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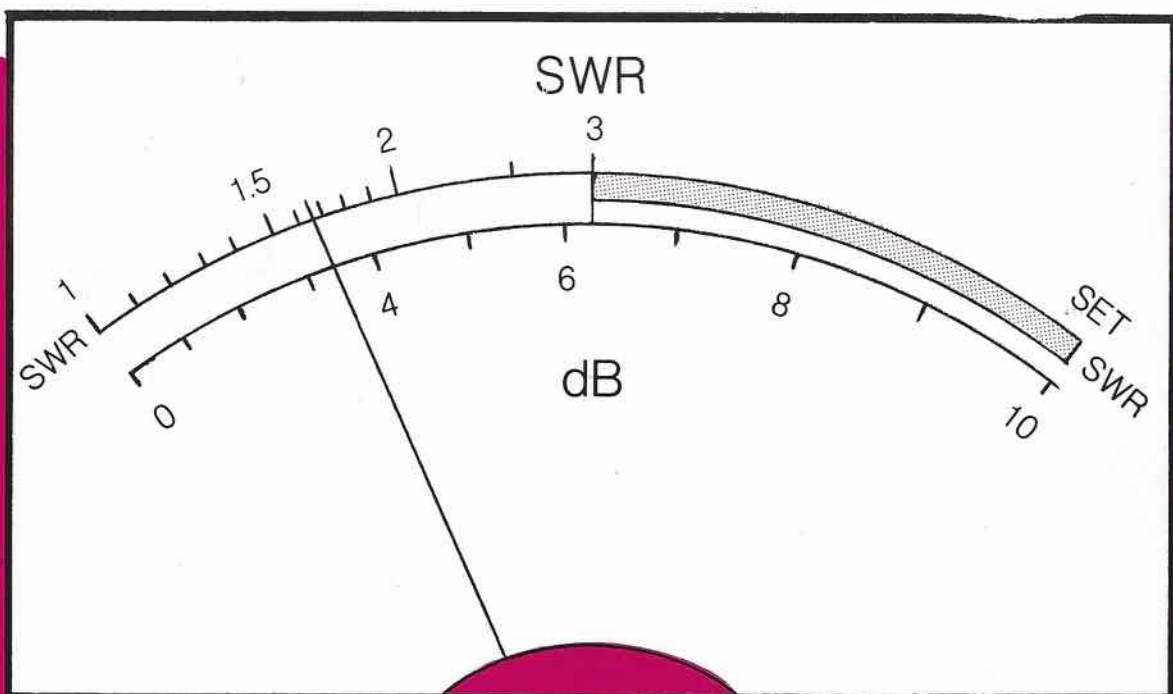
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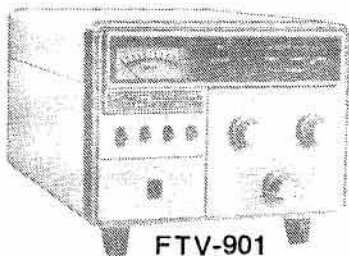
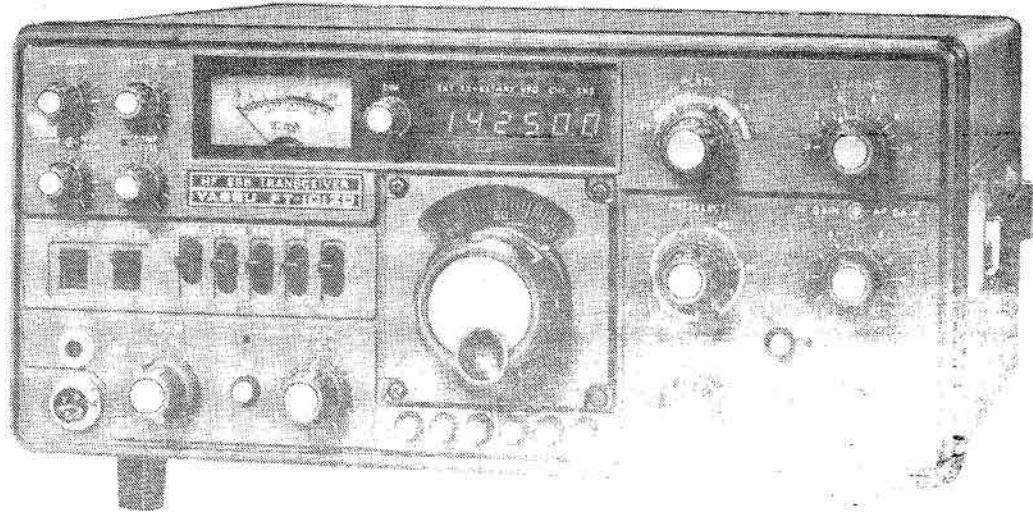
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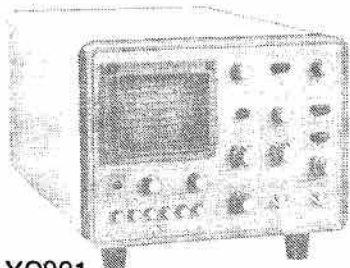
How important is your

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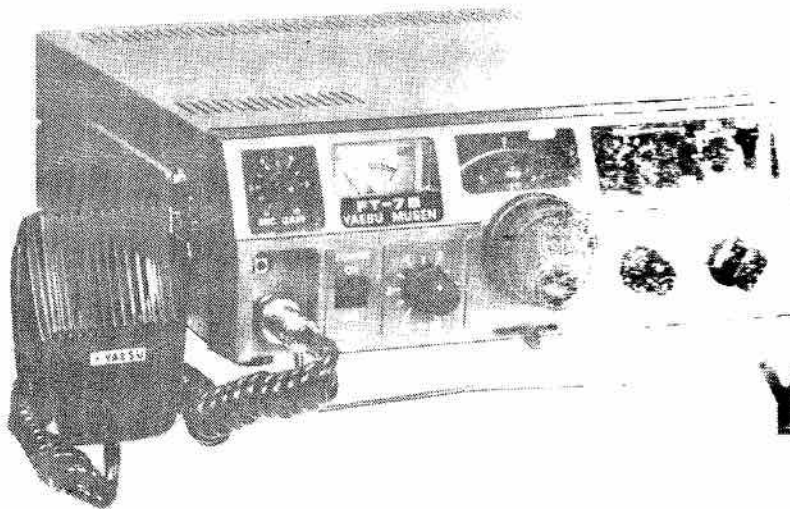


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CARF THE CANADIAN AMATEUR

March 1980

Vol. 8 No. 3

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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.

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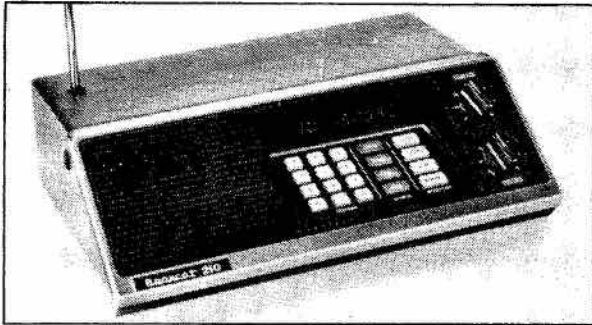
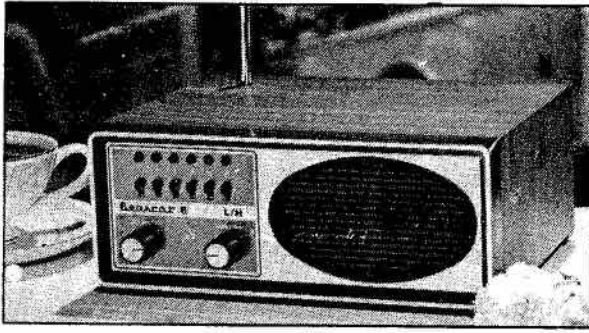
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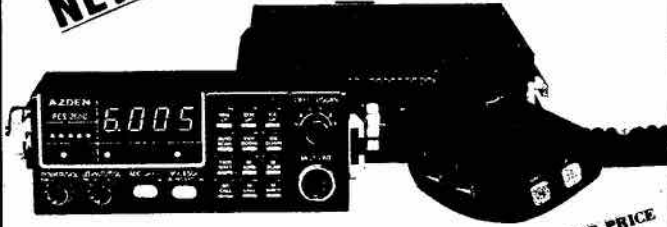
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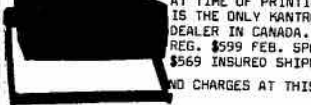


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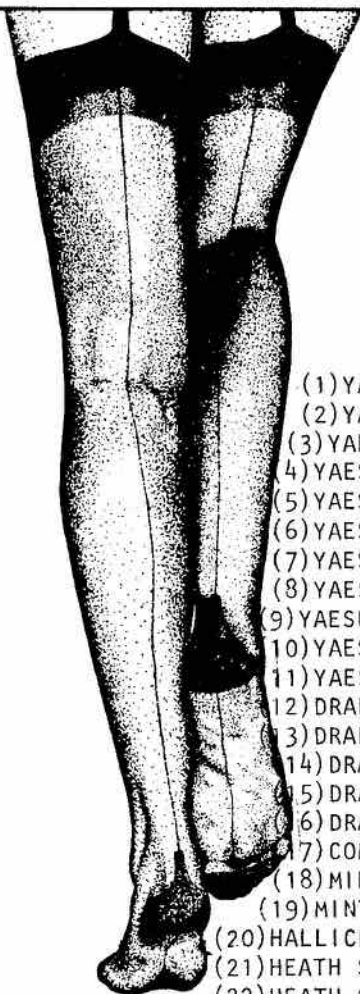
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**1 to 4 WATTS IN— \$186
10 to 40 WATTS OUT.**

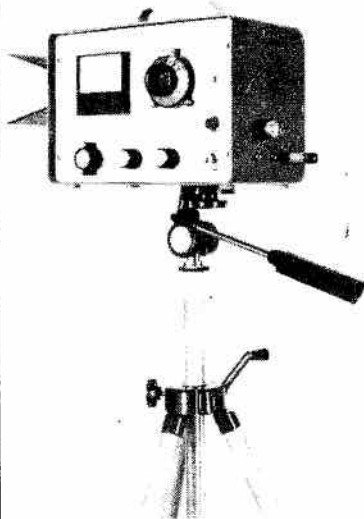
- Can be used with any 1-5 watt radio.
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PHYSICAL SPECIFICATIONS

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Color: Blue Enclosure, Gray Front Panel
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Speaker Included
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Proven Digital Technology

ICOM has used its expertise with Digital Technology, developed with the IC-701, in designing the all-new IC-551. A Microprocessor Controlled PLL is at the heart of this rig. The frequency tuning dial is ICOM's unique Optical Chopper, which provides years of problem-free service. This is also the first radio to use a pulse power supply, resulting in a lighter weight.

All Modes Plus Scanning

The IC-551 has All Mode capability: USB, LSB, AM, CW, and FM. The operating mode is indicated by an LED display beside the frequency readout. The module to provide FM is optional. Scanning is a standard feature, which includes Program Scan and Memory Scan. Program Scan allows scanning between two programmed frequencies. Stop-On-Signal and Speed adjustment is also included. All scanning operations work in any mode. Reading and writing to the three memories is quick and simple. Complete 4 MHz coverage without a band select switch. Two built-in VFO's provide split frequency operation at no extra cost. The optional extras for the IC-551 are FM, VOX, and Pass Band Tuning. The IC-551D includes all of the options, except FM, plus 80 watts RF output. An external power supply is necessary for this model.

Specifications

GENERAL

| | |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency Coverage | : 50 - 54MHz |
| Operable Temperature | : -10°C - +60°C (14°F - 140°F) |
| Power Supply Requirements | : 13.8V DC ±15%, negative ground, or 117V/240V AC ±10% |
| Power Consumption | : Receive at min. audio level DC 0.9A AC 35W at max. audio level DC 1.1A AC 41W Transmit in SSB/CW modes DC 3.3A AC 98W in AM mode DC 3.0A AC 92W in FM mode* DC 3.3A AC 98W |

| | |
|------------|-------------------------------------|
| Dimensions | : 111mm (H) x 241mm (W) x 311mm (D) |
| Weight | : 6.3 kg |

TRANSMITTER

| | |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------|
| RF Output Power | : SSB 10W PEP (1 - 10W adjustable) CW 10W (1 - 10W adjustable) AM 4W (0 - 4W adjustable) FM* 10W (1 - 10W adjustable) |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------|

Modulation System

| | |
|--------|-------------------------------------------|
| SSB/AM | : Balanced modulation |
| FM* | : Variable reactance frequency modulation |

Max. Frequency Deviation*

| | |
|--------------------------|----------------------------------------------------|
| ±5KHz | : ±5KHz |
| Spurious Emission | : More than 60dB below peak power output |
| SSB Carrier Suppression | : More than 40dB below peak power output |
| SSB/AM Unwanted Sideband | : More than 40dB down at 1000Hz AF input |
| Microphone | : 600 ohm dynamic or electret condenser microphone |

RECEIVER

| | |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Receiving Mode | : A1 (CW), A3J (USB, LSB), A3H (AM), F3 (FM)* |
| Receiving System | : SSB/CW/AM Single Superhetrodyne (Triple Superhetrodyne when Pass Band Tuning unit is installed) FM* Double Superhetrodyne |
| Intermediate Frequency | : SSB/CW/AM 9.015MHz (When Pass Band Tuning Unit is installed: 2nd IF: 10.75MHz, 3rd IF: 9.015MHz) FM* 1st IF: 9.015MHz, 2nd IF: 455KHz |
| Sensitivity | : SSB/CW/AM Less than 0.5 µV for 10dB S+N/N FM* More than 30dB S+N+D/N+D at 1 µV |

