battery charger.

The battery I decided to use with my QRP 40 metre CW rig is made by PowerSonic. The number of this sealed battery is #PS 1212 which indicates the battery is 12 volts and has a 1.2 A.H. rating.

PowerSonic suggests that their sealed lead-acid batteries not be subjected to over-charging if maximum life is to be obtained. They further make suggestions as to maximum charge-rates and suggest a constant voltage charger with automatic switching circuitry so the battery remains at full charge, without overcharging, when left on charge for extended periods.

The charger described fulfills these requirements adequately and is priced considerably below any commercially available unit.

The transformer secondary is 25-0-25 volts, and I use full-wave rectification, although a 25 volt seconday rated at .3 amps could be used with a bridge rectifier just as well. In any case, the secondary must be capable of providing at least 300 MA.

Capacitor C1 (470 UF) is rated 50 volts. The DC component across C1 is 39 volts and some ripple can be observed under load. This ripple does not appear in the 24 volt DC output of the three terminal regulator 7824, however.

Resistors R2 and R3 place a reference voltage on the non-inverting input of the LM 311 comparator. Resistor R1 senses the amount of current flowing into the load and a varying voltage-drop can be measured across this 10 ohm resistance. Resistor string consisting of R4, pot R5 and R6 provides a means for adjusting the threshold voltage applied to the inverting input of the LM 311.

The second three terminal regulator (7812) is used to produce a variable (but regulated), output voltage which will determine the charge-rate as well as the float-charge condition.

When the battery is run down, it will accept 300 MA and R12 will limit the charge-current to that value. As full-charge conditions are approached, this charge-rate will taper off until it reaches about 12 MA. This is true so long as the charging voltage is regulated. In the case of the PS 1212, this voltage is a constant 14.7 volts DC, after the initial rate drops below about 230 MA.

When the charge-current reaches about 12 MA, the charger must go into a float condition, which assures the battery will remain fully charged. Under the float condition, the charger may be left on for an indefinite period without danger of over-charging.

Resistor R8 sets the output voltage to 14.7 (on the battery side of D1), while R7 is used to set the float voltage of 13.5 volts using the same test point.

Pot R5 adjusts the threshold-point when about 12 MA flows in R1. So long as more than 12 MA flows in R1, the voltage-drop keeps the inverting input more negative than the non-inverting input and the LM311 output remains high. When the current in R1 is less than 12 MA, the combination of the voltage-drop across R1 and the adjustment of R5 causes the inverting input to become more positive than the non-inverting input and the LM311 output goes to ground, which switches R7 into the common lead of the 7812 and lowers the output to 13.5 volts.

My initial test procedure (the battery is disconnected at this time) is to connect a 1000 ohm resistor in series with a 200 ohm and connect it in place of the battery.

Connect a clip-lead at the junction of the two resistors so that the 220 ohm resistor can be shunted by the clip-lead. Adjust R5 such that inverting input voltage is well below the voltage on the non-inverting input. With the 220 ohm shunted by the clip, adjust R8 for an output voltage of 14.7 volts. Remove the shunt from the 220 ohm and carefully set R5 just to the point when the output voltage drops. This voltage drop (R7 should be somewhere in the middle of

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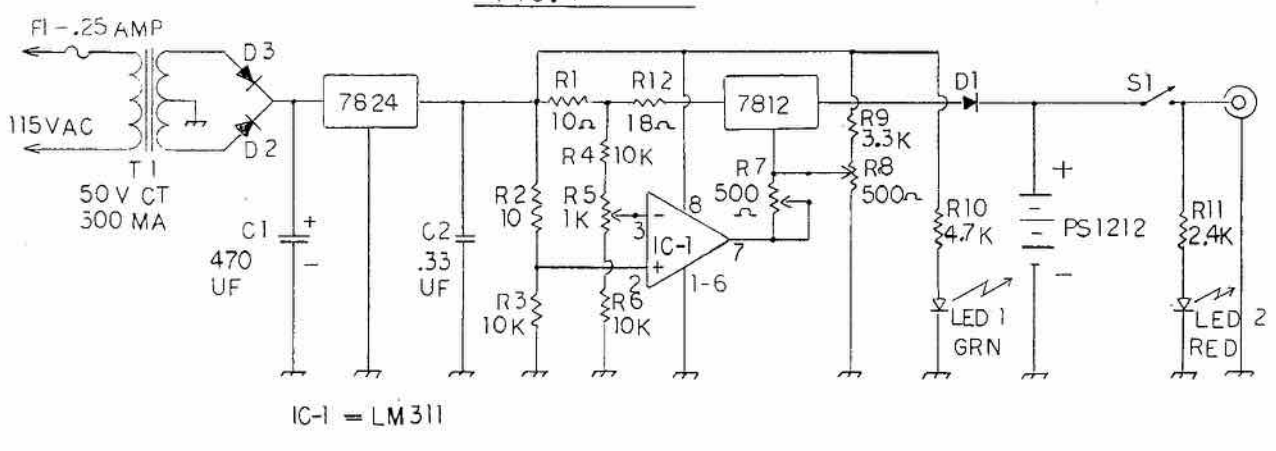
FIG. 1



