

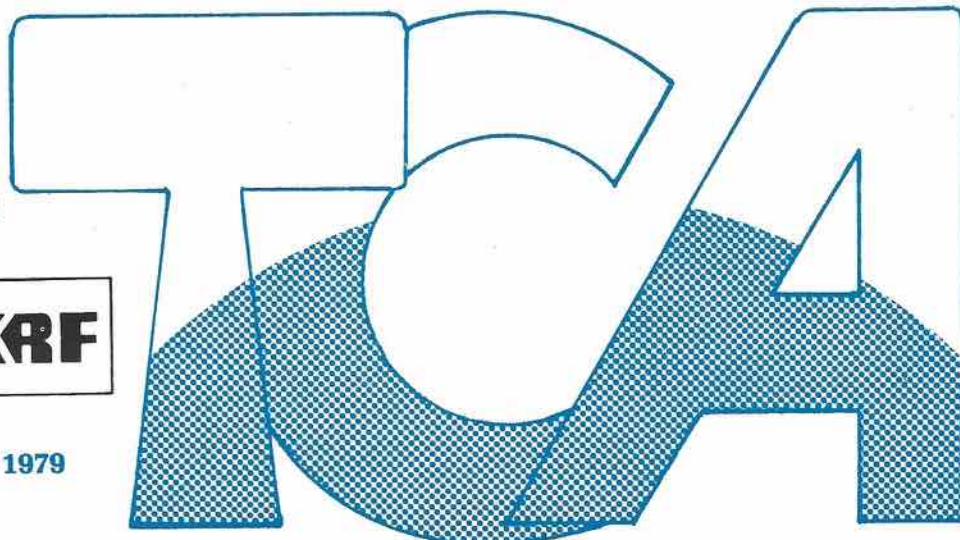
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OCTOBER 1979



THE CANADIAN AMATEUR

Regs in the Bathroom

and other Test Trivia - Page 45

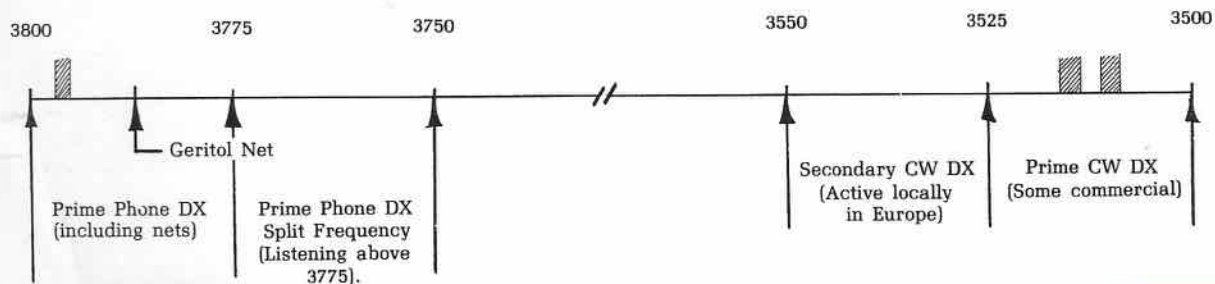
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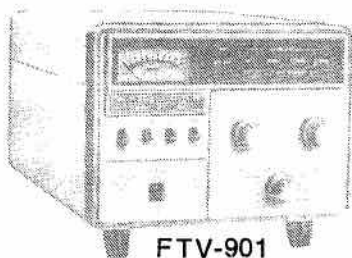
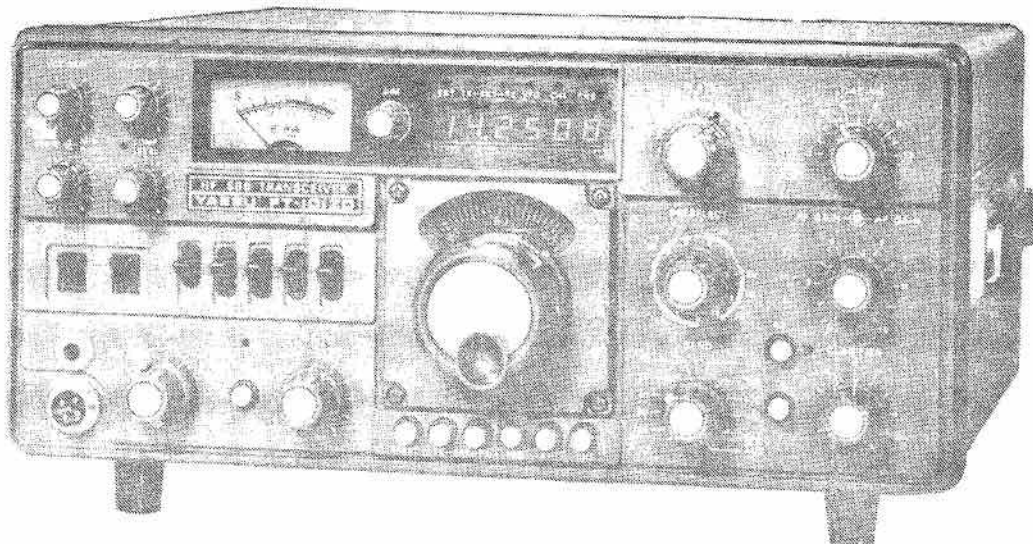
The Challenge of 80 M DXing

80 METRE DX WINDOWS

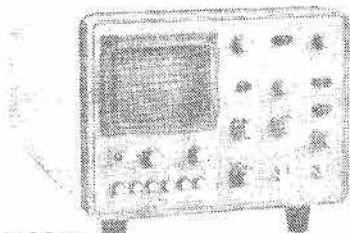
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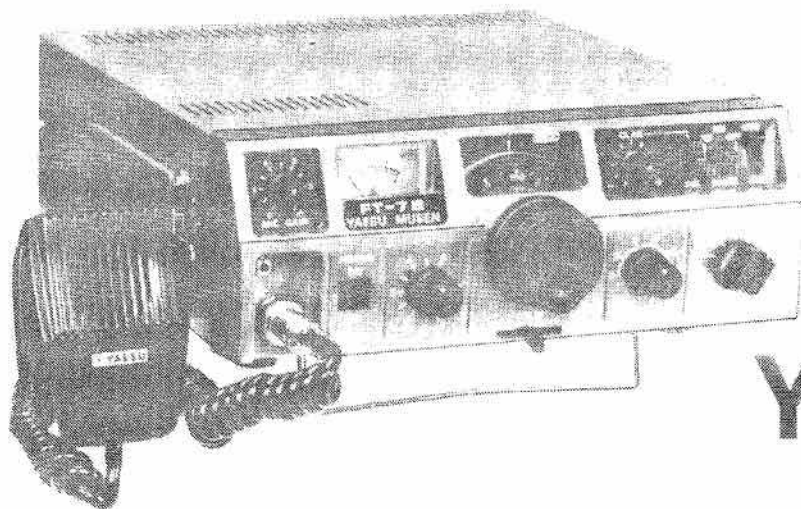




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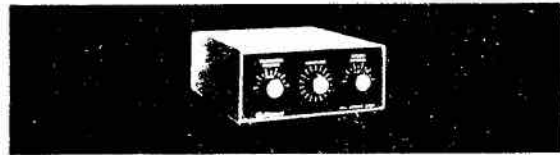
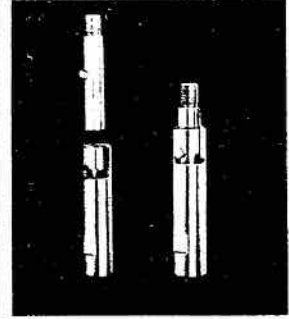
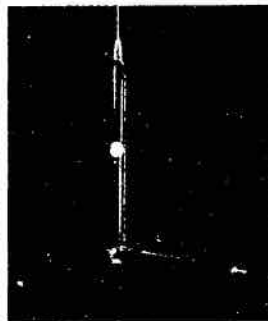
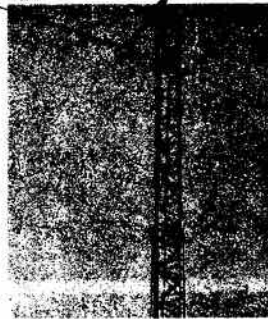
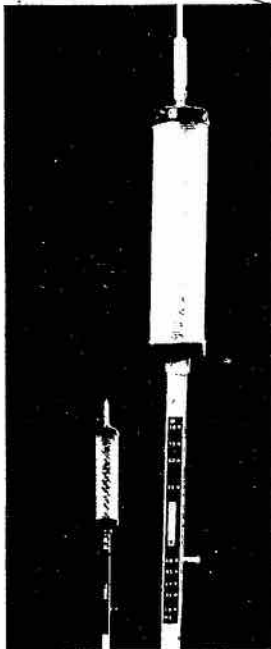
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ANTENNAS



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TB2A 2 element rotary beam for 10, 15, 20 meters light weight. 6.5 foot boom length. (Photo 2).

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KWIK-ON Quick disconnect or installation. Stain-less steel with standard thread. Most mobile antennas. (Photo 4).

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- AGC (selectable fast/slow/off).
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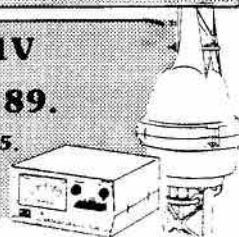
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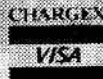
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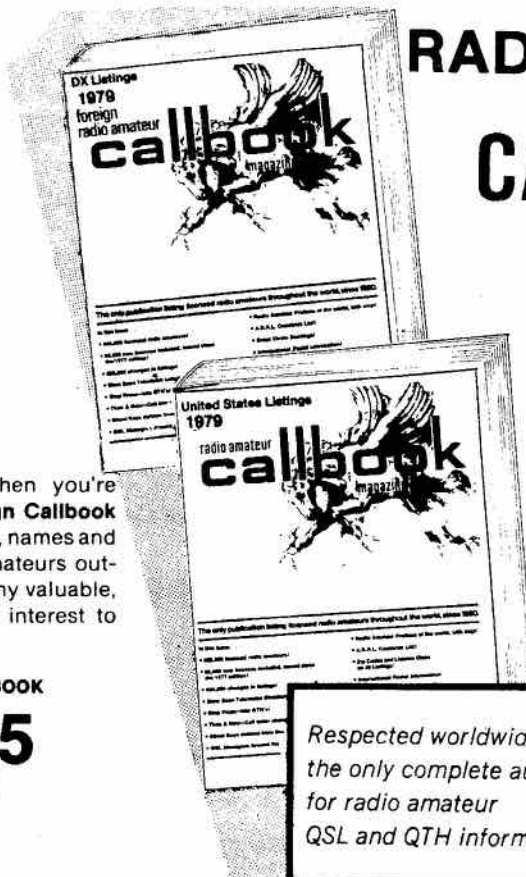


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3) DR22C-6	DR22C with 600 ohm audio output	1579.00
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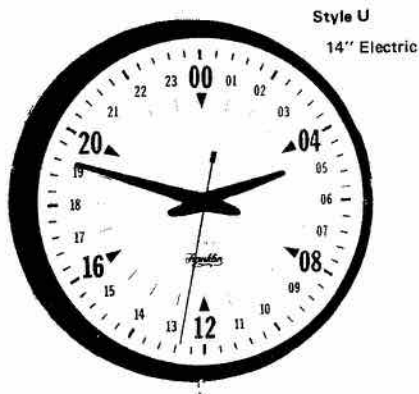
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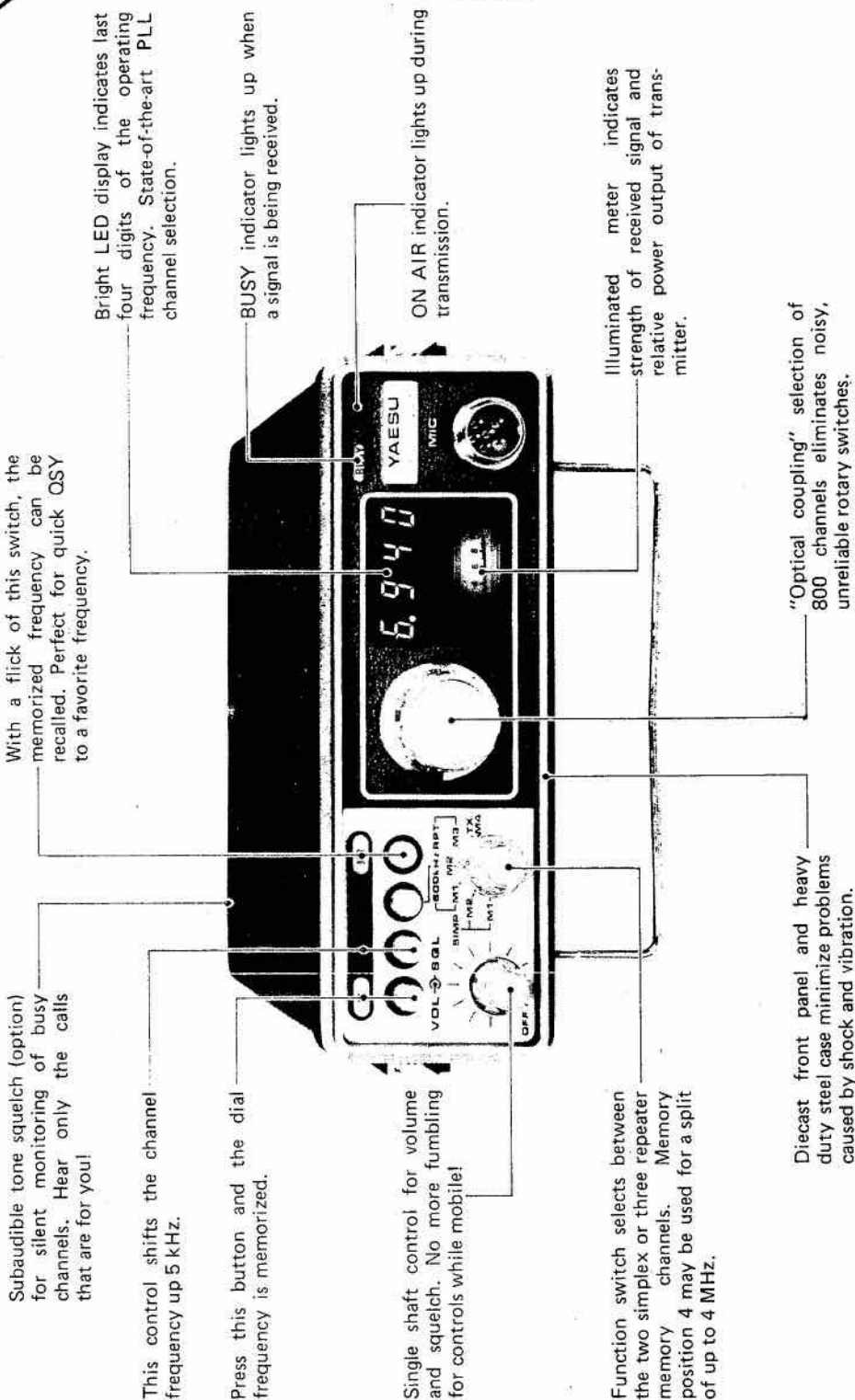
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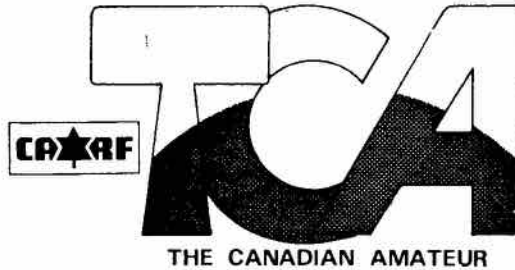
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October 1979

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LETTERS:

PASSING EXAMS

Regarding the topic of passing the 'new' DOC Amateur and Advanced exam, I have followed a certain procedure and 'mindset' which resulted in my completing the Advanced requirements at the July 11th exam sitting.

For the benefit of those who hope to upgrade, my experiences and thought may be useful.

1) Passing is possible – if you are ready. VE4ZH and myself recently passed our Advanced on our first try. We're the only two Amateurs in Gillam so in spite of the low pass rate elsewhere, that in Gillam was 100% for this round.

2) Get your code up to 18 wpm for the Advanced in whatever way you can – that means keep away from a mike!! Remember to do this DAILY – that means EVERY day.