Spurious Response Rejection Ratio

| | |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| : More than 60dB | |
| Selectivity | : SSB/CW/AM More than ±1.1KHz at -6dB Less than ±2.2KHz at -6dB (When Pass Band Tuning Unit is installed: less than 1KHz at -6dB) FM* More than ±7.5KHz at -6dB Less than ±15KHz at -60dB |

Squelch Sensitivity

| | |
|--------------------|---------------------|
| : 1 µV | |
| FM* | : 0.4 µV |
| Audio Output Power | : More than 2 watts |

551-\$749 FM-\$195 VOX-\$85 PBTUNE-\$169

551D-\$1125

PS-20-\$299



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Canada

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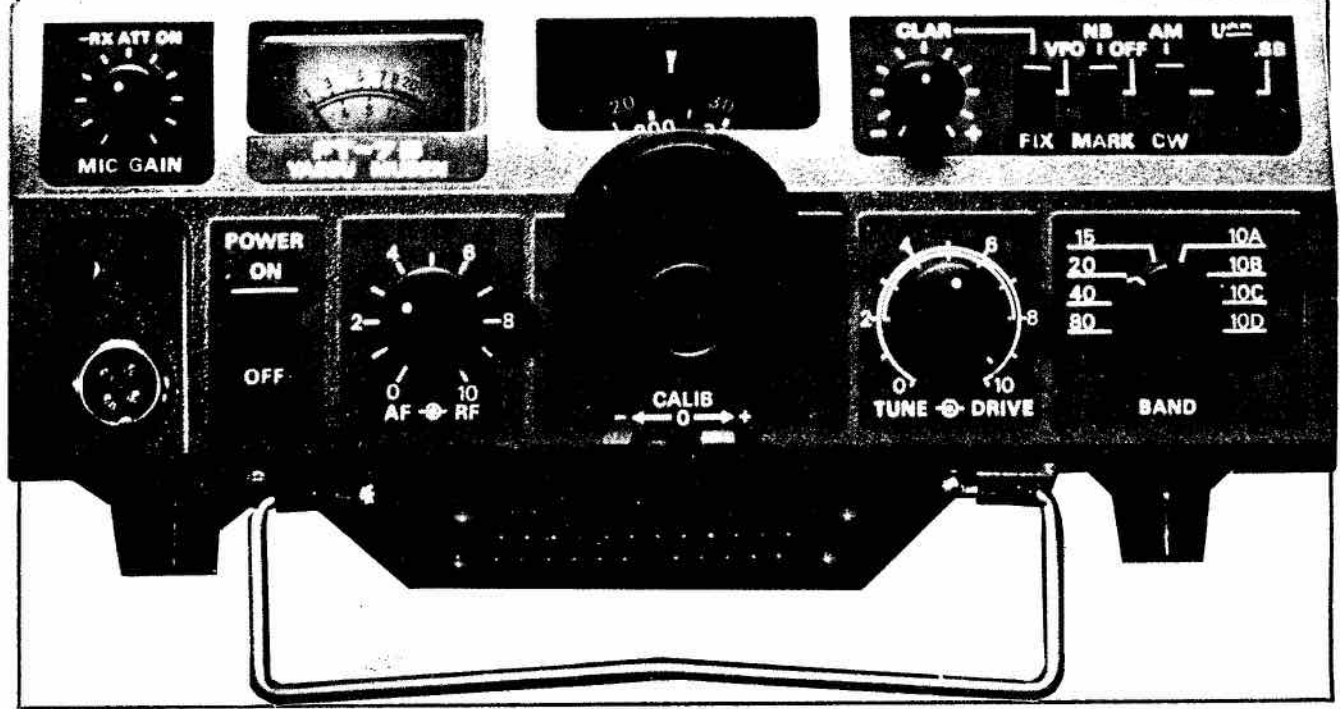
**NEW FT-7B 100 W
 MOBILE/BASE HF TRANSCEIVER**

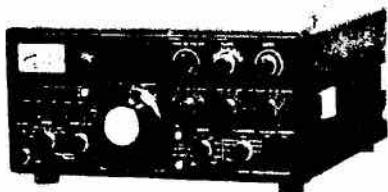
RECEIVER

Sensitivity: 0.5uV for S/N 20 dB
Image rejection: Better than 50 dB
IF rejection: Better than 50 dB
Selectivity: -6 dB: 2.4 KHz, -60 dB; 4.0 KHz
Cross-modulation: Better than 60 dB immunity at 20 KHz off a 20 dB input signal typical
Audio output: 3 watts @ 10% THD

TRANSMITTER

Emission: LSB, USB (A3j), CW (A1), AM (A3)
Input power: A1, A3j; 100 watts DC
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Unwanted sideband suppression: Better than 50 dB @ 1000 Hz
Spurious emission: Better than -40 dB
Distortion products: Better than -31 dB





KENWOOD Transceiver
TS-820S 160 thru 10M

Reg. \$1695.00 Special \$1489.00



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13-510

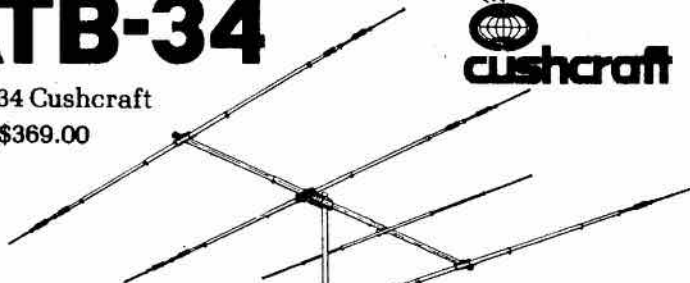
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| TS-520S HF Transceiver | Reg. 1149.00 | Special \$1079.00 |
| TS-820S HF Transceiver | Reg. 1695.00 | Special \$1549.00 |
| R599D and T599D Kenwood Twins | Reg. \$1698.00 | Special \$1498.00 |
| Midland 13-510 800 channel 25 watt 2 mtr mobile | Reg. \$699.00 | Special \$549.00 |
| Opto 7000 Counter 10-550 MHz kit with power supply | \$149.00 | |
| wired and calibrated | \$199.00 | |

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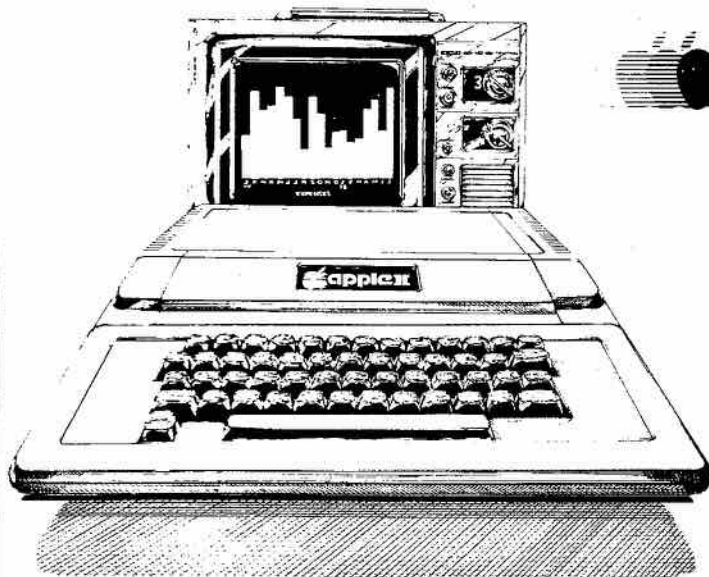
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| Apple II or Apple II Plus - 16K RAM | \$1695.00 |
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| Disk II - Drive only | 795.00 |
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| Disk II - Drive and Controller | 895.00 |
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| Sanyo VM4209 - Video Monitor (B&W) | 329.00 |
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| Electrohome 914 Video Monitor (B&W) | 289.00 |
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| Vinyl Carrying Case | 49.95 |
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| 16K Memory Expansion Module | 200.00 |
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| Centronics 779-2 Printer with Interface | 2195.00 |
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| Centronics 779-2 Printer only | 1925.00 |
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| Modem IIB with Interface | 579.00 |
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| Communications Card & DB25 Connector Cable | 295.00 |
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LETTERS:

B.C. HF NETS

The 80 metre nets in B.C. and the Yukon are: the B.C. net on 3755 kHz, daily at 0200 Z; the Northern Net on 3775 kHz on Wed. and Sunday at 0300 Z, originating from Prince Rupert; the Alaska Highway net on 3782 kHz originates from Whitehorse and is on Monday, Wed. and Friday at 0400 Z. The Northern and Alaska Highway Nets are informal and comments about the weather, etc. are passed along with traffic.

Activity is starting, in this area, on RTTY. It is still in the primary stages, but it won't be long before a half-dozen or more will be on HF.

Bruce Cox VE7BCZ
Smithers, B.C.

TOWER OF POWER?

I very much enjoyed reading Gary Hammond's article on the CARF/VE3 Bureaus (January TCA). The caption under the photo of yours truly, however, is something else!

I am not now (and never was) an employee of CN Tower Limited. For a period of time from 1976-1977 I was responsible for the CN/CP Telecommunications portion of the CN Tower project and the job title was 'Project Coordinator'. In case any reader wonders what that implies, it's a substitute for 'Project Engineer' or 'Project Manager'...

This was over and above my regular occupation as

CNT's (now CNCP Telecommunications) Power Engineer, an occupation I have held more or less continuously as 'Power Engineer', 'Special Project Power and Building Engineer' (Microwave Projects), and 'Power and Buildings Engineer' for some 30 odd years.

At one time, however, almost lost in the mists of antiquity, I was the 'Chief (and only) Engineer' of a small Canadian subsidiary of a large U.S. radio component manufacturer. So that I will not be accused of having any delusions of grandeur, may I point out that this was a very small operation indeed. The bottom floor of our establishment was occupied by a Turkish steam bath. One always knew where to locate our harassed senior management on Monday mornings in those days!!

Ken Rolison VE3CRL

Our apologies to former CARF Secretary VE3CRL. Somehow, 'power' and 'tower' must have got mixed up in our composing room.

DATA TRANSMISSION

First of all, let me congratulate you on an excellent magazine, although I would like to hear less of DOC exam problems and more of WARC results.

I am interested in getting in touch with local Amateurs who would like to pursue inter-CPU data transmission on 220 or 902 (proposed) MHz, particularly dealing

with digital graphics data a la TELIDON.

In addition, I am looking for some technical help (especially on roll-your-own equipment) to receive Anik-B or U.S. satellite TV/Data information.

Steve Dunik VE3LNC
162 Winchester St.
Toronto, Ont M4K 1B6
416-923-8972

Thanks for the bouquet, Steve. As for the brick, February was the earliest we could print the full WARC story. With a four to five week lead time, it takes time to get such news circulating in TCA. The WARC results were published in summary form in CARF radio bulletins and in the monthly newsletter to affiliate club editors immediately after WARC '79 folded up. Maybe your local club has not yet affiliated with CARF and didn't hear the results.

As for exams -- agreed! Enough is enough. Action is now being taken by DOC as a result of the CARF 1979 symposium and discussions with CARF.

A BEAM ON SOUTH

With reference to VE1PZ's article 'A Beam on South' in the January TCA, it is interesting to note that applications for 'reciprocal' operating privileges in Chile should be routed via the Radio Club de Chile. However, the requisite copy of the agreement between Canada

**TCA welcomes Letters to the Editor. Please send correspondence to Editor
TCA, 151 Fanshaw Ave., Ottawa, Ont. K1H 6C8.**

and Chile may be difficult to obtain. It doesn't exist!

Recent inquiries to DOC confirm that, while Chile has concluded a Third Party Traffic Agreement with Canada, they have not as yet signed a Reciprocal Operating Agreement. It appears that it is a copy of a **draft** agreement that the Chilean foreign office has mislaid when they moved their archives. The ball is apparently in their court; Canada is quite prepared to conclude such an agreement.

Art Stark VE3ZS
Chairman, CARF DOC
Regulations Committee

NET DIRECTORY

In the December issue of TCA appears a Net Directory including two networks which have never existed, namely VE2PL's at 0800, daily, on 3750 kHz and VE2PL's at 1700, daily on 3750 kHz.

For the last 15 years, at 0800 on weekdays and 0930 on Sundays, on 3750 kHz, there is a network called 'Le Petit Train de Huit Heures'

(The Little Eight o'clock Train) operated by VE2AA, Adrien E. Anctil of Victoriaville, Que. This network is on phone, SSB, and the language used is French, but anyone who desires to join in English or CW is welcome.

For the last 12 years, at 1700 daily on 3750 kHz, there is a network called 'Le Réseau de la Détente' (The Relaxing Network) with the same characteristics as the other one in language, mode and availability. This network has been under my control until the last few years when, because of my age and state of health, Eugène Lajoie VE2RA of Perkins, Que. (a past Director of CARF) took the direction of the Network.

May I express the opinion that anyone wishing to publish a Net Directory should consult the Provincial Associations in order to be as accurate as possible; a reference to the official ARRL Net Directory would have indicated the existence of the two above-mentioned Nets.

Congratulations for your

Magazine which is indeed very interesting.

Alex. Lariviere VE2AB
Quebec, Que.

Alex has been a member of ARRL since 1924; member of CARF since its formation; member of RAQI; founder of the Quebec Radio Club in 1926 and others. We will be happy to find a reader who will research and publish a complete, up-to-date list; they are hard to come by.