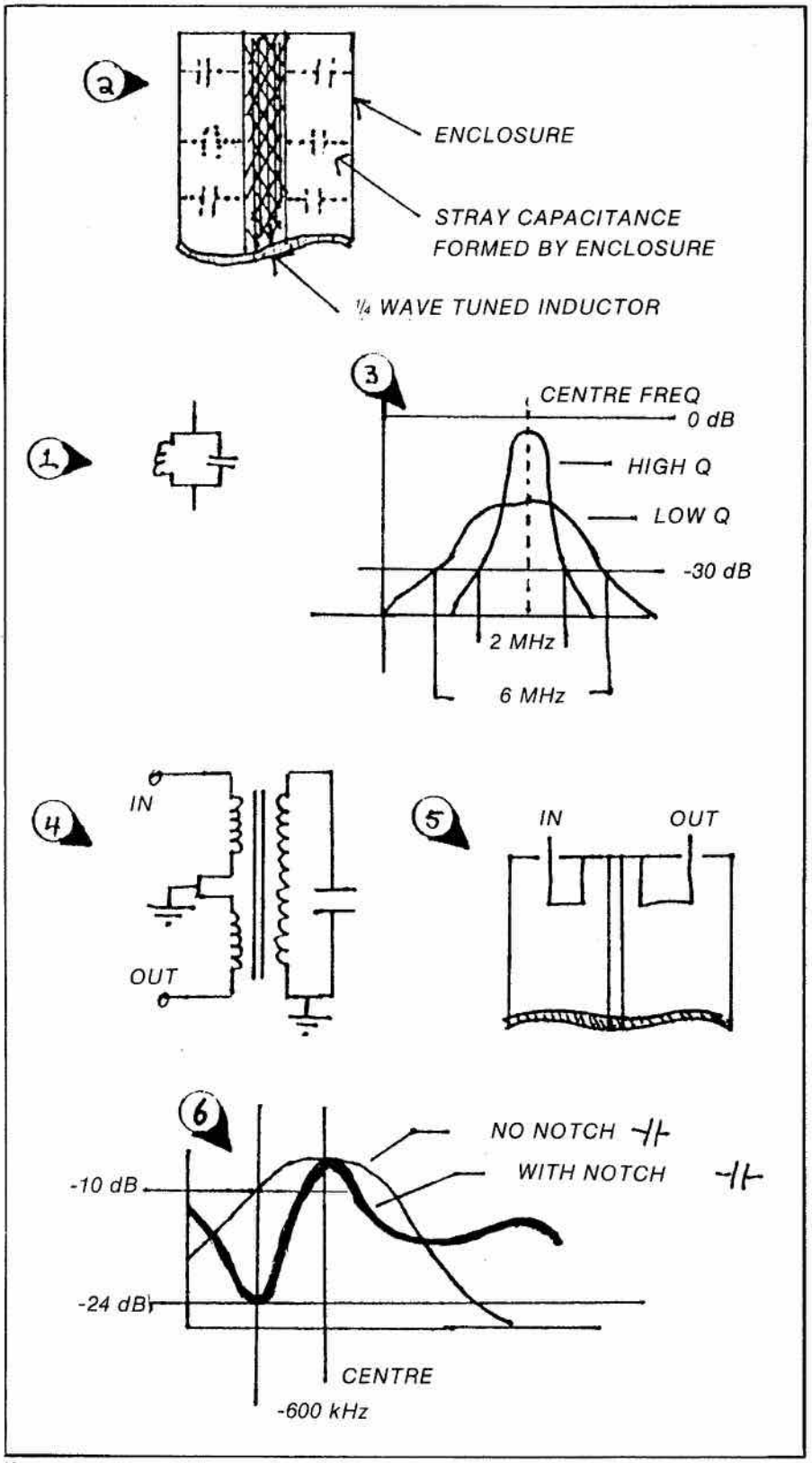
Building a Cavity

By Dan Arsenault VE3DAA

Well, here it is, the long awaited cavity article that you've all been waiting for. Calm down now, it's really nothing special. But it is free, kind of; I'm not getting paid to do this, you know. So if you read something you dislike, don't send me hate mail and don't complain to me, as it will do you no good.

Anyway, I can see that I'm drifting off topic. Maybe what I am driving at is that in reading these articles you will see that they were all born from economic necessity and not from some superior wealth of knowledge, so there are flaws in the material but I do my best. With that said, we will now return to the scheduled programme.

First I will explain the theory of what a tuned cavity is and why it works. The cavity without the coupling loops is basically a tuned parallel LC resonant circuit (see Fig 1). A parallel resonant circuit has its maximum impedance at resonance as opposed to a series which is the opposite. If you look at Fig. 2 you will see how we form the inductor and capacitor components in the context of a cavity. Note that the diameter of the cavity enclosure determines the capacitance of the cavity and that it also



CHARGER *(cont'd)*

its range) indicates that the comparator has detected a lower current in R1.

At this point, adjust R7 for an output voltage of 13.5. Reconnect the clip-lead in shunt with the 220 ohm. If the threshold is set properly, the output voltage should resume its 14.7 volt reading.

Several adjustments might be necessary in order to get these three pots adjusted correcly but the adjustments should only take a few minutes. Whenever the current is more than 12 MA the output will remain close to 14.7 volts.

A slight droop in output is permissible at high current. It is important that the 14.7 volts be maintained at the low current end so the charger can switch to 'float' when the charging current is around 12 MA. It might be a good idea to make the final adjustment of R5 with a fully charged battery and an accurate MA-meter in series with the battery just to be sure that 12 to 13 MA is the switching point where the charger goes into its float condition.

