

TCA



\$1⁰⁰

JUNE 1981

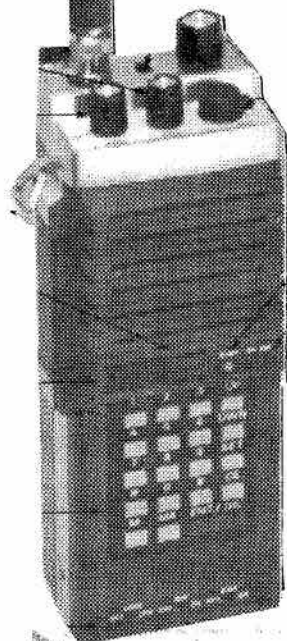
The Canadian Amateur Radio Magazine

Rig Mod~ ifi~ cation

- Multi-7 Rejuvenation
- CW Modification for FT-101
- Putting the Kenwood TS700SP Down (1.2 MHz)



Yaesu

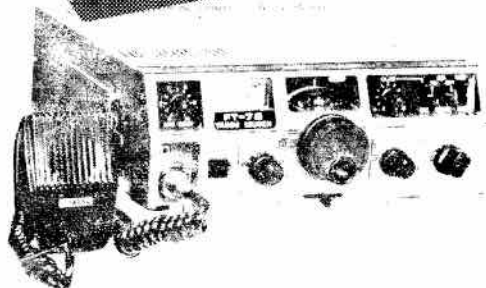


FT207R

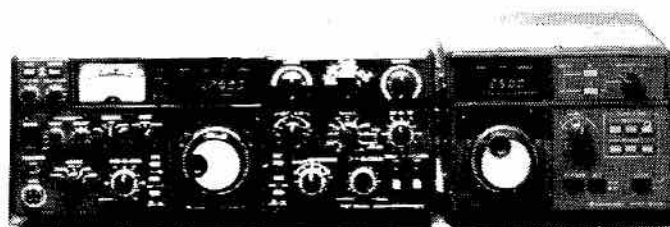


TS-180S

Kenwood



FT-7B



TS-830S

VFO-230

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TCA

THE CANADIAN AMATEUR

June 1981

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TCA - The Canadian Amateur is published in Canada 11 times per year to provide Radio Amateurs, those interested in radio communications and electronics and the general public with information on matters related to the science of telecommunications.

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

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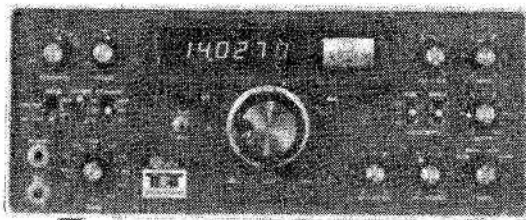
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TEN-TEC

The All-American DX Machines

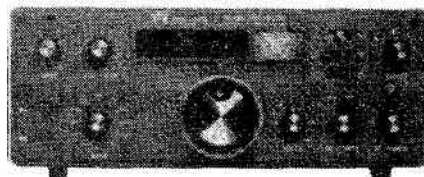


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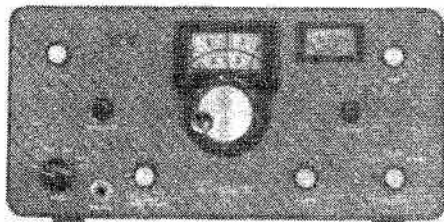
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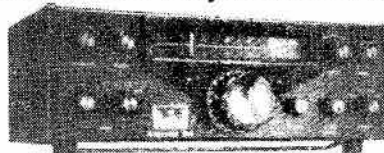
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Mosley CL-36

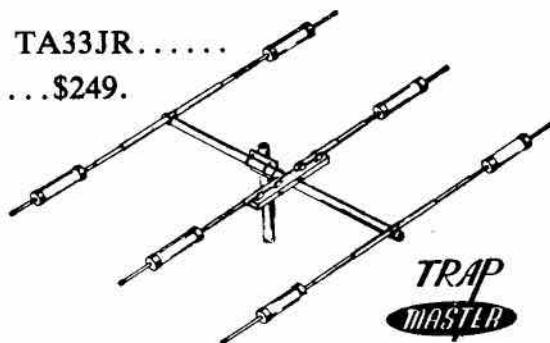
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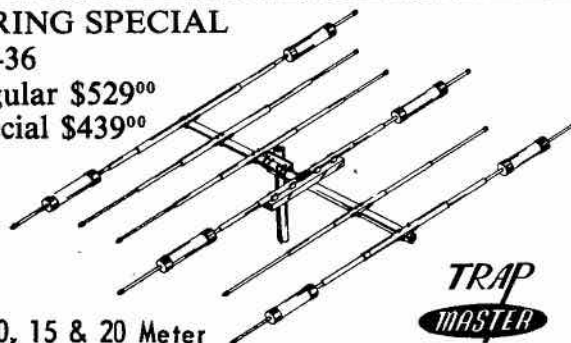


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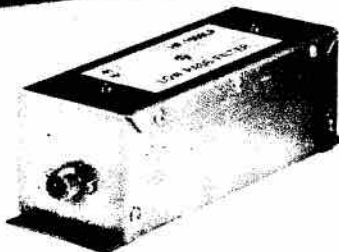
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Hammond POWER BAR

HF-1000LP LOW PASS FILTER



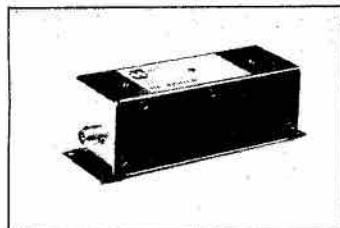
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A truly rugged, uniquely Canadian, linear amplifier in the Hammond tradition. Top quality, heavy duty components designed for longest life performance.

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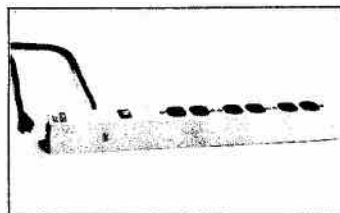


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Designed to eliminate spurious conduction from transmitters operating below 30 MHz and eliminate 2nd and 3rd harmonics appearing in the TV bands when operating in 10, 15, and 20 meters.

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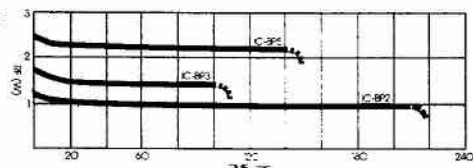
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**Do not attempt to use 100% power of NiCd batteries

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FEATURES

15 multifunction memory channels, easily selectable with a rotary control

- M1-M13...memorize frequency and offset (± 600 kHz or simplex).
- M14...memorize transmit and receive frequencies independently for nonstandard offset.
- M0...priority channel, with simplex, ± 600 kHz, or nonstandard offset operation.

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Priority alert

M0 memory is priority channel. "Beep" alerts operator when signal appears on priority channel. Operation can be switched immediately to priority channel with the push of a switch.

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Extended frequency coverage

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Built-in autopatch DTMF (Touch-Tone) encoder

Front-panel keyboard
For frequency selection, transmit offset selection, memory programming, scan control, and selection of autopatch encoder tones.

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Entire band (5-kHz or 10-kHz steps) and memories, with UP/DOWN microphone (standard)

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Letters:

YUKON ARA

Having often read in the past of the absence of VY1's during field day and other competitions, this is to inform you and all your readers that we, the Yukon Amateur Radio Association, will be out again in full strength during the coming field day in 1981, as we have since 1976.

Also, we plan to run a public relations operation in downtown Whitehorse in conjunction with the CARF Canada Day competition.

Operators may be interested in finding out that the *Yukon is not north of Alberta, etc. but northwest*. Please point your beams in the correct direction.

Ron McFadyen VY1AD
Secretary YARA
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Whitehorse, Yukon

REPEATER OPERATIONS

The VHF Repeater Advisory Committee has recommended that repeater operations should be established in the top portion of the 10 metre band as follows:

29.52-29.58MHz Repeater Inputs
29.60MHz Simplex Operation
29.62-29.68MHz Repeater Outputs

There is no repeater operation proposed below 29.5 MHz to protect OSCAR satellite output at 29.4-29.5 MHz, and the Radio sport satellite sub-band at 29.3-29.4 MHz.

This 10 metre band plan has been implemented in the United States, and we have been asked if we would amend our Amateur repeater policy to permit this proposed operation.

Our policy concerning Amateur repeater operation is that

they may be operated in frequency bands above 50 MHz. This policy was originally developed in conjunction with the Amateur Associations. Therefore, as a first step in our review of this matter we are consulting the Canadian Amateurs, through their national Associations, to determine if there is general support for the proposal to permit the use of repeaters in the 10 metre band. Would you therefore please provide us with an indication of the degree of support that this proposal enjoys with your membership.

Jean-Jacques Rousseau.
Manager,
Spectrum Management
Operations Division
Telecommunication
Regulatory Service

This matter was to be discussed at the Winnipeg Symposium. Further details will be made available at a later date in TCA.

VE1 CALLS

If Mr. Lever VE1BSH wanted to know the outcome of the prefix proposal, why did he not write to the organization that conducted the survey? The Nova Scotia Amateur Radio Association. Better still, he could have attended the annual meeting at Sydney last fall and found out first hand. Failing that, he could have read the result

in the Dec. 1980 issue of the Nova Scotia Amateur on Page 16 in the minutes of the Sydney meeting. (All licensed Amateurs in Nova Scotia were mailed out that issue.) He had at least one more source of information in that he could call into the Association Net on 3762.5 KHz nearly every Monday evening at 6 p.m. local.

We go to a considerable effort to keep our Amateurs informed of happenings and events in the Amateur Radio world, and it's very disheartening when the information that is so freely available is not utilized. There should be a lesson here somewhere.

Bernie Bonnar VE1UT
President NSARA
Hebron, N.S.

Thanks, Bernie. However, I still don't know the results myself. You didn't include them in your letter, and issues of the Nova Scotia Amateur are not sent to us. (I wish they were, too.) A lot of people in Canada would like to know the results.

HW101

VE3ACY is looking for any information to incorporate R.I.T. in a HW101.

Rob VE3ACY
Embassy of Canada
Box 30481
Nairobi, Kenya

WESTERN ALIENATION

When is CARF going to end its alienation towards Western Canada and give Manitoba, Saskatchewan, Alberta and the N.W.T. separate representation on the Board of Directors?

It is a little bit much expecting a Director to look after this huge area. The Amateurs in these three provinces and NWT do not

**TCA WELCOMES LETTERS
TO THE EDITOR. PLEASE
SEND ALL CORRESPONDENCE
TO EDITOR TCA,
1082 APOLYDOR AVE.,
OTTAWA, ONT. K1H 8A9.**

have a great deal to do with one another. They have separate nets, separate provincial societies, etc. Why not separate directors? I am told the answer is finances. Would it be too much to ask for a hike in dues to cover the extra plane fares to meetings, etc. to remove this terrible inequity which leaves a large part of our country unrepresented in CARF?

Malcolm Timlick VE4MG
Kelwood, Manitoba

I agree with you, Malcolm. Every province should have its own Director. You are correct in saying that finances have a great deal to do with it. I am sure the CARF executive will discuss this matter at the June meeting, but don't expect anything to happen immediately. By the way, the Directors should appoint regional assistants to help in matters such as this. It is part of their responsibility to see that every region is represented. If you are not getting the representation you want, then either get the Director to appoint more active assistants or do the job himself. If you feel that Jim VE6HO has not done a good job, you should not have let him be re-elected by acclamation. No-one ran against him, so it can only be assumed that everyone thought he was doing a good job...Editor.

HALL OF FAME

Would it be feasible to establish a Canadian Amateur Radio museum and an Amateur Hall of Fame? Don't laugh, many think it's a reasonable idea.

If such a thing should come to pass, I suggest it be established in conjunction with the Royal Canadian Signal Corp museum in Kingston or in Beddeck, Nova Scotia. I believe Kingston would likely be the better location because it is more centrally located. The house-keeping and security would also be provided (likely). The RC Sigs museum is also very much related to the same subject — Radio.

Secondly, I suggested a Hall of

Fame for a very simple reason, to honour those Hams who over the years have contributed greatly to the advancement of radio, mankind and his fellow Amateurs. I do believe it would be a first (I stand corrected) and I think it would be a good idea to commit those bygone memories to print before it's too late to remember.

Wouldn't you like to see a bronze bust plaque in the Hall of Fame with your C/S etc. on it and a narrative of your great contribution under it?

And what about an awards night? Just like the movies with categories. And the winner is ...!

Have I opened a can of worms? I now throw the idea at your feet, let you all kick it around for what it's worth.

Gerry VE1ASS
Elmsdale, N.S.

Ottawa has an Amateur who has already started a museum. He is Ed. Morgan VE3GX. Fred Hammond VE3HC also operates an Antique Radio Museum in Guelph, Ont. Are there more?

'CANADIAN' SUB-BANDS

I perused with great interest the letter by Mike Masella VE2FSM quoting from the December copy of QST, regarding which sub-bands of the main frequencies are 'Canadian'.

Among others, Mike remarked that "U.S. Amateurs should realize that not only Canadians, but the rest of the hams in the world are there too..." referred to the 'indiscriminate' use of linear amplifiers by U.S. Amateurs. I should like to add to these some observations of my own.

As a matter of fact, the most used sub-bands on the 7, 14 and 28 MHz frequencies have been almost completely taken over and commandeered by the U.S. Amateurs. It is my daily experience that many of these try to take over my DX contacts in the midst of communication by calling my contact's numbers, and if they don't succeed

despite the cannon-shots provided by their 1000 watts powered rigs, they do successfully prevent further 'talk' on a large scale.

Admittedly, there are probably no more than 25-30 of the hundreds of thousands of Amateurs, but the presence of three or four at the same time creates complete havoc and frustration on a large scale. Overseas Amateurs hardly if ever work over 50 watts of power, while Canadians generally work, and successfully so, with 100 watts.

Mike is perfectly right in condemning the use of linear amplifiers. There are no reasonable justifications for their use on CW and ostensibly serve no other purpose than attempts at overpowering other weaker stations. It is also characteristic that these 1000 watt goliaths are among the poorest morse-keyers, avoided and ignored by other hams and they seem to take out their frustration by preventing or disrupting others' work on the air.

I would suggest that CARF should contact its U.S. counterpart organization for discussing methods to be applied in order to prevent the continuation of this abusive practice.

J.W. Mullner VE3LXM
Ottawa, Ont.

Mike VE2FSM sent me a fair amount of material on the controversy of 'sub-bands'. It includes some correspondence with a U.S. Amateur. The battle is taking shape in the letters column of QST. Sometime I will put the whole thing down in TCA for all to see.

TECHNICAL SECTION

I have received good service as a CARF member and enjoy TCA, QSL Bureau and participating in CARF Contests.

One note you can pass on to whom it concerns: I wonder if it is possible to put some advertising in between your articles in the Technical Section of TCA when they are on different topics and

not have articles back to back on the same page. It would allow articles to be filed under specific headings such as antennas, TX, RX, etc.

Art Pederson VE5YF
Swift Current, Sask.

Good suggestion, Art.
Sometimes it is not possible to do it, but an attempt can be made to organize the articles in that format.

WHAT HAPPENED TO GEORGE?

A really fb story! As a fellow member of RADAR and attached to the RAF, I also got into some odd places, but not to the Middle East.