3) Regulations are straightforward from the TRC handouts. Spend at least three hours off and on mulling through them. They have a lot – so digesting them and rereading will help.

4) Theory is OVERRATED as the recently published questions in 'TCA' show. The books (on theory) are innumerable; UNDERSTAND them;...

5) Adequate preparation time is essential – don't try to squeeze too much into too little time. Check yourself with any published DOC questions or with Amateurs who have recently written the exam. Based on the July 11 exam I wrote, the exam 'toughness' is overrated, but READ the question so that you understand what is required. So many are worried sick of failing. If you don't make it – learn from the experience and try again next time; afterall, did you learn to walk on your first try?

P.S. Hans Schaedel in the July/Aug. TCA asks about SSTV. Recently I bought a copy of the SSTV Handbook for \$5 in Montreal. It's published by 73 and packs a lot of info between its softbound covers.

Ken Pisichko VE4ZO
Gillam, Manitoba ROB 0L0

october 1979 - 16

INSTRUCTOR'S GUIDE

In the July TCA, President's remarks, it was stated that a CARF Instructor's Guide was being written. I however am not the only author; Art Blick VE3AHU is a co-author. Would you please so state, so that I do not appear to take credit for the work of others!

Ron Walsh VE3IDW

ADVANCED EXAMS

Having recently written the Advanced exam, I would like to pass along my comments on it.

Firstly, the exams cover a variety of theory but nothing beyond what is suggested as prerequisite in DOC publications. Secondly, I do not think that DOC have made the exams harder as far as theory knowledge is concerned. The exams have kept pace with technology and are including a greater percentage of electronic theory and lesser of tubes. Furthermore the study guides put out by CARF and the like are still quite adequate in helping provide the groundwork for the exams...

I think that the only thing that DOC needs to review is the format of the exam and wording of questions. There certainly is redundancy in some statements as well as ambiguity, especially in the Regulation Section. If the statement of a question is not clear then it makes it even more difficult to get that 70% pass mark...

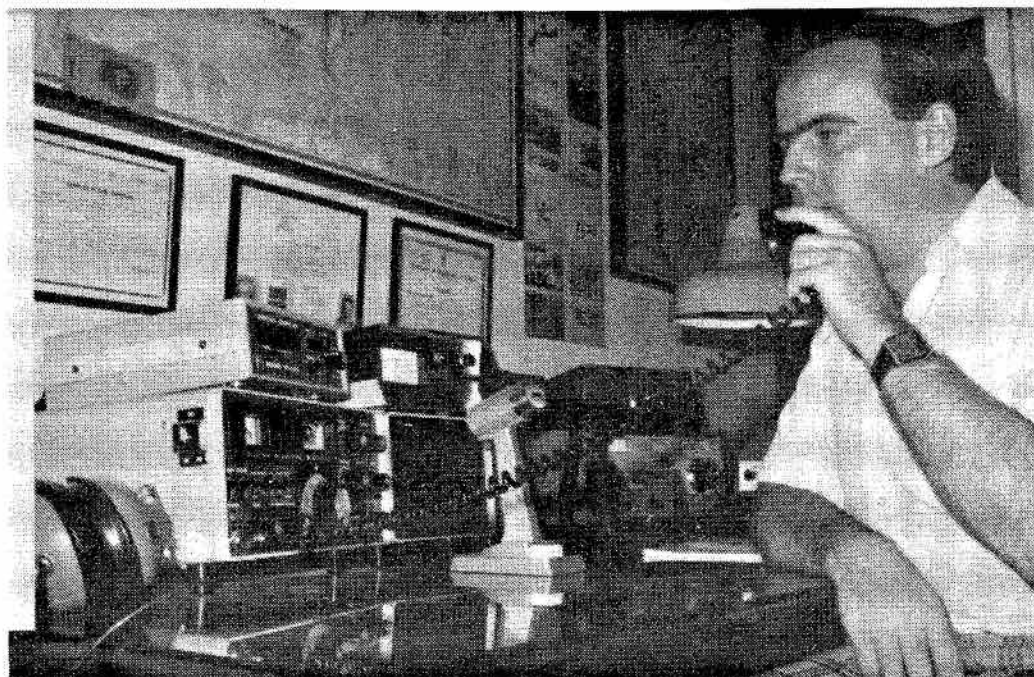
CW is a one-person show and it's your own fault if you fail that, although it's much easier to take the CW test alone than in the crowd at some civic centre...

Best of luck to those trying the exams in the future.

You can do it!

Mike Graham VE3KMG
Box 1260
RR 2
Nepean, Ont. K2C 3H1

TCA welcomes Letters to the Editor. For speedy processing, send correspondence directly to Doug Burrill VE3CDC, Editor TCA, 151 Fanshaw Ave., Ottawa, Ont. K1H 6C8.



CN8AK

I noticed in a recent issue of TCA that photos of interest were requested for inclusion in the journal. While I don't know if photos of CN8AK would be of interest to the readers or not, I thought they might fill up an empty space if you have one in the International News space.

When I get back to Canada it's normally to Ottawa although I am originally from Saint John NB. I also hold ZB2DW, from where I operate as often as I can get up there, and occasionally as G8ONQ while in the UK.

I have been here now about two years and expect to be here until summer of 1980. I must say Rabat is a fine ATH for DX and using the Yaesu line-up you see in the photos, am now up to 277 worked and 259 confirmed for DXCC.

If anyone needs a sked with CN8 I can often be found around 14.200 in the evenings GMT or we can set one up if they drop me a line to Box 709, Rabat.

Gregg A. Calkin VE3JGC
First Secretary & Consul
Canadian Embassy
Box 709, Rabat, Morocco.

AN OLD TIMER'S STORY

The response to our request for back copies of 'XTAL' and the first "Canadian Amateur" brought home interesting replies from old timers. Here is a letter from Monty VE2JT who sent us a number of issues of both magazines:

Thanks for your letter. It was a

pleasure to hear from another "Old Timer".

I first got started in radio during school days around 1920s by an article in the "American Boy" which described the saving of a vessel at sea by wireless. The bug bit right away, so tried a coheror but

with little success. Then a bit of pencil carbon across a razor blade in series with a 1½ volt battery. I think I hear the local Canadian Government marine station VCA with its beautiful rotary spark gap but when I managed to send 50 cents to Cleveland for a bit of Galena success was mine! With a buzzer and battery I learned to find the sensitive spots on the piece of galena. Quaker Oat box, cylindrical type wound with #18 bell wire and the galena, a condenser across the phones, (Murdock, only a single phone), condenser made of wax paper and cigarette package 'silver' paper. Tuning was done by tapping every 10th turn up to the last package ten turns where each one was tapped. Bits of wire from taps to brass tacks through a wooden board. NAA, Arlington sounded great when the local signal from VCA did not drown it out. That circuit was not noted for selectivity! What about the aerial (not Antenna then)? Well 200 feet of no. 18 Bell wire with the old wax cotton insulation. I spent quite a few dirty hours burning off the insulation! How else would the signals from NAA get to the copper under the insulation?!!!

In my final school year (High School) we were asked to write a composition with the choice of subject ours. Of course, my subject was **wireless**. I remember the teacher calling me on the way out, if the classroom shortly after to ask me where I learned about wireless. Was I pleased!

In 1934 I got my licence and off I went. First tx: a single 45 in a tuned grid circuit. The plate coils was quarter inch copper tubing wound with sufficient turns to reach the 40 metre band. Many a good QSO I had with that 10 watts. One of the most memorial was one with Warner of the ARRL I think I received a QSL Card from him. What a thrill.

Came marriage, then the War. Before it started I had ideas. Anyway in 1939 I started to really study my theory. Finally I had an interview with a Squadron Leader in the Hunter Bldg., Ottawa. Passed my medical and then got a commission as a Pilot Officer. Trained in Toronto, CNE Grounds, and apparently was a good boy because all of us were promoted to Flying Officer. In January 1941 posted overseas on a secret training course. Thought I was a signals Officer; - I was, but Signals Special! Otherwise Radar as it later became known. So off to Yatesbury, Wiltshire, England where the RAF had a huge Radar Training School and plenty of

real hot RADAR stuff. Clinton Ont. area radar facilities were not then set up. By means of a good memory and hard studying I managed to pass out of the school. Not at the top of the class but not at the bottom either. What I did not understand, I memorized! What they did to tubes and 'Valves' was not human according to my ARRL and QST education!

Was in charge of RAF Station at St. Cyrus, Scotland, a small town on east coast of Scotland. Then posted overseas again to Singapore with two of my pals, Canadians, of the Yatesbury Course days. Had a great time helping to erect a Station in the Jungle just outside of Kota Tinggi, Johore, Malaya. Operated it for about two months when out it came down the jungle path of an 1800' Mountain, because the Japs were closing in and about 5-10 miles away. Out of Singapore to Java, Dutch East Indies at Soerbaya. We attempted to put up another station using bamboo poles for the antenna supports. Worked fine but the Japs landed in Java. Destruction of some 200,000 Pound worth of equipment. - I had the dubious honour of being in charge of that. What a waste! Some 500 of our Radio Installation and Maintenance Unit hied to the mountains; but the Dutch had capitulated and all Allied personnel were handed over to the Japs.

Spent 3½ years in 13 Prisoner-of War Camps; got out a little the worse for wear some of which is still present to this day. Met some Amateurs in the various camps with VE2CD and an American Amateur helped to build a two-tube receiver to pick up news.

Hope I didn't bore you with the foregoing. I think I am lucky to be alive and well, so best forget the bad parts and remember with great enthusiasm the good parts.

I am a pensioner of the Bank of Montreal so after all that caused by radio, I returned to the Bank. Got the Station going again. At present time not very active although I have a Heathkit 101 down cellar and a 2 metre up in the den.

Regards and best wishes.

L.R.(Monty) Montgomery VE2JF
Lachine Que.

U.S. AMATEURS

For the U.S. fiscal year ending June 1, licensed Amateur ranks in the U.S. totalled 363,820. Extra class 23,111; Advanced 84,181; General 120,903; Technicians 69,162 and Novice 66,363. (HR Report)

The fall contest season is again upon us. With the sunspot cycle approaching its peak and more DXpedition scheduled for this fall, the season looks to be one of the best.

CQWW, the contest many consider No. 1, will be in late October. Like this years WPX we should see even higher scores and

many old and not-so-old records shattered.

Now that the first running of the CARF Canada Day Contest and the third running of the Canada DX sponsored CAN-AM Contest are over don't forget the granddaddy of them all, November Sweepstakes.

CONTEST CALENDAR

Oct. 27-28	CQ WW DX Phone
Nov. 3-4	November Sweepstakes Phone
Nov 17-18	November Sweepstakes CW
Nov. 24-25	CQ WW DX CW

CQ WW DX CONTEST - ALL -		TIME CANADIAN RECORDS	
MULTI MULTI	VE3KZ	78	10,612,755
MULTI SINGLE	VE3KZ	77	3,433,560
SINGLE ALL BAND			
	VQ7WJ	78	2,739,140
28 mhz	VE7IG	67	318,752
21 mhz	VE3BMV	78	913,556
14 mhz	GK1HH	77	746,760
7 mhz	VE3EDC	76	133,496
3.5 mhz	VE3EDC	75	141,726
1.8 mhz	VE3BMV	76	29,750

News Briefs

At last! After a number of hearings over the years asking for relief on duty for Amateur equipment, the Tariff Board has recommended that the 15% duty now imposed on Amateur receivers, transceivers and transmitters be rescinded. This applies to equipment for "use only on the Amateur bands". As a result of representations made by CARF and other Amateur organizations and individuals the Board was "of the opinion that a strong case has been made for the special tariff treatment of major items" of Amateur equipment. Consequently it has recommended in its report, which will be tabled at the first session of the new Parliament, that the major items noted be admitted to Canada **free**, from those countries listed by customs as coming under the British Preferential Tariff and Most Favoured Nation rates. Implementation may some time coming, though, as the Board also

recommended that the change "be effected in two stages over a period of one year". Further good news for antique radio buffs was a similar recommendation to drop the duty on antique radios and parts for those which are more than thirty years old. The former limit was for fifty years. The Board report is well-written and worth the \$4.75 to any or all of those who participated in any way in the hearings.

Amateurs who for years have railed at import duties on their equipment now have a chance to really do something about it. Further action depends on Parliament amending the Tariff Act. That means political action. To get political action write to the Minister of Finance, John Crosbie, with a copy to your local MP. Twenty thousand letters would sure scare up some action.

Hugh Lines VE3DWL

An addition to the CARF/CRAG Repeater Directory in the June issue is VE3TTT, London, Ont. on 449.4 in and 444.4 MHz out.

The Brandon, Manitoba club reminds clubs and individuals who are planning to set up repeaters that they should get in touch with the CANAM Repeater Council which co-ordinates frequency allocations for both sides of the border between Manitoba and North Dakota. They would invite every club in that province and state to have a representative on the Council. For information, contact; Bill Graham VE4QG, 16 Frontenac Cres., Shilo, Manitoba, R0K 2A0.

FREE! FREE! FROM DOC!!

Here's a freebie from your favourite federal department. A 48" x 24" full, ever-living Technicolour wall chart of the Canadian domestic allocation of the radio spectrum from "DC to daylight". Write to Information Service, Dept. of Communications, 300 Slater St., Ottawa, Ont. K1A 0C8 for your free chart. Despite what may happen at WARC '79 it will be good for the two or more years it will take to implement any changes to the Amateur bands which may surface in Geneva during the next few weeks. The chart, by the way shows the loss of 420 to 430 MHz to another service and the allocation of 902 to 928 MHz to Amateurs. Neither of these are in force until official notice appears in Part 2 of the Canada Gazette. This will probably be done before the middle of September in the form a new TRC-25 which will make a number of changes in the regulations which have already been up for public comment.

International News

BY4YAL

CARF member VE3KUJ reports hearing a BY4YAL (CHINA) on 20 metres last month. Reports from Japan and the U.S. are that a JA6HOZ was worked portable from China for a couple of days on six and ten into Japan and then came up on 20 metres. The resulting pandemonium led to his abruptly closing down. The first station is suspect but the JA station is probably okay as he apparently had been invited to China to demonstrate Amateur Radio.

IARU NEWS

From IARU news: Russian Amateurs are now using 1850-1950 kHz. Netherlands stations may use a commemorative prefix from October 10 to November 10 to mark 50 years of Amateur activities in that country. Example of the prefix is that PA0 stations may use PA50; Spanish stations with the prefix EA6, EA8 and EA9 may use the 1820 to 1835 kHz band.

INTERFERENCE IN WEST GERMANY

West Germany is ahead of other countries in combatting interference. The government has just issued regulations which define the rights of listeners and owners of transmitters. Receivers must be able to reject specified levels of unwanted signals. The strength of the desired signal

must be above specified minimums or a complaint of interference will not be accepted. (HR Report) Canada and the U.S.A. governments have been fiddling for years with this idea, but so far no real progress has been made, and the battle between cheap and poorly designed receivers and 'clean' transmitters still goes on in some areas.

HEATHKIT TO BE SOLD

Heathkit, an everyday word in the Amateur lexicon, is to be sold to Zenith Radio for a reported \$64.5 million from its present owner, Schlumberger Corp., which is a French-based conglomerate which acquired Heath in 1962. (HR Report)

PERSONAL RADIO

The FCC, like DOC, are considering a 'personal radio' band somewhere in the 900 MHz band; something like 897-902 or five megs around 935 MHz. The Notice of Inquiry is out, but neither it nor a questionnaire have reached TCA as yet.

CHANGING QTH?

To make sure of not missing an issue of TCA any change of address or non-delivery complaints must be sent to CARF Inc. Box 356 Kingston, Ont. K7L 4W2, NOT to the Editor.

Don't Starve a Vertical

Most Amateurs would dearly love a full-sized beam on a 100 foot tower. If, however, you have purchased new or near-new equipment, the additional cost has caused temporary deafness in many Amateurs. Now I don't mean to intimate that a vertical is cheap, but with a price of around \$160 new, this cost can also give you the odd nervous twitch. Perhaps you've bought one at a good price at a hamfest, or already have one that is not in use. If you tried it and sunk in one or more ground rods, only to discover it's not performing like the words in the advertisement, then you're not feeding it properly.