Note: Resistors R1 and R12 are rated at 2 watts. ■

controls (coupling loops excluded) the Q of the cavity (see Fig. 3).

Now if we want a narrow bandwidth for an application such as a repeater duplexer we would want a very high Q. But, if we wanted a band pass filter with a 3 dB range of say 500 kHz or so we would need a lower Q circuit. Now these cavities are fine and dandy, but where do we hook up the coax? Well, there are several methods of coupling our feedline in and out of the cavity but inductive coupling using loops is the most widely used and is very easy to do, so it is the method that we are going to use.

Figure 4 shows what a cavity such as this is in the form of a schematic. What is that you say? Why it's a parallel resonant circuit with inductive coupling to the circuit. Now if you look at Fig. 5 you will see a cross section of a cavity with these loops installed.

Note that all construction is symmetrical, that is, both halves of the cavity are the same. The reason for this is because the impedance is 50 ohms on the input and output of the cavity, but the circuit formed by the cavity is a much lower impedance. How low? It's irrelevant for our discussion here, but the reason I mentioned it is because we use the coupling loops not only for coupling but also to transform our input impedance (usually 50 or 75 ohms) to the impedance of the cavity and then back up to the same impedance of the input on the output of the cavity. Therefore if the loops are not the same, the input and output impedances of the cavity will differ, causing a higher through loss in the cavity. Hey, I bet with some experimentation of loop size, one could easily make the transition from 75 ohm CATV hardline to 50 ohms in one cavity with little loss. But that is another discussion altogether.

So how can I build one and why would I want to? Second question first: Well, if you were building a local coverage repeater (I wonder who's doing that?) I'm sure that the first thing you would run out and do is pay in excess of $1,500 for a set of commercial cavities instead of building them yourself for under $100. Ya, right, sure you would!