The one published was taken from an old RSO list and we noted that it was not complete. The 'PL' net designation was a description rather than a title. Nos regrettes, Alex, et merci bien pour votre lettre et votre appui longtemps de la fédération. Alex even sent us a sample membership card for 'Le p'tit train' -- it's in the form of a railway pass.

THANKS

Thanks for letters from Garry VE3HWS in Kingston, Ont., who reports working WB6ZBW aero mobile on two metres from Kingston. The WB6 was at 90,000 feet near San Fransisco; Alan Harris VE3LFH, who comments on the exams; and Fred Burton VE3KUJ, who was disappointed to find that a G3OIZ he worked turned out to be, as far as he can tell, a 'pirate' station.

• OS7 and OR7 prefixes are being used by Belgian operators to celebrate the Brussels Millenium, according to HR Report.

PARCOURS : 75 METRES — RESEAU : AMATEUR



LE P'TIT TRAIN DE HUIT HEURES
S'ARRETE SUR DEMANDE

Voie: RADIO
Classe: SSB-AM-CW
Prix: UN QSO

no 3750 kc

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CONTEST CALENDAR

- March 1-2 ARRL DX Phone*
- March 8-9 Commonwealth Contest*
- March 22-24 BARTG Spring RTTY
- March 29-30 CQ WW WPX SSB
- April 5-6 QRP ARC Contest
- * see February TCA

At time of writing, the WPX SSB results have just come out, and few records survived. The Canadian records in the multi/multi, multi/single, single op all band, and 14 MHz single band categories were all broken. Congratulations to CK7WJ, VX7UBC, VC7BTV and VE7IG. CK7WJ and VE3BBN brought home the worldwide high scores in the Multi/multi and 1.8 MHz single band categories respectively. In single operator, all band, VC7BTV was second high worldwide, and in 14 MHz single band VE7IG was third high. When looking at the records, it appears B.C. has the edge in the race with Ontario, with no other provinces providing any competition.

BARTG SPRING RTTY

Period: 0200z March 22 to

0200z March 24. A maximum of 30 hours of operation is permitted.

Classes of entry: Single operator, multi op and SWL. Bands: 3.5 through 28 MHz.

Exchange: Time (z), RST and serial number.

Scoring: 2 points per QSO with your own country, 10 points for QSO with others. Call areas in Australia, Canada and U.S.A. count as separate countries. Final score is the QSO points times the number of countries worked on each band, added to the number of countries worked on each band times 200, times the number of continents worked on all bands (max. 6).

Entries: Separate logs must be used for each band, and must include date, time, call, exchanges sent and received, and claimed score per QSO. Entries must be received by May 31, 1980 and sent to: Ted Double G8CDW, 89 Lincoln Gardens, Enfield, Mddx., EN1 4DX, U.K.

CW WW WPX

Period: SSB - 0000z March 29 to 2400z March 30; CW -

0000z May 24 to 2400z May 25, 1980. A maximum of 30 hours is permitted to single op stations.

Classes of entry: Single operator, all or single band; multi-op, single or multi transmitter; plus a separate section for QRP stations running 5 watts or less.

Bands: 1.8 through 29 MHz bands.

Exchange: RST plus serial number. Multi/multi entrants only must use a separate series on each band.

Scoring: QSOs between stations on different continents score 6 points on the 1.8/3.5/7 MHz bands, and 3 points on the others. QSOs between stations in North America count 4 and 2 points respective to band, as above. Final score is QSO points on all bands times the number of prefixes worked on all bands. Count only those prefixes worked on all bands together, not on each band separately. A prefix is the initial number/letter combination at the beginning of a callsign. (ex. VE8, G3, P29, VP2, UO5, etc.)

Entries: Separate logs must be used for each band, and must include date, time, call, exchanges sent and received, and claimed points per QSO. Prefix checklists and cross-checking sheets are recommended, entries must be postmarked no later than May 10 for SSB and July 10 for CW, and sent to: CQ Magazine, WPX Contest, 76 N. Broadway, Hichsville, N.Y., 11801, U.S.A.

All-time Canadian Records, WPX SSB Contest

| Class | Call | Year | QSOs | Mult. | Score |
|--------------|--------|------|-------|-------|------------|
| Multi/multi | CK7WJ | 1979 | 10468 | 590 | 16,545,370 |
| Multi/single | VX7UBC | 1979 | 4338 | 455 | 5,136,950 |
| Single/all | VC7BTV | 1979 | 3236 | 367 | 3,140,786 |
| 28 MHz | VE7CIB | 1979 | 1658 | 214 | 804,640 |
| 21 MHz | VE3BMV | 1978 | 2173 | 402 | 2,445,336 |
| 14 MHz | VE7IG | 1979 | 1628 | 425 | 1,778,825 |
| 7 MHz | CG3IXE | 1978 | 725 | 118 | 345,032 |
| 3.5 MHz | VE3KZ | 1976 | 394 | 194 | 283,240 |
| 1.8 MHz | VE3FFA | 1976 | 106 | 77 | 31,416 |

Club joins in Centennial celebrations

Last August the Bancroft ARC obtained the special call XJ3TBC to celebrate the village of Bancroft Centennial. The operator racked up more than 1,300 contacts on the HF bands from 48 countries, including 300 plus contacts on VHF.

There were 18 guest operators who assisted in operation of the station. One of the eight daily prizes for contacts with the centennial station went to a guest operator, DJ7GH, who was visiting from West Germany.

XJ3TBC was operated on a 24-hour basis for the eight days of the celebration. About 200 guests visited the station, which occupied a temporarily vacant house.

Although the Bancroft

club is small, with only a dozen members, their enthusiasm and that of families

and friends plus support from local service clubs, made the event a success.



* * * *

Right, above: President Ron VE3KFA worked with a CW contact while Karl VE3AFP was bringing in German contacts on phone. The station was set into the bay window of the shack - a vacant house donated by a local contractor - which afforded an exceptional view of Bancroft's main street (Hastings Street) as well as access to the antennas.

Right, below: Hardy DJ7GH came from Munich, Germany to visit John VE3IWA. Right is Club President Ron VE3KFA.



LDX

By Garth Hamilton VE3EUP
 P.O. Box 1156
 Fonthill, Ont. LOS 1E0

The DX Column is a new regular feature for TCA readers, prepared by Garth Hamilton VE3EUP. Comments and reports on DX should be addressed directly to him at Box 1156, Fonthill, Ont. LOS 1E0.

DX BRIEFS

Trinidad - PPOMAG 1 Feb. 80 for 60 days by PY1MAG; CW & SSB 6m thru 160m QSL PY1MAG.

East Germany - DM - DT no longer in use. The new prefix is Y plus two numbers ie Y25LO ex DM2XLO.

China - Last minute word is that a delay on the Feb. start by ZL1ADI and AMO.

Juan Fernandez - CEOZG delayed to early March now due to transport difficulties and there will be no operation from San Felix.

Dijoubti/Sudan - N2KK David to be QRV from these two QTHs before arriving at reunion in mid-Feb. (FR7)

Reunion - N5AU K5CO to join N2KK on FR7 in mid Feb. and will try to arrange transportation to go to Juan de Nova/Europa and Gloriosso if possible before going on to FH8/D68, 5R8 and other points in the area if possible.

Heard Is. - VKs report that there will be an Amateur in the 12-man contingent going to the island in early March for 3 weeks. This is a scientific expedition so I don't know how much operating he can do.

Anguilla - VP2EES & EEU by W5IJU & Co. Mar 27 to Apr 3.

Burma - Still more news of another operation. This time by Chester HS1AIV and other calls in Southeast Asia. Hopes to sign XZ5AC from Mandalay in Feb or Mar. Nothing heard from VE3FXT/HS4AMI on his plans other than he is now reported trying to sign from BY (China) in the future.

Here are a number of DX Newsheets/Bulletins which are available on a subscription basis which are publish-

ed in various formats and issued weekly, bi-weekly or monthly.

The position of the various publications in my list does not infer any preference or rate the quality of the publication. Everyone has their own idea of what will best suit their need and pocketbook and will have to find what suits them best.

Long Skip, Canadian DX Assoc. Box 717, Stn. 'Q', Toronto, Ont. M4T 2N7;

The propagation forecast which will be a regular feature of this column needs some explanation. These predictions are relative and rate the expected performance of the bands relative to our current apex of the sunspot cycle. The indications are that we saw the high point last fall in October. However, it will take until at least May to confirm this. As a result of being at or near the apex, the predictions may not be as accurate as before. This is a result of having to wait for new trends to show themselves and the old trends turning out not to be true. The 27-day cycle is more accurate and the 54-day cycle less so. I hope you find the predictions of use in your DXing.

| February | | | | | | |
|----------|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | | | | | 1 | 2 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | |

| March | | | | | | |
|-------|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | | | | | | 1 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | 31 | | | | | |

N4XX Propagation Forecast

| Sun | Mon | Tues | Wed | Thurs | Fri | Sat |
|--------|--------|--------|--------|--------|---------|--------|
| 10-H/L | 11-H/A | 12-H | 13-H/L | 14-H | 15-H/A | 16-H |
| 17-H | 18-H | 19-H | 20-H | 21-H | 22-H/L | 23-L |
| 24-L | 25-L | 26-H/L | 27-H | 28-H | 29-H/A* | 01-A |
| 02-A | 03-A | 04-A | 05-H | 06-H/L | 07-L | 08-H/L |
| 09-H/A | 10-H | 11-H/L | 12-H | 13-H/A | 14-H | 15-H |
| 16-H | 17-H | 18-H | | | | |

editor VE3FRA ex-VE1AL.
DX Newsheet, RSGB, 35
Doughty St., London WC1N
2Ae, England; editor Geoff
Watts.

QRZ DX, Box 494, Howe,
Texas 75059; editor K1TN.

Long Is. DX Bulletin, P.O. Box
173, Huntington, L.I., N.Y.
11743; editor W2IYX.

The DX Bulletin, 306 Vernon
Ave., Vernon, Ct., 06066;
editor K5FUV.

CQ Magazine, DX column has
been by K4IIF, but Feb. issue
was by W7OM.

73 Magazine, DX column has

been by N5KC and now by
K1TN.

QST Magazine, DX column by
K1JX.

Next month we will try to
cover some of the DX nets
where you can find DX to
work.

This month we will take a
look at Asia and give an idea
of when to look for activity.
While this is mainly from VE3,
it will give an idea of trends.

20 METRES

00z short path to VU, 4S7, AP,
until 03z

JA, JT, VS6 until 06z
possibly all night if
conditions are good.

11z short path to VS6, JA
opening moves from west to
east closing in the west at 15z
over the pool at 18z.

11z long path to VU, 4S7, AP
until 14z (9M2, 9V1, also
possible)

17z long path to JA, VS6 until
19z.

17z short path to VU, 8Q7,
4S7, AP until 24z.

15 & 10 METRES

11z short path opens on
northeasterly beam headings
by noon; 17z due north and 23
z to the northwest.

Listen and ye shall hear

During last fall there were
numerous DXpeditions on the
air and many of you heard for
the first time what operator
frustrations will do. In some
cases it is just plain "me
first" attitudes that cause it.
"If I can't have it my way,
then no-one will have it their
way." The idea that all the
policemen are W's is just not
so. I have heard several VE's
in addition to G's, VK's and
ZL's, just to name a few.
While I doubt that the police-
men will disappear, it's
something that the silent
majority can lessen by being
just that - the silent majority.

Don't ask the standard
questions: "what is his call",
"what's his QSL info", "has
he worked the 4's yet" and
"where's he listening".

There is just one solution,
stop, look and listen! Stop
calling until you have deter-
mined that he is working your
area or country and until you
have found where he is

listening. This is done by
listening and looking. There
are some DXpeditions that
are good at keeping the
listening crowd informed and
others that are not but
eventually do.

As Canadians there is a
need to be better informed
and to spend more time
listening. There are far too
many VE's who call on the
transmit frequency for long
periods of time.

Recently a VE6 made
himself most objectionable by
his poor operating and
continued long calling on the
transmit frequency of the DX
station. He called VE3
BVD/ST2 for almost 30
minutes even after repeatedly
being told that the DX
operator wasn't listening
there.

In addition, the DX
operator, Dave, gave his call
after almost every QSO and
where he was listening after
almost every second QSO and

QSL info more than once
every five minutes. The
complaint that "I only have a
transceiver" just isn't valid.
Until Christmas I was in this
group and routinely rocked
the dial to work DXpeditions
operating split frequency. In
fact, I would guess that more
than half the stations worked
are transceive only.

Speaking of listening, how
many of you realized that,
when the Kingman and
Palmyra stations were on
15M around 18Z, the best
signal was on the long path
from eastern Canada? Or
that one of the Palmyra
operators routinely tuned
even frequencies going up the
band and odd frequencies
coming down the band, and
every time he gave his
listening frequencies, he
would start back up the band.
When you figured this out it
wasn't hard to get them with
only a few calls and some



strategic positioning.

There have been many complaints about the operating of the group on Kingman Reef. Personally, I feel that two wrongs don't make a right. If the gang on this end had used good operating practices then the problem would not have existed.

When someone goes on a DXpedition, he is out for his own gratification and the DX op is the one to call the shot. It is not our position to dictate terms to the DX operators.

This 'dictating' results in anarchy and the loss of many QSO's by those looking for a 'new one'.