I'm not going to feed you formulas or any difficult mathematics, just a few dos and don'ts and with apologies to the Metric Commission, all my lengths mentioned will be either in feet or inches!

The most important thing I'm going to advise you is, **'You need radials'** or, if you prefer, a ground plane system. When I say radials, those wires that spoke out from around the base of the vertical, I'm not speaking of one, two or six, but no less than fifty. If you're just using a half dozen or so, the antenna is being starved for efficiency.

Why do you need that many? One simple reason. Ground wet or dry is a poor conductor, in fact I consider it no conductor of RF current. Stop and consider for a moment, would you put up half a dipole or inverted vee? Of course you wouldn't, but erecting a vertical with one or more ground rods is exactly the same. RF energy (some of it) forms an umbrella-like pattern out from the top of the antenna, directed toward the ground. If it cannot get back to the mounting point of the antenna, its efficiency is drastically reduced. The radials facilitate the return path for this energy and enhances the RF signal you're trying to get out into the

atmosphere, where you trust someone will answer that 'CQ'.

Laying radials does not have to be a chore, and you do not have to cut or dig slits from one to two inches deep. I have 85 radials at the base of my Hy-gain 18AVT. They were laid in late November five years ago, on top of the dead Fall grass. You could accomplish the same thing in early Spring. If you feel you want to cut slits, then do so but no deeper than from a quarter inch to a half inch. If you bury them any deeper, the radials are again being isolated by the earth above, which as I've mentioned is a poor conductor, so you're defeating the original purpose of a good return path.

I pegged each wire down in several spots using long bent nails, heavy pieces of aluminium wire bent into a U shape and some large fence wire brads bought at a hardware store. When this is all complete there are several other small jobs, but the radials themselves you will find by mid summer have been completely covered over by grass. You will have to raise the mower one notch, just to be sure you don't suck up any loose wires and cut them off. You can lower the cutting height later, but you shouldn't cut the grass to short anyhow.

What is a good length? Fifty radials all 50 feet long is what I consider to be a minimum. If you haven't that kind of space, don't let that deter you. My radials are from 45 feet to 25 feet in length. They are made to fit the size of the space available. The number making up for the various loss in a specific length. You can wind them through bushes around trees or whatever you can manage. They can also be interconnected one to the other if you wish. Anything that makes the return path easier will obviously improve the performance of the antenna.

We're going to go back to the base of the antenna, to explain how to tie off the verticals around the bottom. You can purchase a piece of half inch diameter copper pipe and using a form, bend it into a circle roughly a foot in circumference. You can make it smaller if you desire. Once you've decided on the size, flatten the pipe all the way around and then drill as many evenly spaced holes as the number of radials you intend to lay. Leave one hole at each end to tie the flattened pipe into a circle. Let's say you wanted fifty holes but the flattened pipe won't allow that many, then drill 25 and tie two radials to each tie point. If you have some heavy copper wire around the shack, this will do just as well. Simply form it into a circle, place it around the mounting pipe and then solder each radial to this wire.

There is another connection to be made once this is all in place. The flattened pipe circle or heavy copper wire has to be connected to the mounting pipe of the antenna. Instructions with verticals suggest you tie off the radials at the bolt end of the clamps supporting the antenna. What has also been used in some cases is the retaining bolts at the top of the mounting bracket. Here's another caution, **Do not terminate radials to these points**".

There is a good reason why not. Any slack in the connecting wires or pieces of braid may eventually come in contact with the antenna proper. If this occurs you will have a dead antenna, it would be completely shorted out. If you should persist in trying to load into this condition, thinking it is something else, your transmitter may require some work and new finals. The preferable method is to place a clamping strip around the mounting pipe close to the ground. Bring the wires or braids to this point and then tighten the clamp. If you have the antenna mounted on a wooden stake or other non-conductive material, then you will need a ground rod close to the base and the radials tied off at this point.

You need more than one wire or piece of braid to finish the circuit. If you use only one tie point you're defeating the effect of the radials. The RF current running back along the radials will have one wire as a feed point; instead, install as many as you can fit from the circler to the clamp. One more thing while on the subject of the mounting bracket. The mount has sets of holes for two clamps. I recommend you drill another set midway between the two

and add a third clamp. Under high wind conditions along with ice accumulation the plate can be bent or will eventually crack from flexing of the aluminium as the antenna sways back and forth.

(I recommend reading an article in the March, 1974 issue of QST, by Jerry Sevick, W2RMI. It's well worth the time it will take to read it.)

The 18AVT has a loading coil and whip at the top for 80M. It has limited band width, but I have overcome this problem by using an antenna matching unit with a built-in balun. It has increased the useable frequencies beyond that specified for the vertical. I work the SSB portion of the bands with good reports, even though my measurements in the original mounting were all done for CW.

If you find after a year or so the efficiency appears to be low, then here is a servicing note. Where each section fits together and is clamped, a black greasy residue will build up. This results from moisture reacting with the aluminium. Take the antenna down at the first clamp above the mounting bracket. Clean each connection both inside and out. This greasy formation prevents the joints from making a good electrical contact. Before putting the vertical up, give each nut, screw head and bolt a light coating of grease. I used a light ball bearing grease and re-do it once a year as required.

The coax from the antenna was placed underground by slipping it through a piece of large diameter clear plastic tubing. Where it enters the building I pushed enough into the hole to prevent any moisture from entering at this point. At the other end where it screws onto the coax fitting, I sealed both the tubing and the coax connector with a pliable compound called Mortite. This sealant is used to seal windows and doors, and it remains workable even after several winters. It can be removed and re-installed as many times as you like without harming its sealing qualities.

The amount of wire I have in my radials is just under 3000 feet. I bought up a bit here and there when I saw it at a good price, until I had enough. Use from 16 to 12 guage, anything smaller is not strong enough to withstand your pulling and pegging. My best lobes tend to an East/West direction, simply because that is where the longest wires are. I work DX, I may have to be a little patient, since I only run 100 watts at all times. It's just a matter

of waiting until some of the high power fellows are through. But sometimes it has surprised me when I've snagged one right in the middle of a pile up with a good RST report. Without having improved the workings of the vertical, I would be trying to erect a dipole or V antenna and having to make some undesirable bends since I do not have trees tall enough or in a direct line to the direction I would wish to work.

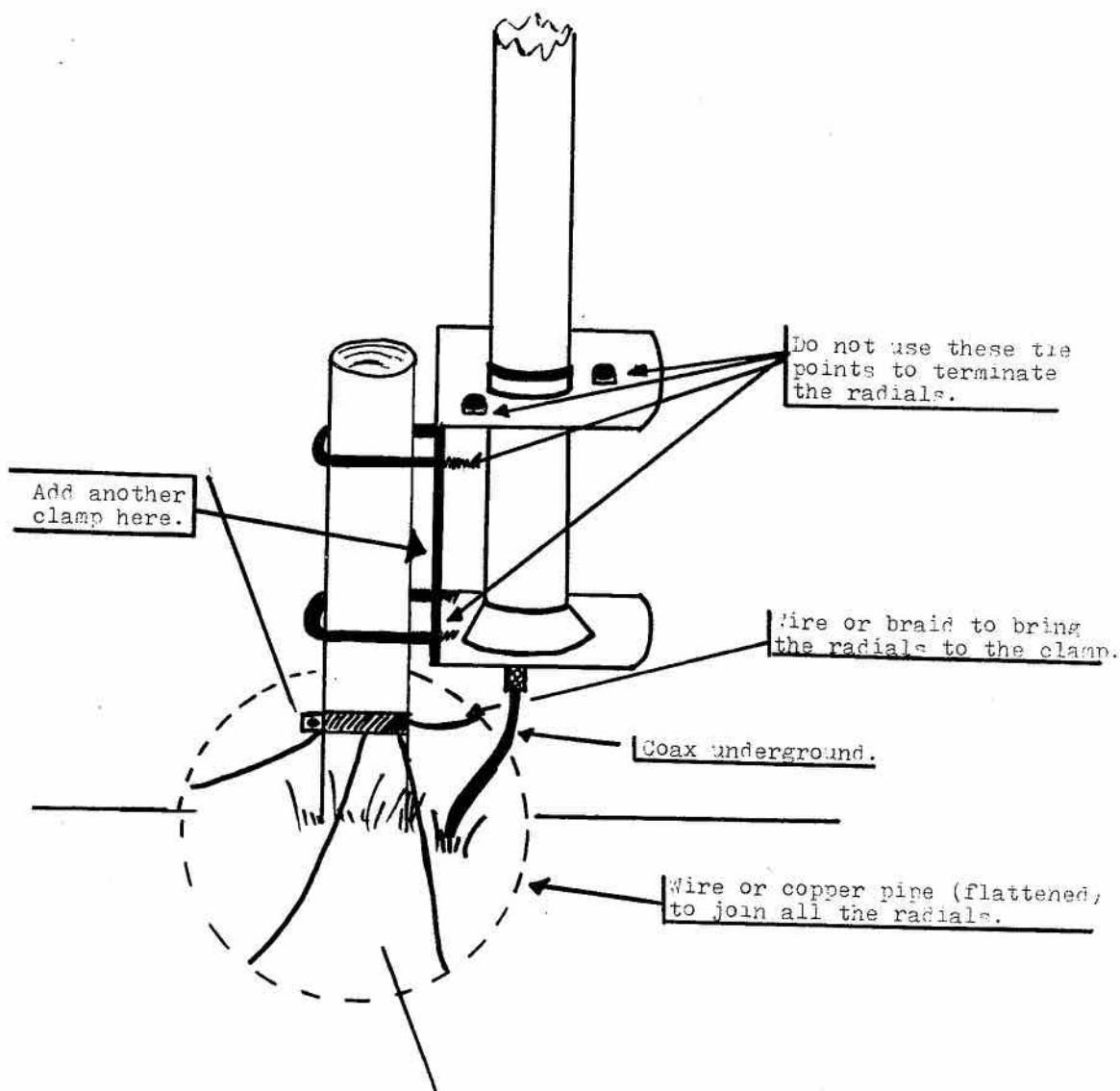
An excellent arrangement would be two verticals, phased for one or more bands. This requires a considerable amount of coax however, and the old perennial space problem comes up again. You would need 33 feet of separation for a quarter wave length and 66 feet for a half wave length apart. Both verticals over a

good ground plane would provide a switchable array for two directions with a cardioid pattern resulting. Perhaps when I've finished experimenting with this system I'll let you know what I've learned.

Yes, I do have one complaint about the vertical, the only one to date. It's a noisy antenna. By this I mean it will pick up man-made and atmospheric noise like a sponge. I sometimes feel I get QRN from the neighbour when he sneezes.

Overall it has served me well for both long and short path communications; hopefully this will help others. So give your vertical a good feeding via the radials.

J. G. Coulombe VE2HY
127 Hastings Ave.,
Pointe Claire, Que. H9R 3P4



Low Drain Battery Status Indicator

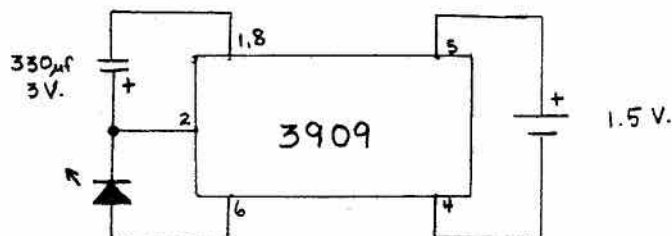
By VE3CGU

If you are like me and own a two-metre portable transceiver you have probably considered the problem of deep discharging the ni-cads caused by leaving the rig turned on by mistake. A check through my files of clippings and sketches of possible circuits to indicate that the power was 'on' revealed two. One advocated connecting a jumbo diffused red LED, with 390 ohm $\frac{1}{2}$ watt resistor, in the circuit. Since this was claimed to draw about 25 milliamps and my transceiver's power drain in squelched position was 30 milliamps it was apparent that another circuit had to be found.

The next circuit I considered was in March '79 CQ magazine. WA2NDM reported that he had derived a simple

circuit from the National Semiconductor data sheet on the LM3909 integrated circuit. This IC was familiar to me from some experiments I had done last year and since I had a supply on hand I elected to build a copy of the circuit.

The choice of the 8-pin DIP 3909 seemed a good one as my past circuit exhibited very low battery drain in its use as a novelty device, (fig. 1). All that was required to flash a LED was a 1.5V cell, the IC, and an electrolytic capacitor. With a fresh AA alkaline cell I got over six months of continuous flashing. An interesting point is that although the LED required 1.6 V to light, the 3909 pulses the available voltage from the cell, producing the necessary voltage from even an almost dead cell.



Continued on Page 33

18HT 6-80 meters.

The only vertical antenna on the market offering multi-band performance without traps. The Hy-Gain 18HT utilizes a unique stub decoupling system to maximize efficiency, frequency stability and band isolation. It also offers a 50 ohm input impedance for all bands.

The 18HT features automatic band switching, $\frac{1}{4}$ wavelength performance on 40 and 80 meters, $1\frac{1}{4}$ wavelength on 10 and 15 meters. Maximum legal power rating on all bands. It is entirely self-supporting and requires no guys. Heavy duty, slotted, taper swaged, aircraft quality aluminum with full circumference compression clamps is used for radiators. The 24' tower is all rugged, hot-dip galvanized steel and all hardware is indited for corrosion resistance. Special hinged base for easy raising and lowering.

18HT 6-80 metre \$429.00

18AVT/WB 10-80 meters.

The Hy-Gain 18AVT/WB gives you true wide-band performance in limited space. And now we've made it even better. The 18AVT/WB now has an improved 80 meter coil and an over-size corona ball on the whip to eliminate wasteful and noise corona discharge.

This antenna is rated in excess of maximum legal power 10-40 meters and up to 1 KW PEP on 80 meters. Entirely self-supporting, requires no guys. All tubing is slotted, taper swaged, aircraft quality aluminum with full circumference compression clamps.

The 18AVT/WB has automatic band switching and utilizes three air dielectric Hy-Q traps for exceedingly stable performance and true $\frac{1}{4}$ wave resonance on all bands. May be roof mounted with Hy-Gain 14RMQ kit. Recessed SO-239 connector prevents moisture deterioration. 12" heavy duty mast support bracket.

18AVT/WB \$149.00

BEAMS

TH3MK3. The 3-element Thunderbird, offering outstanding performance on all three bands. Lighter and smaller than the TH6DXX, yet it has Beta Match, separate traps, DC grounding, taper swaged tubing and cast mast bracket. Takes maximum legal power.

TH3MK3 \$345.00

TH3JR. The Thunderbird Junior, a compact, high performance, 3-element antenna for great tri-band action in a small space. Ideal for rooftop or lightweight tower mounting. Has Beta Match, DC ground, separate traps, taper swaged tubing and a high strength formed aluminum mast bracket. Rotates with heavy duty TV rotator.

TH3JR \$225.00

hy-gain

H.F. ANTENNAS

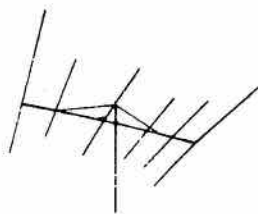


18HT

18AVT/WB

TH6DXX

\$449.00



TH6DXX

TH6DXX. This is the super Thunderbird, the undisputed 6-element king of the tri-banders. It utilizes separate Hy-Q traps with extra large coils and exceptional L/C ratios for each band. These superb Hy-Gain traps offer long term stability and exceptional band isolation. Hy-Gain traps come factory pre-tuned for peak performance and can be adjusted according to factory supplied charts for optimum results.

The TH6DXX has Hy-Gain's exclusive Beta Match for optimum matching and positive DC grounding to eliminate most precipitation static. Impedance is 50 ohms. Of the 6 elements, 3 are active on 20 and 15 meters and 4 are active on 10. VSWR is 1.5:1 at resonance and the TH6DXX is rated for maximum legal power.

All construction is of heavy gauge, taper swaged, slotted aircraft quality aluminum tubing for light weight and easy adjustment. Mechanically and electrically superior full circumference compression clamps are used throughout. The TH6DXX is supplied with a heavy duty, cast aluminum boom-to-mast bracket that accomodates masts from 1-1/4" to 2-1/2" and provides mast feed-through for antenna stacking. Extra heavy gauge, machine formed, boom-to-element brackets are used, with plastic inserts for insulation only. The high strength boom is 24', the longest in the industry.