I think every SHQ or Sqdn section had its own 'George', an RAF type, an overqualified genman who looked down on the poor sprogs from the colonies. Thanks for some happy memories.

Bill VE3KXJ

SHORTWAVE

Several months ago, a writer asked you where all the shortwave listeners in Canada were. Perhaps this letter will inform your readers of where some of us are.

The Southern Ontario Radio Club is a relatively small group of SWLs in Ontario and area. SORC prints a monthly bulletin consisting of DX tips, news and discussion topics, as well as construction articles for SWLs. Aside from the news letter, SORC holds at least one DXpedition per year, either in the west Lorne, Ont. or Prescott, Ont. area. There are presently about 22 members of the growing club.

Residents of North America are welcome to join, and membership costs \$10.00. A sample bulletin may be obtained from the address below for \$1.00.

If you would like more information about the club, please address inquiries to the following address: Southern

Ontario Radio Club, Box 524,
Prescott, Ontario K0E 1T0.

NO VE3?

Enclosed please find a copy of a recent issue of a magazine from a club in New England (my wife and I were there on an engineering assignment for quite a number of years)

You may or may not be interested in the reference to operators not complying to regulations issued by the FCC.

The writer has, for some time now, heard constant refusal on the part of quite a number of operators here in Ontario, to use the prefix 'VE3' prior to identification, either before a contact or at the conclusion and, what is further evidence of their ignoring our regulations, should some individual say for instance 'DWW' they even go back to him or her. This, by the way, on such as 75 and 2 metres.

I respectfully submit that we might take a page from some of the references in the attached.

Ed Westall VE3DWW
Streetsville, Ont.

K1RQ indicated that the FCC has made a statement that various repeaters in New England and New York are not following regulations with regard to proper verbal usage on the air. The Boston FCC office has asked various hams to monitor the repeaters and log misuse of the repeaters. The SCM (Section Control (sic) Manager) has directed that the assigned monitors will tape repeater transmissions that are not in line with FCC regulations and the repeater control operator will be accountable for any violations.

Club discussion centred around how various repeaters are plagued with the problem of verbal misuse. NOBARC relies on good judgement of members to report violations to the club officials and help identify and localize the offenders. K1RQ

recommended a more formalized program be developed and implemented by the club.

*Minutes of the Northern
Berkshire ARC*

DX Hams at VE7LPC

Want to learn about Kenya or Indonesia without even working DX? Just call VE7LPC in Victoria!

VE7LPC is the Club station at Lester Pearson College in Victoria. Students from 53 countries are attending a two-year International Baccalaureate curriculum here.

Many learn Amateur Radio, too. It is one of the activity courses offered, in addition to regular studies, with instruction by Victoria ham volunteers. A Thursday class is offered by Rick VE7FJD and Orriano VE7DYZ, and one on weekends by Roy VE7TG.

Two students have already received Canadian operator certificates: Harya, a student from Indonesia, and Zach, from Kenya. Both are already on the air from VE7LPC, hoping for contacts from their home countries.

A frequent contact at VE7LPC is Martin PA3BEW, who was a student at the college last year. Martin's brother, Arnold, is PA3ARC who was frequently working the Victoria Club station. Martin, not to be outdone, got his own ticket so he could keep in touch with ex-classmates.

There is a sister World College in Wales with a new ham station, GW3YXP, and one in Singapore with a station in the planning stage. Other World Colleges are planned for Venezuela and other countries. All are to have Amateur stations, if possible.

-Roy VE7TG



Canadian
Repeater
Advisory Group

Hugh Lines VE3DWL
P.O. Box 192, S.S. 11 Belleville
Ont. K8N 4Z3

Well, the last repeater list has sure resulted in an influx of mail here. Many changes, additions and deletions have come in and I am sure that more are coming. In the meantime, here are the ones that I have received to date, from East to West. Thanks to the following for this information: VE1BXM Dartmouth ARC, VE2ATW, VE2BTX, VE3KCE, Oxford County ARC, VE3KIY, VE3FWV, VE3GMQ, VE3IJB, VE5ZU, VE6ADI, VE6AMY, VE7ERP, VE7WI, VE7ADI, VE7DZR, VE7AOW and VY1AD.

In addition, Hubert VE6AMY wishes to remind all about the Andrew Alta. Hamfest from July 31 to Aug. 2.

The new information is as follows:

1. Change VE1PB to VE1DAR, Dartmouth.
2. Add the notes 'A' and 'E' to VE2RED, Montreal.
3. Delete Mt. St. Joseph VE2IN and change Carleton from Not Known to VE2IN 146.220 146.820 and delete the note 'P'.
4. Change VE3RYC Aurora to VE3YRC.
5. Delete VE3YRC from Toronto.
6. Change VE3TFM Toronto to VE3MPU.
7. Change VE3WPR Whitney Park from Not Known to 146.400 147.000.
8. Add Oakville VE3OAK 147.015 147.615.
9. Delete VE3MIN Minden.
10. Add Woodstock Ont. VE3OH 147.870 147.270.
11. Change VE3RMR Ottawa/Hull to VE3TEL, and add note 'D'. It runs at 9600 BPS FSK. For info contact the Pioneer ARC, Box 3246, Ottawa, Ont. K1P 6H7.
12. Delete VE3HFR Windsor. Delete VE3III Windsor on 146.280 147.060. Change VE3III Windsor

from 146.460 147.060 to 147.660 147.060 and add Windsor VE3III 449.000 444.000. For both VE3III listings add the notes 'A', 'L', 'E' and 'T'. Add Windsor VE3WER 147.795 147.195. Add Windsor VE3UUU 449.400 444.400. Add Leamington VE3TOM 147.900 147.300.

13. Delete Brockville Ont. VE3WXR. Change Brockville VE3BAT to delete note '9' and add note 'A'. Also add a radius of (80) Km after Brockville.

14. Change Chatham Ont VE3KCR from 147.720 147.120 to 147.120 147.720 and add the notes 'A' and 'E'. Add Chatham VE3KCR 444.900 449.900 'E', 'L' and Chatham VE3KCR 144.810 145.410 'E', 'T'.

Interference Committee

An international organization that Amateurs do not hear much about these days is CISPR (pronounced sis-per). That is the French acronym for the International Special Committee on Radio Interference. They will be meeting this year in Toronto from Sept. 21 to Oct. 2. Amateurs should watch and encourage the work of this committee. Much of the gear we complain about is imported. It is this organization that sets international standards controlling the interference consumer and industrial equipment caused to radio communications and the susceptibility of electronic equipment to radio signals. About 75 Canadians give their time and expertise to the work of CISPR. CARF is represented by Barc Dowden VE3TT.

15. Change Saskatoon VE5SK note from 'L' to 'E'. Add Saskatoon VE5SCR 146.190 146.790 'A' 'T'. Delete Swift Current VE5SCR.

16. Change Andrew, Alta VE6-JET to add note 'A'. Add Grand Prairie VE6XN 146.250 146.850 'A'. Change Hardisty VE6WW to read Hardisty-Camrose and delete the note 'P'. Add Innisfail VE6SPR 146.370 146.970. Change Milk River VE6BRC from 146.160 146.760 to 146.190 146.790. Add Namao VE6CU 147.900 147.300. Add Oyen VE6CNK 146.340 146.940. Add Rocky Mtn House VE6VHF 146.310 146.910 'L'. Add Whitecourt VE6PP 146.220 146.820 and change Willingdon VE6PP to VE6RJK.

17. Change Nelson BC VE7? on 34/94 to read Nelson VE7RCW 146.340 146.940 'A'. Delete Salmon Arm VE7APH and change to Salmon Arm VE7RNH 146.160 146.760. Change Kimberly VE7CAP to read East Kootenay (80) VE7CAP. Delete Cranbrook VE7?, and delete Fernie VE7?. Change Port Alberni VE7RAC to delete note 'C'. Add Port Alberni VE7RPA 147.750 147.150. Change Kelowna VE7ROK from note 'P' to note 'A'.

18. Last, but not least, change Whitehorse VY1BRW to add the notes 'A' 'B' and 'E'. By later on this summer, the Whitehorse listings should read as Whitehorse VY1BRW 146.340 146.940 'B' 'E' and Whitehorse VY1BRW 146.280 146.880 'A' and 'E'.

That's it for this month. In the next issue I will publish the repeater listing as accurately as I have been given the information up to and including May 15. Please remember that all I have is a 'dumb' computer that can only keep track of information that is as accurate as you send in. □

THE CANADIAN

Contest Scene

Dave Goodwin VE2ZP., 4 Victoria Place, Aylmer,
Quebec J9H 2J3

CONTEST CALENDAR

June 13-14 ARRL VHF
20-21 All Asia Phone
20-21 SMIRK 6 Metres
27-28 ARRL FD
July 1 *CARF Canada Day*
11-12 IARU Radiosport
18-19 10-10 Summer QSO Party

It appears, despite the unfortunate conflict with the Bermuda Contest, the first running of the CARF Phone Commonwealth Contest went quite well.

Logs received so far have shown scores comparable with scores in the RSGB's CW event. Hopefully, a comparable number of logs will be received. Results will appear in Sept. **TCA**. VE1ASJ with 6360 points, G3FXB with 5740 and VE5RA with 5730 are the leaders in the logs received so far.

CQ Magazine has published the results of the WPX CW Contest of last year. CARF sponsors a trophy in this one, for the top scoring Canadian Single op all band entry, and this year Mitch Powell VE3OT, operating as XL3LON is the winner. Mitch is, of course, the Director of Canadian Division ARRL, which most of you should find interesting, if not amusing. Craig Howey VE3HWN, one of the new Ontario CARF Directors, presented Mitch with his trophy at a meeting of the London ARC.

Surprisingly, perhaps as a result of the publicity over continuous rule changes, there was significant Canadian activity in the ARRL's DX Contests. VE6OU and VE3IY worked multi/single

earning an estimated 1.5 and 1.3 meg respectively. VE6OU again M/S in the phone made about 1.3 meg. I think VE1DXA may have been on, but I spent the contest on 80 metres, and was largely out of touch. Doug VE3KKB worked both contests QRP, attempting to improve on his trophy winning performance last year. In the 1980 run, Doug was top VE/W in the SSB.

Doug was also in the SSB WPX, trying to break VE3KZ's QRP record for Canada, but fell short with 419 k. VE6OU and VE1DXA were M/S and Yuri VE3BMV's proposed trip to Sable Island did not come off due to transport problems. Yuri spent the contest at home on 15 single band.

I was on 80 metres again, trying for the old North American record, but I would have been outclassed by HP1XRK and ZF2EO if I had made it anyway. With 405 k, I beat VE3KZ's old Canadian record. In this contest, it should be rare to have any record score last more than a year at the sunspot maximum, at least not until all the new USA prefixes are issued.

WHY WORK CONTESTS?

As promised last month, I will try to introduce the subject of contesting to those who are unsure of this aspect of the hobby. Why work contests? Well, the easy answer is: It's Fun. That doesn't tell you much. A contest provides

the ground for you to test out your capabilities as an operator in a high-pressure situation.

You can, by comparing your performance with that of other stations, come to some conclusions about your techniques, your equipment and your antennas. You also learn a good deal about tactics in a contest, as your final score in most cases is a combination of the number of contacts you make and the number of multipliers you collect. Finding a balance which gives you a high score is where strategy comes in.

It therefore becomes quite a mental, technical and physical exercise to do well in a contest.

A good place to start in contests is in the smaller, low pressure contests such as the Canada or Canada Day Contests. You can get a feeling for what is required of you to perform efficiently and so on.

Another reason many people enter contests is to complete operating awards. The large DX contests are good places to find new countries easily, or if you are after a smaller, more national award, like the Canadaward, contacts are readily available in many of the smaller, national contests.

If you are interested in any single band, almost any contest can suit your desire to see how well a new antenna will perform. If your interest is in 10 or 160 metres, there are several contests designed for these bands only. There is an awful lot of variety in contests, but the common element is competition.

All Asian DX Contests

Period: SSB: 0000z 20 June to 2400 21 June.

CW: 0000z 22 Aug. to 2400 23 Aug.

Bands: 1.8 through 28 MHz.

Classes: Single operator, single op all band; Multi op, all band. Exchange: RS(T) and age. YLs may send '00' in place of age.

Scoring: Work only Asian stations. 3 pt/QSO on 1.8 MHz, 2 pt/QSO on 3.5 MHz, and 1 pt/QSO on other bands. Multiplier is total of Asian Prefixes worked on each band. Total QSO points times total Mult points is final score.

Awards: Certificates to the top scoring station in each class from each country. Second, third, fourth and fifth place certificates will be awarded if activity merits. In the all band or multi op classes, continental leaders will receive a certificate and medallion from the Japanese Minister of Communications.

Logs: Separate logs must be used for each band. New multipliers must be clearly marked. A summary sheet with signed declaration of observance of contest rules and radio regulations must be enclosed. Logs must be submitted to JARL, Box 377, Tokyo, Japan by 30 September.

1981 Summer SMIRK Party Contest

Organized by the Six Metre International Radio Club to encourage use of Six metres, and provide a contest for six exclusively.

Period: 0000z 20 June to 2400 21 June.

Band: Six metres only, any mode may be used.

Classes: Single operator only. Exchange: SMIRK membership # (if applicable) and Province or Territory. Other stations will send USA State, Japanese Prefecture or other political subdivision.

Scoring: 2pt/QSO with SMIRK members, 1 pt for others.

Multipliers are total of Provinces/ states/ prefectures/ whatever worked.

Logs: Official log and summary forms are available from WB5SND, 6821 West Ave., San Antonio, TX, 78213, USA, for an

SASE. Logs must be sent to WB5SND by 1 Aug.

IARU Radiosport

Period: 0000z 11 July to 2400z 12 July.

Bands: 160 through 2 metres,

RESULTS, CQ WPX CW CONTEST, 1980 Canadian entries

Call	Class	Score	QSOs	Mult.
XL3LON	A	1,337,560	1275	382
VE7CC	A	727,892	877	284
VE3JTQ	A	473,040	582	270
VE3DUS	A	317,250	461	225
VE1CAN	A	741	20	19
VE3BMV	28	113,412	310	156
VE2ATJ/3	28	6,410	53	49
VE7WJ	21	611,208	814	312
VE1ABU	21	202,440	388	210
VE3EDC	14	971,584	1023	376
VE4XK	14	466,125	719	275
VE3FCU	14	129,195	295	165
VE1UG	7	39,374	106	73
VE3INQ	1.8	288	9	8
VE1DXA	MS	2,286,744	1808	453
VO1AW	MS	1,843,914	1614	382
VE7FFI	MS	916,504	1113	293
VE2DZE	MS	906,270	1299	255
AL70/VY1	MS	18,304	133	64

Results, CANAD-X Can-Am Phone 1980

Call	Class	Score	QSOs	Mult.
CZ60U	A	684,369	1278	189
XJ5UF	A	154,368	454	128
VE1CCC	A	145,152	399	128
VE1AIH	A	107,502	303	123
VE3IKW	A	71,022	225	114
VO1AE	A	42,525	236	63
VE7IQ	A	26,772	136	69
VE3DOU	A	17,019	103	61
VE2HY	A	9,954	83	42
VE2WA	A	3,267	43	27
VO1AW	A	520	16	13
XJ5ADA	14	17,640	154	40
VE3ETE	7	8,399	80	37
VE7ZZZ	MS	338,832	743	156
VE1CFB	MS	307,952	697	152
VE7UBC	MS	252,285	713	121
VE3NNN	MS	218,152	525	148
VE3TIA	MS	82,814	309	94
VE2CUA	MS	32,940	209	54
VY1AU	MS	29,078	160	67

both EW and SSB.