The groups that went to Kingman and Palmyra paid a heavy price for the privilege of going on a DXpedition. A burst tire on landing at Palmyra coupled with a seat belt not buckled resulted in serious injuries to Jan WA6YQW who was removed by the U.S. Coast Guard to Honolulu where she will be hospitalized for up to four

months. One other person is reported to have suffered a badly cut hand at the end of the DXpedition. WA2FIJ and KB5FU suffered a bit from exposure to the elements on Kingman. All of that is a high toll to pay and they deserve some thanks for their effort. Having been on a DXpedition myself, I know that one receives a lot of punishment.

Enough of this; the problem exists, let's hope wisdom prevails in the future.

VE3EUP

CARF promotes regional symposia

WARC '79 is finished, but the competition for spectrum is not yet over. Canada must now revise and update its Domestic Frequency Allocation Table and its domestic Radio Regulations to take into account the Final Acts of WARC '79 (the ITU Radio Regulations). This will probably involve negotiations with the United States who will be making frequency table and regulations revisions too. Most other countries will be doing the same.

While these changes will take many years to implement, Amateurs need to make their views known to DOC fairly soon in order to have their wishes taken into account.

For this reason, CARF is promoting the holding of one-day regional symposia by provincial societies or other large regional organizations, before a National Symposium to be held in Hamilton, Ontario, on May 17 this year, at which relevant recommendations to DOC will be developed.

Expected or not, the ITU's thorough review of international spectrum problems and its rewriting of the Table and Regulations has opened up a whole host of problems for us.

The reason for this is simple. The bands that most Amateurs use today (two metres and below) were set up by Administrative Radio Conferences in 1947 and 1959. Subsequent specialized WARC's made only minimal changes below about 30 MHz.

So, for Amateurs, it is the first review in 32 years and the changes during that period have been fantastic.

To some extent, Amateurs are behind in things and we have to pull ourselves up in a hurry. The thing is not to be overwhelmed. If we seize the initiative, tackle the problems and get our recommendations in to DOC, we stand a much better chance of getting what we want rather than the dregs, the leftovers.

 CARF

Two-way Intruder Watch

New Zealand authorities have set up a unique system for dealing with intruders in the Amateur bands. An Amateur station, ZL1BOD, has been allocated a special call sign, ZL6IW (Intruder Watch!), to work intruders only and to persuade them to move off the Amateur bands. This is an active approach to

the problem which has brought some results in contrast to the system of simply reporting intruders to regulatory authorities. Since going on the air in October, the station has successfully persuaded a number of Russian trawlers to move off the Amateur bands. (HR Report)

WARC '79: Still work ahead

While the 1979 World Administrative Radio Conference is over and the international allocations to the Amateur and Amateur Satellite Services are reasonably satisfactory, the domestic competition for spectrum is far from being settled. This is no time for us to relax.

WARCs establish very general regulations, resolutions and procedures within which countries must manage

their radio spectrum and operate their radio communications. However, they also allow countries freedom to adjust their utilization to meet specific needs. WARC '79 increased that freedom over that previously available quite a bit. Footnote 3502A which allows Canada to have broadcasting in the 80 metre band is typical of one way in which this is done.

Canada will take advantage of this freedom, especial-

ly in the bands above 30 MHz as it revises its own domestic frequency allocation table and regulations to implement the 'Final Acts' of WARC '79.

While we need to worry about 80 and 40 metres, it is really the spectrum between about 50 and 1215 MHz that we have to argue for. The CARF Symposium in Montreal recognized this and recommended that regional symposia followed by a national symposium be convened to discuss and recommend on issues important to Canadian Amateurs resulting from WARC '79. These are now being arranged through the provincial associations. To help promote discussions, a working paper has been prepared to outline some of the problems and possible solutions. Copies can be obtained from the CARF Office at Kingston.

It is hard to believe, but during the period following the Atlantic City Administrative Radio Conference in 1947 and ending with WARC '79, practically nothing was done to the allocations which the majority of Amateurs use. When one thinks of the growth in all uses of radio that has taken place since 1947 and the congestion that we now have despite the improvements in technology, it can be seen why we Amateurs have to be as attentive to our position in the competition for radio frequencies as are the 20-odd other user associations in Canada.

Bill Wilson VE3NR
President

South of the Border

● A well-known Canadian Amateur, Noel Eaton VE3CJ, who is president of the International Amateur Radio Union, has been given a new office by the American Radio Relay League, of which he is vice-president. Noel has been appointed vice-president for international affairs for the ARRL, according to HR Report.

● The following interesting statement by the FCC made in 1977 surfaced in a paper discovered when cleaning out an old file drawer: "Projections for Fiscal Year 1979 are that between 3-21 million persons (best estimate - 9 million) will experience TVI associated with CB radio operation. The principal factors involved in such interference appeared to be: (1) inadequate CB transmitter harmonic suppression; (2) inadequate TV receiver selectivity (overload); and (3) illegal use of external power

amplifiers." Nine million TVI cases ... like wow!

● According to HR Report, the American Radio Relay League is going to study a possible expansion of the 20 metre phone band. The expansion to be contemplated would involve U.S. Advanced Amateurs working phone down to 14175 kHz and Extra Class ticket holders being able to drop to 14150 kHz.

Canadian members of the ARRL may like to express to that organization their opinion on such an extension.

Correction

In the tables shown for post-WARC '79 Amateur frequencies in the February issue, there was an obvious error in the headings at the bottom of page 35 and the top of page 36. It should, of course, read "... 3300 MHz..." not "kHz".

VE3NB retires as Treasurer

After serving a three-year stint as CARF Treasurer during a time when the explosive growth of the Federation's finances called for his competent attention, Bernie Burdsall VE3NB has retired as CARF Treasurer. We asked Bernie for a few words about himself before he left, and here is the result:

Dec. 31. Kingston. Ontario. As the clock ticked slowly toward midnight and the dawn of a new year, the noisy crowd at the party did not realize that at the stroke of 12, Bernie VE3NB would turn from CARF Treasurer back into a Pumpkin.

I have been asked to write a short history of myself, which is nice. Better than writing one's obituary.

I was born at a very early age in 'G-land' and endured school until I was 16. The Grammar School beat some knowledge into me, as it had trouble getting in via my ears. So in 1937, being possessed of very little skill, I became an office boy and tea-maker. Later that year I was hired by the Post Office Telephones as an apprentice. To say I liked telephone work is an understatement ... I loved it. It also got me away from Mother.

In 1938 I got my first Amateur licence. In 1941, the telephone and other essential services were allowed to join the Armed Forces and, as everyone wanted to be a Fighter Pilot, I decided to have a go. After all, I did use Brylcream. After much standing around, lining up, getting fallen-in and anatomical inspections, I ended up at #4 Wireless School, Guelph, and

later at #6 Bombing Gunnery School at Mountain View, Ont. In May 1943 I became a WAG, or Wireless operator - Air Gunner.

Having met a charming red-head on the Toronto-Port Dalhousie Lake boat one warm moonlit night, and being a Sergeant with good prospects, I popped the question and got married. Unfortunately, I was told to proceed back to 'G-land' and set about winning the war (WW2, that is).

Keeping a stiff upper lip, I said farewell at Toronto Union Station to the Red-Head and got weaving ... to find a Wellington Bomber all set to go. This canvas-covered kite took me on some hair-raising trips around Europe, North Africa and the Balkans. I did have a radio to play with, the famous Marconi twins - R1154/T1155, and we used frequencies around 3.2 and 7.2 megs. It was almost like old times.

EXAMS UPGRADED

Results from the January set of exams were not available at press time, but the Director of the Regulations Branch, W.W. Scott, has notified CARF that the recommendations for improving the exams and the procedures which were adopted by the CARF symposium at Montreal last November are "being considered by officials of the Department. In general, barring conflicts with our programs, I expect that we will be able to implement them in the near future".

In 1946 I left Palestine for England and met up with the Red-Head at last in London, where she had been working for the Canadian YWCA. Back to the Post Office and start working for a living on radio interference, BCI, TVI and tracing unlicensed war surplus rigs. Back on the air as G2DKW. Having trouble getting cigarettes, so decided to come back to VE land. First things first, I say, so got my VE call, VE3BEO, and then a job with Bell Telephone in Ottawa.

The Company has really progressed since I joined it, and as it was doing fine I retired to pension in 1977, leaving it to struggle along without me. It seems to manage, as my pension cheques arrive regularly.

Sometime along the way I became VE3NB and, having strong views on Canadian control of its Labour Unions and other National organizations, I joined CARF and became its Treasurer in 1976. A lot of work, but very gratifying.

It just makes sense to have an organization like CARF, run by dedicated Canadian Amateurs. Will you continue to support CARF by membership, by spreading the word, by writing to your Director or the Executive with suggestions or complaints? They would love to hear from you.

Bernie VE3NB

P.S. The Red-Head is just fine, and still red-headed. □

Lorna Hill VE3IWN is filling Bernie's place. We'll have a story on her in the next issue.



Canadian
Repeater
Advisory Group

Hugh Lines VE3DWL
53 Monterey Dr.
Nepean, Ont. K2H 7A9

Starting right out with the north-west, we hear from Sharon VY1AL a report that the Whitehorse, Y.T., listing is in error. Please change the call to read VY1RBW, not VY1BR who is Sharon's OM!

Art VE7DKY sends a lot of information from the sunny (should read snowy!) west coast. Please add the new listings below.

Bruce VE7BCZ writes that "It must be nice to live in an area where one repeater can cover more than 100 miles in one shot. The distance between Prince Rupert and Smithers is about 140 miles direct, with Terrace in the middle, and no-one can work the other's repeater. This is

why we are working on UHF links from mountain top to mountain top. When we get these links hooked up, we will have coverage from somewhere southeast of Smithers to the Queen Charlotte Islands and Ketchikan, Alaska."

In Toronto, please change the listing for VE3RPT to read 147.660 as the input frequency. The output remains as 147.060. The Three Hills repeater is VE3FUN, on 146.22/146.82.

From Quebec, John VE2ADZ writes that VE2AU (St. Rose, 146.31/146.91) has changed location and is now located in Deux Montagnes near Mirabel, and its new

call is now VE2RAU. It remains on 146.310/146.910. It is a totally solid-state machine and operates 24-hours a day with emergency (battery) power. Still in Quebec, Jean-Paul VE2BHK advises that VE2RON in Noranda should have an autopatch on it by now, and that VE2RYE in Val D'Or has an operating autopatch now.

From 'The Rock', Keith VO1AE advises that the listings appearing in the box below are correct for Newfoundland/Labrador.

If there are any other errors or omissions from the list, please let me know as soon as possible so that I can have an up-to-date list for the May issue, before the summer travelling starts. The deadline for the May issue will be March 31, so the corrections must be in my hands before March 20 to be included. Send them direct to me at the address in the column heading.

VK Visitor

• John Aarsse VK4QA, president of the Queensland branch of the Wireless Institute of Australia, has been paying an extended visit to Ottawa as part of a world tour. John, who works for the Australian Broadcasting Corporation, has had extensive discussions with CARF officials and a look at private and public broadcasting facilities through his Amateur contacts. An exchange of publications and information between WIA and CARF has been arranged.

Alberta

| | | | |
|-----------------|--------|---------|---------|
| Porcupine Hills | VE6ROT | 146.130 | 146.730 |
|-----------------|--------|---------|---------|

British Columbia

| | | | |
|---------------|--------|---------|-----------|
| Fruitvale | VE7? | 146.340 | 146.940 |
| Prince George | VE7? | 146.280 | 146.880 |
| Smithers | VE7RHD | 146.460 | 147.060 |
| Vanderhoof | VE7? | 146.030 | 146.630 |
| Vernon | VE7RVN | 146.460 | 147.060 A |

Also make the following changes to your listings:

British Columbia

| | | | |
|------------|--------|---------|---------|
| Quesnel | VE7RQL | 146.060 | 146.760 |
| Salmon Arm | VE7APH | 146.250 | 146.850 |
| Trail | VE7CAQ | 146.250 | 146.850 |
| Vernon | VE7RSS | 146.280 | 146.880 |

Bruce VE7BCZ also sends info from VE7-land. Please add the following to your lists:

British Columbia

| | | | |
|---------------|--------|---------|---------|
| Prince Rupert | VE7RPR | 146.280 | 146.880 |
| Port Edward | VE7RPE | 146.400 | 147.000 |
| Terrace | VE7DRT | 146.340 | 146.940 |

Newfoundland/Labrador

| | | | |
|---------------|--------|---------|---------|
| Corner Brook | VO1MO | 146.340 | 146.940 |
| Gander | VO1AV | 146.460 | 147.060 |
| Grand Falls | VO1CNR | 146.340 | 146.940 |
| St Johns | VO1GT | 146.340 | 146.940 |
| St Johns | VO1EN | 146.460 | 147.060 |
| Labrador City | VO2AD | 146.340 | 146.940 |

AMATEUR EQUIPMENT DELIVERED TO YOUR DOOR

(WE PAY SHIPPING!)



MFJ-941B Versa tuner II

This accurate unit has SWR and dual range wattmeter, antenna switch, built-in balun, 300W RF output. Matches everything from 1.8 thru 30 MHz. You can use just one antenna and increase the useable bandwidth. Has SO-239 connectors. Mobile mounting bracket.

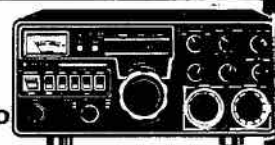
\$124. postpaid.



DENTRON GLA-1000 linear amplifier

Freq. coverage 80 to 10 meters, covers most MARS freq., RF drive: Max. 125, power consumption: 117 VAC 50/60 Hz 12.5 Amps, factory fused at 15 Amps. 234 VAC 50/60 Hz 7 Amps. DC input: 1 KW CW and 1200W PEP SSB. Final tubes 4D-50A tubes (6LQ6).