Other applications and, may I add, overlooked applications, are to use them to remove interference or to eliminate de-sense of a receiver. Examples: To remove intermod from pagers on your favourite 2M repeater (e.g. VE3KCR) or to eliminate de-sense of sensitive receivers such as 2M Oscar down-links or EME receivers or even if you wanted to use an inexpensive scanner to receive weather radio at your repeater site. I'm sure that you can think of a couple more.

Now you're all excited and want to build one? Good for you. The materials you will need are all readily available and (of course) they are cheap. I will provide a list of where I scrounged up all of my parts later. First cut out the bottom of all 3 paint cans. I suggest that you use a can opener to do this as it does a nice job and everybody has one of these. The next step is to weld the cans together in the position shown in Figure 8. I used lots of flux, a propane torch and big solder to do this but I'm sure that you are all far more capable of doing a neater job than I did on this part. In fact I'm sure that any small child could have done this part neater than I did (I never claimed to be a welder anyways).

Keep all of the lids as you may want to experiment or you may botch one of them up or something like that. You may place your RF connectors right in the lid enclosure if you are using this cavity as a bandpass device, but if they are for repeater use you will have to use a small aluminum box above the top with the connectors mounted on this case in order to access the live elements of the loops in order to install a notch filter (see Fig. 8).

Without a notch we will only be about 10 dB at 600 kHz spacing and much more at about 2 MHz, which is fine for filtering out pagers in some cases for the weather radio scenario. Repeaters, on the other hand, need much more than 10 dB.

To do this we produce a notch via the use of an external capacitor or inductor between the live elements or the coupling loops which will give us negative and positive frequency notches respectively. The notch depth on my cavities were 24 dB @ 600 kHz @ 147.63/147.03 spacing. Remember that 600 kHz at 147 MHz is less than ½ or 1% away in frequency and that 25 dB is a reduction in signal strength of almost 400 times and that it is an awful lot of attenuation at such close spacing in frequency.

What do we lose with the notch? Look at Fig. 6 and you will see that we lose our symmetry bandpass and a substantial amount of our out-of-band rejection, but we do gain more than 30 times the amount of attenuation @ 600 kHz spacing. At this point I would like to talk about the proximity of the coupling loops to the inductor and about their physical size. I have found that the loops tend to be self resonant and therefore seem to give funny looking curves near your cavity centre frequency if you make them the wrong size.

The size that I used in Fig. 8 seemed to be self-resonant at about 136 MHz but if I made them larger they creeped up closer to my centre frequency and this caused problems for me. I have to put a little more work in on this aspect of the beast and comments or suggestions would be appreciated.

The other factor is the spacing between the loops and the inductor. As you increase this spacing you will narrow your bandwidth as you load up the cavity less and get a higher Q. Unfortunately you will also increase your insertion loss, so you have to come to a compromise that is convenient for your purposes. With the spacing that I used I ended up with a notch of 25 dB and a loss of 0.8 dB per cavity, which is not as good as commercial equivalents but much much cheaper and besides, it is only Amateur radio.

The other option you have is to build a shortened cavity with only one or two paint cans. These shortened cavities will have a lower Q and thus a wider bandwidth which in some applications is tolerable or even desirable.

When would it be desirable? If you were trying to receive packet down on 145 MHz and had pager interference up on 148.5 MHz this type of cavity would be maybe 30-50 dB down at such a