Classes: Single operator, single or both modes; Multi operator, both modes.

Exchange: RS(T) and zone number.

Scoring: 1pt/QSO with stations

on other continents. Multiplier is number of ITU zones worked on each band. Note that ITU and CQ zones differ dramatically, and are as follows: VE6, VE7, VE8 west of 110°W and VY1 are in zone 02; VE5, VE4 and VE3

west of 90°W, and VE8 between 110 and 90°W are in zone 03; VE8 south of 80°N and East of 90°W, VE2 west of 70°W, VE3 east of 90°W are in zone 04; VE2 west of 70°W, VE1, VO1 and VO2 are in zone 09; VE8 north of 80°N are in zone 75.

Entries: should be on official forms, or a reasonable facsimile. Entries with more than 200 QSOs must include dupe sheets. Entries must be sent to IARU, Box AAA, Newington, Conn., 06111, USA by 25 August.

CARF Canada Day Contest

This contest, which appears to be rising in popularity, will be held again on Canada Day. The objective is to get Canadians working Canadians, and encourage people to try contesting. Rules appear elsewhere in this issue of TCA.

QRP RIGS

One of the lesser known facets of Amateur Radio is low power, or QRP, operating. With flea-power rigs, many operators enjoy the challenge of getting a signal out with only a few watts.

Two Guelph, Ont., Amateurs are setting up a Canadian group dedicated to low-power operating. The club is to be known as the 'VE QRP Amateur Radio Club' and it is intended as a focal point for Canadian Amateurs interested in QRP, home-brewing and other technical aspects.

For information on the set-up, send SASE to Lou Vermond VE3-QRP, 83 College St. West, Guelph, Ont. N1G 1S2. The other operator involved is Dave Woodhouse VE3HEA.

SIX-METRE BEACON

News has been received from the RSGB of a new six-metre beacon in the Solomon Islands. H44IR transmits continuously on 50.005 MHz. Beacon keeper H44PT is very anxious to receive signal reports. Tx VE2ZP

CW RESULTS CANAD-X Can-Am 1980

Call	Class	Score	QSOs	Mult
XJ5UF	A	374,891	686	197
VE2WA	A	246,268	427	193
VE1AIH	A	232,638	429	191
VE3DZV	A	213,940	404	190
VE2HY	A	207,900	448	165
VE3DAP	A	174,384	367	173
VE1AXT	A	138,621	308	161
VE1UG	A	129,762	336	149
VE3ATD	A	102,951	305	123
VE3DDU	A	62,928	200	114
VO1AW	A	60,830	199	110
VE3JCV	A	39,200	154	98
VE3EZR	A	30,000	142	75
XJ5AAD	A	21,808	114	68
VE3MCL	A	18,112	101	64
VE5ZU	A	17,622	97	66
VE3DXY	A	13,524	95	49
VE3EZU	A	10,800	76	54
VO1KO	A	8,040	82	40
VE3MCN	A	928	20	16
VE1AWS	14	2,900	55	26
VE4RF	QRP A	22,046	110	73
VE3BMV	QRP A	6,834	73	34
VE6ZT	MS	564,075	807	249
VE3NNN	MS	401,280	597	240
VE7ZZZ	MS	288,036	543	189
VE3UOT	MS	198,528	408	176
VE1CFB	MS	193,704	402	172
VE3MKZ	MS	40,500	171	90
VE3TIA	MS	3,468	37	34

Results, Six Metre International Radio Klub Fall Contest, 1980. Canadian winners.

VE1ASJ	35,288	Overall winner
VE1AVX	19,550	
VE2AKD	5,198	
VY1AU	3,344	
VE6BCC	1,530	
VE1BPY	304	
VE3FDP	238	

The Canadian Traffic Handler

Ed 'Chip' Schoenherr VE3JLL
Box 149, Metcalfe, Ont. K0A 2P0

The time between the writing of an article and its eventual appearance in this or any other publication is dependent on a number of factors, not the least of which is getting the article to the editor in time for editing. Since a number of articles have already been assembled, it is a little difficult to remember at times what has been in print and what has not.

At the January meeting of the CARF Executive, I was present and put forward some of the things that have been happening in the formation of The Canadian Traffic System.

I must say that a great deal of effort has gone into the outline and general guidelines for the CTS. There are a number of people that have given so much of their time into assembling the thoughts and ideas on how to get the system working.

A good number of people have sent me letters and comments in the past few months. Every letter has had both good and bad to say about the formation of an *All-Canadian Traffic System*. Indeed, from some of the comments made, it is obvious that a number of people really have not taken the time to sit down and read the available information on the system.

A manual is available through CARF HQ in Kingston for the asking. The manual in part explains what the system will be all about when it gets off the ground and operating as a true system. If you haven't read the manual, don't knock the system.

Work is proceeding in assembling a Net Directory, not simply for member nets of the system, but all known and reported nets dealing

in Emergency or Third Party Traffic. The directory is not complete as I do not feel that all operating nets in Canada are to be found in a directory at this point in time. We look forward to adding the information about your net to the directory.

We have just recently added a Net in Quebec which is returning into the traffic family, the QSN (Quebec Section Net). The QSN recently came back on stream with Bert VE2PJ, operating nightly at 0030Z and 0245Z on 3643 KHz. For those who have been in traffic for some time, it feels good to have the QSN operating once more, and the best to Bert and the rest of QSN.

Of the people that have received a copy of The Canadian Traffic System manual, there were a number of common questions, which are answered here. Each of the questions has been answered personally to ensure that specifics in each series were answered.

Q. Do you hope to take over the traffic handling from the NTS?

A. It was and is the intent of the people involved in the formation of the CTS to call upon all Canadian Amateurs regardless of their organizational affiliations to help form the traffic system. There was not and is not any intention known to me to try to squeeze out the NTS. The facts are clear that the NTS is the most efficient traffic network that is currently operating. The intent was and is to include member nets of the NTS into the Canadian Traffic System. When you look to the Western provinces, some Westerners find it hard to take that they must clear

their traffic destined for Eastern Canada through the Tenth Region in the U.S.A., as there is no functioning Network in Canada to handle such traffic.

Q. Is there a great deal of difference between the CARF system of handling traffic and that being used in the NTS?

A. The basic idea behind Network operations and the actual handling of traffic, is to operate in a *standard* method to ensure that the person receiving the message on the other end can handle the traffic. Should a second set of standards come about, it would only create confusion and lead to problems in handling. The simplest answer to the question is NO, there is no difference in the format used to Originate, Send or Receive the message. Someone operating within the NTS can jump into the CTS and function without any difficulty. The differences in the system are not in the handling of traffic, but in the policies surrounding the QNI (Check-in) policy and recording and counting of traffic. The main object of the CTS is to clear traffic listed on a net. Any net that affiliates with the CTS must ensure that it honours the CTS QNI policy which, simply stated, is: to accept check-ins from *all Canadian Amateurs* regardless of call sign or location and as long as that check-in can keep up with the net, they may stay as long as the net is in operation. Further, all CTS nets will accept check-ins from non-Canadians who shall remain a part of the net until such time as they have cleared their traffic (if any is listed) or a *minimum* of checkins from five additional stations.

Q. How do you intend to cure the age-old problem of East-West traffic?

A. The NTS operates a function called the TCC (Trans Continental Corps). This group of dedicated people meet on assigned frequencies at assigned times and pass traffic which jumps over many so-called traffic boundaries. The TCC is a good, reliable method of partially curing that problem, but it is only a partial cure. The biggest problem of course is *time*, and it is the time that various Eastern and Westerners operate that is the biggy.

A net is operating on 20 metres nightly at 0230Z and 0330Z on 14040 KHz. This net, called the Canadian Traffic Net (CTN), is attempting to help bridge the gap by operating half an hour before the B.C. nets have their early net (7 p.m. local PST or 0300Z) and again a half hour after the early net. By operating in this manner, traffic Westward bound could be relayed back through the Western nets into Alberta, Saskatchewan and Manitoba when they meet for their Late Net. Eastward bound traffic could be relayed into the BC nets and sent back East on the 0300Z net or directly on either the 0230Z or 0330Z by member nets in any of the Western provinces.

Q. Isn't there another method which could be used to handle this East-West, West-East communications gap?

A. It is proposed that basically each of the Time Zones across Canada would have a Regional type of Net. This Regional Net would meet at least twice nightly and would have REPS to it from the Time Zone to its East and to its West as well (sorry Newfoundland and BC, but there is a limit). These Net Reps would check back into their appropriate Local or Other Net with the traffic picked up from the 'Regional' Net or they could carry that traffic to the Wide Coverage CW or Fone nets on 20 Metres (we are trying to convince

someone to help start a Fone Net on 20 to act as a Wide Coverage Net; any takers?). The basic outline for both the CTN (CPN-Canadian Phone Net) and the Regional system are in the systems manual.

Q. Is there any way to deviate from the manual or is it the laid down rule to follow?

A. The system manual, which also includes a training section, is but an initial guide. Changes will have to be made not only to the system but to the manual as well. The manual is a starting point and any and all types of constructive criticism designed to improve both the manual and the system are most welcomed.

The Policies laid down in the manual are good common sense guides to operating a system. The QNI policy may not be cast in bronze, but is a statement in general that most Canadian Amateurs involved in traffic handling agree with. Until someone can create a policy that can bridge the blind spots in this country, the policy as it stands should hold the system in good stead.

"It is the intent of the CTS to call upon Canadian Amateurs regardless of their organizational affiliations..."

Q. Could you use more help and, if so, where, what and how?

A. This is the easiest of all to answer: YES. Any assistance would most certainly be welcomed. There is a need for member nets both east and west of Ontario. Ontario is well served by its CTS affiliate net, the Grey Bruce Net (GBN), and we hope by the time this article hits the shack, to have links with COMSONT and other nets as well in Ontario.

There have been steady check-ins from the West into the CTN, but we need solid networks in the West and the Maritimes to form

the Regional network system outlined in the manual. In addition, the system needs people with traffic or emergency handling experience to act as Communications Managers for all areas but the Eastern Region. If you can help, or know of someone who can, drop me a line. Yes, Norm and Peter, we would accept NTS people who are also CARF members to act in the role of Communications Managers.

The preceeding were the most common questions asked about the system and manual, which was produced and mailed to some 43 individuals and clubs across the country.

There were a number of questions pertaining to me which were also common, but I won't deal with them in this column, except to say thanks to some for the nice comments. I somehow got into the CTS up to my eyebrows, and for some time have been trying to figure out how to get others involved with the system so I can get back to handling traffic and not pounding a typewriter, answering questions and doing up manuals.

In closing, let's just say that your support and assistance with the Canadian Traffic System is needed and would be very much appreciated. We are trying to form a network in Canada that can handle Canadian situations as they arise and do not have to rely on sources outside *our* country to handle *our* traffic for us.

One final comment to those persons that found the CARF message form difficult to deal with because of a different layout than the format they are accustomed to, the form has been changed to a very familiar-looking form, samples of which are available from the writer with just an SASE. The new form has been forwarded to Kingston HQ and to the members of the executive for approval, and should be available in mass shortly. □

Editorial

The Growth of Amateur Radio

Since the end of WWII there has been a gradual increase of Canadian Amateurs and, until the mid-70s, this growth amounted to an annual increase between 3% and 4%. The GRS 'explosion' however made many Amateurs and their organizations realize that the future well-being of Amateur radio could depend on accelerated growth. Two different methods were adopted and, in general terms, these were:

1. Need to lower existing standards and introduce a Novice class of Amateur;
2. Need to encourage training of candidates to achieve growth without lowering of standards.

This led to a divergence of aim particularly between the Federation and the Cdn Div ARRL (now called CRRL) that lasted until 1980. Since that date the leaders of CRRL have given up method #1 and are now following the lead of the Federation in progressing with method #2. Canadian Amateur radio will certainly benefit from this convergence of aim.

CARF, in 1975, realized that a major requirement for successful training is provision of a suitable textbook for the technical portion of the DOC examinations, and produced the 1st editions of the CARF Study Guides. These received wide acceptance by instructors and candidates across Canada. In 1979, due to changes made in the technical requirements and on advice from many instructors of

Amateur radio courses, the contents of these Guides were revised and rewritten. Again these publications received wide acceptance with approximately 13,000 copies of the 2nd editions sold since production. These Study Guides were designed as textbooks to be supplemented by instructor's and student's notes. New publications, now on the Canadian scene, are different in that they are detailed notes and, in the main, do away with the necessity for instructor hand-outs and student note taking. Again, acting on the advice of instructors, your national Federation is reviewing the Study Guides and will be publishing a new 3rd edition scheduled for production later in 1981.

"It is expected that future examinations will have a beneficial effect on Canadian Amateur growth..."

Growth in Canadian Amateur numbers hit a peak in 1979 with a 10% increase but this rate has declined greatly since then. Judging from complaints made to CARF by instructors and candidates, this was due to newly structured examinations and procedures by DOC and this led to a comprehensive review of the situation in 1980.

In November 1980 a detailed presentation was made to DOC by CARF, listing areas requiring improvement with substantiation of same. This was accompanied with recommendations were immediately adopted by the Department as evidenced by the examinations held in early 1981. One major concern of CARF was the content of TRC-24 - Guidance for Candidates, which was considered to be too broad in scope and thus not serving its primary purpose of guidance. DOC released a draft of a revised TRC-24 to the Federation in December 1980 and a meeting with DOC, attended by representatives from CRRL, was held in January 1981. Changes to the draft of TRC-24 were approved by those attending and a new document is scheduled for publication in mid-1981 that will give candidates more detailed guidance.

It is expected that future examinations, based on the CARF recommendations and the new TRC-24, will have a beneficial effect on Canadian Amateur growth. These new requirements give a fairer balance of knowledge between the Amateur and Advanced Amateur levels and will enable instructors to organize courses that will qualify average citizens with approximately 60 hours of instruction. As one DOC official remarked - "CARF is certainly on the side of the housewives and plumbers!" □
VE3AHU

Computers, TCA & You

The CARF Office staff is worried and somewhat confused!

When the forwarding of TCA was changed from third class to second class mail in late 1980, we were told that this change would result in a lesser cost to the Federation and speedier delivery with less chance of copies going astray. As second class mail must be grouped (tied in bundles) by Forward Sortation Areas (first three digits of the Postal Code) the computer listing had to be completely changed from a listing by membership number to a listing by FSA. Computer programs were devised so this change would be made and labels were produced in order of FSA starting with A0A.

A physical check, taking three weeks, was made to ensure that all data had been transcribed, the few errors found were corrected and additional copies of the Dec 1980 TCA were forwarded.

But, since the copies of the Jan TCA were circulated to the present time, the Office has received many complaints of non-delivery and has had many copies returned by the Post Office as undeliverable. Checking the 'undeliverable' copies against the complaints, the Office staff noted that several members had moved but the Office had not received notice of a change of address, although most complaints of this type signified one had been sent.

A check on other complaints showed that the address label was correct, membership was current and copies of TCA had been mailed. Several of the complaints noted that a series of TCA editions were missing such as 'no 1980 copies received', with others noting that one or two copies were missing.

Practically all complaints received blamed the computer for fouling up delivery, so a second

check was made to ensure that the computer listing and the labels produced were correct — and everything checked out okay! The only conclusion we can draw is that the problem is in the postal system and can only hope that the recently announced changes to the system will again give us the efficient delivery we had in the past.