\$589. List. Call for deal



KENWOOD TS-700SP all mode 2m transceiver

Covers the entire 2 meter band. SSB, CW, FM, AM, and semi-break in CW, side tone monitor, digital frequency readout, receiver preamp and 600 KHz repeater offset operation within all 2m repeater subbands including the new 144.5-145.5 MHz. 10 watts RF output complete with AC/DC power supply.

\$1199. Free mic!!

YAESU

YAESU FT-207R synthesized Handi-Talkie

144-148 Mhz, 5 KHz steps, output: 2.5W hi/200 mW low, 4 memories plus program-mable offset, prior ch., memory band & auto scan, keyboard encoder freq. entry, 2 tone input from keyboard, keyboard lock, programs odd splits, auto. battery saver for LED, rubber flex antenna & 15 hr. wall charger.

\$479. List. Call for deal



DRAKE TR/DR7 general coverage digital R/O transceiver

Covers 160 thru 10 meters, reception from 1.5-30 MHz continuous, 0-30 MHz with optional Aux-7 modes: USB, LSB, CW, RTTY, AM equiv., true passband tuning, RIT, built-in RF wattmeter/VSWR bridge, SSB 250W PEP, CW 250W AM equiv. 80W. Power supply required for AC operation.

\$2098. In stock



TEN-TEC Century 21 CW transceiver

Full break-in, 70 watts input, all solid state, built-in speaker, receives CW or SSB but transmits CW only, overload protection, offset receiver tuning, adjustable level sidetone, built-in regulated power supply. Crystals are provided to cover the 80 thru 10 meter bands.

\$539. In stock



CDE Ham IV antenna rotor

Pinpoint accuracy with snap action switched wedge brake and rotational controls. Tower mounted only. Turns 12 sq. ft. of antenna. 8 conductor cable required.

\$239. Special!



KENWOOD TS-120S HF transceiver

No tune up! With digital display, cooling fan, IF shift, protection for the final transistor, VOX, noise blanker, 25 KHz marker, 80-10 meters, WWV, modes: SSB and CW, 200W PEP SSB, power requirements: R.O. 7A 13.8 VDC, T. 18A 13.8 VDC, Size: 3 1/2" H x 9 1/4" W x 13 1/2" L.

\$1049. Call for deal



KENWOOD TS-180S solid state HF transceiver

Covers 160-10 meters, digital frequency control with 4 memories and manual scanning, 200W PEP/160W DC 160-15 meters and tunable noise blanker, dual RIT (VFO and memory/fix) SSB, CW, and FSK, 13.8 VDC operation, and built-in digital display to show VFO freq. and difference between VFO and M-1 memory freq.

\$1659. Call for deal

You can use your
Master Charge or
VISA when you order.



HAM



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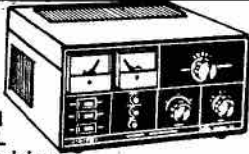
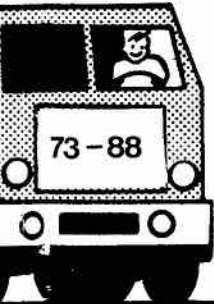
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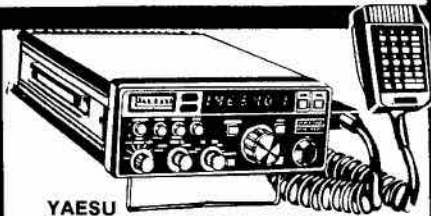
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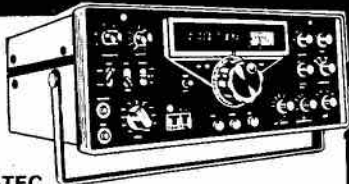
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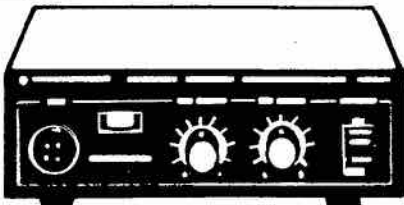
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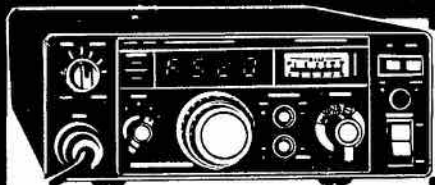
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CHIPS & BITS

A new computer column for Amateurs!

By Charles MacDonald
Service Manager,
Compumart,
411 Roosevelt Ave.
P.O. Box 6132, Station J,
Ottawa, Ont. K2A 1T2.

Last month in this column we talked about the Micro-processor and the ways it will affect the Amateur in the 80's. In short order that little 40 pin IC is going to be found in several places in the shack.

Most articles in radio Amateur magazines tend to go very quickly into the hardware aspects of the device in question. We soon find out how many volts and watts it uses, its impedance, the size, weight, colour and cost. In this case we will be a bit different.

When you go to put together that super home-brew transmitter for QRP you have been working on, you probably use this procedure:

1. Get the parts
2. Solder them together
3. Smoke test

If your junior op wanted to build the device you would probably find that this set of instructions is not sufficient. Most likely he or she would end up building a kit that came with a detailed list of instructions. The list might say install R5 (red red green) between lug J5(4) and R25(2) NS. This list lets even a person who has never seen a radio chassis before build a unit that will probably work.

What does this have to do with the computer? The computer needs a list of instructions to tell it how to do what you want it to do. The really neat thing is that you don't have to tell the computer why (it will do

anything you say!), just how.

Let's start off with an example in **Basic**, a computer language used by many computers such as the Apple II, the Commodore PET, or the TRS-80. Let's say we would like the computer to say 'hello'. We would type:
PRINT "HELLO"

and the computer responds
HELLO
READY.

The PRINT tells the machine we want it to put something on the screen. The quotation marks tell the machine to pass on what is between them unchanged so the machine puts HELLO unchanged on the screen. The machine, not having anything else to keep it busy, next says READY. and waits for you to type something else.

It would seem that this is a small improvement; the operator has just typed two words to get the machine to type one on the screen. The computer

does not remember the command after it is given. If however you were to type:

```
10 PRINT "HELLO"  
9999 END
```

RUN

the computer would still print
HELLO

READY.

however, this time we can give the command

```
LIST
```

to which the computer responds:

```
10 PRINT "HELLO"
```

```
9999 END
```

READY.

This collection of statements is called a program. Everytime you say RUN the computer will print HELLO. Most programs are, of course, quite a bit longer, but in all cases the principle is the same. The program is just a list of instructions for the computer.

BASIC is just a convenient way for us to tell the computer what to do. Other languages are FORTRAN, COBAL, Pascal, RPG, LISP, Forth, and many many more. Each language was developed for a given use. BASIC was developed in the early 60's as a convenient language to teach people who have never used a computer before how to use it to their own advantage.

An old idiom in the computer field is 'they do just what you tell them to do, not what you want, just what you tell them'. You must tell the

If you have questions, write in, although I can't promise a personal answer. Common questions will be answered in future editions of this column.

machine every step that you want it to perform. BASIC, which is provided by the computer manufacturer, is a list of somewhere between 2000 and 24000 computer instructions that tell the machine how to print to the screen, do arithmetic, get the information you type from the keyboard and so on.

Besides BASIC, another

language we will be using is machine language, the native tongue of the microprocessor. Every microprocessor chip, unfortunately, has a different machine language. In this series, I will be mainly talking about the 6502 microprocessor used in the Apple, PET, KIM-1, OSI, SYM and AIM-65. Users of other chips need not feel left out, how-

ever, as I intend to be as general as possible.

Next month, we will continue our discussion of programming. We will take up the topic of addressing memory, data input, output, and so on. The following month we will (finally) look at the hardware aspects of the chips □

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Why sub-band regulations?

There are times when I wonder if Amateurs really know what they want. Almost in the same breath, they bemoan the multiplicity of regulations and then ask for still more detailed rules concerning their operations.

Specifically, why must sub-bands be regulated by the DOC? Why is it that Amateurs themselves can quite adequately divide and share some bands, such as two-metres, while some of the same people insist that others, like 80- and 40-metres, must be sorted out by DOC and made into regulations? And then they are not content with what they get and demand changes.

In many ways, this is a most cumbersome and inefficient bureaucratic way of doing things; in fact, it appears even childish, as if Amateurs are not mature enough to sort out their own problems. To say the least, it is a costly and unnecessary function which we continue to foist on the DOC. Remember, it all comes out of **your** pocket!

As a result of the CARF symposia, Amateurs will be developing submissions to DOC concerning sub-band allocations. Instead of making this submission to DOC, why not use it as the basis for a self-coordinating, co-operative frequency plan controlled by Amateurs? Of course a submission would have to be made to DOC requesting that they no longer legislate sub-bands, but this is a much simpler process.

There are benefits other than merely controlling our own destiny. For instance, if other countries (U.S.A.?) change their sub-bands without co-ordination with the DOC, it would merely require a simple change by Canadian Amateurs to offset such a move, rather than petitioning the DOC to change the General Radio Regulations (a lengthy and time-wasting procedure).

Canadian Amateurs have already shown they are quite capable of carrying out such band-sharing plans. Just look at the efficient and equitable

way the Repeater Councils have sorted out the two-metre band and are working on other VHF/UHF bands.

Let's show we **are** the mature, responsible and self-regulating people we like to think we are. Stop wasting DOC's time and (our) money in requesting unnecessary regulations!

 CARF

VE3ZS

(To back up this view, a 'spokesman' for the Minister of Communications (as of Feb. 17) said in a recent Canadian Press story that there should be as little regulation as possible. Speaking at a national symposium in communications law and policy, MP Scott Fennell, parliamentary secretary for DOC Minister MacDonald, said that regulations "should be a simple, clearly understood process - limited to what is absolutely necessary to achieve statutory objectives and solve practical problems". Most other countries do not 'legislate' Amateur sub-bands.)

The Fight

Although the smoke and flame of battle for frequencies at WARC '79 in Geneva have subsided in that city of peace, and the bureaucracy of the International Telecommunications Union can revert to a more normal existence, the average Amateur probably has no conception of what the arduous 12-week grind was really like.

It was a conference noted for its political undertones rather than technical accomplishment. In this graphic description of a typical session, note that international politics appear; political, rather than technical, considerations affected many of the decisions on frequency allocation for the next 20 years.

Bud Punchard VE3UD, who was the Amateur affairs advisor on the Canadian delegation to the Conference, describes for us just one of the skirmishes for frequencies for the Amateur Service.

The new frequency table for the 40-metre (7 MHz) Amateur band in the Final Acts of WARC '79 innocently shows little change from the existing table created 20 years ago by WARC '59.

Footnotes have been added permitting the operation of non-Amateur stations during national disasters, and fixed services on a primary basis between 7000-7050 kHz in many African and Middle East countries in Region 1.

Another footnote states that the use of the band 7100-7300 kHz by the Amateur service shall not impose constraints on the Broadcasting service intended for use in Regions 1 and 3.

In effect, this means that Amateurs in Region 2 cannot complain officially through their administrations about broadcast interference from Regions 1 and 3. It all sounds very simple, but the story of how this came about was quite dramatic, and at times spine-tingling.

At the Conference concluded last December, one of the committees, Working Committee 5BB, composed of an average of 200 to 300 delegates, considered the bands for all services between 4000 kHz and 27500 kHz. The 40-metre band first came up for discussion on Nov. 9. Here is a summary, in part, of the comments of the various countries leading to the first decision. (It is typical of the procedure which was used to allocate most bands.)

First off, the United Kingdom proposed that Amateur and Amateur Satellite services should get 7000 to 7100 kHz world-wide (no change) and Broadcasting should be allocated 7100 to 7300 kHz in Regions 1 and 3 (no change).

After a long discussion of Broadcasting versus Amateur services:

- Argentina proposed no change in the existing table (i.e. it supported the U.K.)
- Canada pointed out that

Resolution 10 adopted at WARC '59, which strongly recommended that the WARC '79 Conference should solve the problem of interference between Amateurs in Region 2 and Region 1 broadcasters, should be discussed and solved. Canada then proposed an exclusive Amateur band from 6900-7100 kHz and a Broadcast band from 7100-7400 kHz. While reducing the Amateur band available in Region 2, this would separate the two services and add 100 kHz to the Broadcast band. Night-time operation for Amateurs would be much more attractive.

- Mexico stated that frequencies 6765-7000 kHz had already been decided upon for Fixed primary and Land Mobile secondary together with Industrial, Scientific and Medical (ISM) by footnote. Cannot accept Canadian proposal and must maintain the compromise solution.

- Liberia supported Pakistan.

for Forty

By Bud Punchard VE3UD

United Kingdom: An extension for Broadcasting in the Band 7300-7400 kHz is needed so there will be something available for planning at the future broadcasting conference.

Cameroon: Should extend Broadcast bands but not below 9 MHz.

Pakistan: Extension is essential for the viability of the Broadcast plan.

China: Supports Pakistan, Iran and Botswana.

Iraq: Supports Pakistan, Iran and Botswana.

United States: Must have more spectrum for Broadcasting for intelligent planning - additional spectrum will legalize most of the present out-of-band broadcasting.

U.S.S.R.: Committee 5 must take the decision so it is impossible for this working committee to extend the band.

Somaliland: Strongly opposes any reduction of spectrum available for Fixed Services.

Papua New Guinea: Use of this band for Broadcasting could cause problems - in any case, want Fixed Services on a secondary basis.