204BA 4 el 20 mtr beam \$339.00

203B3 3 el 20 mtr beam \$198.00

BN-86 Balun \$21.00

SPECIAL OFFER

Buy any H.F. beam and receive a HAM III Rotor for only \$149.95

H.C. MacFarlane Electronics LTD.

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Phone (613) 353-2800
VE3BPM



Shipping charges prepaid on all orders for towers, antennas, rotors, etc. over \$650.00



C.D.E.

Ham III

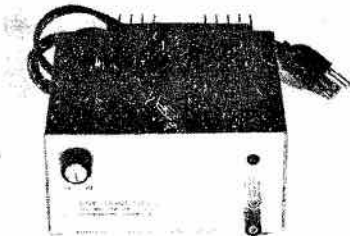


The HAM III is the latest in a series of CDE's world famous communications rotors. Snap action switched wedge brake and rotational controls brings pinpoint accuracy to the large directional arrays popular in communications. A new motor provides prebrake action to assist in slowing down rotational mass, and the new thicker wedge brake offers far stronger lock-in place action. To take full advantage of this newest design, the HAM III is supplied for in-tower mounting only. A new optional heavy duty lower mast adaptor is available when the HAM III must be mast mounted, but its use restricts the size of antenna which can be used. A stainless steel spur gear system multiplies the torque into the dual race 98 ball bearing support assembly assuring years of trouble free performance.



HAM III \$189.00

Power Supply



The CDE QT-1 is a fixed voltage DC power supply converting A.C. line voltage to 13.8 VDC. It is designed for the discriminating user who demands quality, performance, and economy. The regulated 3 amp output is ideal for operating 2 meter radios and other 12 volt devices. Any load can be used at continuous duty that does not draw more than 3 amps at 13.8 VDC.

Power Supply

\$59.95

CD-44 \$159.00
Tail Twister \$329.00



Reg. \$70.00
 Special \$59.95

SHURE 444 adjustable desk mike

The Shure 444 microphone head can be raised or lowered approx. 2 1/4" for the most comfortable talking position. PTT switch with optional locking feature. Omnidirectional polar pattern, frequency response: 300 to 3000 Hz.

H.C. MacFarlane Electronics LTD.

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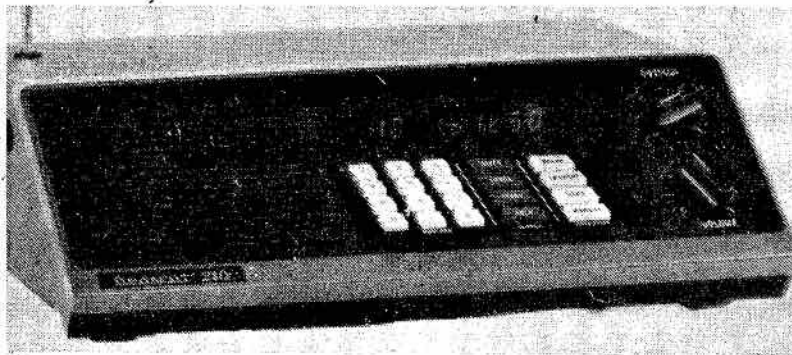
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Shipping Charges prepaid
 on all orders for
 towers, antennas,
 rotors, etc. over \$650.00

OPTO-7000 10 Hz-600 MHz Counter
 XTAL (TCX0) time base $\pm .08$ PPM/°C
 HI-Z and 50 ohm inputs. 1 sec. and
 1/10 sec gate times
 Built-in Prescaler and Preamp
 Kit form \$149.00
 Wired \$199.00





Bearcat®

**PROGRAMMABLE
SCANNERS**

Bearcat® 210 Features

- **Crystal-less**—Without ever buying a crystal you can select from all local frequencies by simply pushing a few buttons.
- **Decimal Display**—See frequency and channel number—no guessing who's on the air.
- **5-Band Coverage**—Includes Low, High, UHF and UHF "T" public service bands, the 2-meter amateur (Ham) band, plus other UHF frequencies.
- **Deluxe Keyboard**—Makes frequency selection as easy as using a push-button phone. Lets you enter and change frequencies easily . . . try everything there is to hear.
- **Patented Track Tuning**—Receive frequencies across the full band without adjustment. Circuitry is automatically aligned to each frequency monitored.

Simple Programming—Simply punch in on the keyboard the frequency you wish to monitor.

Space Age Circuitry—Custom integrated circuits . . . a Bearcat tradition.

UL Listed/FCC Certified—Assures quality design and manufacture.

Rolling Zeros—This Bearcat exclusive tells you which channels your scanner is monitoring.

Tone By-Pass—Scanning is not interrupted by mobile telephone tone signal.

3-Inch Speaker—Front mounted speaker for more sound with less distortion.

Squelch—Allows user to effectively block out unwanted noise.

AC/DC—Operates at home or in the car.

BEARCAT SCANNERS

#250	Reg. \$599.00	Special \$539.00
#220	Reg. \$599.00	Special \$539.00
#210	Reg. \$439.00	Special \$389.00



MODEL 13-510

Full 2-Meter Band Coverage with 800 Discrete Channels, L.E.D. Frequency Readout

P.L.L. synthesized tuning for 400 frequencies in 10 KHz steps between 144.00 and 148.00 MHz, plus a pushbutton 5 KHz shift-up to deliver 400 more. Operate simplex or repeater with 4 available offsets (+600 Hz supplied). Dual conversion receiver has multiple FET front end, helical resonator, monolithic crystal and ceramic filters. Transmitter is rated for 25-watt output power, switchable to 1-watt. Fully modular construction includes SWR and polarity protection circuits, internal DC filtering, electronic switching. Connectors provided for tone burst, discriminator meter, external speaker. Metal cabinet is 2 5/8" x 6-13/16" x 9 5/8".

MIDLAND MODEL 13-510

Reg. \$699.00
Special Introductory Offer

\$589.00

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Phone (613) 353-2800

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VE3BPM

ANTENNA SYSTEMS INSTALLED WITHIN RADIUS 150 KM.

EXPERTISE FREELY GIVEN ANYWHERE





KENWOOD

SUPER SPECIAL

TR7500A \$429.00
 Get at no charge your choice of either
 Mosley MM-144 TK1 mobile antenna, value
 \$49.50 or C.D.E. QT-1 Power Supply, value
 \$59.95 at No Charge!

The TR-7500 is an advanced 2M FM transceiver. The TR-7500 has been developed by Kenwood's advanced VHF technology with the following major points to increase your enjoyment of the 2M band.

SPECIFICATIONS

• Frequency Range: 146.010 to 147.990 MHz • Mode: FM • Antenna Impedance: 50 ohms • No. of Channels: 100 (use of + 15 kHz switch)
 • Power Requirement: 11.5 to 16.0V DC (13.8V DC nominal) • Current Drain: Transmit: High...3.0A, Low...1.5A (13.8V DC), Receive (no signal): 0.5A (13.8V DC) • Grounding: Negative • RF Output Power: High: 10 Watts, Low, 1 Watt • Modulation: Variable reactance frequency shift
 • Maximum Frequency Deviation: ±5 kHz • Spurious Radiation: Better than -60 dB • Repeater Frequency Shift: ±600 kHz • Sensitivity: 1 μV for 30 dB (S+N)/N, 0.4 μV for 20 dB noise quieting • Receiver System: Double conversion superheterodyne • Selectivity: 12 kHz/-6 dB 40 kHz/-70 dB
 • Squelch Sensitivity: 0.25 μV • Image Ratio: Better than 70 dB • Spurious Response: Better than 60 dB • Dimensions: 152 (6 1/8)W x 60 (2 3/8)H x 234 (9 1/4)D mm (inch) • Weight: 2.2 kg (4.85 lbs)
 *Specifications may change according to destination

KENWOOD

KENWOOD

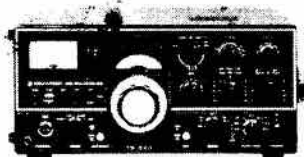
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|---------------------------|-------------------|
| SM-220 Station Monitor | \$499.00 |
| TS-700SP All mode 2 metre | |
| Reg. \$1199.00 | Special \$1089.00 |
| R-300 Receiver | \$369.00 |
| SP-820 Speaker | Special \$79.95 |
| AT 200 Tuner | \$219.00 |
| VFO-820 | \$219.00 |
| VFO-520 | \$219.00 |
| TR-7600 2 mtr 10 watt | \$599.00 |
| TR-7625 2 mtr 25 watt | \$699.00 |



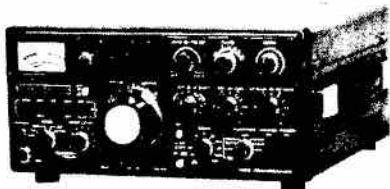
KENWOOD FM 555
TS-700SP



KENWOOD 2M FM
TR-7600



KENWOOD Transceiver TS-520S
160 thru 10M



KENWOOD Transceiver
TS-820S 160 thru 10M

KENWOOD SPECIALS

- | | |
|------------------------|-----------|
| TS-520S HF Transceiver | \$1149.00 |
| TS-820 | \$1450.00 |
| TS-820S | 1695.00 |
| R599D | \$859.00 |
| T599D | \$839.00 |

Purchase a Kenwood HF Station and get at N/C one SP-820 speaker plus Shure #444 mic..... Value \$159.00!!!

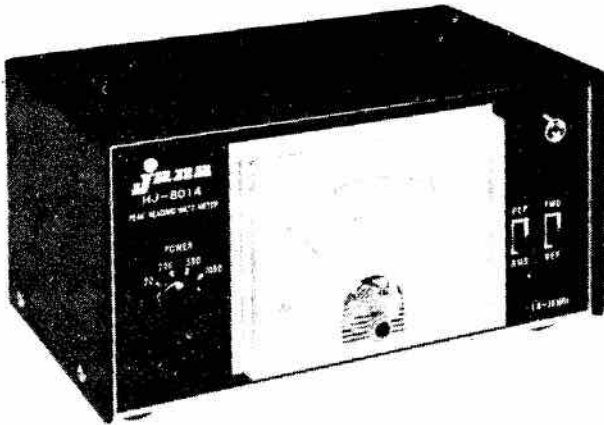
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YOUR ONE-STOP HAM SHOP

ANTENNA SYSTEMS INSTALLED WITHIN RADIUS 150 KM.

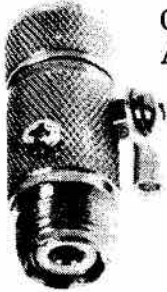
EXPERTISE FREELY GIVEN ANYWHERE





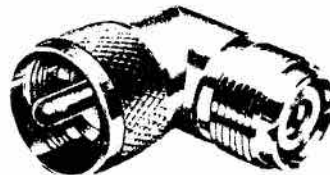
SUPER DELUXE METER HJ 8014

A valuable instrument for the single side-band operator. Permits measurement of SSB peak power output of your transceiver, in addition to AM power output. In-line installation. Large, easy to read, scale has four ranges, reading from 1 to 20, 200, 500 and 1000 watts. Select forward or reflected SSB or AM power measurement. Flat frequency directional coupler provides an accuracy of $\pm 7\%$ from 3.5 to 30 MHz. Measures 8" WQ x 4 1/2" H x 5 3/4" D. Weights — 3 lbs, 14 oz.



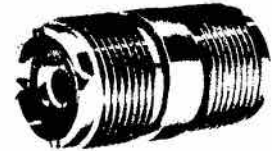
COAX LIGHTNING ARRESTORS

\$4.95



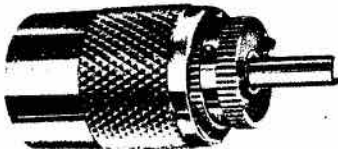
Right Angle Connector

\$2.25



Double Female PL-258

\$1.25

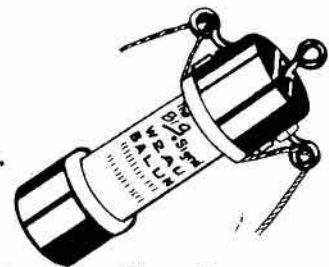


CABLE CONNECTOR

PL-259 \$1.25
Doz. \$11.50

RG8U .30/ft. RG58U .12/ft.
Rotor Cable .25/ft.
RG213 50 ohm Military Spec with
NCV Jacket .39/ft

Multi-band antenna kit
Reyco Coils, connectors, wire, etc.
\$44.95



The Big Signal W2AU BALUN \$21.95

- Handles full 2 KW PEP and more
- Helps TVI problems by reducing coax line radiation
- Stainless steel hardware
- Improves F/B ratio
- Replaces center insulator
- Built-in lightning arrester
- 1:1 matches 50 or 75 ohm unbalanced to 50 or 75 ohm balanced load.



Hammond
#1584-H8B Power Block
\$29.95



FULL
MFJ LINE
AVAILABLE

H.C. MacFarlane Electronics LTD.

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DELHI HAM TOWERS

Heavy Duty Self-Supporting Towers For Amateur Arrays

Delhi Ham Towers use the six larger and stronger sections of our standard eight section 68 ft. TV tower Model DMX-68. Each section is eight feet long and has beaded channel legs riveted together with "X" braces. Legs and braces are high tensile steel, heavily galvanized before fabrication. Rivets are solid heat treated aluminum. Sections fit accurately together and are joined by heat treated nuts and bolts. The new uniform tapered design eliminates the offset leg bends used previously and together with evenly spaced "X" braces give the tower greater strength and reliability.

Three models are available all using a No. DMX3T top section with rotor plate, and top plate with mast bearing installed. Each tower comes with three 4 ft. concrete base stubs.

Load Limits

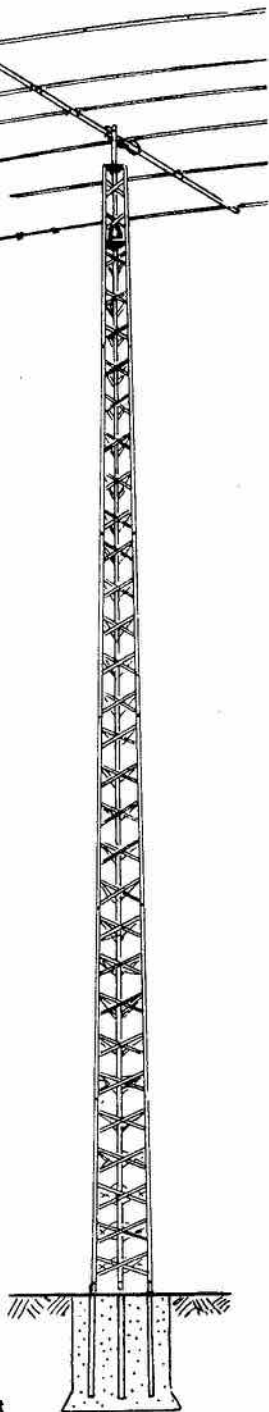
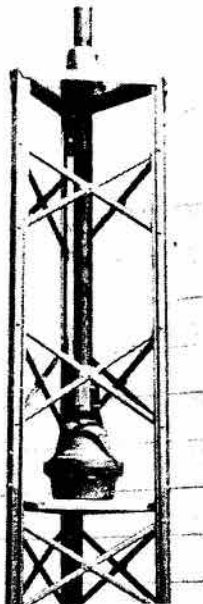
Delhi Ham Towers are designed to support the following loads under severe wind and ice conditions.

- A single amateur array with a wind surface area not over 9 square ft. or a net weight over 50 lbs.
- Any make of heavy duty beam rotor.
- A 1 1/2" to 2" OD x .134" wall mast 8 ft. long with not more than four feet extending above the top of the tower.

If any load is needed above these figures the tower should be guyed.

At left is shown the top section of a Ham Tower with a Ham-M rotor, mast and a ball bearing mast bearing installed.

Ham Towers are shipped in one compact nested package containing: 8-foot tower sections, three concrete base stubs 4 ft. long, all nuts, bolts and washers. Top bearing plate and rotor plate are assembled in top section. No mast is supplied.



concrete base

DMXHD-48

Model	Description	Weight	Amateur Net
DMXHD-32	4 section tower, 32 feet high	170 lbs.	\$209.00
DMXHD-40	5 section tower, 40 feet high	240 lbs.	\$265.00
DMXHD-48	6 section tower, 48 feet high	304 lbs.	\$315.00

H.C. MacFarlane Electronics LTD. RR No. 2 Battersea, Ont.
- Phone (613) 353-2800
VE3BPM

**YOUR ONE-STOP HAM SHOP
OVER 7 TONS OF DELHI TOWERS IN STOCK**



ATB-34

ATB-34 Cushcraft
\$369.00



4 ELEMENT BEAM

10-15-20 METERS

Cushcraft engineers have incorporated more than 30 years of design experience into the best 3 band HF beam available today. **ATB-34** has superb performance with three active elements on each band, the convenience of easy assembly and modest dimensions. Value through heavy duty all aluminum construction and a price complete with 1-1 balun.