One last comment. If you are changing address, please send the notification by first class mail and, where possible, make arrangements with the Post Office to forward from the previous address for a few months. The Federation is doing all it can to get your copies of TCA in your hands.

News Briefs

VOLUNTEER MONITORS

The FCC would be allowed to enlist the aid of volunteers for monitoring Amateur and CB services and for administering Amateur exams if a bill now in the U.S. Congress is approved, says HR Report. Similar ideas were discussed in Canada at the Montreal Symposium in 1979. Perhaps now that DOC is facing budget restrictions, Amateurs attending the Winnipeg Symposium on May 20 should re-open discussions on these matters and be prepared to make some concrete proposals to DOC. The idea would be to help DOC clean up some of the illegal operations in Amateur bands and facilitate the taking of Amateur exams in the more isolated areas of Canada or at more convenient times.

SUPPORT CSA

Last issue we reported work being done by the Canadian Standards Association on the development of EMI and EMC standards. We recommend that Amateurs support and encourage CSA's work.

There is another Canadian organization actively working in this field — the Canadian Radio Technical Planning Board. One of the key recommendations in a report about to be submitted to DOC is that "DOC assume

responsibility for accepting reports and for investigating complaints of electromagnetic interference from licensed radio transmitting systems into non-radio communication systems such as telephones, audio equipment, pacemakers, transport vehicles and other consumer and industrial devices and including their complaints in the reports". The reports referred to are the DOC's statistical summary report of interference complaints received from the public. CARF supports this report and especially the above recommendation. Barc Dowden VE3TT represents CARF on the CRTPB's committee responsible for EMI and EMC work.

SENIOR AMATEUR

There are not many Amateurs in their 90's that are still active. J.P. Henderson VE3AF started experimenting in radio in Toronto in 1909. In 1922 he was assigned the call sign 3AF and he has held that suffix ever since. In 1924, JP, as he is affectionately known, initiated the broadcasting of the Dominion Observatory Time signals over the club station of the old Ottawa Amateur radio association. Later he found the station now identified by CHU. JP was recently made an honorary member of the Ottawa Amateur Radio Club.

The Seaview Expedition

An interesting expedition named the 'Seaview' left Antwerp by sea, then to Falmouth, England, Lisbon, Portugal, Canary Isles and Cape Verde Islands.

The vessel is out of 'Jules Verne': a steam boiler, 15 metres in length, 3 metres wide, draught 6 metres, with three underwater port-holes and diving equipment. A conning tower protrudes below the water with observation ports for underwater photography.

The ship, if you can call it such, is under the command of ON4AXA/MM, Fons Oerlemans, a Belgian. The crew consists of a lady, Margoretha Arens from the Netherlands, and two young Norwegians, Frank Robertson and Bjørn Haltet.

Contact has been made with the orange-painted steam boiler since it left the Cape Verde Islands on Feb. 18 this year. Now on every two days on 14.245 kHz at 2100Z, Fons gives his longitude and latitude.

This is not the first unusual voyage undertaken by Fons, for on Oct. 26, 1974, he departed from Morocco on a raft made of barrels. The raft was called *The Last Generation* and after 3500 miles and 82 days, it arrived in Trinidad.

The vessel took three years to build. "For the past four years I have been planning this trip in the boiler, which I have called *Seaview*," said Fons. It has a false snub nose to allow it to cut through the water. On the top of the boiler he has a wheel-house aft, a mast, a radio and a 105 hp engine for emergencies only. Not enough fuel to do the complete journey to Barbados.

Now 17 days out from the

Cape Verdes at 16.00N and 37.30W, Fons has not reported any great problems. The controllers Ted W2GLF and Fred W4CW were a little concerned when Fons did not show on the frequency on Feb. 26.

Keeping vigil besides the chief participants have been Len VK3LP, Merv VK5AMY, Rowland VE3AML daily. Cora VE2AFU comes in now and then, plus ON7DK, ON5SE, ON5DO and others.

The average distance travelled daily has been about 40 nautical miles per 24 hours. The last report said they were using three sails. Four can be used, of the balloon type, but very little wind was experienced.

The power for the TS180S is from two 400 ampere hour batteries, and the antenna is a vertical. The generator had only been used once in the first eight days.

On March 1 from my log, there was no wind but ON4AXA/MM did not lose his sense of humour when told by Ted that his journey was by slow boiler to the Barbados. Fons had to disagree and said, "It may be the fastest boiler in the world". Fons was now steering due 250 west and later will correct to 270 degrees west.

Another interesting fact was received by one of the U.S. Amateurs by mail from Fons from the Verdes. They now had only one bicycle on board. They did have three, Margoretha had given hers to a little boy, and one of the Norwegians gave his to an old man. This may not seem very significant to North Americans, but bicycles in the Cape Verdes are the same as cars to Canadians and very valuable and scarce.

Talking to some British Amateurs, they told me that the *Seaview* had been reported on the BBC when it called in to Falmouth. The ship is entirely alone and unescorted, so is relying entirely on its Amateur Radio contacts.

Today, Sat. March 7, the Americans were having some difficulty through the contest raging on the band. But all was well, the position was read by VE3AML and fortunately Fred and Ted came on along with VK3LP and VK5AMY, so the information was received.

Fons now reported he was in a high pressure area and for the past three days had very little wind. His position was now 16.00N and 37.30W but he is half way there now.

Day 19 produced no change, and only 11 miles in 24 hours. The following day, Fons reported a different picture. Progress was good, Fons was diving to clean the port holes and he said it was scary to look down 10,000 feet. The wind was now giving them one degree a day or 60 nautical miles per 24 hours.

The March 11 report was not good. Fons reported neck pains and calls were put out to ON stations. Arrangements were being made to get ON4DO on for medical information. The next day, Andy ON4DO supplied the medical advice.

March 14 loomed with the position of 14.58N X 41.50W. This was to be an interesting day. Emergency signal flares were seen six miles away. Flying fish were flying over the *Seaview*. Contact was made between VE0MDT on

route from Brazil. A whale was also seen.

Day 24 and only 950 miles to go.

March 19, Fons' arm still sore, but getting better. He saw a ship today and four weeks since any lights seen. The set TS180S was working well.

Day 29 and the steering cable broke. Fons managed to repair it after three hours of hard work. The next day saw their first rain squalls, which washed the ship with fresh water, so the crew had their first fresh water shower.

The big news of March 24: Fons told of how he listened to the Barbados medium wave radio and heard about the yacht being towed in with the commandoes and the suspect.

Fons has had contact with VK2, VK3, VK5, S79, ZS, G2, ON, VE2, VE3, using the vertical, TS180S and batteries.

Day 40 at 13.20 X 56.40. Very heavy seas were reported and into the next day. Fons said, "We are rolling like hell, like a roller coaster". Now 100 Nautical miles remaining.

While in contact with Fons the next day, he reported the sun had been screened, so could not be sure of his exact position. He said he had to go topside to talk to a fishing boat, who gave him his position as being 25 nm off Bridgetown, Barbados.

Day 41, 60 dolphins dancing around, and fishing boats more plentiful. Fons calculated he would be in Barbados by the end of March. It was now April 2 ... not bad in such a weird contraption.

He did 5,000 miles in six months from Antwerp and now Barbados, a 1981 adventurer. 5:15 a.m. Barbados time found the Seaview going into Bridgetown, Barbados, West Indies! □

Fox supports 10kHz channel spacing

DOC Minister Francis Fox has announced that Canada will support the retention of the current 10 kHz channel spacing on the AM frequency band at the 1981 Regional Administrative MF (AM) Broadcasting Conference of the International Telecommunication Union in Rio de Janeiro.

The second part of the two-session international conference to establish a frequency assignment plan for the 9,000 AM broadcasting stations in the Americas will be held this November. Countries attending the first session in March 1980 were divided between proponents of 9 kHz spacing and those, like Canada, who favor the retention of 10 kHz spacing. It was proposed to defer a decision until the 1981 session.

"I have concluded that it is in Canada's overall interest to support ... 10 kHz over the 9 kHz alternative, since the financial costs and operational disruptions that would result from conversion outweigh the benefits," Mr. Fox said.

Reducing the spacing would increase the number of channels available in Canada from 107 to 119, allowing three or four additional stations to operate in certain frequency-congested areas. In order to squeeze existing stations closer together, about 350 of the 400 Canadian AM stations would have to change their frequencies by a small amount, at an estimated cost of \$5 million for technical changes alone.

Non-technical costs related to advertising and loss of revenue and audiences have been estimated as high as \$32 million by the Canadian Association of Broadcasters.

"Every effort will be made to

gain the support of other countries in the Americas to retain 10 kHz channel spacing but if, despite our efforts, a majority of countries vote for 9 kHz, Canada will have to conform to the regional decision," the Minister said. □

The Age of Homebrew

The age of homebrew is over — Nonsense! I am a new ham and electronics is foreign to me, but with a little help on two metres I have built an accukeyer, 24-hour clock (kit), SWR Bridges, CW Audio filters, power supplies and antennas.

If you are not impressed with my efforts, that's okay, because the enjoyment I get from my projects is tremendous. Ham radio has become so technical that it is hard to build radios, but accessories are still easy and you can save money.

My latest effort is the ultimate transmatch complete with roller inductor, bypass and choice of two antennas. The total cost was under \$50 and it works as well as any commercial unit.

The Flea Markets are an excellent source of parts. For example, at one Flea Market I got a mobile antenna trunk mount base for 25 cents. Back at home, my junkbox yielded the coax, SO239 and whip to provide a very nice ¼ wave at little cost. □

Bill Rumball VE3KGJ

LARC Bulletin

Editorial: Trials of

Every once in a while I get the urge to express myself on paper. This happens to be one of those times. Being the editor of TCA means that I receive all sorts of suggestions about Amateur Radio: what it means, where it is going, where it has been, and why it is in the shape it is in. I may not necessarily be able to answer these questions, but I can point the interested party in the right direction, or urge someone else to answer the question.

At times I can neither obtain the answer nor someone who can get it. We are all human. I have noticed that no-one seems to be as upset at not finding an answer as I am. That is to say that no-one jumps all over me if I can't satisfy their curiosity. The same cannot be said for obtaining articles for print.

Deadlines being what they are, it seems that I am expected to pull articles out of the air at will in order to fill an issue of TCA. Take, for example, the October issue. That issue was put together in August when everyone was preparing to get back to Fall and Winter reality. No-one was even thinking of submitting articles to TCA, or any publication for that matter. The feeling I experienced while looking at my in-file as deadline date approached must have been the same feeling that Captain Smith of the Titanic felt as he watched the last lifeboat pull away. I wonder how many other editors have had that feeling?

Let me qualify what I am saying. When you have nothing to print you print nothing. It matters not that your deadline has come, or your superiors are expecting everything to be on time. Miracles

occur in fairy tales, certain religions and university finals. Reality is made of more concrete stuff.

After the October issue went to press (three weeks late), I decided to use the material provided me by other bulletin editors of Canada. Such bulletins as SPARC-GAP, Zero Beat, Hi-Q and many more have provided me not only with material, but also with some very enjoyable evenings of reading.

Most of these bulletins are high quality masterpieces of knowledge and wit. Some are not. The common point with all of these bulletins is that they are prepared the same way that TCA is prepared, for the most part with volunteer help. Neither the best nor the worst of these bulletins could survive without the help of volunteers.

If you take the time to read the pleas from the editors, you will find another common point: volunteers are becoming a rare species.

Where does that leave us? Diminishing quality, and a diminishing quantity of editors who have the enthusiasm for the job. For every willing volunteer, there are hundreds of others who chose not to lend a hand. Why is that the case? That is one of the questions that neither I nor my counterparts across the country can answer. If we could, I can assure you all that something would be done about it.

TCA has a high standard to maintain as we derive our funds from advertising revenue. Our funds are limited and yet we offer to pay for articles submitted for publication in TCA. Articles gleaned from club bulletins are not

in this category, much as I would like them to be. My reason for publishing these articles is so that the best that is being written in Canadian Amateur publications can be seen and appreciated by all of us.

Recognition for a job well done is sometimes hard to come by. National recognition is rarer. For most, this is a reward for their work; for others, just the normal run of events. For a minority, this is considered an invasion of privacy (or an invasion by piracy). It is fortunate for us that the former is the more common of the two.

It seems to me, however, that there is a growing attitude of 'promote self' rather than 'help others'; don't do something just for the sake of seeing your efforts help others.

It is refreshing to note that most bulletins agree to having their articles reprinted in any Amateur Radio publication, with proper credit given. This permits me, along with my fellow editors, to survive when the pickings are lean. There are those publications that state 'no reprints' and others that state nothing at all about reprints. Using material from such publications is a risky business at best, despite the fact that they also use reprints. Fortunately, the last example does not represent a significant number of publications.

I agree with some who say that my reprinting of articles without paying for them is a little underhanded, but I am not the only one who does it. Most bulletin editors do it. In fact, there is one publication in the States that uses reprints

a Magazine Editor

for most of the material in the paper. I don't think they pay either, unless the material was written *for* them.

Despite all of this, I intend to do something soon about the situation. I may make it a yearly policy to pay to various clubs a certain amount of money depending on how many reprints I have obtained from their bulletins. This may encourage more clubs to send me their bulletins and encourage writers to support their editors.

The Penticton BC ARC bulletin editor stated that he had begun to wonder if anyone even read his bulletin. I can assure him that I read it from cover to cover, as I do all bulletins that come to me.

Don't expect a fortune to be forthcoming, because our funds are limited. We operate on a break-even budget. The amount may only be enough to pay for mailing your bulletin to me, plus a membership, but it is better than the proverbial 'Golden Handshake'.

For those of you who have been contemplating writing for TCA, please do so. We are short of original articles at the moment, and with summer upon us, the prognosis for a large September issue is poor. For those of you who have written articles, and have yet to see them in print, write and enquire about it. I don't mind answering one or two letters. For those of you who have yet to receive payment for articles published, the money is coming. Soon.

It might be worth noting that we could use some regular column writers for TCA. QRP, Teletype, Computers (assistance to Charles

MacDonald is badly needed), Amateur Travel and many more topics could provide by-line status for some Amateur.

Even a monthly Provincial Report would be appreciated. I have tried to get the CARF Directors to write about their regions but to date I have only received one article. That article was published elsewhere before TCA got hold of it. I don't mind beating my head against a wall. The wall eventually gives or is replaced. Aspirin cures my headache.

While we are mentioning the Directors, the thought occurs to me that you are the input to the directors. If you do not see their names in print in TCA, then perhaps they don't want to publish the results of their activities on your behalf. Then again, perhaps they do, but don't know how. Educate them. This is your magazine. They are your Directors and our representatives to you.

This is the vehicle through which all of you can see what they manage to accomplish during their term.

My final words for this month concern a topic I entered into last fall: advertising. Bill Cousins VE3GPR of Ottawa came up with a great idea about how to bring to the attention of the general public the usefulness of Amateur Radio. We all know of various service clubs like the Kiwanis, Rotary, Lions, Shriners clubs who are forever on the lookout for speakers for their meetings. Why not volunteer for the part for one meeting? Some of you who belong to such clubs are naturals for the job. You know the people and know what sort of speaker they like. You are in a perfect position to aid both the club and Amateur Radio. Do it for us all, and get yourself involved. □

Cary VE3ARS
Editor TCA

VE3DRW

AN APPEAL FOR FUNDS

The appeal for funds to replace the obsolete Hamilton Radio Club Repeater is now well under way. The response to date has been quite gratifying. If the present monthly rate of contributions is maintained, we can be assured of a new repeater to replace the one now on loan.