Nigeria: Opposes any extension of Broadcasting.

Kenya: Opposes any extension of broadcasting below 9 MHz.

Argentina: Suggests no change.

Jordan: Supports Iraq 7300-7400 kHz BROADCAST

world-wide.

Senegal: Opposes Broadcasting in that band.

Uruguay: Opposes Broadcasting in that band below 10 MHz.

At this point, the proposal for 7400-7400 kHz Broadcasting world-wide, was put to a poll. The result was: for 44, against 47. The comments continued:

United Kingdom: Would support Papua, New Guinea but for Broadcasting with Fixed service secondary.

Greece: This poll was too close to be a consensus.

Botswana: Why not poll this on a Regional basis?

U.S.S.R.: This is impossible - firmly opposed.

Nigeria: We are not discussing the Broadcast plan here. The main trouble is the manner in which the broadcast frequencies have been used, causing the delegates to have a complex against Broadcasting. Actually a broadcast plan is essential - with or without an extension provided Fixed Services can be accommodated.

New Zealand: Supports Canada. Issue is world-wide - must separate the two services.

United Kingdom: Band 7300-7400 kHz for Broadcasting must be considered first.

Uruguay: Supports Mexico because cannot tolerate loss of Fixed Services bet-

ween 6750 and 7000 kHz to the Amateurs.

United States: If an equitable solution cannot be found, then the status quo should be maintained. (This came after the U.S. had privately stated that it would support Canada.)

Canada: Suggested a new proposal: 7000-7200 kHz Amateur world-wide exclusively; 7200-7400 kHz Broadcast exclusive world-wide. (This would have required Broadcasting in 7100-7200 kHz to move out.)

This proposal was polled with 23 for and 64 against. **It was therefore settled that there would be no change to the present table for Regions 1, 2 and 3.**

At this stage Region 2 Amateurs felt a keen sense of disappointment that the serious interference problem on the 7 MHz band at night had not been resolved. The debate, however, continued:

Nigeria: Footnote 212 allocating 7100-7150 kHz to the Amateur Service in South Africa should be suppressed.

Tanzania: 7000-7050 kHz is now used for Fixed Services primary in Tanzania now and therefore they wanted a footnote showing this as an alternative allocation.

Norway: Opposed to a one-country footnote.

Chairman: Can Tanzania accept a secondary allocation for Fixed Services in 7000-7050 kHz? (No answer.)

Pakistan: Proposes 7300-7400 as an extension for Broadcasting world-wide.

Iran: Supports Pakistan.

Greece: Supports Pakistan.

U.S.S.R.: Tanzania's request is perfectly normal.

Thailand: Opposes extension of Broadcast bands.

Botswana: It is imperative to have an extension of the band 7300-7400 kHz for Broadcasting; will not oppose suppression of Footnote 212.

Senegal: Wants deletion of Footnote 212.

Lybia: Supports extension of broadcast band proposed by Botswana and Pakistan.

Here the meeting was polled again on the proposal for 7300-7400 kHz Broadcasting with Fixed secondary. The result was 42 for, 49 against.

Canada: Why are we not addressing Resolution 10 to solve the serious interference problem below 7300 kHz? This could be accomplished by allocating 7000-7200 Amateur exclusive world-wide and 7200-7400 kHz Broadcasting exclusive world-wide.

Pakistan: Actually, we need the band 7300-7500 kHz for Broadcasting.

Norway: Supports Pakistan.

United States: Reserves approval of this matter at this time.

United Kingdom: Reserves approval of this matter at this time. Regrettable that conference has not been able to solve this problem.

Iran: Reserved on this band but the problem must be resolved.

United Kingdom: Conference has not yet solved

regional problem between 7100 and 7300 kHz.

Argentina: If broadcasters would use single side-band use of spectrum would be doubled.

When, twelve days later on Nov. 23, Working Committee 5BB resumed discussion of this matter, out of the blue came this shocker!

The United Kingdom delegate arose and stated that, because an extension of the Broadcast band on 5950-6200 kHz had been rejected, the U.K. proposed that Broadcasting be allocated exclusively between 7100-7300 kHz in Region 2!

A poll was taken on this proposal. The result was 42 for and 32 against! **This eliminated the Amateur Service between 7100-7300 kHz in Region 2!** Most Region 2 countries were staggered - they did not want broadcasting and were strongly opposed to this result.

An immediate counter-attack was launched by the U.S. delegation. It declared that the imposition of an unwanted allocation on Region 2 by Regions 1 and 3 would shake the foundation of the ITU. The U.S. therefore felt compelled to give notice that, when the issue of deleting the Amateurs from 7100-7300 in Region 2 and adding broadcasters came up in the final plenary session, it would reserve the right to also permit the Amateur Service in that segment, in the U.S.

Seventeen countries went to the support of the United States on this move. Although Canada had previously proposed broadcasting in part of this band, it agreed to support the United States.

Later in Committee 5, the

main Frequency Allocation Committee, the U.S.A. introduced Document 827 which was prepared by the U.S.A., U.K., Brazil, Botswana, Tanzania and Mexico. It proposed re-instating the Amateur Service between 7100-7300 kHz on an exclusive basis in Region 2 with a footnote stating that the use of this band by the Amateur Service could not impose constraints on the Broadcast Service intended for use within Regions 1 and 3. Scattered sniping met this proposal:

Switzerland: Pointed out that it had earlier proposed 7000-7200 kHz AMATEUR world-wide and 7200-7500 kHz BROADCAST on a world-wide basis. Strongly opposed to Document 827.

Pakistan: Have not received Document 827 in mail.

Iran: Document is not on the agenda, therefore it cannot be considered or polled.

Here the chairman wound up the battle by declaring that the proposal in Document 827 should be tested by a poll. It was duly taken and the result was 53 for, 9 against and 19 abstentions, including the U.S.S.R.

Therefore the table for the band 7000-7300 kHz will remain unchanged except for the addition of the footnotes mentioned at the start of this saga.

Although it was a hard fight and the interference picture wasn't improved, it was a victory in that at least the status quo on 40 was, more or less, retained. Perhaps the words of the Duke of Wellington at Waterloo are apropos. He is reputed to have said: "It was, sir, a damned close run thing".

To QRP or not to QRP?

Edmond ('Chip') Schoenherr VE3JLL

('QRP' is the Q signal for 'decrease power')

Great, glowing stories have been written about the joys of Amateur Radio. Eye-catching ads tell us all how great our signal would sound if we only used 'Brand X' linears and 'Brand Y' Speech processors and the like. In viewing back issues of Amateur-oriented mags, this writer has seen little or nothing about the joys of operating QRP ('low power').

Could it be that Amateur radio has gone past the stage of enjoyment? Are we all now looking for that ever elusive signal report of 5, 9, 9 plus 40? Have we all lost our patience and stick-to-itness? These are questions each one must ask himself. The continued existence of QRP operating depends on your answers.

Listening to both the CW and phone sections of the bands has been one of my most recent projects; part of that project was to list the type of equipment and power being used. The table below

covers some 270 QSOs over a period of two weeks of monitoring.

These figures say three things:

- 1) Japanese-built equipment is the number one choice in Amateur gear.
- 2) Most Amateurs are equipped with linear RF amplifiers.
- 3) QRP operations are dying off.

It is not surprising that some American firms are getting out of the Amateur radio line. As the writer is a Canadian Amateur and there is no Canadian Amateur Radio gear production as such, I must empathize with the U.S. manufacturers. From the gear that I have seen, the quality is first rate yet, with prices higher, for the most part, Americans and Canadians seem to lean toward the bigger names in Japanese gear.

If the trend towards the Japanese-made gear continues, in less than 10 years there will be no Amateur

radio gear produced in the U.S. As Canadians and Americans are about as close as any two people can be, it will be a sad state of affairs when American Amateur Radio know-how goes down the tube (or down the transistor, as the case may be). Unless Americans and Canadians start looking for and buying gear built closer to home, we will kill that source completely.

What does all this have to do with QRP operations? Not much, except most QRP equipment is produced in the U.S.A., although at least two big-name Japanese producers make some QRP equipment.

It is the ease of availability and the slight difference in pricing between QRP equipment and equipment geared to 100 to 200 watts input, that appears to be the biggest factor in choosing that type of equipment over the QRP gear. After all, you can't drive those 1,000 to 2,000 watt after-burners on five watts!

The joy and thrill of operating QRP is most definitely on the wane and the tide is not being stemmed at all. Of the 3,000 contacts made by the writer (all hours of the day and night) over the past three years, only some 200 of those were QRP contacts. This works out to only 6.7%, a very small figure



Type of Equipment Used

| | |
|---------------------|-----|
| American-built rigs | 56 |
| Japanese-built rigs | 214 |

Type of Power Used

| | |
|----------------------------------------------|-----|
| Power in excess of 200 watts input: | 156 |
| Power over 25 watts but less than 200 watts: | 106 |
| Power less than 25 watts: | 8 |

indeed. If you consider the figures of the 270 QSOs monitored, you find that those figures work out to only 2.9% being QRP. To QRP enthusiasts, these are very alarming figures.

When you consider that much less power (hydro power and its related costs) is required, and the signal reports are off by only 2 or 3 'S' units (these figures are reasonably accurate and can be readily verified by working the same station with both 'QRO' (i.e. common types of 100 watt to 200 watt) and QRP equipment. If you decide you want to try that test, make sure you don't use a linear, just gear with from 100 to 200 watts input).

The joy of working a station and getting a 5 7 9 on QRP right after a QRO station has worked a station and got

a 5 9 9 can't be beat (except on a dull, dreary morning at around 6 am, hearing a DX station calling CQ; you call him, he calls back saying "Sigs OK, tnx fer call, am running 2 watts into a folded dipole").

Yes, it takes a special breed to operate QRP: guys and gals that spend a great deal of their time tuning and trimming antennas to get as close as possible to the perfect match; people who live with the frustration of hearing big guns ignore their 'weaker' signal (and some that even pretend the QRP signal isn't there at all and start calling right on top); those that have got the use of CW filters down to a real science and are more often better at zero beating than most others on the band (try listening to some traffic nets).

More and more QRP operators are banding together in clubs or on QRP nets, to help keep the true spirit of comradeship and Amateur radio alive.

If you hear a QRP station on the air, in most cases you'll find their speed in CW to be 10-15 wpm and their QSOs have the tendency to fall into the good old-fashioned **rag-chew**; it seems once we make contact, we hate to let you go.

Yes, it does take a special breed of Amateur to operate QRP, and it's a shame that more don't try it ... they'd find that they were really missing something that words alone can't express. Operating QRP is something you must experience in order to fully appreciate.

Chip Scheonherr VE3JLL
Manotick, Ont.

Tower torts to topple?

Amateurs who have been unfortunate enough to buy or rent homes with a restriction on the erection of antennas may take heart from recent happenings in Ontario. The current battle between cable TV operators and interests which want to market pay-TV by direct satellite-to-home transmissions has brought out some interesting facts. In order to receive such signals, a rooftop dish antenna would be the best bet. This would conflict with the restrictions in some residence sales and rental agreements.

Such restrictions, however, are difficult to enforce, according to a report in the *Globe and Mail*. Quoting the assistant deputy minister of the federal Justice Depart-

ment, the article states that the restrictions involve a very technical area of property law and the chances of successfully enforcing such restrictions is not very high.

The federal official also noted that, in Ontario, the law allows a court to relieve the landowner from a rest-

riktion if it is too onerous. The restrictions, which appeared about 20 years ago, were encouraged by cable TV companies which paid housing developers to include the prohibition. This meant that, without a TV tower, homeowners were ready-made customers for cable TV.

Free QSL Service for members

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

London Seniors on the air

London Amateurs don't do things by halves, according to a report from Dave Lamber VE3KGG who tells about the inauguration of the London (Ont.) ARC Senior Citizens' station VE3LS.

The December event featured DOC district office's David Ronaldson presenting the station licence to Ced Tanner VE3BBL, 'Amateur Radio Day' being proclaimed by Mayor Gleeson and a certificate presented to the club by Alderman Jim DeZorzi VE3ZK.

The group obtained a federal government 'New Horizons' grant to set up their all-band station which is on the air five days a week. VE3XY was the sparkplug in getting the project rolling and in procuring the grant.

-Photo VE3KGG



Left to right, Jim DeZorzi VE3ZK, Richard Hewitt of the New Horizons Program and Ced Tanner VE3BBI with the Mayor's proclamation.

DX News

- VY1AU, reputed to be the first Yukon station on six metres, claims to have heard a South African six-metre beacon on Nov. 28 at 0652 Z. VE1ASX was reported heard by EI6AS (Eire) on 50.125 MHz on Dec. 27.

- VE3BVD/ST2 in the Sudan will be on for several weeks from that country on CW, according to Canadx publication 'Long Skip'.

- DX operators may be able to get the thrill of a lifetime this spring if they can hook one of the three Amateurs who are hoping to get an okay to operate from Communist China. George

Collins VE3FXT, Canada's globe-trotting DXer, now operating HS4AMI in Thailand and ZL1ADI and ZL1AMO all hope to get permission to get on the air from 'BY-land'. George's call has been erroneously reported before as HS4AMA.

- HR Report, the weekly newsletter for Amateurs published in the States, notes that the call sign prefix 'Y2' is a new prefix for East Germany. The question of whether ZA3KL is an Italian in Albania or an Albanian in Italy or whatever seems to be resolved by reports of DF bearings by European Ama-

teurs which place the station in central Italy. Anyway, Albania, which doesn't even list any Amateurs, hasn't exactly been noted as a ham paradise. (To complicate matters, there is at least one area in Central Italy where expatriate Albanians have settled. Your Editor encountered it during WWII.)