SPECIFICATIONS		
FORWARD GAIN -	EXCELLENT	LONGEST ELEMENT - 32'8"
F/B RATIO -	30 dB	TURNING RADIUS - 18'9"
VSWR -	1.5-1	WIND SFC - 5.4 Sq.Ft.
POWER HANDLING -	2000 WATTS PEP	WEIGHT - 42 Lbs.
BOOM LENGTH/DIA. -	18' x 2 1/8"	WIND SURVIVAL - 90 MPH.

UPS SHIPPABLE COMPLETE

ENJOY A NEW WORLD OF DX COMMUNICATIONS WITH ATB-34

RINGO RANGER The Ringo Ranger was developed by Cushcraft engineers in direct response to amateurs who wanted to extend their communications range and access more FM repeaters with full-quieting signals. The omnidirectional Ringo Ranger consists of two half-wavelength radiators in phase with an eighth-wave matching stub and provides 6 dB gain over a 1/4-wavelength whip (4.5 dBd). In addition, it has an extremely low angle of radiation, is tunable over a broad frequency range, and is perfectly matched to 50-ohm coaxial transmission line. As with other antennas in the Cushcraft line, the Ringo Ranger is assembled by skilled craftsmen from the highest quality materials. All Cushcraft antennas are designed for 80 mph (129 km/h) when properly installed. For maximum performance and value in an omnidirectional gain antenna for VHF/UHF FM, choose a Cushcraft Ringo Ranger.

Ringo Ranger

\$53.95

Shipping Charges prepaid on all orders for towers, antennas, rotors, etc. over \$650.00

4-6-7-11 ELEMENT YAGIS

The Yagi beam is the standard of comparison for VHF/UHF communications—these Cushcraft beams are designed for vertical polarization and are cut for the amateur FM frequencies. The four- and six-element models can be side mounted on your tower, all are rated at 1000 watts with direct 50-ohm feed and PL-259 connectors.

Model	A147-4	A147-11
Frequency, MHz	146.148	146.148
2:1 VSWR bandwidth	+4 MHz	+3 MHz
Gain	9.0 dBd	11.3 dBd
Front-to-back ratio	19 dB	20 dB
3-dB beamwidth	66°	48°
Boom length	44"	144"
Longest element	(1.1m)	(3.6m)
Turning radius	40"	40"
	(1.0m)	(1.0m)
	44"	72"
	(1.1m)	(1.8m)
Wind area, sq. ft. (m ²)	0.42	1.21
	(04)	(11)
Weight	3.6	6.9
	(1.4kg)	(2.7kg)
Maximum mast OD	2"	1 1/2"
	(5.0cm)	(3.8cm)

A147-4

\$34.95

A147-11

\$52.95

POWER PACK Big-signal 22-element array for 2-meter and 1 1/2-meter FM uses two 11-element Yagi beams and comes complete with horizontal hard-drawn aluminum mounting boom, coaxial matching harness, and all hardware. Forward gain of this array is 14.2 dBd (3-dB beamwidth, 42°), front-to-back ratio is 20 dB. Overall array size of 144" x 80" x 40" requires 85" turning radius; wind area, 1.42 square feet (0.13 m²), weighs 15 pounds (6.7kg); takes 2" (5cm) mast; 50-ohm feedpoint takes PL-259 fitting.

Model A147-22 for 146-148 MHz Rated at 1000 watts

Power Pack A147-22

\$149.00



H.C. MacFarlane Electronics LTD.
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RR No. 2 Battersea, Ont.
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HF VERTICALS 10 through 80 METERS



EFFICIENT TOP RING

FIBERGLASS TRAP FORMS

ENAMELED WIRE COILS

SOLID ALUMINUM CAPACITORS

NO TUNING REQUIRED

FULL COMPRESSION CLAMPS

OMNIDIRECTIONAL COVERAGE

REINFORCED BASE

MAST OR GROUND MOUNTING

PRE-MARKED SECTIONS

EASY ASSEMBLY

SUPERIOR QUALITY



3 BAND

20-15-10 METERS
MODEL ATV-3

\$69.95

4 BAND

40-20-15-10 METERS
MODEL ATV-4

\$124.95

5 BAND

80-40-20-15-10 METERS
MODEL ATV-5

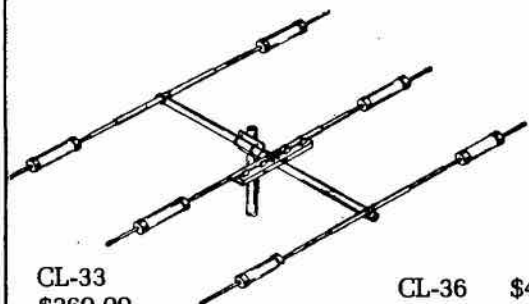
\$149.95

ALL MODELS UPS SHIPPABLE



THE ANTENNA COMPANY

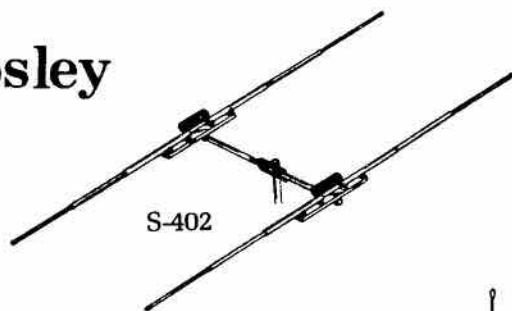
Mosley



CL-33
\$369.00

MAXIMUM ELEMENT LENGTH: 27 ft.
ASSEMBLED WEIGHT: 42 lbs.
SHIPPING WEIGHT: 47 lbs.
WIND LOAD 180 MPH
EIA Std) 120 lbs.
WIND SURFACE: 6 sq. ft.
MATCH: Broad band
reciprocity.

CL-36 \$459.00
MPK-3 \$85.00



S-402

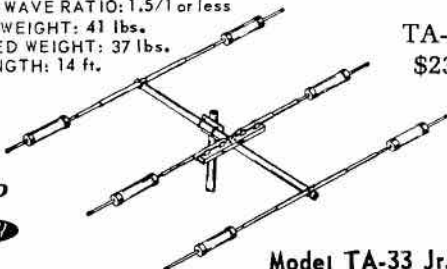
Model TA-33 for 10, 15, and 20 meters

The Mosley TA-33 three element beam provides outstanding 10, 15, and 20 meter performance. Exceptionally broadband - gives excellent results over full Ham bandwidth. Exclusive Mosley trap design offers resonant frequency stability under all weather conditions. Element center sections are of double thickness aluminum to reduce sag. Boom requires no bracing. Heavy duty universal mounting plate fits masts up to 1½ inch O.D. Antenna handles full KW AM/CW or 2 KW P.E.P. SSB input. Feed with one coax line, RG-8/U recommended. The TA-33 may also be used on 40 meters with TA-40 KR conversion. Complete with Hdw.

FORWARD GAIN: Up to 8 db. TURNING RADIUS: 15.5 ft.
FRONT-TO-BACK: 20 db. or better WIND LOAD: 114 pounds.
MAX. ELEMENT LENGTH: 28 ft. WIND SURFACE: 5.7sq. ft.
STANDING WAVE RATIO: 1.5/1 or less
SHIPPING WEIGHT: 41 lbs.
ASSEMBLED WEIGHT: 37 lbs.
BOOM LENGTH: 14 ft.

TA-33Jr.
\$239.00

TA33
\$319.00

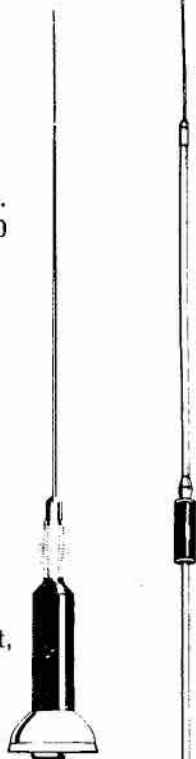


Model TA-33 Jr.

Mosley TA-33 Jr. has quality and performance found in the TA-33. Rated to 300 watts AM and CW, - 1000 watts P.E.P. on SSB. Complete with Hdw. The Junior may be converted to MP-33 with higher power rating with MPK-3 Kit. Shipping weight 28 lbs. Assembled weight 20 lbs.

Mosley BW-144T

5/8 wavelength mobile antenna complete with coax, trunk mount, spring, etc. Special 47.50



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WITHIN RADIUS 150 KM.

Mosley Rode Master Mobile Antenna

VSWR Guarantee 1.5/1 or better
on 6, 10, 15, 20, 40 & 75 mtrs.
Complete with all coils,
Bumper mount, etc.
Regular \$189.00 \$149.00

\$149.00

RV-4C

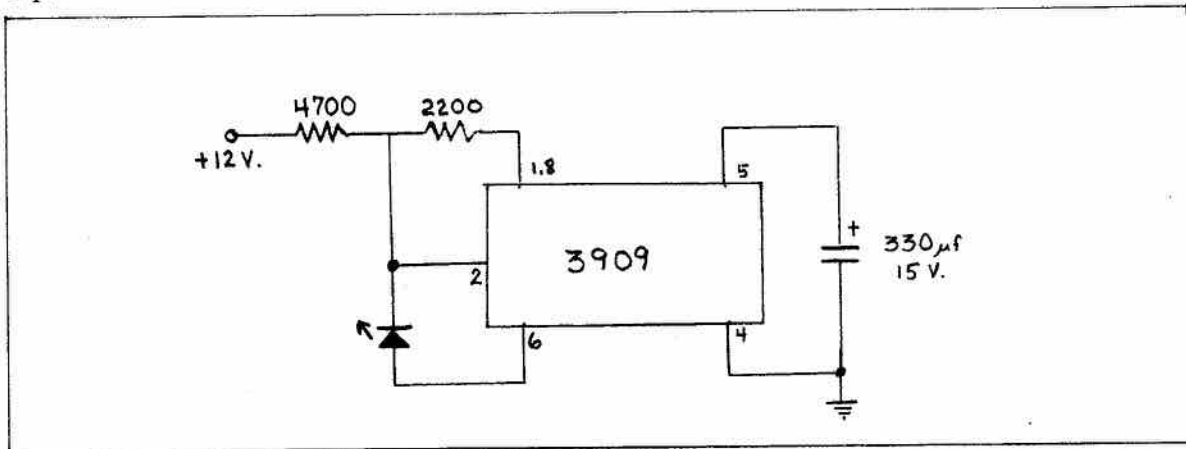
RV-4C \$99.00

RV-8C \$59.00



After connecting the parts as shown in CQ, I was rather dismayed to find that my low drain flasher drew almost 20 milliamps from the 12 volt supply. By several hours experimentation I arrived at the circuit

and parts values shown in (fig. 2). Now the device was functioning as it should. At 12 volts it drew 2 milliamps; at 10 volts the drain was down to only 1½ mA.



This added current drain would not be noticeable in effecting the life of the battery pack. I tried both red and green LEDs with good success. The pulse is bright enough to be seen across a normally lighted room.

While testing the circuit at various voltages I noticed another interesting feature of this IC. As the battery voltage decreases the flashing rate increases. At 12 volts the LED pulses on at a rate of 1.4 Hz; at 10 volts, the point where it is time to recharge the ni-cads, the pulsing increases to 2.4 Hz. This is quite a noticeable change and for the many portables without battery check positions should prevent unexpected QRT due to weak batteries.

By using the time honoured 'rodent's

nest' style of wiring the circuit takes up very little room. A bit of ingenuity and some electric tape to provide insulation should enable the indicator to be placed in almost any portable. A small LED mounted on the front panel is the only modification necessary. The positive lead to the 3909 is of course soldered to the load side of the on-off switch. Use of a tantalum capacitor should save a bit more space in the H/T case if room is at a premium.

This little circuit should repay itself many times in operating convenience and peace of mind. I hope you find it useful.

Glenn F. McMichael VE3CGU
Box 231
Goderich, Ont. N7A 3Z2

Big Bang from Little Cells

With the increasing use of nicad batteries for radio and other equipment, caution should be exercised to prevent short circuits as they have been known to explode when shorted. Don't carry them loose in your pocket where coins could trigger an unpleasant surprise. Your editor received an annoying burn from the batteries in his electric shaver during the weekly maintenance chore. It was a distinct shock (!) to find that those small cylinders harbor a nasty bite.

Wire Antennas

More on the G5RV

By Bob Eldridge VE7BS

An interesting comment came in from W2FE, via VE3ANX, about the use of coax directly connected to the open-wire stub of the G5RV antenna.

W2FE had been having troubles because of the VSWR on the coax on some bands, and tracked down G5RV in Uruguay to get some advice. G5RV's reply confirms his original advice given in the articles in the RSGB Bulletin (which probably W2FE had not seen) and is interesting to quote as it gives Louis Varney's own views after another 15 years or so experience with the design. He said:

"1. The G5RV antenna is essentially a balanced system and should **not** be fed with coax (a balun is ineffective because of complex reactance conditions which occur at the base of the matching stub on certain bands).

The recommended methods of feeding are:

a) 34 ft. long open wire matching stub (spacing not important) or 29'-6" of 300 ohm ribbon. From the bottom of the stub,

any reasonable (up to say 150 ft) length of 75 ohm twin lead into a suitable antenna tuning unit (match box);

b) **No matching stub.** Use an 84 ft. length of open wire line (spacing unimportant) from centre of flat top to antenna tuning unit. This is the most low-loss arrangement and the one which I (G5RV) use. Provides voltage feed at the terminals of the tuning unit and virtually 1 : 1 VSWR on all bands."

Vic (VE3ANX) goes on to say that he discussed the use of coax with W2FE because several members of the N.S.A.R.C. in Oshawa had problems with VSWR on the coax.

Of course, when G4RV says it should not be fed with coax he means "should not be directly fed with coax, or through a balun". As I mentioned in the TCA article, Louis devoted a lot of space in the RSGB article to the design of suitable antenna tuning units (which in deference to G3VA I suppose I should call "matching units", as they don't tune the **antenna** at all!)

A Double-size G5RV

Recently (beginning of June 1979), we had occasion to get on 160 metres in a hurry to contact G6CJ, who was visiting California. The antenna in use was a G5RV with a 104' top and 34 ft. matching stub, used as a shallow inverted VEE with the apex at 95 ft. and the ends about 70 ft. high. This antenna, running north and south, covers Europe quite well on 20 and Japan reasonably well on 40 and 20. It is no great shakes on 160; it tunes up and loads all right but doesn't put out much of a signal beyond about 1000 miles.

The quickest and easiest thing to do seemed to be to add 64 ft. to each end of the top, making it a slightly short half wave on 160, two half-waves in phase on 80, two full waves in phase on 40 and goodness knows what on 20 and up.

The results were interesting. The most noticeable thing was that except on 80, the settings of the transmatch (a Dentron MT3000A) hardly changed at all. On 80,

the point in the matching stub which used to be low impedance is now high, so a completely different set of conditions exists on the feeder system; on the other bands the ends of the original 104 ft. top (made a bit long because I am on CW most of the time) seems still to be "seeing" a high impedance much like that previously presented by the insulators.

It works beautifully into California if the south end of the antenna is sloped at about 45 degrees (a solid 599 from G6CJ/W6 just as it was getting dark) and about an S point down from that if it is sloped about 30 degrees from the horizontal. To the East it works better at the 30 degree slope.

On 20 the signals from Europe were noticeably weaker until the north end was slewed round about 20 degrees towards East. This makes sense, as the main lobes get closer to the line of the wire as the antenna gets longer.

Radiation Patterns

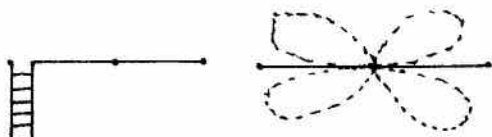
Some comments and questions received since this series began show that it would be worthwhile saying a bit more about the radiation pattern of all-band wire antennas.