Because of the repeater's excellent coverage, many Amateurs have expressed the desire for an autopatch and, if sufficient funds become available, for a repeater link up. Your contribution will make it possible to replace this

repeater and add these additional facilities.

Any contribution will be appreciated, but a generous one will allow an earlier replacement of this repeater. This will make it possible to maintain a dependable means of communication for club members and Amateurs living in and visiting this area.

Contributions should be forwarded to: The Hamilton Radio Club Repeater Fund, HARC Inc., P.O. Box 253, Hamilton, Ont. L8N 3C8.

Report from an RFI Committee

The London (Ont.) ARC started an RFI committee for the first time in 1980. The last year was not very busy, but we have established some elementary rules and are slowly gaining some knowledge of the problem.

Basically, the RFI committee has the job of helping to identify an RFI problem, suggesting solutions and following up.

An official of the club, or even you as an Amateur, cannot adjust, modify or change anyone's equipment without leaving themselves open to legal liability. So our role is simply one as observer.

When a call is received from a Ham who has a problem, generally with a close neighbour, the first thing is to establish that there are cordial relations between them. If so, a visit to the Ham's shack is in order to check it out for possible problems, i.e. poor grounding, lack of filters in the output, proper tune-up procedures, etc. Then comes a review of the neighbour's equipment being interfered with. Once again, possible problem areas are noted.

The ultimate test is always when equipment is switched on, so, using 2 metres as a communication link, the Ham is instructed to operate on each band with various power levels while the neighbour's equipment is monitored for RFI. This way the exact band, power or mode causing the interference can be found.

After the tests are done, a discussion with the Ham and the neighbour may help establish co-operation. Then it's home to a review of various texts to isolate the problem. A written report is sent to the Amateur (2 copies) for his information and that of his neighbour.

As you can see, we merely act as an observer and recommend corrective measures.

The most common problem seems to be stereos, because most people will spend \$1,000 on one but are not willing to spend \$20 on a good shielded speaker wire (That's two-conductor speaker wire with a *separate* ground jacket.).

Bill VE3KGJ
LARC Bulletin

VE3WRR REPEATER REPORT — 146.16/76

After several months of work, VE3WRR Repeater has gone on the air in Manitouwadge, Ont., and currently is the only repeater operating between the Soo and Thunder Bay.

The repeater will be tested for bugs for about two months from my QTH. Range is expected to be about 15 miles from town. Any visitor to the area is invited to kerchunk the machine and give me a shout. Because this is a new machine, everyone gets two free kerchunks per day during the first month!

Sometime in May, hopefully, the repeater will be moved. Permission was finally obtained to try out an installation of a commercial tower at White River. Because of possible intermod problems, the repeater will be tested for about one month to look for interference with other services.

The frequency of 146.16/76 was okayed last year by the Northern Repeater Council, and should find wide acceptance due to its popularity.

Gord Woroshelo VE3EYW
Algoma Amateur

Looking Back

Things have changed a lot in the last few years. Looking through an issue of CQ Magazine from 1969 points out some of the progress (?) we have made.

Heathkit was pushing the top of the line transmitter, a 107-lb. Model DX-100 for only 189.50. That was in U.S. funds, but in those days wasn't our money worth more than theirs?

A CW model AT-1 transmitter was only \$29.50. If you had the bucks you might go to the complete station by Hallicrafters: A transmitter, receiver, linear, complete with console for only \$1495. This unit even had SSB, that new type of sending voice.

The editorial had Wayne Green W2NSD saying pretty well what he says in his own magazine now. There were 4½ pages devoted to that new device, the transistor. In the article they state: "The recent appearance of the transistor on the electronic scene has created a great amount of enthusiasm throughout the electronic industry."

Crystals for the rig (remember, not too many people had VFOs) were 50 cents, or a fantastic 79 cents if they were not stock types. There were also a lot of ads pushing Conelrad monitors, since all Hams in the U.S. by law had to have these monitoring devices to tell them of any invasion. I wonder if that law is still in the books.

Hi-Q

SINGAPORE

Canadians temporarily in Singapore may obtain a licence to operate an Amateur station there. DOC has been advised that, while reciprocal operating privileges may not be granted, reciprocal licensing of Amateurs is permitted. Thus all a Canadian must do is prove he is the holder of a valid Amateur certificate and station licence.

Noise By-Laws

A noise by-law enacted in October 1980 by the city of Mississauga, Ont. must be of great concern to Amateurs in Ontario and the rest of Canada.

Mississauga now has two noise by-laws. The first, 360-79, passed in January 1980, is directed at the control of noise from construction and other kinds of machinery as well as from motor vehicles and the like. Its intent is clear and it poses no threat to Amateurs.

By-law 785-80 of October 1980 covers noises from radios, phonographs, televisions, PA systems and sound producing instruments when such noises disturb the peace, quiet, comfort or repose of any individual in any dwelling or apartment house. Its intent is much less clear.

There is, however, a distinct difference between the two by-laws. The earlier by-law covers machinery which has no susceptibility to the surrounding radio environment. The second sweeps in consumer electronic equipment, most of which is susceptible to the radio environment today and which can create noises never intended by anyone. The intent of the second by-law is unclear because it does not rule out or in noise caused by the equipment's susceptibility to radio transmissions.

Electronics experts are well aware of this problem of susceptibility. Electronics literature is peppered with articles on this problem and what can be done about it. Two domestic organizations, the Canadian Standards Associa-

tion and the Canadian Radio Technical Planning Board, and one international organization, the International Special Committee on Radio Interference, are trying to do something about susceptibility.

Those who use radio want consumer equipment susceptibility sharply reduced and manufacturers want a free hand to do nothing. When trouble pours out of the user's speaker, he finds he is in the middle, and he is frustrated by the runaround he gets from the parties involved. The DOC's program on susceptibility is dragging badly due to budget restrictions. The problem is worsening.

The court record shows that an Amateur in Mississauga was charged under the by-law with causing "...the emission of sound from the operation of an auditory signalling device, clearly audible at a point of reception located in a residential zone within a prohibited period of time...". The complaint was, "Our stereo picks up the Morse code and voice transmission and a clock radio picks up the Morse code even when not turned on, but only plugged in."

The DOC letters to the Plaintiff and the Defendant on the mat-

ter were not considered because the Court "...can't cross examine a letter". (Hint: If you are going to produce a letter from DOC as evidence, produce a Radio Inspector, too.)

There are those who doubt that the conviction of the Amateur under this by-law would be upheld by a higher court when he is properly authorized to use radio and his signal is 'clean' according to DOC.

Most municipalities look to each other for help in assessing municipal problems and in finding ways to resolve them through the enactment of by-laws. It is reasonable, therefore, to expect the Mississauga by-law 785-80 of October 1980 to be repeated elsewhere. Amateurs, especially in Ontario, must be alert to this possibility and block such by-laws which do not take into account Federal jurisdiction over radio emissions and the incidental susceptibility of consumer electronic equipment to lawfully authorized radio communications.

Your Federation has written the Minister of the Environment for Ontario who approves by-laws of this kind under the Environmental Protection Act. We have asked him not to approve such by-laws as the one in question unless they clearly exclude the ultimate effects of radio emissions legally authorized and licensed by the DOC. We have also asked the Minister to review the Mississauga by-law and have corrective amendments made. □

Bill Wilson VE3NR

"Amateurs must block such bylaws..."

Canadaward Update

Here is another report of CARF's Awards Programme. CARF offers certificates to those who can prove they have made QSOs with Amateurs in each province and territory on any one band.

I think that there is some increased interest in the Award since the report in the January issue of TCA, as applications have been arriving in greater numbers than before. Some of you have suffered delays, which I apologize for. The excuse this time is that I ran out of certificates before I could fill all standing applications. The applications left over must wait until a new load arrives from Vancouver.

There is one (surprisingly only one!) correction to be made to the January report. 28MHz Certificate No. 9 was issued to VE3KXF.

Notwithstanding the April letters column, there are no other errors of which I am aware in the list. Those of you who have sent off applications to Vancouver can rest easy, as Peter VE7BBQ, the former manager, regularly forwards all applications to me.

The most outstanding news is the sheer number of 50 MHz Awards. That band has been great, as you all have heard, and thanks go to Andy VE1ASJ for popularizing the award among 6 metre operators.

I am even more amazed, however, at the small number of 21 MHz applications. Do any Canadians use 15 for QSOs inside Canada? 7 MHz, despite the great interest in that band, also sees a drought of award interest.

Congratulations to Steve VE3JPJ for earning the second 5 Band Canadaward. With Steve's modest station (i.e. 100 watts and a trapped dipole), no-one should have

any excuse for not earning the Award on 3.5, 7 or 21 MHz!

Dave VE2ZP

Here is a list of Awards issued between Nov. 19, 1980 and Apr. 16, 1981.

3.5 MHz		
4. VE3JPJ		SSB
7 MHz		
2. VE3JPJ		SSB
14 MHz		
44. WA2FUM		SSB
45. WA7GVM		SSB
46. VO1KO		CW
47. VE3AHB		CW
48. VE3GRW		SSB
49. VE3JPP		Mixed
50. VE3JPJ		SSB
51. VE3LWL		CW
52. JA1WVK		SSB
53. WA1ZIC		CW
21 MHz		
3. WA2FUM		SSB
4. VE3JPJ		SSB
28 MHz		
39. WA4NOM		SSB
40. VE3JPJ		SSB
41. G4FXS		SSB
42. JH1IFS		SSB
43. JG1FJT		SSB
44. VE5ABJ		SSB
45. VE3IPR		SSB
46. VE7FAO		SSB
47. VE7EDA		SSB
48. WD9FOE		SSB
49. K6PKO		SSB
50. WB0PPR		SSB
51. WA1YRB		SSB
52. KC4OH		Mixed
53. AJ1L		SSB
54. KB6CO		SSB
55. WD6DRM		SSB
56. KA8ECT		SSB
57. K6CID		SSB
58. W8BCE		SSB
59. VY1BU		SSB
60. VY1BF		SSB
61. PA0MA		SSB

5 Band Canadaward

2. VE3JPJ	SSB
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Canadian Short Wave Listeners

Canadian Shortwave Listeners International (C-SWL-I) is an SWL hobby organization based in Thunder Bay, Ont. It was formed in 1977 by Neville Denetto, John Garner and Wesley Rogers, with a charter membership of 58, mostly from North America and Great Britain.

In that same year, C-SWL-I published its first edition of CAN-DX, a 40-page publication containing program schedules, DX loggings, technical articles and other items of interest to SWL's and DXers. There are now about 200 members representing all continents.

The current Board of Directors is Neville Denetto, administrator; John Garner, sec-treas; and Bill Butuk, Managing Editor, who all reside in the Thunder Bay area.

Early in 1979, C-SWL-I was elected a full member of the Association of North American Radio Clubs, an umbrella organization based in Pasadena, California and serving the interests of 15,000 North American radio enthusiasts.

At the 1980 ANARC convention in California, C-SWL-I were victors over SLIDX of St. Louis, Missouri to host the 1981 ANARC convention. It will be held July 17, 18, 19 at the Airline Motor Hotel and will bring together over 200 delegates, including international broadcasters, celebrities, equipment manufacturers, SWL, BCB, UTE, FM and TV DXers.

More info on C-SWL-I and the ANARC convention can be obtained from: C-SWL-I, Box 142, Thunder Bay, Ont. P7C 4V5. □

Lakehead ARC
Bulletin Hi-Q

Coherent CW Experiments in Thailand

Coherent CW experiments in Thailand have been carried out to prove that effective communications result, when power is reduced by one order of magnitude, and digital technology is used.

On Thursday February 5, 1981, 15.28 U.T.C., a general call was sent out by HS4AMI George Collins, Faculty of Science, Khon Kaen University. This call was responded to by W6NEY Charles Woodson, Berkley California, University of California.

Without using a digital filter, W6NEY reported the Thailand signal as 3-3-9. With a digital C.C.W. 10 Hz band pass filter operating on the HS4 AMI signal, W6NEY gave a report 5-9-9.

This result is an effective communication increase of 6 'S' points (18DB) just under a 100 fold increase. The actual frequency was measured 3Hz high of the centre frequency of 14,049,000 Hz. There was no spreading over time domain, the pulses were not elongated by doppler shift due to change of movement in the ionosphere.

All monitoring stations are advised of these scientific experiments over the Pacific Ocean, using power levels of 10 watt, 1 watt, 0.1 watt. output. (1 watt = Power level of 1 Parafin candle).

Keying rate 10 baud. (12 words per minute). Test frequency 14,049,000 Hz at 15.00 U.T.C. Experimental Radio Operators: HS4AMI Thailand. Lynden Ontario Canada, VE3DPB, VS6CZ Hong Kong. Orillia

Ontario Canada VE3SW. Victoria British Columbia VE7KL. Umtata Transkei S8AAA.

This research is sponsored

by Cambridge Science Park, A Foundation for Technical Education in Canada.

HS4ami George A. Collins

Social Events

• **The International Peace Garden Hamfest** will be held July 11-12, 1981 at the Peace Garden on the Manitoba-North Dakota border. It is to be held on the American side this year and alternates to the Canadian side in 1982.

• The Burlington Amateur Radio Club will hold its **Seventh Annual Ontario Hamfest** on July 11, 12, 13 at the Milton Fairgrounds located south of the intersection of Hwys 401 and 25 (Exit 39) in Burlington. General Admission \$3. Pre-reg before June 15 \$2. Gates open Fri. July 11 at noon and on Sat. at 7 a.m. Flea Market opens at 8 a.m. Tables free. Camping, food and lots of prizes. Talk in on 147.81/21

For more information write BARC, Box 836, Burlington, Ont. L7R 3Y7.

• **Lake Simcoe Hamfest 81** will be held on June 12, 13, 14 at Molson's Park, Barrie, Ont. Full family program, flea market, free camping for the weekend.

• The location for the **Central Ontario Amateur Radio Flea Market and Computer Fest** was changed recently. If you plan to attend, make sure you contact Dennis VE3DGA or Andy VE3GDY before you get lost. The location is relatively close to the old one, and a talk-in should be provided.

• The **Maritimes Old Timer's Club** will hold a get-together in Sackville, N.B. on Aug. 22 and 23.

• **Radio Society of Ontario** will hold its convention in Waterloo on Oct. 2, 3, 4.

• **Okanagan International Hamfest**, July 25, 26, Oliver Centennial Park, Oliver, B.C., note change of QTH! Reg. Sat., July 25, 9 a.m. PDT. Activities Sat. 1 p.m. to Sun. 2:30 p.m. YLs bring your hobbies for display/sale and flea market items. Potluck luncheon Sunday noon, entertainment, bunny hunts, contests, etc. Talk-in Freq. 34/94 OKN Rptr 76/76. No reservations at Centennial Park, first come, first serve. Info John Juul-Andersen VE7DTX, 8802 Lakeview Dr., Vernon, B.C. V1B 1W3 or Lota Harvey VE7DKL, 584 Heather Rd., Penticton, B.C. V2A 1W8.

• **Central Alberta Radio League Annual Picnic** will be held on June 19, 20, 21 at the Benalto Stampede Grounds about 6 mi. west of Sylvan Lake. Look for the Benalto turnoff on the Rocky Hwy and watch for signs in the village. Ball games, tug-o-war, kids games, horseshoes. North and South groups should think of organizing teams! Feature: Transporter Bus from County of Red Deer, mobile comm. centre manned by Amateurs with Disaster Services. Flea market. Picnic \$15 for 3 days, \$8 for single day, including breakfast on Sunday. Pit BBQ Sat. night at \$5 per person, half price for kids. Pick-up dance afterwards. Dealers invited. More info Ed VE6PZ.