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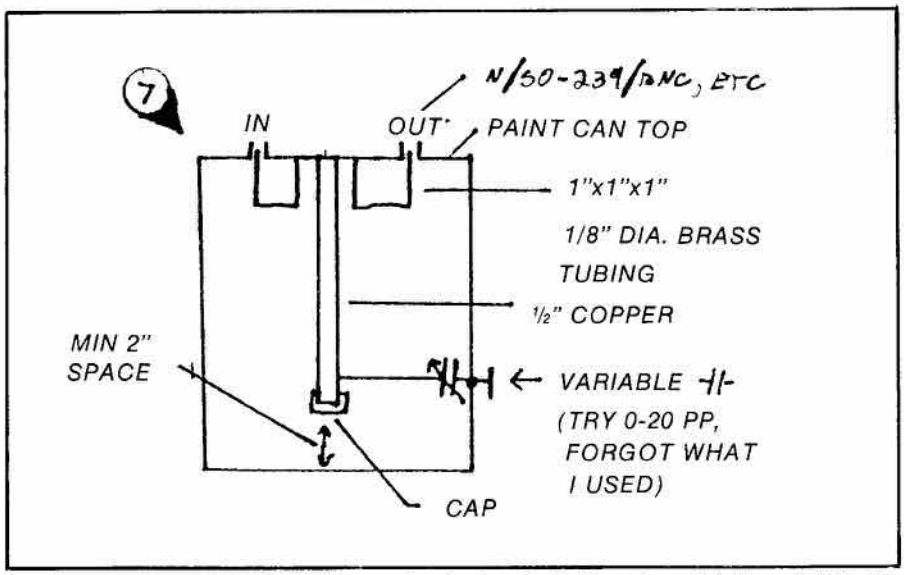


CAVITY *(cont'd)*

large spacing as this and would also be 1/3 the size of the full cavity. We do have to add a capacitor at the end of the inductor, thus eliminating the sliding inductor in order to tune the cavity to resonance (see Fig 7).

Oh, just in case you are wondering if I'm grabbing some of this purely from literature, let me assure you that I have built both of these types of cavities with success and they do work. In Fig. 8 you will find a description of the repeater cavity that I am using with explanations and specs in the parts list.

Well, again it's been fun. Sorry I couldn't go into more depth; believe me there is much more to be written in much more detail than I have presented here, but due to space limits this will have to do. So until next time, when we will talk about how to take that old VHF or UHF business band or marine crystal radio that you have laying around and turn it into a receive converter or into a transverter (sounds neat, eh?) for low bucks. This is VE3DAA saying bye for now.