The design of the feeder, and the method of matching it to the transmitter, has no effect on the radiation pattern, but the point at which the feeder is connected to the antenna does have an effect. So does the insertion of an insulator at the feed point.

Let us take some examples:

1. An antenna a full wave long from end to end.

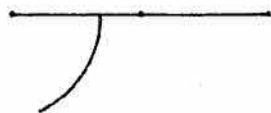
a) Fed at the end, the pattern will be like this:



b) Fed one-quarter of the way along (at the centre of one of the half waves) it will be (more or less) the same, because the two half-wave sections are still working out of phase.

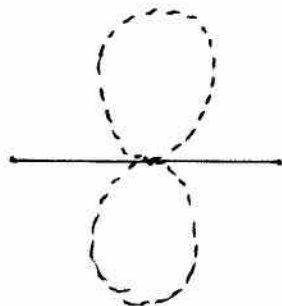


c) Fed one-third of the way along the top (or to be more precise for the Windom purist, 36% of the way) with a single wire feeder, it will still be the same, because the two half-wave sections are still out of phase.



d) Broken in the centre with an insulator, and the feeder connected to each end of the insulator, things change completely, because the two half-wave

sections are now in phase. The pattern is now like that of a half-wave dipole but with sharper lobes and therefore more gain at right angles to the direction of the wire. The pattern looks like this:



These patterns are drawn from the head, not from a handbook or a computer, and in the peace and quiet of a mountain valley, so please don't write to say they should be a bit narrower or wider. Also, they become asymmetrical as the feeder is moved towards one end, a matter that will be dealt with soon in the series.

To determine whether antenna sections are in or out of phase, all you have to do is figure what respective voltage polarity exists at the ends of the sections at a given instant.

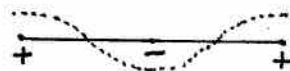
Remember that at any point on the feeder, including the point where it is

connected to the antenna, the polarity on the two conductors is opposed.

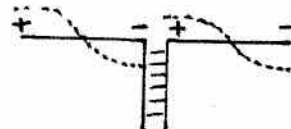
So at the top of the feeder, the voltages look like this:



On a full wave continuous antenna, the voltage pattern looks like this:

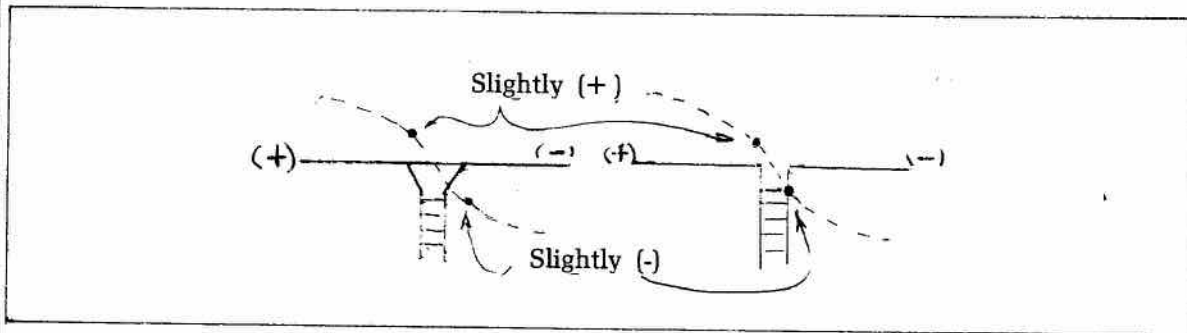


On a full wave antenna broken in the centre, the voltage pattern looks like this:



What happens then at the centre of a half wave dipole, which can be broken in the centre or left continuous without changing the pattern?

The answer is that, being a low impedance point, the voltages on the respective sides of the feeder are only slightly positive and negative, compared with the high voltage present at the two ends of the top. You can draw it like this, imagining a 70 ohms or 300 ohms load resistance present between the two top ends of the feeder.



Now that this has been cleared away, clarify it in your own mind by drawing the voltage patterns of

- a full wave top fed at the centre with a single wire feeder, and
- a half wave top fed at the centre with a single wire feeder.

Next thing coming up (I think) is the effect of feeding long wires at points other than the centre.

Bob Eldridge VE7BS
8386 McGregor Ave.
Burnaby, B.C.
V5J 4H9.

Caribbean Hurricanes

Amateur radio again came to the forefront during the catastrophic Labour Day Weekend hurricanes which devastated areas of the Caribbean from Dominica, probably the hardest hit area. A former Hull, Quebec Amateur, Tom James, was able to get J7DNF on the air. In Santo Domingo, Susan HI8XDJ was another of the few stations on the air from the stricken areas. Ron Belleville VE3AUM patched external affairs officials in Ottawa through to Canadian officials in the disaster areas. Those Amateurs working the emergency circuits were appalled at the Lunatic

fringe who generated deliberate interference during exchange of what was literally life-and-death traffic.

The island of Dominica, off the South American coast found that for some time after the big blow that Amateur radio was its only link with the rest of the world. In recognition of this fact, Dominica has arranged for third party traffic to and from there to be legalized. The ad hoc arrangement with DOC will be formalized at a later date, according to DOC sources. It does not yet therefore, show on the list of countries which permit such traffic.

Spectrum & Allocation Use

DOC has issued two requests for public comment on two portions of the spectrum in which Amateurs have an interest. The first invites submissions on the use of the spectrum from 890 MHz to 10.6 GHz. The second invites comment on a proposed allocation of some part of the band from 890 MHz to 960 MHz for a new general radio service allocation. CARF will submit a brief to DOC in which it will probably be suggested that any such allocation should not be adjacent to the Amateur allocation

of 902 to 928 MHz. This latter allocation has not yet been put into effect. Both it and the loss of 420 to 430 Mz will probably become legal shortly in a forthcoming issue of the Canada Gazette. Anyone wishing to comment on these two notices should obtain details from their District office. Comments close November 18. Full details were in the CARF Newsletter for September, which circulates to affiliated clubs.

news briefs

EMERGENCY COMMUNICATIONS

The Peterborough ARC is engaged in formally setting up emergency back-up communications for its civic authorities. The Lakehead club ran a test last May to test both local and long-haul emergency communications. Back-up facilities for hospital switchboards which quickly become overloaded in local disaster situations are provided for in a number of Amateur emergency plans.

ANOTHER VOICE IN COMMONS

There is another Amateur in the new Parliament which will be called this fall ... Gordon Gilchrist VE3ANY, who was elected for a first term in the May Federal elections. Gord, a Progressive Conservative, represents a Scarborough riding. As reported in the last issue, Doug Neil VE5QN, also a PC, was re-elected for a fifth term for the Moose Jaw riding.

SASKATCHEWAN PARTICIFEST

The Saskatchewan 'Particifest' sponsored by the Moose Jaw club was a success, with about 200 prairie ops and wives attending. CARF president Bill Wilson VE3NR, conducted a CARF forum and had the opportunity of talking with a great number of western Amateurs. Jim McKenna, CARF Western director was unable to attend because of illness. Fred Towner, CARF vice president, now VE6XX, also had to miss the affair but will be visiting various western cities in the course of his new job and hopes to speak to a number of clubs. Glen Gorham VE5GG, was elected president of the Saskatchewan ARL and Bill Gilbert VE5IB is vice president.

**WHEN REPLYING TO ADVERTISEMENTS
SAY YOU SAW IT IN TCA!**

CARF Annual General Meeting Report

The Board of Directors approved the following changes to the By-Law and Regulations:

1] Change to Letters Patent - addition of title "Federation des Radio Amateurs du Canada Inc."

2] The Board of Directors to consist of six Regional Directors and up to three Directors-at-Large. The Directors-at-Large to be chosen by the Regional Directors to deal with matters that are national or regional in nature.

3] The Regional Directors to have authority to appoint Regional Assistants.

4] Provincial and Territorial Amateur Radio organizations be encouraged to support the Federation as Group Members and that representatives of such organizations may attend all regular meetings of the Board of Directors and participate fully in discussions held therein but with voting powers vested in the incumbent Directors only.

5] All proposed changes to the By-Law and Regulations to be publicized in TCA with members invited to comment to their respective Regional Director.

6] Membership dues to be increased starting on 1 Sept. 1979 (see CARF Info Section in TCA for details).

SUMMARY OF ANNUAL GENERAL MEETING* 26 May 1979

1] President's Report (published in Jul/Aug 'TCA').

2] Treasurer's Report: Statement of Revenue and Expenses (Balance Sheet prepared by P.E. Sheppard, C.A. and approved by CARF Auditors) - as of 31 Dec. 1978.

Assets	\$41,279.00
Liabilities	1,072.00
Operating Surplus	40,207.00
Revenue (1 Jan - 31 Dec)	77,382.00
Expenses	80,880.00
Excess Expenses over Revenue	2,998.00

Extra expenditures were included in the budget for 1978 to develop 'TCA' and to procure the CARF Computer System for the CARF Office.

3] General Manager's Report

Individual membership in 1978 and 1979 continued to show a healthy increase.

New editions of the Certificate and Advanced Study Guides and Radio Regulations Handbook will be printed during August 1979. These CARF publications will also be available through RADIO SHACK outlets in September.

A new publication - The Instructor's Guide - will be printed around 1 September 1979. A Digital Operator's Study Guide and Radio Operator's Handbook are in preparation and should be published by the end of 1979. There have been some unforeseen problems with the Operator's Handbook which has resulted in a delay of several months.

The CARF Office will be moving to a new location in September 1979 in the KINGONTARIO complex, Morton St., Kingston, Ont. The Office is now open from 0900 to 1230 hours weekdays (Tel. 613-544-6161) and all Amateurs are invited to drop in and meet the staff.

4] Changes in Letters Patent, By-Law and Regulations approved by the Board on 25 May 1979 were ratified.

5] The presentation of a President's Award to Bert Hovey VE3EW and Bill Bushell VE3DXY during the 1979 RSO Convention was approved.

SUMMARY OF ANNUAL MEETING OF THE BOARD OF DIRECTORS* 26/27 May 1979

1] Lionel Bonhomme, VE2SY, was appointed to fill the vacant office of Quebec Regional Director.

2] The following Officers for 1979/80 were appointed:

President - W.J. Wilson VE3NR, Vice President - Fred Towner VE6xx (ex VE2NM), General Manager - A.E. Blick VE3AHU, Secretary - John Gilbert VE3CXL, Treasurer - Bernie Burdall VE3NB, Immediate Past President - John Henry VE2VQ.

3] CARF Finances and Budgets:

The General Manager stressed the need for annual budgets and made several recommendations for their preparation and implementation including the dedication of membership dues and advertising revenue to cover specific expenses - TCA

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production, QSL Services, membership administration and Board and National Executive meetings. These were approved to come into effect 1 September 1979.

4] Recommendations by J. McKenna VE6HO, Mid-West Director:

a. That the By-law and Regulations be printed in booklet form and be made available to members. Carried with notation that changes approved and ratified recently require approval by Minister of Consumer and Corporate Affairs before publication.

b. That a summary of the Minutes of the AGM and Board meetings be published in TCA immediately following publishing of the Minutes. Carried.

c. That the possibility of semi-annual meetings of the Board be investigated. Carried with notation that expenses incurred (approx \$3500.00) will be the determining factor.

5] Reports made on Regional activity made by the Atlantic, Ontario, Mid-West and Pacific Directors and by Stella Broughton, VE6VF and Bob Rouleau VE2PY, Directors-at-Large (all 1977/79 incumbents).

6] Committee Reports:

TCA Production: [Doug Burrill VE3CDC]: The possibility of incorporating TCA as a separate entity should be investigated primarily to obtain 2nd class mailing privileges.

Plans are being looked at for TCA to contain articles in French.

The CARF News Service monthly newsletter is very popular and now go to 70 Affiliated clubs, to provincial organizations and editors of major Amateur Radio publications. Weekly radio bulletins are transmitted in all modes from VE3TCA and in addition are now given by several CARF News Stations on regular schedules.

Communications [Frank Merritt VE7AF]:

Recommendations - that CARF explore the publishing of a CARF Message Form; -that the Communications Committee be replaced with the CARF Communications System having the following divisions:

CARFNET - replacing the TRANSCAN NET

CARFPAC - Packet Radio
CARCOM - Local net operations
CARFNEWS - on-the-air bulletins
CFARS LIAISON
Carried.

Regulations Advisory [A.P. Stark VE3ZS]:

Discussion held with DOC on:

1] Notice DGTR-004-79 re several proposals to change existing Radio Regulations;

2] Reciprocal privileges for foreign Amateurs holding 'no-code' licences.

This is to be further investigated before formal submission made.

QSL Services [Jean Evans VE3DGG]:

The CARF QSL Bureau now has a working staff of nine Amateurs to handle the work involved. Over 150 pounds of mail is received and processed every month by the Bureau with over 16,000 QSLs handled monthly by the CARF Out-Going QSL Service.

CRTPB/CSA Liaison [Barc Dowden VE3TT]:

This committee continues to be active on committees of the CRTPB and CSA concerned with consumer equipment and E.M. compatibility.

Bud Punched VE3UD, reported on the work of the CRTPB committee investigating the usage of 406-960 MHz.

WARC 79 Preparations [Bud Punched VE3UD]:

Bud reported that he will be on the official delegation to WARC 79 and will be the delegation's advisor. He is now involved in writing the Amateur position for Canada and analyzing the Amateur position of other countries.

Bud will be pleased to visit clubs across Canada, under CARF auspices, following the WARC 79.

Contest and Awards [Peter Driessen VE7BQ]:

The CANADAWARD has generated considerable interest and Gary Hammond VE3GGO, has achieved the first 5-band CANADAWARD.

CARTG has requested CARF to sponsor the 80 metre Award for their annual RTT

contest.

The CARF CANADA DAY CONTEST will be held for the first time on 1 July 1979.

Committee Designations:

The General Manager recommended that the CARF committee structure be reviewed and changes made. The Board approved the following:

a) Formation of an Ottawa Committee under the chairmanship of the President, or a Vice-President, responsible for activities such as: DOC Liaison, Regulations Advisory, Antenna Rights, CRAG, CRTPB/CSA Liaison, Digital Operating, WARC Preparations.

b. Formation of a Kingston Committee under the chairmanship of the General Manager responsible for administrative details such as: Membership, Publications, Publicity, CARF Office, KOTARA Liaison, Contest & Awards Liaison, Technical, CARF News Stations.

c. Standing Committees to be:
QSL Services Jean Evans VE3DGG
Planning & Finance Bob Rouleau VE2PY
TCA Production Doug Burrill VE3CDC
Contests & Awards Peter Driessen VE7BQ

8] CARF Amateur Radio Symposiums, 1979/80:

a. Suggestion made that the symposiums be extended into an annual Conference and thus made available to a much larger body of Amateurs. To be studied by the Planning and Finance Committee for possible change in the 1980 symposium.

b. Approved that the 1979 symposium be held under the auspices of RAQI.

c. Approved the offer of the Hamilton ARC to host the 1980 NARS under the auspices of the Radio Society of Ontario Inc.

9] DOC Examinations:

Agreed that the present DOC examination process is hindering the growth of Amateur Radio and that the objectives of a suitable process would be to achieve an annual growth of 10% while maintaining the quality of present standards.

To do this the success rate should be 75%, with standards such that the necessary knowledge of theory and operations can be achieved in a semester of 16-24 weeks. Recommended that the content of the examinations be based on the up-dated CARF publications.

10] Financial & Administrative Directives:

The General Manager recommended that the Board and National Executive study the draft of revised Directives circulated with comments to the President prior to final acceptance. The bulk of the Directives are already in use and remainder will be put into use as soon as practicable unless objections raised. Carried.

11] Directors-at-Large:

The National Executive to recommend to the Board areas of responsibility to be assigned to the presently vacant positions of Directors-at-Large. If approved by the Board, the Board is to select suitable individuals to cover these positions.

12] Reports were made on miscellaneous items of business including: Submissions to the Tariff Board re lowering, or abolishing duties on Amateur Radio equipments. Methods of increasing membership services. Methods of increasing membership. CARF/ARRL Relations. CARF involvement with Conventions and Hamfests.



WARC '79 Underway

Six Amateurs on Team

The Canadian delegation to WARC '79 headed by DOC's Ed Ducharme is now in Geneva settling the fate of Amateur allocations along with the 150 or so other nations or the International Telecommunications Union.