DISC JOCKEYS, ATTENTION

- Region 2 Broadcasting frequencies have been expanded as a result of WARC '79. Starting Jan. 1, 1982 at the earliest, the 'broadcast band' as we know it will be extended from 1605 kHz to 1705 kHz.

Is your gear

Burlington ARC

Normal household furniture insurance provides protection on a limited basis for Amateur gear while in the shack. The major perils of interest to Amateurs are damage caused by fire and lightning. These two perils are insured, but not all policies provide burglary or theft coverage or protection for equipment which is temporarily removed from the residence of the insured. Most policies of this type have a deductible clause. The deductible amount may range from \$25 to \$100.

All **fire** insurance policies **exclude** windstorm damage to outdoor antennas or their appurtenances (tower, coax, rotor and cable). Specific insurance is available with a very few insurance companies with high deductibles at a cost which is prohibitive.

Regular policies exclude coverage on equipment which is **attached** in any way to a motor vehicle. (Opinions vary on this, but the terms and conditions of the policy prevail over opinions.) This type of gear can be insured by endorsement to the automobile insurance policy, but only for the same coverages as are carried on the vehicle, such as collision, comprehensive or fire and theft.

There are disadvantages to the insurance under an automobile insurance policy. Coverage applies only while the insured equipment is contained in or on the vehicle described in the policy. There is no protection for the gear

when it is used in any other vehicle, i.e. a rental or borrowed recreational vehicle for vacation use. Deductibles may range from \$25 to \$500.

Automobile type of insurance coverage cannot be used to cover your gear if you drive a borrowed, leased or company owned vehicle.

The practical way to insure mobile or portable radio gear is on an 'Inland

Marine floater' which can be added to your existing household furniture coverage or as a separate policy. The coverage is usually on an 'All Risks' basis and 'floats' with the equipment anywhere in Canada or U.S.A.

Recommended Method to Insure your Gear

Equipment in the shack - regular household furniture coverage (make sure your

Amendments to

Owners of the recent edition of the CARF Radio Regulations Handbook should note the following amendments, dated January 1980. These are largely the result of recent DOC changes to the regulations.

Page 6 - Correct table in para 2.11 to read:

VO1 - Island of Newfoundland

VO2 - Labrador

Page 24 - Effective January 21, 1980, Cards of Authority are no longer required to permit Canadian and American Amateurs to operate, on a temporary basis, in the other country. The following changes should be made:

(Replace para 5.16.1 with new 5.16.1)

"5.16.1 Operating in the U.S.A.

Canadian Amateurs may operate their Amateur stations in the U.S.A. as portable or mobile installations without prior approval of the F.C.C. Your D.O.C. station licence **and** Operator's Certificate (or copies thereof) must be carried with your equipment and be available for inspection upon demand by appropriate government officials, e.g., radio inspectors, customs officers, etc."

(Delete para 5.16.1.2; delete para 5.16.2; renumber para 5.16.2; replace para 5.18 with new 5.18)

"5.18 Operation in Canada by Foreign Amateurs

Foreign Amateurs, except U.S. Amateurs, wishing to operate their Amateur stations in Canada should make written application to the D.O.C. Regional Office nearest their intended port of entry. (U.S. Amateurs do not need to apply as they are permitted by special agreement between Canada and the U.S.A. to operate in Canada;

properly insured?

policy covers theft).

Equipment for mobile or portable use - Cover under an 'All Risks' floater policy or rider.

Antenna and Tower - self-insure or buy specific coverage on floater type policy.

Join 'Operation Identification'. Ask your Insurance agent for a Security Marking System. (Cost is under \$5.) Each kit contains an invisible

non-defacing marker and two warning stickers:

'Warning - articles inside are invisibly marked for identification by police.' Print your name and driver's licence number (invisibly) on the outside of each piece of gear as well as other personal belongings. Police Departments have ultra-violet lights for immediate identification.

To be sure of just what

coverage you may have or wish to get -- call your own insurance agent... Ed.]

Ron Poppe VE3IUJ
in the Burlington ARC
'Printed Circuit'

Amateur
appointed
to CRTC

Don Courcy VE1CF, a member of the Sydney Amateur Radio Club and Radio Inspector at the Sydney N.S. office of the DOC, has just been appointed Associate-Director of the Atlantic Region for the Canadian Radio-Television and Telecommunications Commission (CRTC).

Don will be leaving the DOC to take up his new duties with the CRTC Regional office in Halifax. Don is well known in the Amateur circle in Nova Scotia as editor of the Cape Breton Amateur, and recently changed his call from VE1RI to VE1CF. Don is also ex-VE1 AKM, ex-VE1WP and ex-VE2 JV.

CARF ASKS TO END 160 METRE RESTRAINTS

● As a result of WARC '79, the navigational device called Loran will be phased out of the 160 metre band. Operation by Amateurs in this band has certain restrictions because of Loran but with its eventual removal they will become redundant. CARF is asking DOC to remove these restrictions when Loran is moved out.

Regs Handbook

they must, however, carry their F.C.C. licences with their equipment.) Application may be made after arrival in Canada, but operation shall not commence before receipt of appropriate authorization from the D.O.C. Without such authorization, Amateur radio equipment may be refused admission to Canada or be sealed by Canada Customs."

Page 72 - To ensure that certain activities of law-enforcement agencies allowed under the Criminal Code are not in violation of the Radio Act, the following amendments have been made to the General Radio Regulations, Part II:

Section 35 of the GRR Part II is amended by deleting the word "or" at the end of paragraph (c) thereof, by adding the word "or" at the end of paragraph (d) thereof and by adding thereto the following paragraph:

"(e) making use of or divulging a radio communication transmitted otherwise than by a broadcasting undertaking where such use or divulgence is made

(i) in the course of or for the purpose of giving evidence in any civil or criminal proceedings,

(ii) in the course of or for the purpose of any criminal investigation,

(iii) to or by a peace officer and is intended to be in the interests of the administration of justice, or

(iv) on behalf of Her Majesty for the purpose of preserving national security."

Page 93 - Appendix B-2 - Third Party Traffic

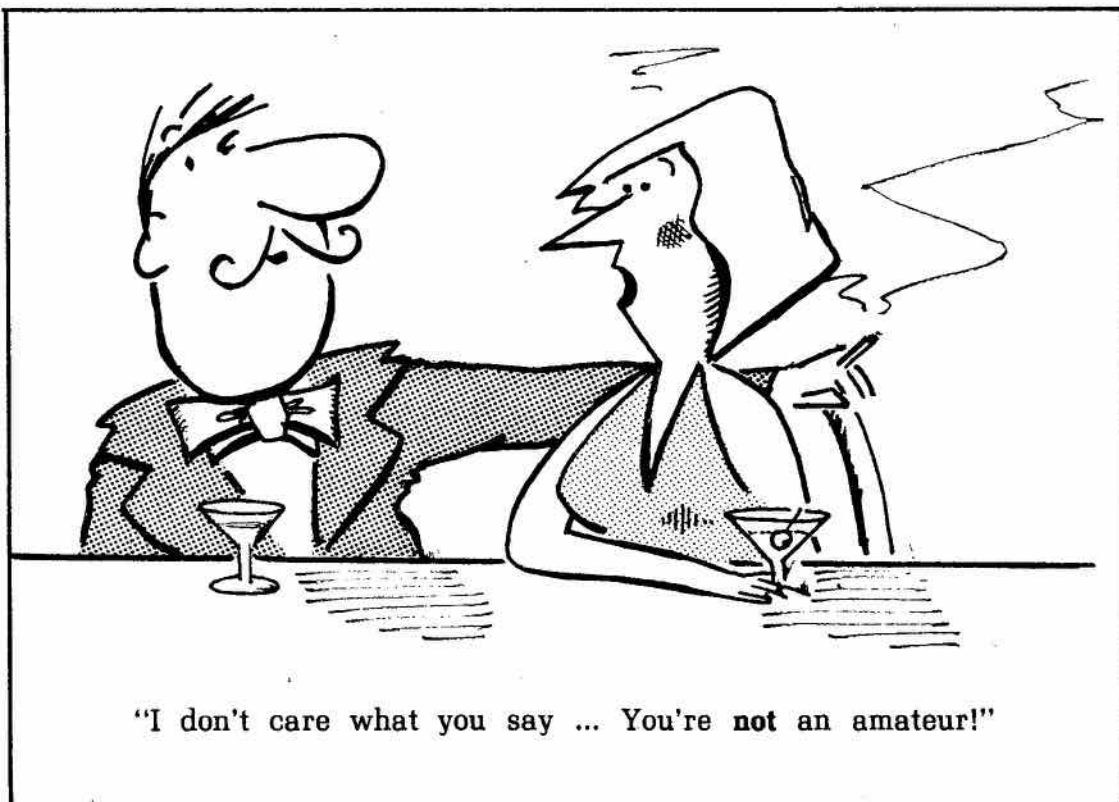
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"S ... H ... I ... "



"I don't care what you say ... You're **not** an amateur!"

How important is your SWR?

By R. Zbarsky VE7BTG

The purpose of this article is to throw some light on standing wave ratios, a subject which appears to be a mystery to many Amateurs, judging by the comments heard on the air.

We will take a close look at standing wave ratios to see how this phenomenon manifests itself, but also to see how it affects the transmission system where it originates, and the receiving system where its effects are noticed.

First, we must take a quick look at S-units and decibels, because these are the quantities with which the receiving system is concerned.

The decibel (dB) is a term used as a convenient means of describing increasing (or decreasing) values of power, relative to some initial quantity. In human terms, one decibel represents the 'just detectable' change in signal strength, **regardless of the actual value of the signal.**

For example, say you were listening to a transmitted 100 watt signal, and the operator started to gradually increase the power level. At a certain point, you could tell him that the loudness of his signal had increased - this would indicate a 1 dB change

in signal strength. The question, then, is what is the power level at which he is now transmitting?

Fortunately, there is a simple mathematical relationship that describes the decibel in terms of power levels:

$$\text{dB} = 10 \text{ Log } \left[\frac{P_2}{P_1} \right]$$

where P1 is the original power level in watts and P2 is the new power level in watts.

In our example, for a 1 dB increase from an initial power of 100 watts, we can substitute these values into the equation and arrive at a value of 126 watts for P2. This means that, in order to just detect a change in signal strength, an increase in the transmitted signal strength from 100 watts to 126 watts is required.

Let's take one more example. Say the transmitting station increased power from 100 watts to 200 watts. How many dB does this increase represent? Substituting in the equation, we find:

$$\begin{aligned} \text{dB} &= 10 \text{ Log } (200/100) \\ &= 10 \text{ Log } (2) = 3 \text{ dB} \end{aligned}$$

The conclusion is that going from 100 to 200 watts would result in a 3 dB

increase: 3 distinct changes in signal strength. The interesting fact here is that we will always see a 3 dB increase in signal strength if we **double the power level, regardless** of the initial value. This is true because the ratio of the powers will always be 2, and 10 Log 2 is always 3.

Therefore, the receiving station will notice the same **increase** in signal strength if the transmitting station goes from 1 to 2 watts or 500 to 1000 watts!

How is this power gain or increase in signal strength measured at the receiving station? Usually in terms of **S-units**. After all, we rarely tell the transmitting station how many dB his signal level is, but how many S-units it is! Fortunately, there is a convenient relationship between dB and S-units.

Many years ago, certain manufacturers of Amateur equipment arbitrarily decided to provide an accessory to their receivers called S-meters. They designated **S9** to represent so many microvolts of signal appearing at the receiver. However, because of the large number of manufacturers involved, and many different types of receivers, S9 on one receiver did not necessarily match the signal

strength required to produce an S9 reading on another receiver. Eventually, a standard practice was agreed upon, whereby a 50 μ V signal would represent S9. (Although S9 still varies from frequency to frequency and receiver to receiver due to component selection and circuit design, we will assume that it is fairly constant for the purpose of this discussion.)

By filling in the rest of the S-meter scale from S9, it is possible to measure how many microvolts are equivalent to each 'S' reading, and one can also measure how much power is required to produce that microvolt signal strength at the receiver. It turns out that an increase in signal strength of 1 S-unit is equivalent to **6 dB**.

Referring to our previous example then, we had a 1 dB increase when the transmitter power went from 100 watts to 126 watts. This is therefore only 1/6 of an S-unit! Hardly noticeable. In fact, doubling our power, resulting in a 3 dB increase, yields an increase of only 1/2 of an S-unit.

Carrying this reasoning further, you can see that in order to gain 1 S-unit at the receiver, the transmitter must therefore increase its power level by 6 dB (all other

conditions remaining the same). This is equivalent to quadrupling the power level. So, a station currently transmitting at a power level of 250 watts would have to increase all the way to 1000 watts, before the receiving station noticed 1 S-unit increase. Note that the receiving station will notice **the same increase** in signal strength - 1 S-unit - when a station quadruples its power **regardless of the absolute value** of those powers. For example, going from 5 watts to 20 watts is exactly the same as going from 250 watts to 1000 watts, as far as the receiver is concerned.

Before examining how standing wave ratios affect the transmitted signal heard at the receiver, let's look briefly at what causes standing waves in the first place.

The science of antenna theory tells us that when a transmission line is terminated in a load, such as an antenna, equivalent to the characteristic impedance of the transmission line, there is no reflection from the load, and all the energy delivered to the load is absorbed. In the case of an antenna load, all the energy delivered to it is radiated. This is known as a matched system.