**We pay for technical articles.
Send contributions to:
CARF Technical Editor, Box 356,
Kingston, Ont. K7L 4W2.**

Static Electricity

All microelectronic and most semiconductor components are sensitive to static discharge.

The most highly sensitive, commonly used devices by the Amateur, are the field effect transistor (FET) and the metal oxide semiconductor (MOS) integrated circuit.

As technology advances, the packaging density and functional speeds of IC's increase and they become increasingly more sensitive to damage. Therefore, Amateurs working with such devices should be familiar with the causes and prevention of static, and possible damage to components.

Almost everyone is familiar with the generation of static electricity by rubbing. Clothing made from synthetic materials can generate large electrostatic voltages as a result of normal movements by the wearer. A human being will build up and dissipate substantial charges, many times unnoticed as they are less than 3,000 volts.

Activity	Voltage Generated
Walking across carpet	1.5-35 KV
Walking across vinyl floor	.25-12 KV

Working at bench	.10-6 KV
Picking up poly bag from bench	1.2-20 KV

Large static charges are possible even between two objects of the same material. The simple act of expanding a folded poly bag will generate kilovolts of accumulated charge.

The charge tends to quickly bleed off into the air, if the relative humidity is greater than 25%. This fact makes the winter season particularly dangerous, as most homes are very dry.

There are two types of failures possible: 1) catastrophic – readily apparent as the device

suddenly ceases operation; 2) latent – the device appears to be alright but has suffered impairment.

Catastrophic failure occurs as most devices of MOS construction depend on metallic regions separated from each other by a thin layer of metal-oxide, and it is this layer that can break down, causing the metal layers to short to each other. Even bipolar devices can be damaged when the static discharge causes the base-emitter junction to melt and short.

Latent failure may occur when the oxide film is punctured but the two metallic layers do not short. The metal may then migrate over time and cause the device to fail.

In devices that operate under a high voltage, the breakdown voltage of the device may be reduced, causing a failure to occur after some time. In bipolar devices, the damage to the junction may not be total, causing only an increase in leakage current or degradation in normal parameters.

Now that the causes of static electricity and its possible effects have been explained, the important point is how to avoid damage to the component being installed.

Although most modern IC's have zener diode or resistive protection circuitry designed into them, it is not wise to depend solely on these for protection. A static discharge can just as easily destroy the protective device as it can the unprotected IC. This is not to say that the protection is useless; MOSFETs are much easier to install now than several years ago when leads had to be

shorted together with spring clips however, it is foolish to avoid simple preventative procedures and court possible disaster.

By following the simple rules below, there is less chance of destroying components:

a) if the device comes in conductive foam, metal foil, conductive plastic bags, etc., do not remove until required. If you must remove the component for any reason, either install in the circuit or return to the original container when finished.

b) avoid excessive handling of the devices. Do not, for example, "shine-up" the IC package on your nylon sweater.

c) when installing IC's in a circuit board, a good trick is to lay the board on a piece of aluminum foil. This will tend to conduct charge away, and short all the leads of the IC together, reducing the possibility of damage.

d) if possible, increase the humidity levels in the work area, to increase the rate of static discharge.

e) use soldering irons which are either equipped with a three wire cord or a battery operated unit. While not exactly static, nothing can zap an IC as fast as AC leakage from the soldering iron.

f) if possible, avoid wearing clothing that is an obvious static generator i.e. nylon, etc.

While the above discussion is not designed to dissuade you from home-brew construction, it is designed to point out areas of caution. If the precautions are followed, the chances of damage to expensive devices is greatly reduced. □

OVMRC Rambler

VHF/UHF Mobile on 10 GHz

Members of the West Island ARC (Dorval, Que.) VHF/UHF Activity Group have conducted a mobile-mobile QSO on 10 GHz. It is believed to be the first instance of Amateur 10 GHz mobile communication in Canada, and perhaps in North America.

The contact took place Feb. 7, 1981, 2039-2057Z with Don VE2DWG being the operator in one car, Dave VE2FMF and Chris VE2FRJ in the other car. Solid contact was maintained at distances approaching a mile in spite of the fact the antennas were positioned at a low level inside the cars, with intervening traffic and other obstructions being frequent.

The signal dropouts were mainly caused by large obstructions such as metal signs, earth bulges between the two cars and major changes in direction (VE2DWG's antenna was positioned in the rear window with no means of orientation).

A unique feature of the contact was the presence of clearly audible Doppler shift tones (in the neighbourhood of 1 KHz), two in number, caused by the motion of each car relative to the ground; passing vehicles were also noted to produce a Doppler note. A taping of the contact played at a meeting demonstrated the level of the tones relative to speech modulation.

Equipment used was Microwave Associates 15mW Gunnplexer transceivers with 17 dBi gain horn antennas and 30 MHz IF receivers. Transmission was full duplex, that is, continuous in both directions. This has a definite advantage for 10 GHz operation since, when tuning the units, one can tell instantly by the quieting that the other signal has been acquired without acknowledgment by the other operator, and communication can begin at once.

Will 10 GHz replace 2 metres as a mobile band? It doesn't seem likely in the near future, but it's almost certain that the level of 2 metre FM activity in many areas will result in a need to use higher

and higher frequency bands as time passes. Exploration of the characteristics of these bands for mobile operation would therefore not seem out of order. □

-WIARC Bulletin

NB Telephone's Project Mercury

Communications Minister Francis Fox recently noted the inauguration of the New Brunswick Telephone Company's Project Mercury, a 'home of the future' field trial in which some 45 Telidon terminals are to be used.

Telidon is the videotex (two-way television) system developed by the DOC. NB Tel is buying 25 Telidon terminals and another 20 are to be loaned by the department for the project.

This is the first Atlantic trial of Telidon, combined with a telephone-based alarm system for fire, police and ambulance services.

Serving 75 homes, businesses and community institutions in the Millidgeville area of Saint John, the project will cover a wide cross section of users. Public terminals will be placed in the local community college, a newspaper office, the Saint John public library, the University of New Brunswick's Saint John campus and a local high school. Teleidon user terminals are to be rotated among those participating in the trial. Users will be able to access a variety of information such as news, weather, 'Yellow Pages', and business, entertainment, travel and educational information. □

SEAWAY VALLEY HAMFEST

The Seaway Valley Hamfest will be held at Louisville, NY (near Massena) on Saturday, Sept. 12, 1981. More details will be forthcoming when the program is established, at least tentatively. Flyers, including a map, will be distributed to clubs and individuals. Louisville is between the bridges at Massena and Ogdensburg.

The Canadian Chairman is John Howieson VE3MSF (formerly VE2FSS). Knoll Top Farm, RR 1 Alexandria, Ont. K0C 1A0. He will be your contact for any info you may want and will also distribute flyers and possibly tickets.

YL'S AT C.N.E.

To coincide with 'Ladies Day' at the Canadian National Exhibition, CLARA and The Ontario Trilliums are planning on 'Ladies in Amateur Radio Day'.

They will possibly be operating the stations at the CNE exhibit under the direction of station mgr. Norman Dennis VE3ZH of Metro Club.

If you can attend the Ex on that day, come, join in, let the committee of Ann VE3HAI, Mary VE3COH or Thelma VE3CLT know your intentions so they won't be the only YLs holding the fort. They need operators as well as YLs to speak to the public.

TOT Topics

The Canada Day Contest, 1981

The Canadian Amateur Radio Federation is please to announce the Canada Day Contest.

Time: 0001-2359 UTC on July 1, 1981. Open to all Amateurs, everybody work everybody, 160 to 2 metres, cw and phone combined.

Classes of Entry: Single operator all band, single op single band, multi op single transmitter all band.

Contacts: All contacts with Amateur stations are valid. The same station may be worked twice on each band, once on cw, once on phone. No crossmode contacts and no cw contacts in the phone bands allowed.

Exchange: Signal report and consecutive serial number starting with 001. VE1 stations will also send their province (NS, NB, PEI).

Scoring: 10 points for each contact with Canada. 1 point for each contact with others. 10 bonus points for each contact with any CARF official news station using the suffix TCA or VCA. Multipliers are the number of Canadian provinces/territories worked on each band and mode. (12 prov/terr x 8 bands x 2 modes for a maximum of 192 possible multipliers).

Prov/Terr: VO1/VO2, VE1-PEI, VE1-NB, VE1-NS, VE2, VE3, VE4, VE5, VE6, VE7, VE8, VY1.

Frequencies: Phone — 1810, 3770, 3900, 7070, 7230, 14150, 14300, 21200, 21400, 28500, 50100, 146520.

CW — 1810, 3525, 7025, 14025, 21025, 28025, 50100, 144100.

Times: Suggest phone on even hours UTC, CW on the odd hours UTC.

Entries: A valid entry must contain log sheets, dupe sheets and a summary sheet showing a chart

of multipliers per band/mode and score calculation. Send your entry with comments to: Canadian Amateur Radio Federation, 203-1946 York Ave., Vancouver, B.C. Canada V6J 1E3 postmarked before August 1.

Awards: The CARF Canada Contest Trophy will be awarded to the highest scoring single operator entry. Certificates will be awarded to the highest score in each entry class in each prov/terr, USA call

area, and DX country, and to the highest score from a Canadian non-Advanced Amateur (no phone on 3.5-21 MHz), and where participation warrants.

Results: will be published in TCA The Canadian Amateur magazine. Non-subscribers may include an SASE for a copy of the results.

Official entry forms are available for an SASE from the CARF office or the above address.

Long Distance Vows

The following article appeared in the Prince Albert (Sask.) Daily Herald, and was submitted to us by Mary Beaton VE5OH.

Richard Barley and Nina McKenzie got married Monday, but their "I do's" crackled with static and the honeymoon won't be until June at the earliest.

Barley, from San Fransisco, is stuck in the Arctic Ocean aboard the Coast Guard icebreaker *Polar Sea*. So he and McKenzie exchanged vows via a two-way ham radio.

It might have been the first Amateur radio wedding ever, said Bob Winters, a ham radio operator who arranged the 10-minute nuptials at his Marysville, Washington home.

The ceremony began an hour earlier than its scheduled 7 p.m. time, because testing on previous nights prompted fears that solar flares would interrupt the radio conversation.

Even so, transmission was described as "intermittently lousy", but Barley and McKenzie could hear each other's words.

At the end of the ceremony,

the new Mrs. Barley obviously couldn't kiss her groom, so she kissed the Baptist minister, Bob Hamilton.

Her closing words to Barley were, "I really miss you, I love you. Over."

The couple plan a California honeymoon when Barley comes back from the Arctic.

The Polar Sea is stuck in ice about 415 km from Point Barrow, Alaska, and may not be free until June or July, depending on how fast the ice melts, the Coast Guard says. □

THRESHERMAN'S REUNION

The Brandon Amateur Radio Club will operate from the Austin, Manitoba Thresherman's Reunion July 22-25, 1981 inclusive using the club call VE4QD. This station operates on all the HF bands plus two metres. There are a few displays and information on Amateur Radio. This station operates out of the old railway station on the museum property during the Reunion.

-The Manitoba Amateur

TVI Battle Continues

In March 80, DOC issued a "Discussion Paper on the Need for Improvements to Television Receivers". Your Federation has since reviewed this document and commented in a Nov. 80 letter to the CRTPB (Canadian Radio Technical Planning Board). The paper reports in part on the serious lack of television receiver immunity to strong out-of-band RF signals as are commonly found in the urban environment (eg. from broadcasters and GRS/CB stations). DOC now requires broadcasters to evaluate the potential effects of high field strengths caused by their stations and to resolve valid complaints of interference. A DOC brochure, "How to Identify and Resolve TV Interference Problems" dealing mainly with GRS/CB interference has also been of help in Amateur Radio operations.

However, your Federation feels that this is far short of what is really required, and noted that many radio services including Amateur Radio share the frequency spectrum, operate in both urban and suburban environments and regularly create out-of-band signals which are picked up all too easily by television receivers. The discussion paper did not deal with such situations, let alone propose some sort of program for ensuring that the immunity characteristics of television

receivers be improved. In some areas, television receiver susceptibility has resulted in non-television bands being virtually unusable to other radio services, creating a vast waste of spectrum.

In conclusion, it was noted

that "all other radio services have made significant improvements to the immunity of their receivers to out-of-band signals. It is only reasonable for DOC to ask that some improvement be made in TV receiver immunity."

VE3GEA

Metric made easy

We reproduce here the latest version of a chart some of our old timers have been using for a while. This chart is specially designed to permit the quick conversion of cycles per second into their metric equivalent, termed 'Hertz'.

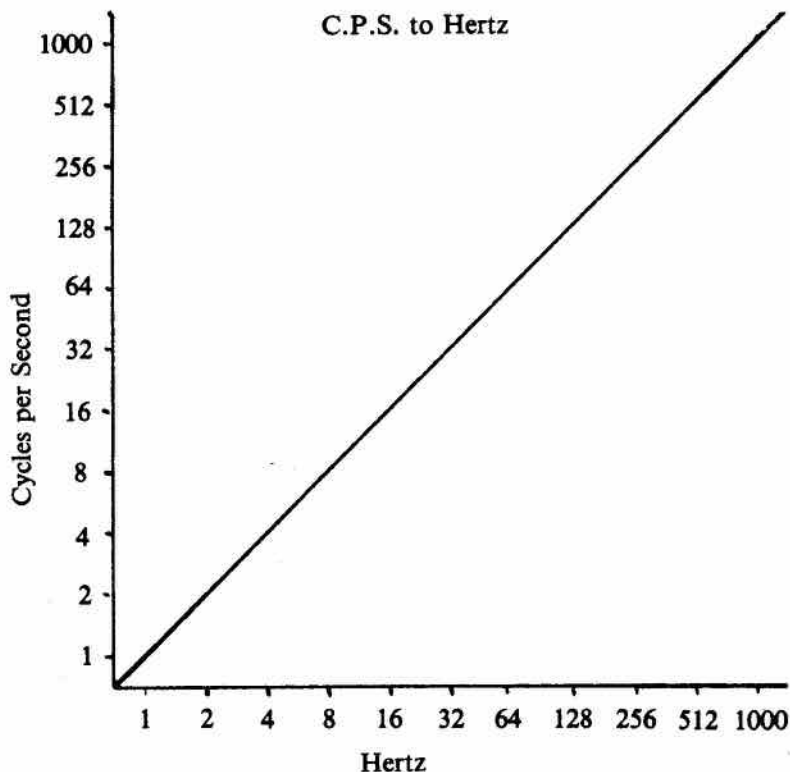
This chart is given in units of cycles per second, however, due to the care taken in its preparation, it can be used for higher frequencies.

By adding the appropriate number of zeros to c.p.s., this highly accurate chart can still be used. When three zeros are added to c.p.s., read the Hertz as 'Kilohertz'. If 6 zeros are added to c.p.s., read the Hertz as 'Megahertz'. No other adjustment is needed with this magnificently useful chart.

London ARC Bulletin

Simplified Conversion Chart

C.P.S. to Hertz



LEGALIZED CB?

According to HR Report, France has legalized CB radio. Law or no law, there were at last estimate about 100,000 illegal sets operating in that country. The power limit is two watts on 22 channels in the 27 MHz band.