At last count there were six Amateurs on the team of about 40, including VE3UD, Bud Punchard, who is the delegation's advisor on Amateur matters.

Others are Al Hewitt VE3DA, Bob Eldridge VE7BS, Sandy Day (ex VE3AWG) Don Fraser and Bob Jones.

It may be interesting at this time to read some thoughts by Norm Brooks who is a commercial operator at VCS, at the Coast Guard Station at Ketch Harbor, N.S. Norm took umbrage at some letters suggesting dropping code requirements and "who needs technical know-how to operate an Amateur station?" Norm kicked off with the following, which is apropos of the struggle which will develop at WARC '79 over Amateur frequencies as well as commercial.

"Be clear on one thing, satellites, underwater cables, or new advances in VHF notwithstanding, there is more pressure today on the HF spectrum than ever before, and it is becoming more and more difficult each year to justify the existence of a very choice portion of the 3 to 30 MHz bands to what must look to many as a hobby fraternity. If you have any doubt whatsoever as to the magnitude of your good fortune regarding frequencies and your uses of them, please take the time to look up the frequency allocation structure as set up by the ITU as to what services occupy what portions of what bands and frequencies. Amateurs have by far the largest block of the HF portion of the radio spectrum and have far greater

latitude in their use of them and greater freedom of movement in them.

It is not uncommon to see advertisements in TCA, QST, etc. extolling the virtues of one manufacturer's latest toy, claiming less than 100 Hz drift after 30 mins warm up or for plus or minus 10% line level fluctuations, etc. Equipment on all other services must at present meet stability requirements of at least 1 part to the 8th power per 24 hr period. That's the equivalent of 1 Hz drift at 8 MHz during any day. Think how much your next piece of gear would cost if it had to meet this stability!

Today's Amateur operators are beginning to think that CW is old hat or that knowledge of how to repair at least something basically wrong with your equipment ...[is]...too much work and unnecessary. This year at station VCS we expect, as we had last year, a record number of messages to flow through here by CW, because Canada has seen fit to remove the morse code equipment from the Great Lakes. This fall fully one-third of our traffic will come from ships plying the Lakes because, if you don't speak English, transmitting or receiving long messages on voice can be an interesting experience to say the least. Imaging yourself on a cargo vessel about to enter Leningrad, trying to send a grocery list for a large cargo vessel, if the operator there spoke only Russian and the entire message had to be sent letter by letter phonetically. Much easier to hit the key and send it in everyone's language.

Here then, is the thing to ponder when thinking of why the standards for technical knowledge are high and the requirements for code are at least marginal. One: your

Continued on Page 49

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ELECTIONS

Although normally the workings of a foreign organization are not of great interest to Canadian Amateurs, the upcoming election for director and vice-director of the American Radio Relay League's Canadian Division merits some comment on our part because probably half of our membership are also subscribers to 'QST' and thus, as members of the ARRL, are eligible to vote.

We have heard that a number of Amateurs primarily active in local activities, have tossed their hats into the ring. Among them are two who have had, in addition, experience in the national scene; Bill Loucks VE3AR and Fred Towner, formerly VE2NM and now VE6XX. Bill has been nominated for the post of director and Fred has had his name put forward by a large number of Amateurs for the vice-director position.

Unfortunately, up until press time we had not received any official or first-hand notice from other candidates. For those of our members who will be voting, here are some details taken from the biographies sent to us by Bill and Fred.

Bill was born in Regina in 1921 and graduated from the University of Saskatchewan in engineering physics in 1943. During World War II he saw service in radar work, both ashore and afloat. He is now manager of Ontario Hydro Computer Centre in Toronto, where he started in 1947, doing electrical research and industrial engineering, financial studies and data processing.

His first licence was VE4ABR, in 1936, when the prairie region was all VE4. Bill later became VE3BFP and then 1947 got his present VE3AR call. He is a CW hound, making about 3,000 contacts each year.

On the organizational side, Bill joined ARRL in 1935 and has been active in the Toronto area for many years, including working with blind operators and sponsoring VE3SVS, the Sunny View School for the Handicapped.

Experience with the provincial level came when Bill served successively as secretary, vice-president and president of the Radio Society of Ontario and as Ontario delegate to CARF.

Since then Bill has served two terms as vice-director of the Canadian Division of ARRL, which has given him a good knowledge of Amateur affairs on the national level.

Fred Towner, who recently changed his VE2NM call for VE6XX on moving to Calgary, has had a world-wide and varied operating experience, ranging from the Arctic to the jungles of Africa. Born in Hamilton in 1933, Fred completed his apprenticeship as a tool and die maker, becoming interested in radio in high school when he joined the cadet signals. In 1944, then 16, he enlisted in the Royal Canadian Canadian Corps of Signals reserve and eventually joined in the regular army in 1954. He left the forces in 1967 to enter the field of data processing management in London, Ontario. After a stint with National Cash Register in the EDP field where he became marketing manager for software, Fred took a management position in Ottawa. He left there recently for Calgary, where he is manager for a data processing consultant firm, Rogers and Associates.

Fred's service career took him up to Alert, where he was the first licensee to set up the Amateur station with the call VE8ATU, in 1959. He did four tours at Alert and then was sent to thaw out in the Congo with the Canadian contingent of the United Nations Force. Before he left the Army in 1967, his service also took him to the west coast and other stations. Fred has held a variety of calls, VE3LN, VE8RCS, VE7MG, VE2DNW, VE3CDT, VE2NM and now VE6XX.

His managerial experience, wide acquaintanceship and diplomacy have been put to good use in the Ottawa club

THE CHALLENGE OF

"Depend on it, Sir, when a man knows he is to be hanged in a fortnight, it concentrates his mind wonderfully"

Samuel Johnson, 1777

Chasing after the dozens of operating achievement awards is a vital part of our fascinating hobby for many Amateurs. My interest in DXing has led me primarily to the DX awards with the emphasis over the past three years on the ARRL 5 Band DXCC award. The objective of this award is to have proof of two-way contact with 100 different countries on each of five bands. With the rare exception of those diehards who aspire to DXCC on 160 or 6 metre, this really means working 100 countries on each of 80, 40, 20, 15 and 10 metres.

While it may seem an arduous task to work 100 countries on five bands, it is far from impossible, particularly during the high point of the sunspot cycle, and with a bit of luck it can be accomplished in three years. (Getting the QSLs takes a little longer!) Over a three year period there are well over 100 countries readily accessible on 40 through 10 metres. Moreover, on those bands, at least from VE3 district there is no part of the world that is beyond reach, although some parts of Asia can be difficult. But as one starts to increase the country totals on each band it soon becomes clear that one band, 80 metres, is different from the rest. The country score grows more slowly on this band, and new ones come few and far between. The result is that one's mind, like that of Johnson's man about to be hanged, becomes concentrated wonderfully on two narrow DX 'windows' in the 80 (or 75) metre band.

Why, you may ask, do DX stations congregate in narrow "windows" of spectrum when there is a full 500 kHz

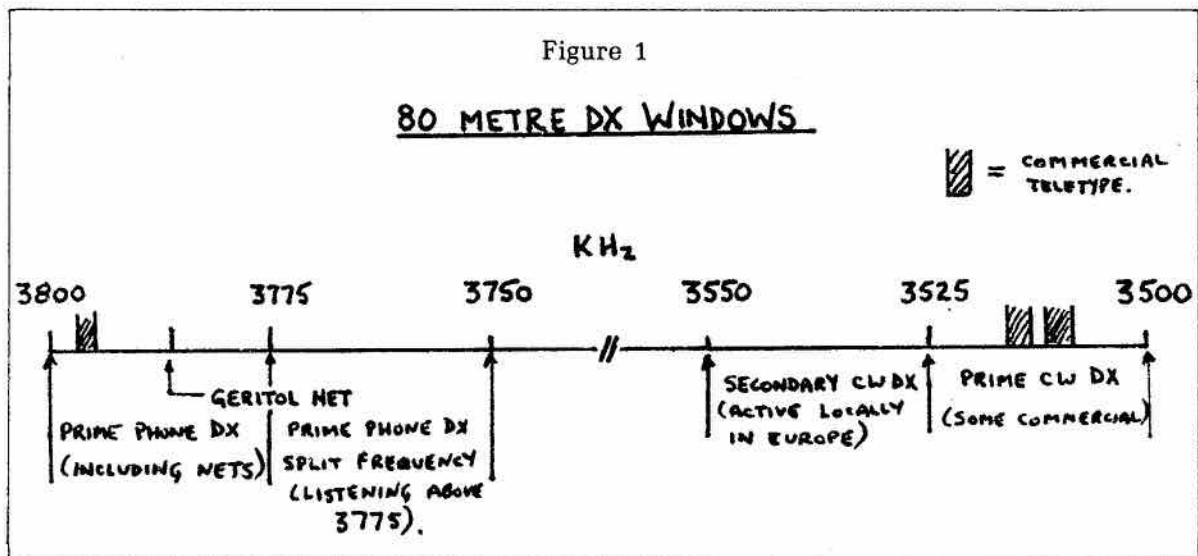
available to the Amateur service in the 80 metre band? The answer lies in the fact that in most areas of the world the Amateur Service shares the 80 metre band with other radio services (Fixed, Mobile and in some parts of the world, Broadcasting, above 3900 kHz). Moreover, the upper limit of the band for many countries is 3800 kHz and for some Amateurs 3600 kHz is the top of the band.

Radio Amateurs, as we all know, readily adapt to such situations, and over the years, by tradition and "gentlemen's agreements" certain sectors of the band have become identified as DX windows. This enables the DX stations to avoid some of the more irritating commercial QRM (much of which is not heard in North America) and enables the DXer to avoid conflict with the domestic rag chewer and traffic handler. These windows have been 3500-3525 kHz for CW and roughly 3750-3800 kHz for phone (with several countries operating below 3750 but listening above 3750 for North America). However, in my experience over the past three years, I have noticed a further refinement of the DX windows on 80, to avoid commercial QRM so that they now in practice appear as shown in Fig. 1.

Those of you that looked at Fig. 1 and dashed off to the rig to sample some exotic 80 metre DX were probably disappointed. That is because knowing where to look is only the beginning. To be successful one must also know **how** to go about 80 metre DXing and, most importantly, **when** to look for the DX. Fortunately both of these aspects have been dealt with in some detail. The 'how' has been covered by John Devoldere, ON4UN in his 1977 book entitled '80 Metre DXing'. John knows whereof he speaks as he has worked some

80 METRE DX-ING

From a talk by John Gilbert on 80 metre DXing at last February's meeting of the Ottawa ARC.



300 countries on 80. The 'when' has been covered not only by ON4UN, but also by Rod Linkous, W7OM in his article in January 1979 CQ entitled 'Navigating to 80 Metre DX'.

There is no doubt that the high power and large antennas suggested by ON4UN are a most valuable asset to the aspiring 80 metre DXer. Unfortunately, circumstances (a small lot and a smaller pocket book) forced the author to forgo this sage advice in favour of concentrating on the 'greyline' charts of W7OM and paying the penalty of many hours of lost sleep. As a result, armed with nothing more than a TS-520, a trap dipole wending its way through a maple tree at one end and scotch pine at the other and lots of 'greyline' charts the magic 100 countries on 80 metres is within sight!

Greyline charts are nothing more than a guide to remind you which areas of the world are in darkness. More specifically,

to achieve maximum range on 80 metres both stations wishing to communicate must be in darkness or in transition into or out of darkness, and the greyline technique takes advantage of this phenomena. For example, in December in Ottawa it is dusk between approximately 1600-1730 local time. From the charts one would expect a path into Europe, already well into darkness, and sure enough the European DX starts to roll in as if on cue just before supper time. Similarly, at dawn in Europe there is a strong two hour long opening between Europe and North America. Some people will argue that the path between Europe and North America can occur at any time as long as the two stations communicating are in the zone of darkness. My own practical experience is that the signals are noticeably stronger when one station is in total darkness and the other is either in dawn or dusk.

Unlike the other bands, the practical
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range of 80 metres, at least with a modest set-up is limited. From Ottawa, North America, most of Europe and parts of South America are within reasonable range. There are, very roughly, some 50 countries in North and Central America, 55 in Europe and 30 in South America. With a little luck another dozen can be worked in Oceania and Africa, giving a potential total of 147 'workable' countries. However, at least 40 of these are inactive or have not shown up on 80 metres for years, and a further 40 are active only very occasionally or are only activated by rare DXpeditions. This has led me to formulate a set of rules for 80 metre DXing as follows:

Rule 1: Never miss a DXpedition.....

Virtually every recent DXpedition (VR6HI, YV0AA etc) have shown up on 80 metres. The pile-ups are easier to break than in the higher bands (what kind of a nut would want to stay up until 3 AM anyway!) and having gone to all the trouble to put up a long wire antenna for 80 the DX station is usually willing to make a special effort to work as many as he can.

However, never listen to a DXpedition on a friend's receiver when you are away from home and cannot transmit. The frustration will put you off DXing for months - and the station will probably be added to the banned countries list the next day meaning that you won't have a chance to work it again for years.

Rule 2: Watch the contests.....

Almost every major DX contest produces a surprise DX entry, and they like to pick up the VE multiplier on 80 metres. Examples this last year have been FC9UC, Corsica in the F.E.F. contest and 5W1BZ in Western Samoa in the BERU.

Rule 3: Get to know the other 80 metre DX hounds.....

160 metres may be the "gentleman's band", but on 80 metres people are at least polite and often downright friendly. When conditions are right, a number of informal nets quickly appear and co-operation is the order of the day. Perhaps the best known of these nets is chaired by Raoul, N5RQ who appears most weekends during the winter months on 3792 to 3797 kHz between 0400 and 0600 GMT.

Rule 4: Listen.....

You can't hear very much when you
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are transmitting or ragchewing. This is, of course a basic DX rule for any band (if you are interested in collecting countries rather than just talking to other countries) but for 80 metres it is particularly important. Many DX stations will call a short CQ on 80 just to see if there is anyone listening. If they get no reply they will move up to the higher bands. It is particularly important therefore to be listening for those CQ calls. The second part of rule 4 is "Today's DX is tomorrow's QRM..." If you spend time calling and working a station from a country which you have already confirmed, you not only take a chance on missing a new country that may be on down the band, but you also make it that much harder for the DX station to work others who may need the country as a "new one".

Rule 5: Arrange skeds if you have a chance.....

Conditions on 40 through 10 metres provide regular DX openings, and there is no reason, in my opinion to arrange a special sked with a DX station just to snag a new country. On 80 metres, however for example, some openings, to North Africa occur very rarely and when they do there is nothing wrong with asking a DX station to QSY from a higher band for a sked on 80. On the rare occasions when I have done this myself I have found the DX stations to be very willing to make a special sked - and just as thrilled with the chance to make an 80 metre QSO as I have been.

Rule 6: Know your propagation paths.....

Generally speaking the East-West propagation on 80 is particularly good from about mid-November to mid-May in Ottawa. For the past three years, despite the state of the sunspot cycle, the band has peaked around January 1st, and has been excellent until late February. However, contrary to popular belief 80 is not only a winter band. As this article is being typed (July '79) there have been S7 openings on several evenings into South America as far south as the Argentine.

Finally, I would strongly recommend 80 metre DXing for those who are searching for a new operating challenge. Move up to 80 - and rediscover the thrill of your first DX!



John Gilbert, VE3CXL



Regs in the Bathroom

AND OTHER TEST TRIVIA

After twenty-six years of marriage to VE3DZB, I finally had intimate contact with his hobby when I was obligated to cohabit with his rig at the cottage last summer. You guessed it; I fell under the seductive spell of that squawking box in the corner (no sweet whisperings here!) and took a solemn vow to join the great fellowship of radio Amateurs.

Armed with tapes and recorder I attacked Morse code with the zeal of a Crusader off to the holy wars, and after suffering many setbacks in a war that often wasn't holy, I felt I was the victor and ready for the final 'putsch' on the DOC battleground. Valentine's Day 1979 will be remembered as the day I exchanged my blood for ice-water and numbly made the letters that corresponded to the dit-dah-ing of the tape at the DOC office in Toronto.

The fingers performed but not the brain. I still have no idea what I wrote at that code test, but the fingers must have been programmed well enough, because a few weeks later I learned that victory was really mine.