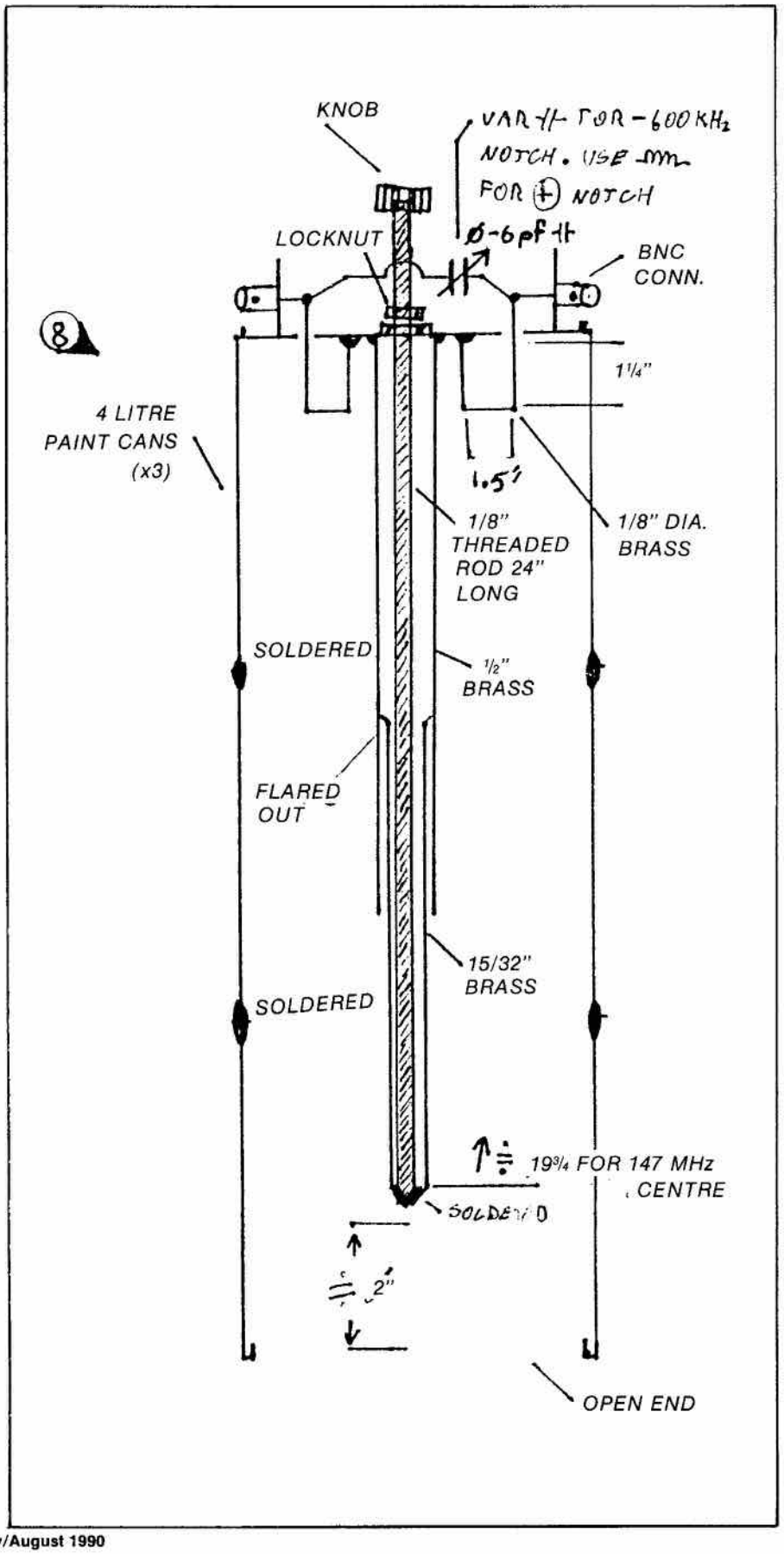
PARTS

Paint cans available at Colour Your World for about $4-$5 each (new),
Brass tubing available at most hobby shops (Leisure World, etc.),
24'' 1/8'' threaded rod with accompanying nuts available at Canadian Tire,
Capacitors (use high Q capacitors only, especially if using for transmitting),
Find the connectors and knobbers yourselves, unless you can't in which case you can find some at Radio Shack that will do.

Note: I used heatsink insulators from TO-220 case collector tabs to insulate the 1/8" brass tubing where it went through the paint can lid.

Note: The top of the cavity need not be totally enclosed in most applications and the bottom not sealed either, especially in some cases where this will actually lower the Q of the cavity if the tuned rod is too close to the bottom.

Note: if you take sandpaper or emery cloth to the inside of the paint can lid, you will find it possible to solder to, otherwise you will not, as there is a coating. ■



IARU OFFICERS

Richard L. Baldwin W1RU, President of IARU since 1982, will continue in office for another five year term.

The new Vice-President is Michael J. Owen VK3KI/G3ZML/ZL1BGFY, the first time that an Amateur from outside North America has served as an officer of IARU. Congratulations.

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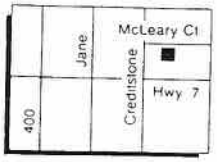

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DIGITAL SIGNAL PROCESSING FOR THE CLEANEST TRANSMITTED SIGNAL

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POPULAR HF TRANSCEIVER WITH OR WITHOUT AUTOMATIC TUNER

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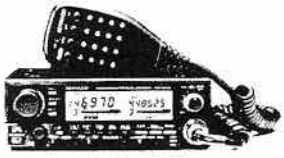
TM 631/731A



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TH 75A

TH 225A NEW

TH 25AT

SPECIAL THIS MONTH
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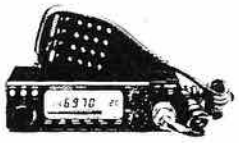

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COMPETITION GRADE

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SIMPLY THE BEST

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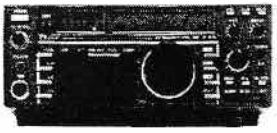
ECONOMY HF

IC-735



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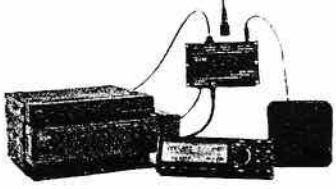

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IC-32AT:	5½ Watts	2 Meters
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20 Memories. Store any frequency, Tx offset and subaudible tone in any memory. Total flexibility to meet your needs.

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7 WATTS