TCA: Technical Section

Putting the Kenwood TS700SP Down (1.2 MHz)

My last year's Christmas gift for myself was to acquire a two metre transceiver which could be used for both OSCAR and FM. This severely limited my options. From a heavily dog-eared and well-read catalogue, I settled on the Kenwood TS700SP multimode transceiver. The order was sent to Vancouver and after a slight delay because the unit was out of stock, it arrived.

I eagerly opened the carton, removed and unpacked the transceiver, plugged in the power cord and antenna, consulted the enclosed manual for switch settings, turned on the unit, set the frequency for 147.06 repeater, repeater switch to normal, and gave a call.

Horror of horrors, no squelch tail — was the unit working? Only one thing to do — read the manual. The explanation of the repeater option hit me right in the face.

In the 147 band, the transmit frequency was 600 kHz above the receive frequency at the Normal position of the repeater switch and the receive frequency was 600 kHz lower than the transmit frequency at the Reverse position of the repeater switch.

In the 146 MHz band, the transceiver at the Normal repeater setting transmitted 600 kHz lower than the receive frequency, while in the Reverse position, the receive frequency was 600 kHz lower than the transmit frequency.

There was just no possible combination of switch settings which would allow me to receive 147.06 MHz and transmit 146.46

MHz. The only immediate solution was to use a second transceiver. This was just not the type of FM operation I had dreamed about.

To say the least, this was a desperate situation which called for desperate measures. The schematic had to be consulted and, if necessary, the warranty would have to be voided!

A careful study of the schematic revealed that there was an easy solution — the transceiver would not have to be modified, in fact, only one crystal might have to be changed. The 147 MHz repeater transmit frequency is obtained by tripling the X6 crystal frequency (heterodyne frequency), adding the first IF frequency, then adding the VFO frequency.

For example, if the receive frequency is 147.060 MHz, then the VFO frequency is 8.260 MHz. The repeater transmit frequency would be:

$$\begin{aligned} & (42.90 \times 3) + 10.70 + 8.260 \\ & = 128.70 + 10.70 + 8.260 \\ & = 147.660 \text{ MHz} \end{aligned}$$

which is not the desired transmit frequency (146.460 MHz). The actual transmit frequency is 1.2 MHz too high. Since the VFO frequency is fixed, and the IF frequencies are fixed,¹ the only place where a change can be made is in the 128.70 heterodyne frequency.

The desired change is 1.2 MHz and this crystal is used in a third overtone oscillator circuit.

¹ In the FM mode, the transceiver uses a second IF, hence the X6 crystal is actually 42.90300 MHz.

Therefore, if this crystal were .4 MHz lower $((128.70 - 1.20)/3)$, the 147 repeater transmit frequency should give a transmit frequency of 146.46 MHz.

$$\begin{aligned} & ((42.90 - .40) \times 3) + 10.70 + 8.260 \\ & = 127.50 + 10.70 + 8.260 \\ & = 146.46 \end{aligned}$$

A new crystal was ordered² and three weeks later Canada Post deposited a small package in my mail box. I struggled to open it, removed the old X6 crystal, plugged in the new one, dialed 147.06, set the repeater switch to normal, pressed the mic button — that squelch tail was beautiful. I did not even touch up the trimmer — a contact via the repeater confirmed I did not have to adjust the frequency! Hallelu!a!

What should I do with the old crystal? Again those good people at Kenwood must have been thinking about people like me — they even included a convenient place to store the old transmit crystal. The X18 crystal position on the fixed channel strip is not used, hence just plug it into the slot. Should I ever run into a repeater where the 147 input is 600 kHz higher than the receiver, all I have to do is interchange the X6 and X18 crystals.

I have been using this modification for about 8 months now and no other problems have been encountered. □

² The exact crystal frequency ordered was 42.50300 MHz from K-W Manufacturing Co., Box 508, Prague, Oklahoma 74864, U.S.A.

TCA: Technical Section

Multi-7 Rejuvenation

By Ken Grant VE3FIT

The FDK Multi-7 2 metre FM rig, though apparently no longer available new, is still quite a good buy if you wish to 'get on 2' with minimum cash outlay.

The rig is a basic 23 channel, crystal controlled, phase modulated, 10 watt output, double conversion superheterodyne with no frills to boost up the price.

Being the third owner of my particular unit, I had little idea of its service history, but all seemed well until one of the local repeaters tightened up on the receiver bandwidth and I could no longer access it.

Checking with a synthesized Amateur(?), I found that my signal was 5 kHz off frequency, just about the edge of the repeater's input channel. Obviously a Multi-7 tune-up was in order!

Fortunately, I have access to a frequency counter and other glamorous test gear, although the tune-up could be performed just as well with only the aid of that synthesized guy. None of the crystals were right on frequency and several were 5 kHz or more off.

The test set-up I used is shown in Figure 1. Only one watt of RF output was used, in consideration of both the dummy load and the repeater users. (Dummy loads seem to radiate like crazy at VHF.)

An examination of the Multi-7 schematic for the transmit crystal oscillator (Figure 2) reveals that the crystal sees a parallel capacitance of at least 33.5 pf. Crystals ground for the usual 25-30 pf load capacitance would oscillate at lower than the indicated frequency when used in this circuit (exactly as observed). Invariably I ran out of adjustment when trying to net the rocks, always on the low side.

The cure was simple. Replace the 47 pf capacitors across the trimmers with 33 pf. The minimum obtainable capacitance is now 25 pf and all of the rocks can be brought precisely on frequency.

The 47 pf disc capacitors are located on the PC board immediately beside the corresponding trimmers. Because the underside of the board is inaccessible without tearing the rig apart, I merely snipped out the disc capacitors and soldered the 33 pf replacements directly to the trimmer soldering lugs. After adjustment, each trimmer was given a dab of Q-dope to make sure that mechanical vibration wouldn't sent it out of adjustment.

After this operation, each repeater could be accessed easily

and reports on audio quality also improved slightly. (It helps to be in the repeater receiver's passband!)

The next part of the tune-up concerned an apparent lack of receiver sensitivity. The IF alignment was presumed to be okay since it had been done at the factory and all of the IF cans were still sealed. The only other thing adjustable was the band pass filter after the RF amplifier stage. This three-stage filter is easy to find because it has a nice factory sticker covering the adjustment holes which says 'Don't touch!'.

Using a sweep generator coupled to the receiver input, and monitoring the bandpass filter output at the junction of C6 and R6, revealed that the filter was set to peak (rather shallowly) at the centre of the Japanese two metre band (144 to 146 MHz). I adjusted each of the three bandpass filter trimmers sequentially to place the peak at 147 MHz. You could also probably do this adjustment using a fairly weak signal on 147 MHz and using the Multi-7's 'S' meter as an indicator. Now the receiver sounded alive!

This completed the tune-up. The only thing I was left unhappy with was the built-in speaker. As you probably know, it's useless as

soon as your car is in motion and the wind and engine and fan noise builds up.

Fortunately, FDK provides an outboard speaker jack. I hooked up a plug and speaker wire to match this jack and tried an external speaker for a few days. Much better audio resulted. However, external speakers take up space, so

I decided to simply hook the two wires in parallel with the existing wire to the car radio speaker. If, as I did, you find that both your Multi-7 and your car radio are dead quiet, you have succeeded in shorting the speaker 'hot' lead to ground. Reverse your connections.

The Multi-7 is now properly set up and a lot of fun to operate. In

the process I've also learned quite a few thing about crystals, oscillators and other circuitry. To me, this is what Amateur radio is all about: learning by doing. I'd like to thank my good friend Mike Blake VE3HFP for his help and advice during this project. Now if I had a synthesizer! □

Ken VE3FIT

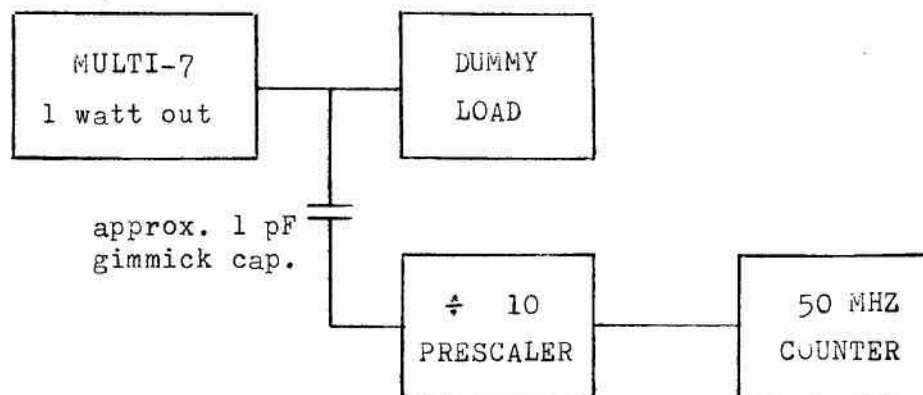


FIG. 1

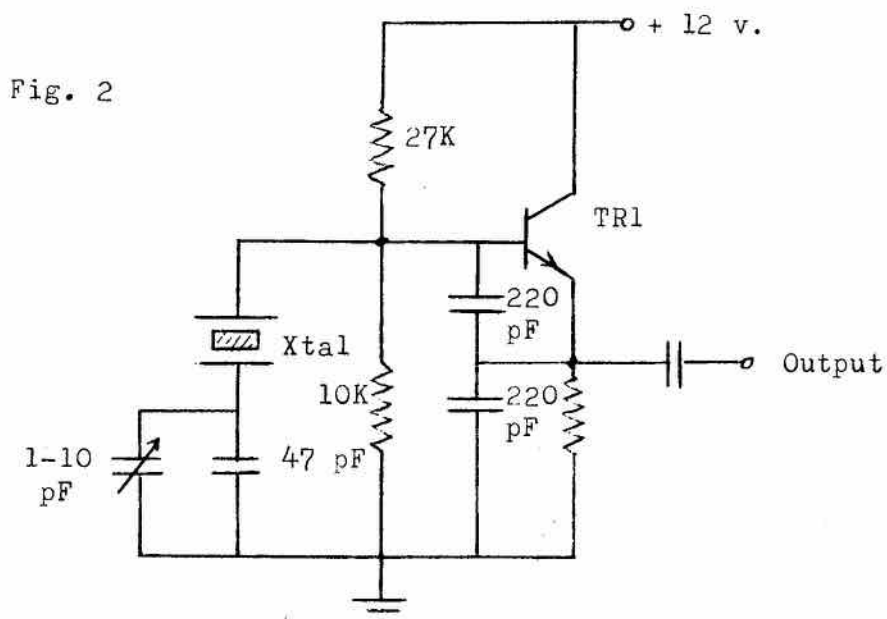


Fig. 2

TCA: Technical Section

Wide/Narrow CW Modifications for FT-101

By VE7AFJ

There can be little doubt that the FT-101 transceiver is one of the most accepted units in the history of Amateur radio. The designers provided for an option of a narrow filter for CW operation. However, when the unit is modified to accept the narrow filter, it is necessary to change the position of the Mode switch from CW to Tune to receive with the wider SSB filter. This is desirable at times for personal or band conditions. The extra change of the Mode switch when changing from transmit to receive and vice versa is an extra step that the operator can well do without.

Further modification of the FT-101 can eliminate this operating deficiency. The modification consists of mounting a SPDT switch centred in the panel area just to the left of the dial bezel with three wires and one diode. With care, the modification will take less than 30 minutes to completion and operation again.

The modifications schematic is provided in Figure 1. The point of the modification is to select either the CW or the SSB filter for CW operation. The diode is included to prevent the ground provided by section C of S2 from turning the sidetone oscillator on when the CW switch is in the Wide position. Without the diode, the ground is provided to the emitter of the sidetone oscillator causing the oscillator to function. The steering diode prevents this path, at the same time permitting the modification to function.

When switch S2 (Mode) is in position 4 (CW) the ground is provided through the steering diode to the armature of the new switch. The switch provides this ground to either pin 9 or pin 12 of the Mod&Osc Unit (PB-1184) selecting either the narrow or the wide filter.

The first thing to do in the modification is to remove the covers. It is also necessary to

remove the mounting surrounding the panel. Using a small piece of masking tape, locate and centerpunch the center of the panel area immediately to the left of the dial bezel. Turn the transceiver on its left side so that the right side is up. *Carefully* drill a 1/4 inch hole using a much smaller 'starter' drill. Be careful that all the chips are kept out of the transceiver.

If you still have the plastic cover over the panel, slit the plastic 1 1/2" at the top and 2 1/2" at the side. Carefully remove all drilling chips. Mount the switch with the mounting nut under the plastic.

Some type of lettering must be used to identify the switch and the positions of the switch. Amidon Associates of North Hollywood, Calif. distribute AMI-CAL word transfers that are available in white. The type size No. 1 closely duplicates the original lettering.

These transfers are applied by rubbing the lettering on with a ball-point pen tip. Careful application of these transfers results in a finished job that looks professional and matches the original lettering. Using short lengths of magic mending tape, secure the edges of the plastic flap to the panel mount and re-install the panel mounting.

Remove the wire from pin 9 of

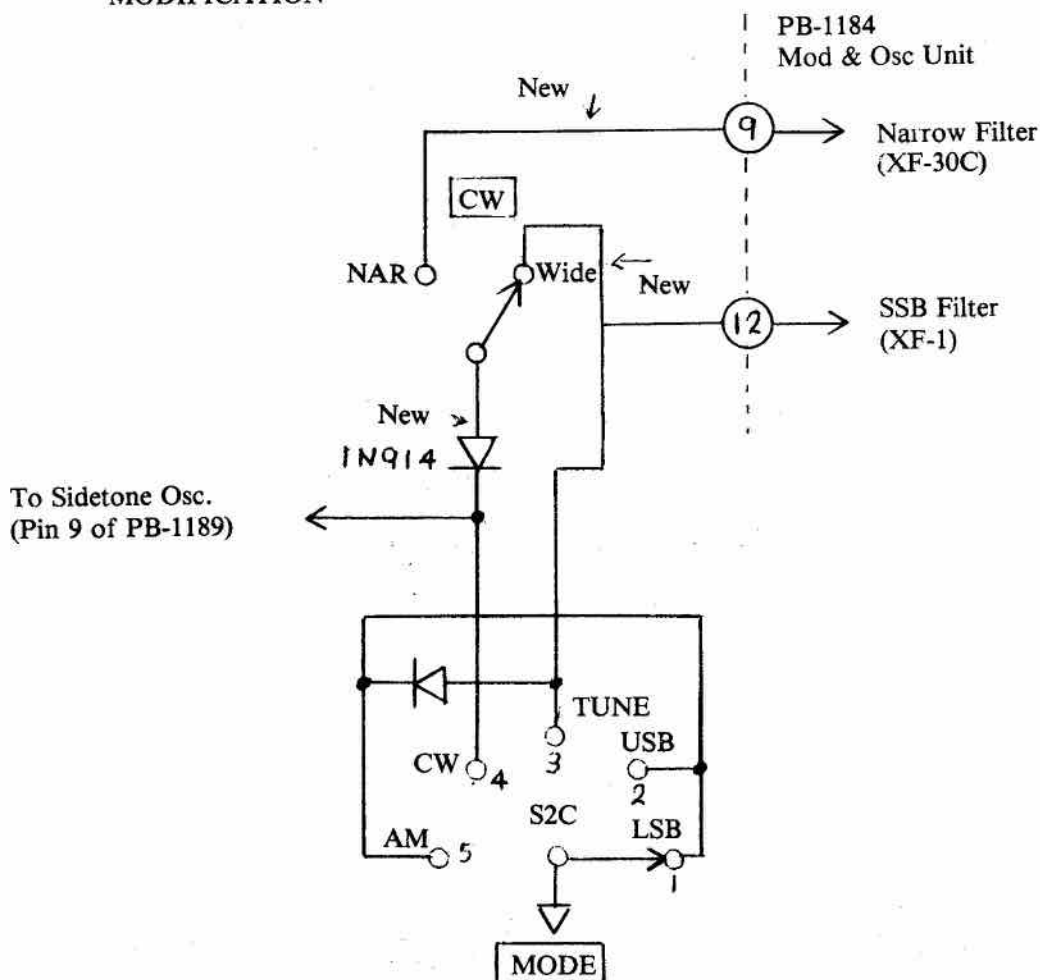
PB-1184 and install a new wire from the NAR. position of the switch to pin 9 of PB-1184. Install a new wire from positions 1 and 2 of S2C to the Wide position of the new switch. It will be noted that the correct section of the switch is at the rear and bottom of the switch.