But wait! Those darn theory and regs exams had still to be passed. For me, a housewife who doesn't work (hi, hi!), and with only one high school course in physics (passed with only credit standing a hundred years ago), this challenge was comparable to climbing Everest in running shoes. However, with regular attendance at the Scarborough Amateur Radio Club course under the able tutelage of Bart VE3HIY, I became vaguely aware of electron theory, semi-conductors, etc. But even as late as March I was still asking my fellow students sheepish questions like, "What does 'bias' mean?"

At this time, my greatest strength came from two very different sources. First, while doing volunteer work with mentally retarded pre-schoolers, I was struck by their eventual mastery of skills after much practice and time. These little ones inspired me, because in my own way I was handicapped, too, by having practically no background in or exposure to electronics. Nevertheless, like them I would struggle, and eventually learn. And secondly, by drawing up a time-table in which I could cover all the course between the time I received the code results and examination day, May 9th, I was reassured, at least on paper, that I could get everything looked after by that date.

And the regs, of course, had to be learned. Here the bathroom seemed to be the best place for that kind of study. A few regs learned each day seemed easier than a concentrated effort that could result in scrambled legalistic terms playing hide-and-seek in my mind on examination day. Yes, the bathroom is a great place for the regulations, at least until someone says, "Mom, are you reading or what?"

After eight weeks of the regs residing in the bathroom, the whole family must have some knowledge of the laws governing telecommunications in Canada.

Well, May 9th came during a heat wave. So, dressed in almost indecent attire to keep cool, I sat for the exam. The air-conditioned hall reminded me of that last Valentine's Day (ice-water instead of blood) and chills of fear and excitement took over. Although I had asked to write the exam in English, the examination book seemed to be written entirely in some foreign language. I knew then that the

questions must be in ancient Sanskrit or modern Martian, but certainly not in either of our official languages. I recovered sufficiently from this initial shock to see a few familiar words, such as: 'bridge' and 'power supply' and after two hours of supreme effort I walked out, determined to do better next time.

About a month later, I learned I'd passed the regs. The bathroom had paid off, you see, and I had also earned a not too shameful mark of 55 on the theory. Again my young handicapped friends came to my rescue, and I registered immediately for the July 11th exam, resolved to try, try, struggle, and learn! If these little people could accomplish what I had seen them do, I knew I could reach my goal, too.

After three weeks of cramming, with the love and support from the great 'ham' in my life and from the rest of the family, I again tried the exam and came out of the examination hall looking like the cat that had swallowed the canary. I'd aced it!

Great!... But not so great! I found, after many second, third, and fourth thoughts that I wasn't so brilliant after all. But I just hoped that the DOC marker would be in a mellow summer mood and read between the lines all the abundance of information I had absorbed over the past year.

Three weeks later I got my envelope from the DOC, but I was too afraid to open it. I realized however, that whatever was in that envelope was backed by a piece of stiff cardboard and the envelope also bore the message **please do not fold**. It was then I knew I'd conquered Everest!

After that, the OM and the YL did a jig around the living room and, in a state of bliss, retired ... to the ham shack.

Epilogue; It's nice being an ex-XYL; and I wonder what my call letters will be!



C. Marie Bedal
355 Hollywood Ave.
Willowdale, Ont. M2N 3L3

Tapes for Wheels



The South Pickering Amateur Radio Club Inc. has started a project which requires work but no money. They are collecting Dominion Store cash register tapes which they trade for electric wheel chairs.

The first chair in this project was recently turned over to Bill Down VE3EPM, a SPARC member. SPARC intends to continue collecting these cash register tapes for additional chairs for fellow Amateurs throughout Ontario and eventually all of Canada. Although this sounds like an extensive project, Howie Varden VE3DAY, the co-ordinator of the projects, feels that if all Amateurs throughout Canada submitted these tapes to SPARC Inc. it would not be too long before many needy Amateurs would have their chairs. Any Clubs interested in this project can submit names of Amateurs in their clubs who need wheel chairs.

Names and tapes can be sent to: South Pickering Amateur Radio Club Inc., Box 53, Pickering, Ontario, L1V 2R2.

(Newfoundland Amateurs have been engaged in a similar project. - Ed)

Social Events

October 12-14 - Radio Society of Ontario convention, Skyline Hotel in Ottawa. Hosted by the Ottawa ARC. Info from Ottawa ARC Convention Committee, Box 8873, Ottawa, Ont. K1G 3J2. The club is sponsoring an award to publicize the event. The National Capital Award starts May 1 onward for contacts with VE3NCR. Highest number of contacts from May 1 to July 31, 1979 is eligible for prizes at RSO Convention. Details for SASE to the Committee.

October 28 - London ARC 'Swap and Shop' flea market. 8 to 4 pm. Lord Dorchester High School. Admission \$2, tables \$2. Displays, prizes. Talk-in 78/18. Info: London ARC, Box 2, Terminal B, London, Ont. N6A 4V3.

November 3-4-5 - The CARF National Amateur Symposium will be held in the Dorval Airport Hilton Hotel. Arrangements for the affair are being undertaken by RAQI, the Quebec provincial organization and Union Metro Sansfilistes (UMS) one of the largest clubs in Canada. The Workshops will be made up of Amateurs from various clubs and associations to

which invitations have already gone out. While the symposium is primarily a working session, there will be a banquet on the Saturday evening. Those who are not in the working groups are invited to participate in the banquet, however, and may obtain a reservation from Jules Provost VE2DN, RAQI president, by writing to him at Box 23, Station A, Montreal, H3C 1C5 or by phoning him at (514) 283-4194 Tuesdays to Fridays, only, between 0700 and 1530 Eastern time.

There will be four areas dealt with by workshops in both official languages. Although it might have been better to have just the four workshops with simultaneous translation facilities, the cost of these would have been prohibitive. The general assembly on the Sunday will, however, have simultaneous interpreting.

The Symposium Committee can be reached at the above address and papers for discussion will be accepted until October 31.

The Symposium Committee is cochaired by Jules Provost and Gerry Paquette, VE2BUJ, president of UMS. His phone number is (514) 464-0049 at home.

June Exam results

On July 11, 508 candidates wrote the Amateur exam, 207 went for the Amateur ticket and 17 tried the Digital Operator ticket.

The results were somewhat the same as the May set of exams, with the national success rate being 50% for Amateur theory, 62% for regs and 33% for the code. For the Advanced certificate, the score was 45% for the theory, 83% for regs and 41% for the morse. Nine people made the Digital certificate, of whom seven were from the Advanced Amateur ranks.

Because of the partial credit system, the number of actual Certificates issued cannot be determined. These would be issued by District offices and hence, until the annual billing for licences in March, the outcome of this year's examinations insofar as the number of new Amateurs will not be known.

Another innovation for the October set

will be allowing one and a half hours for theory examinations rather than the current one hour, according to a DOC HQ source.

CARF presented its comments on the proposed changes to the regulations on which public comment closed July 28. The Federation's recommendations followed those brought out at the CARF National Amateur Radio Symposium in Calgary last fall.

Credit will now be given for each part of an examination: theory, regulations and code. Credits are good for a year. It was learned that examinations will be held once every two months beginning next year.

The next and probably last set of exams for this year will be held on October 17. Last day for applications to write is September 19.

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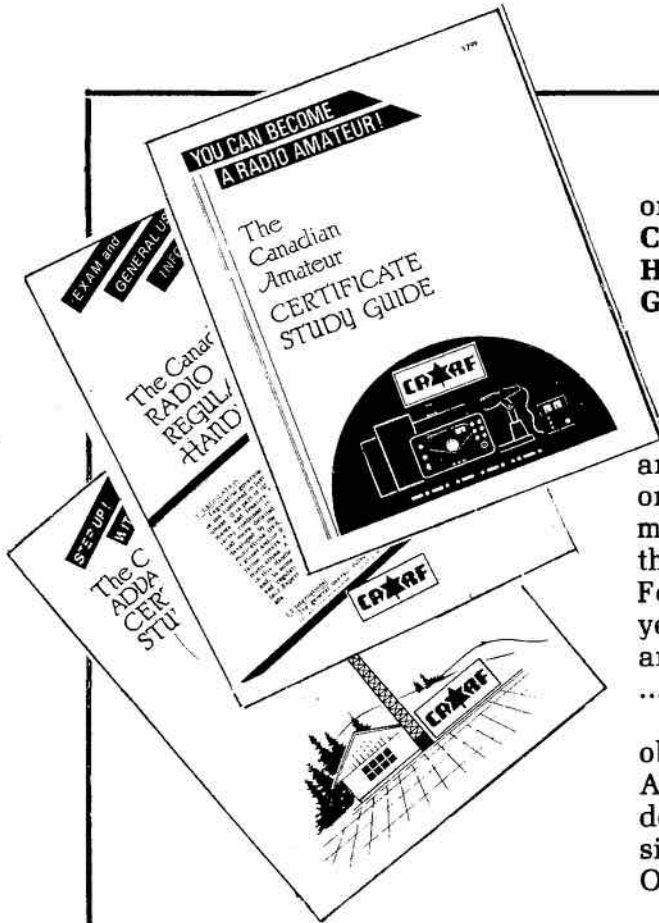
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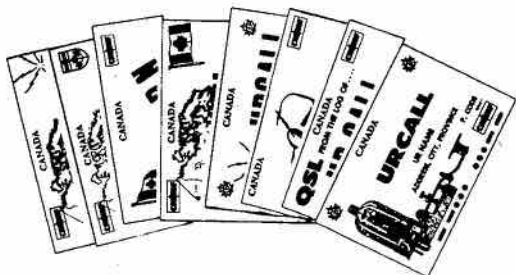
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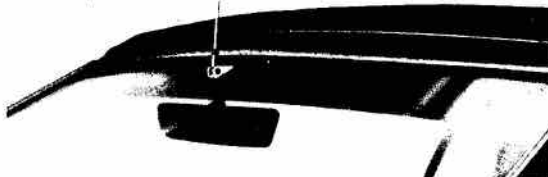
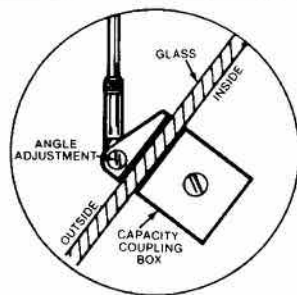
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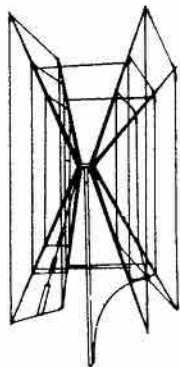


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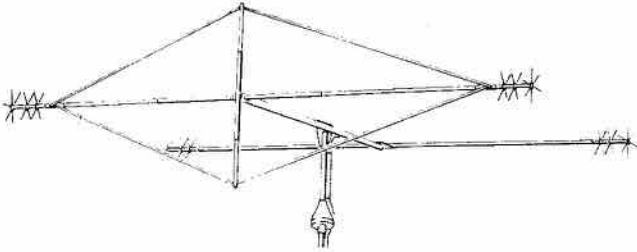
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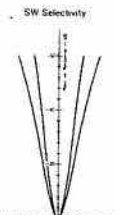
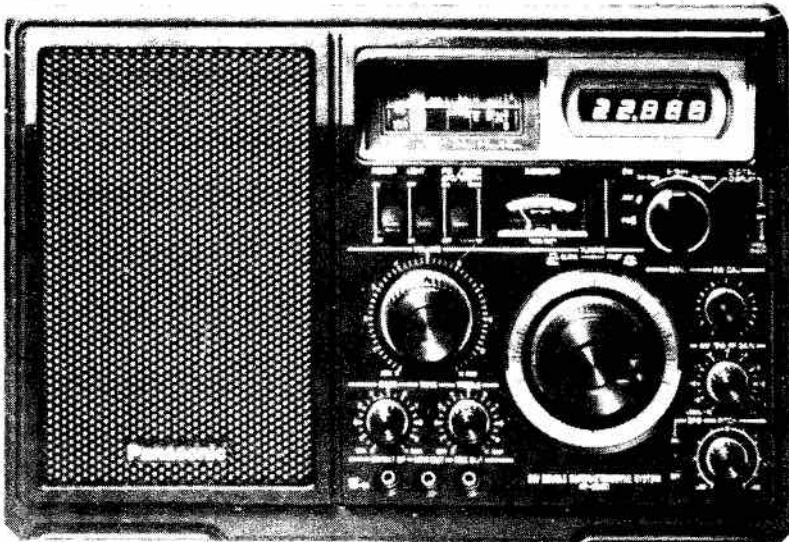
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The Canadian Amateur Radio Federation, Inc. is incorporated and operates under a federal charter, with the following objectives:

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

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Publication of the Radio Operator's Handbook has been delayed due to unforeseen circumstances and work is progressing on the Digital Operator's Study Guide. Both publications should be available soon ... see future issues of TCA for details.

COMMUNICATIONS
VIA



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Infosection

CARF Bulletin Station sked

After a few months of operation, it has been found advisable to make some changes to the schedule of CARF News Service broadcasts over VE3TCA. Here is the schedule which will become effective as of June 30, 1979.

CARF Newsletters and News Bulletins will be heard over VE3TCA, the first official CARF News Service Station, utilizing the facilities of VE3OCU, Carleton University Amateur Radio Club in Ottawa on the following schedule:

Sundays

1745	SSB	14.140 MHz
1930Z	CW	14.077 MHz
2030Z*	RTTY	14.077 MHz
2200Z	SSB	3.755 MHz

Tuesdays

0001Z	CW	3.590 MHz
0030Z	TTY	3.610 MHz

* approx. time; follows CARFNET at 2000Z.

TTY xmissions are 170 Hz shift, 5 level, 60 wpm, followed by ASCII 110 baud.

Carleton ARC repeaters using call VE3OCU will transmit the bulletins simultaneously Wednesdays at 0001Z on 146.86, 224.94 and 53.15 MHz.

Additional HF Bulletin Stations are:
VE7TCA - Mondays 0230Z on 3618 kHz RTTY, 5 level and

Mondays 0245Z on 3755 kHz SSB after BC ARPS net.

VE5WM - Saskatchewan Phone Net nightly 0100Z on 3785 kHz.

- ARES Net Sundays 1530Z 3780 kHz (phone).

VE5GG - Thursdays 1830Z 14.077 MHz RTTY 5 level.

Also, a number of two metre repeaters serve local audiences. Regional coverage repeater newscasts are: VE7BBQ on VE7RPT 34/94 Thursdays 2000 hrs Pacific Time; VE5WM (regina) on 46/06 nightly at 0300Z.

Note: For the duration of Daylight Time, the 3.775 MHz SSB xmission on Sundays and the 3.590 MHz xmission on Tuesdays are one hour earlier Zulu (Z) time.

Moving-Renewing?

If you are changing your address or renewing your membership, please send the change, cheque or money order to CARF, Inc., Box 356, Kingston, Ont. K7L 4W2, where CARF and TCA records are kept in the administrative offices of the Federation. Please do **not** send them to the Editor, who happens to live in Ottawa. Re-mailing means a delay in your change or renewal.

Free QSL Service for members

1. Sort QSLs by prefix and stack face up in a single stack.
2. Keep weight of one parcel under one pound. Parcel carefully and seal securely.
3. Put your name, call, etc. in upper left corner
4. Put your CARF membership no. in lower left corner.
5. Send to CARF QSL Services, P.O. Box 66, Islington, Ont. M9A 4X1.
6. Do NOT register parcel. This causes delay.
7. Check with Post Office for requirements if sending by Third Class Mail
8. If receipt required, enclose SASE with cards.

BANNED COUNTRIES LIST

Iraq, Khmer Republic**, Libya, Somalia, Turkey, Viet-Nam, Peoples Democratic Republic of Yemen.

** Station XU1AA has been authorized to exchange communications with Amateurs of other countries. Note: The calls 70A to 70Z are assigned to the Peoples Republic of Yemen.

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Bolivia, Chile, Columbia, Costa Rica, Dominican Republic, Guyana, Honduras, El Salvador, Israel, Mexico, Nicaragua, Peru, Trinidad/Tobago, USA (Territories and Possessions), Guatemala, Uruguay, Venezuela.

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Note: As a general rule, DOC will consider licensed Amateurs of Commonwealth countries for reciprocal privileges in Canada if the other country does the same.



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