Install a new wire from position 4 (CW) of S2C to the armature of the new switch. Pro-

bably the easiest place to install the diode is in the line to the armature of the switch. Wrap the three wires (and diode) with lacing twine or black tape to provide security for the wires.

This completes the modification. Good construction practices should be used and be careful with the soldering. Good luck and you will have a more flexible FT-101 when operating CW. □

FT-101 NARROW-SHARP MODIFICATION



Poor Man's Speech Processor

By Tim Leier VE5ADL

I recently became the proud owner of a Kenwood TS-120S but, because of certain factors, I am restricted to an indoor dipole.

Needless to say, my station lacked the 'oomph' to compete in pile-ups. A Linear would help but, as I am a high school student, the cost is very out of line. The same seemed true for an outboard speech compressor, or at least a conventional processor.

In one of my high school physics classes, we learned about resonant tubes and lengths. It dawned on me that this could be used to increase the pitch and the 'cutting power' of an SSB signal. By passing your voice through a short resonant tube (about 5" long), the low bassy frequencies

are eliminated, leaving the higher frequencies.

In my quest for a suitable tube, I came upon a novel idea — a tube from a toilet paper roll!

After getting the family cat to tear off what tissue was left on a roll, I took the tube and just slipped it onto the end of my Kenwood MC-50 desk mike.

Much to my surprise, it worked, resulting in a signal which was higher pitched, more readable, no interference from room noise and no distortion. The only problem was a slight 'mussiness' in my signal which was fixed by shellacing the inside of the tube.

So, in short, my toilet paper tube processor is *very cheap*, effective in cutting through interference, stops interference caused by ambient room noise and it

also makes it easier to drive the rig to peaks because of the channeling effect.

I would like to thank Bob VE3LNO and John WB2AES for putting up with me (and actually believing me) in on-the-air tests.

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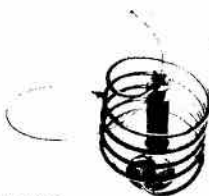
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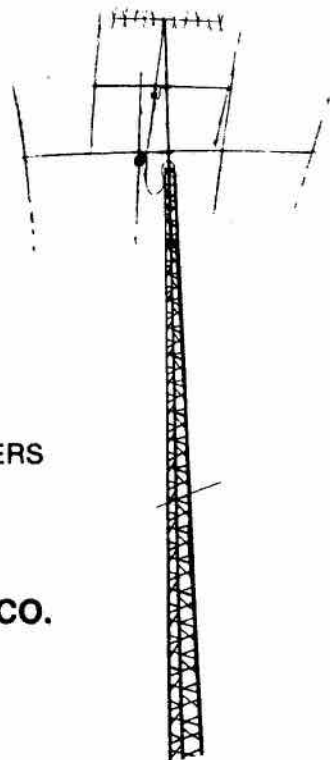
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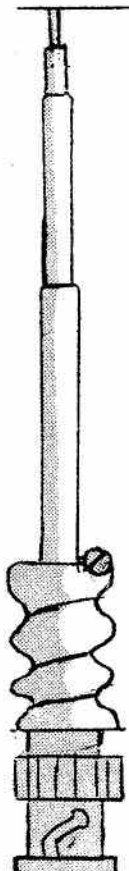
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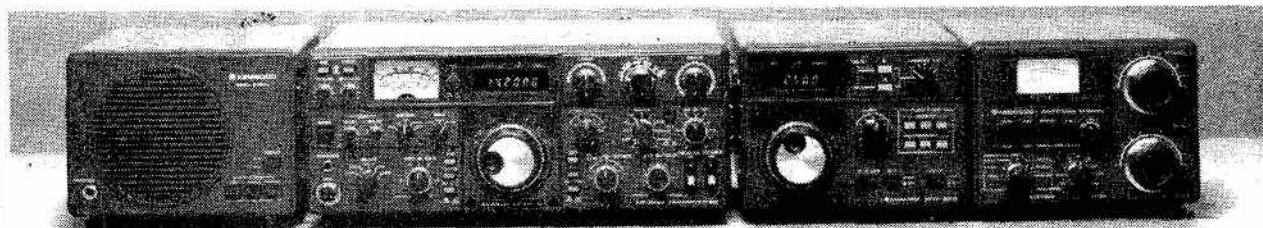
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DOC's recently released annual report of operation during fiscal year 1979-1980 shows an increase in the number of Amateur stations licensed — 20329 as of March 31, 1980. There was a decrease for the first time ever in the total number of stations of all types licensed.

The figure was 1,300,500 which was a drop of 8% from the 1978-1979 total. GRS/CB licences accounted for 63% of the

1978-1979 figure. They also contributed to the overall decrease with a 13% drop over the previous report. The Department noted that this marked "the end of the phenomenal growth of the GRS service over the past five years". The report also noted that WARC '79 achieved all of the essential Canadian objectives. Included was specific mention of the allocation of additional spectrum for the Amateur radio service.

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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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CARF is currently checking some details in the latest DOC lists. This section will be altered as details are received. See Jan. TCA, Page 32 for details.

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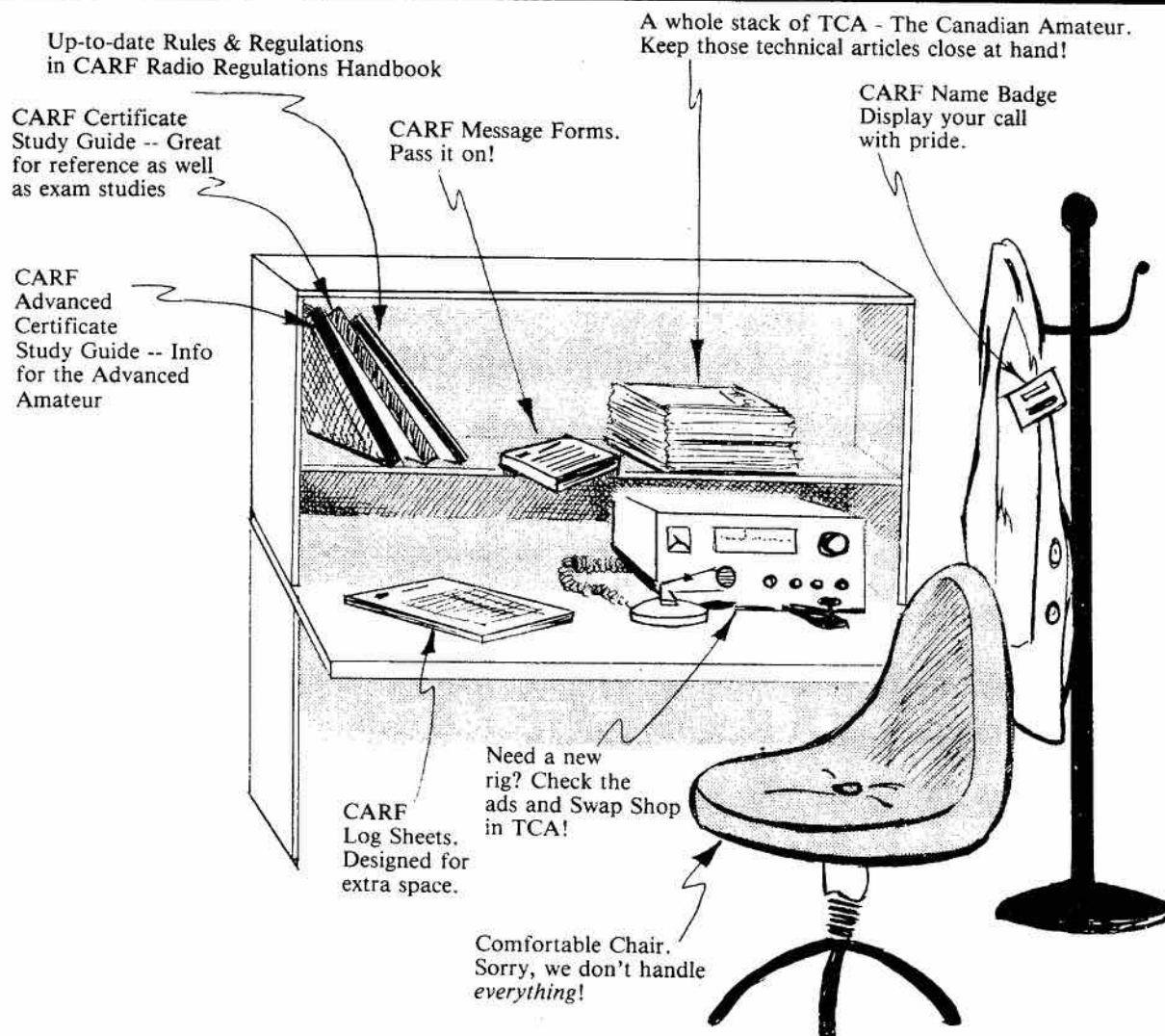
Le service d'envoi des cartes QSL de FRAC se charge de l'envoi de vos cartes QSL dans le monde entier. Ce service est gratuit à tous les membres de FRAC. Si vous envoyez beaucoup de cartes, les frais de votre souscription seront tôt récupérés dû au coût élevé du service postal quand les cartes sont expédiées directement.

Veuillez observer les règles suivantes quand vous utilisez le service FRAC d'envoi des cartes QSL:

1. Classer les cartes (DX) alphabétiquement par préfixe
2. Classer les cartes canadiennes par ordre numérique de préfixe.
3. Veuillez placer les petites quantités de cartes dans des enveloppes en papier épais et bien scellées. Envelopper les grosses quantités de cartes avec précaution de préférence dans du carton. N'utilisez pas de brocheuse!
4. Veuillez adresser vos envois.
5. **Ne Pas Recommander** les envois de cartes. Cette pratique est plus dispendieuse et occasionne souvent des retards et par conséquent, n'est pas réellement nécessaire
6. Si vous désirez recevoir une preuve que FRAC a reçu votre envoi de carte QSL, veuillez inclure une enveloppe pré-adressée ou une carte postale avec timbre avec le mot 'Receipt' imprimé.
7. Si un colis était endommagé sur réception (très rare), FRAC vous fera parvenir une liste des cartes reçues de sorte que vous pourrez vérifier s'il y en a eu de perdues dans le courrier.

Traduisé par Jack VE2SF

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NAME _____

ADDRESS _____

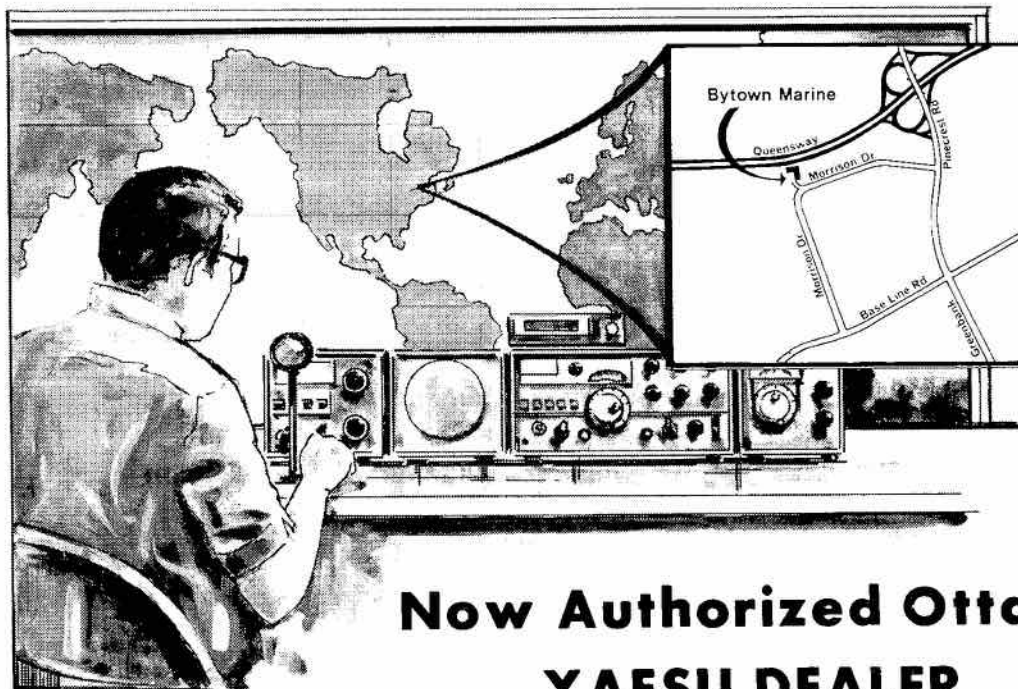
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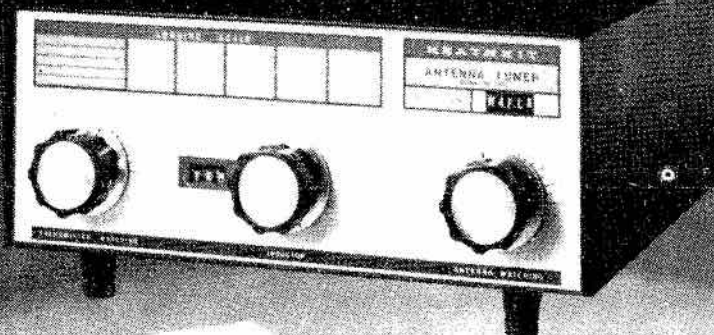


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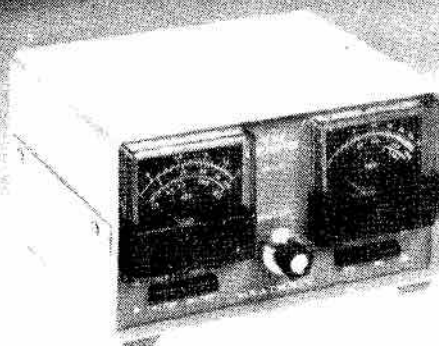
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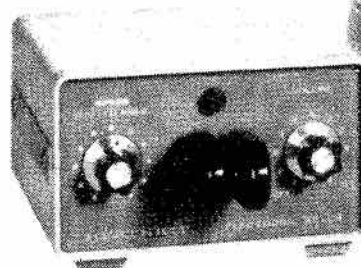
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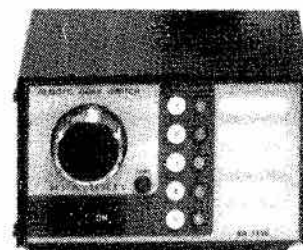


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