The important point to

remember here is that, even though a matched antenna system will radiate all the energy delivered to it, not all the energy produced by the transmitter will reach the antenna. A portion will be lost in heating up the conductors of the transmission line by virtue of the R.F. current flowing through this ohmic resistance. This is an I^2R power loss.

As you might suspect, different transmission lines will attenuate the same signal at different rates, depending on their construction. Shown here is a table of the common transmission lines, showing their attenuation in dB for 100 ft. lengths, under matched conditions. This attenuation results almost entirely from the I^2R loss mentioned.

Let's take an example by looking at RG-58U. It's matched loss per 100 ft, at 3.5 MHz is 0.68 dB, rising to 2.2 dB at 28 MHz. Therefore, if you had a perfectly matched antenna and a 100 foot long transmission line system operating at 3.5 MHz, your signal strength would be 0.68 dB lower when it arrives at the antenna than when it left your transmitter. The receiving station will not notice this loss, however, since it is less than 1 dB.

What happens in the event that the system is not

| Type | Characteristic Impedance | dB Loss Per 100', Matched Condition | | | | |
|-----------------------|--------------------------|-------------------------------------|---------|----------|----------|----------|
| | | 3.5 MHz | 7.0 MHz | 14.0 MHz | 21.0 MHz | 28.0 MHz |
| RG - 8/U COAX | 52 ohms | 0.3 | 0.45 | 0.66 | 0.83 | 0.98 |
| RG -58/U COAX | 53.5 " | 0.68 | 1.0 | 1.5 | 1.9 | 2.2 |
| RG -59/U COAX | 73 " | 0.64 | 0.9 | 1.3 | 1.6 | 1.8 |
| TV STANDARD TWIN LINE | 300 " | 0.18 | 0.28 | 0.41 | 0.52 | 0.6 |

(Note also the different characteristic impedances of these lines. This depends entirely on the physical construction and geometry of the line.)

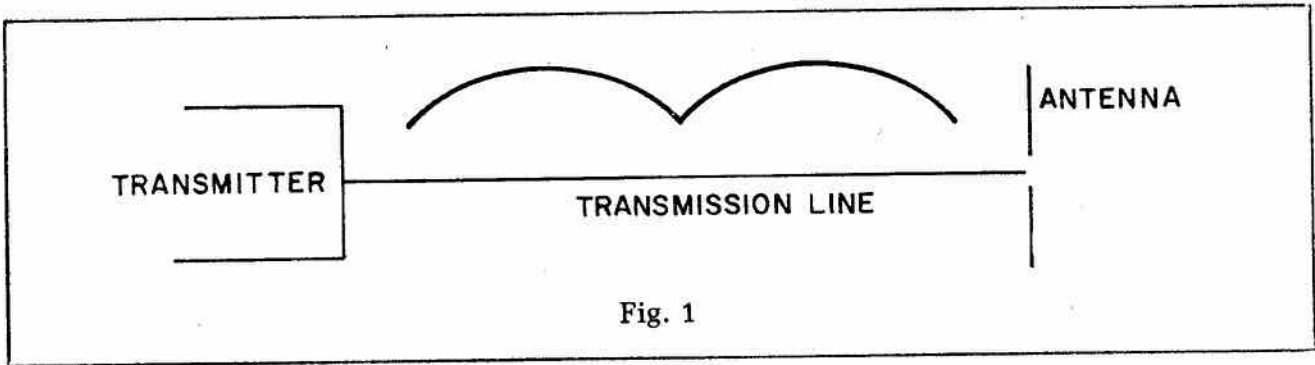


Fig. 1

matched? In this case, the energy produced by the transmitter travelling down the transmission line sees a **reflecting plane** at the antenna terminals. A portion of this energy is then reflected back down the transmission line. (The amount of reflected energy depends **entirely** on the degree of mismatch.) The **combination** of the incident wave and reflected wave produce a stationary, standing wave, as shown in Figure 1.

The standing wave shown can be either the voltage or current waveform. As you can see, there are maximum and minimum points on this curve. If the voltage (or current) at a maximum is 8 volts, and 2 volts at a minimum, this would give us a standing wave ratio of $8 \div 2 = 4:1$, since:

$$SWR = \frac{V_{max}}{V_{min}} = \frac{I_{max}}{I_{min}}$$

The standing wave ratio is also equal to the characteristic impedance of the transmission line divided by the antenna impedance (or vice-versa, if the antenna impedance is larger).

$$SWR = \frac{Z_o(\text{line})}{Z(\text{antenna})}$$

For example, if the antenna impedance was 75 ohms, and $Z_o(\text{line})$ was 300

ohms, our SWR would also be 4:1.

In the case of a matched system, there would be no standing wave since no energy would be reflected – hence no maximum and minimum voltages. The SWR would be 1:1.

What happens to this block of reflected power? Many Amateurs will tell you that this power flows back into the final amplifier and fries everything in sight, so that you will end up with a lump of charcoal where your 6146B used to be. This is simply not so.

What happens is that the output tuning network of your transmitter provides another reflecting plane for this reflected power, and re-

directs it back along the transmission line to the antenna. This recycled power is **in phase** with the incident power produced by the transmitter.

In order to do this, your output network must have a sufficient tuning range to provide a **conjugate match** to the transmission system. Simply speaking, if you can load your transmitter into the line, your network has sufficient range. If you can't, it doesn't! (This range can often be extended by using a transmatch – another subject.)

The point here is that the reflected power **will not** flow back into your finals. Any damage to the transmitter is actually caused by the fact

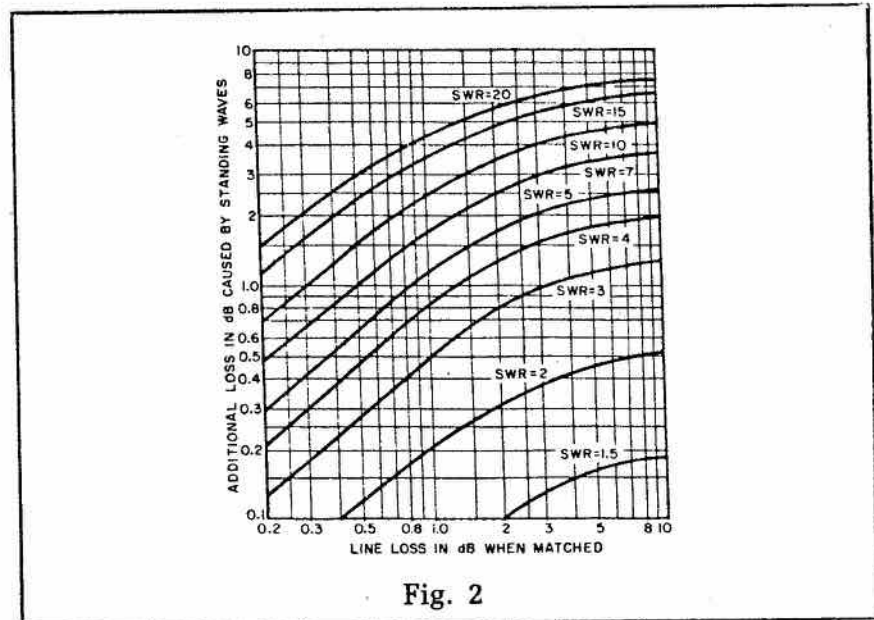


Fig. 2

that the output stage, for the mismatched case, must now work into a complex impedance other than that for which it was designed! (This mismatch of impedances may cause your final to draw too much current and lead to damage.) In any event, if you can load power into your system, you'll have no problems.

Back to this reflected block of power. Since the transmission line attenuates the incident wave, it would seem logical that it would also attenuate the reflected wave. Indeed, this is the case. As this block of reflected power is recycled along the transmission line from reflecting plane to reflecting plane, it is attenuated on each trip! What appears to be a monumental calculating task is presented simply by the graph in Figure 2.

For our previous example, where we had 100 ft. of RG-58/U, the matched loss was 0.68 dB. Enter the graph at this point. If we had an SWR of 4, we would travel up until we hit that curve, and

exit the graph to the left. We could then read off the additional loss caused by that SWR: 0.6 dB. The total loss therefore is $0.68 + 0.6 = 1.28$ dB. It would appear then that with an SWR of 4, at 3.5 MHz, 100 ft of RG-58/U will attenuate our signal just over 1 dB, the 'detectable' point.

Just for fun, what if our SWR was an unheard of 10:1 for the same case? Enter at 0.68 dB, move up to the 10 curve, go across and read about 1.7 dB additional loss. The total loss is therefore $1.7 + 0.68 = 2.38$ dB. **This is less than ½ S-unit!** Interesting, yes?

One more example: We have a typical 50 ft line of RG-8/U coax, and a 4:1 SWR on our system. What is the loss of signal strength? I have calculated this for different frequencies using the graph above, and tabulated the results in Table 2 below.

You will note that the total loss is **always** less than 1 dB for this case. We can therefore conclude that a 50 ft. transmission line of RG-8/U operating with an SWR of 4:1

will cause a total loss that **can never be detected!!** This is a somewhat amazing conclusion, considering the way some Amateurs scramble around, spending time and effort trying to reduce their SWR when it is already low enough as to cause an **undetectable** loss of signal strength.

Just for interest's sake, let's take a wild example. Say that you wanted to keep your total transmission system loss to 3 dB, maximum. We know that a 3 dB increase is equivalent to doubling your transmitted power, so a 3 dB loss is equivalent to losing 50% of your power. This 50% power loss is used up heating your transmission line (I^2R loss). Keep in mind, however, that this 3 dB loss is only ½ S-unit! Who can tell if your signal is S9 or S8½ anyway?

We'll assume again that we have 50 ft. of transmission line, say RG-58/U this time. Our table tells us the matched dB loss for 100 ft, so half that value will be the loss for 50 ft. This shown in Column 2 below, for the different

| FREQUENCY | LINE LOSS | SWR LOSS | TOTAL LOSS |
|-----------|-----------|--------------|------------|
| 3.5 (MHz) | 0.15 (dB) | .20 (approx) | .35 (dB) |
| 7 | 0.22 | .22 | .44 |
| 14 | 0.33 | .32 | .65 |
| 21 | 0.41 | .39 | .60 |
| 28 | 0.49 | .46 | .95 |

Table 2 ↑

↓ Table 3

| FREQUENCY | LINE LOSS (dB) | SWR LOSS (dB) | TOTAL LOSS (dB) | SWR |
|-----------|----------------|---------------|-----------------|------|
| 3.5 | 0.34 | 2.66 | 3.0 | 20:1 |
| 7 | 0.45 | 2.55 | 3.0 | 17:1 |
| 14 | 0.65 | 2.35 | 3.0 | 12:1 |
| 21 | 0.80 | 2.20 | 3.0 | 10:1 |
| 28 | 0.90 | 2.10 | 3.0 | 9:1 |

frequencies. Then, if we want to keep the total loss to 3 dB maximum, we use our curve as before, except slightly backward.

For 3.5 MHz, line loss is 0.34 dB. The extra loss we can tolerate without exceeding 3 dB is therefore $3 - 0.34 = 2.66$ dB. We enter the curve on the bottom at 0.34 dB, on the left at 2.66 dB, and see where they intersect. This gives us the allowable SWR, and lo and behold, it's above 20! Fantastic.

By doing this, we can produce the table below.

Remember that these fantastically high SWR's are resulting in a total 3 dB loss of $\frac{1}{2}$ S-unit at the receiver!

If you have followed the discussion to this point, you will hopefully have learned a bit about the effects of standing wave ratios on both the transmitted and received signals. I have attempted to show that, in many cases, worrying about a 'high' SWR is a waste of time.

All too often you hear

comments like "My SWR is up to 2:1 at the band edge, so I can't QSY", indicating that the operator really doesn't understand what is happening. In a future article, we will show that there are, in fact, valid reasons for keeping SWR down to some point, and also show some antenna installations where a high SWR is desirable.

QRP

R. Zbarsky VE7BTG
4523 West 15th Ave.
Vancouver, B.C.
V6R 3B3

News Briefs

FCC FORM FINISHED

As already reported, the 'permission to operate' forms issued by both DOC and the FCC for visitors have been abolished. When visiting the U.S.A., however, Amateurs should carry a copy of their station licence and certificate. Visitors may operate their own station, or that of a station licensed to another Amateur. Visitors only use the call signs, frequencies and emissions for which they

are licensed in their own country and only if those frequencies are so authorized for use in the host country. This will permit U.S. novices to operate in Canada. They must, however, use only CW and only on those parts of the bands permitted to them in the U.S. Canadian Amateurs and Advanced Amateurs should make sure of their privileges before operating in the U.S.

GOING, GOING, GONE?

As a follow-up to the Canadian Broadcasting Corporation's proposed use of 3950 to 4000 kHz, there is every likelihood that the Canadian Amateur allocation of 3500-4000 kHz will have the top 50 lopped off. No changes resulting from WARC, such as this, will be undertaken without adequate consultation between DOC and spectrum users, according to a senior DOC official.

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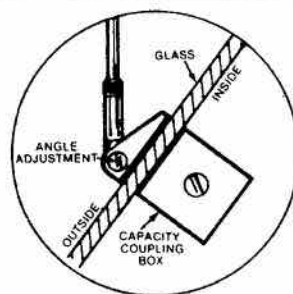
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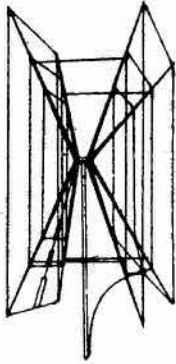


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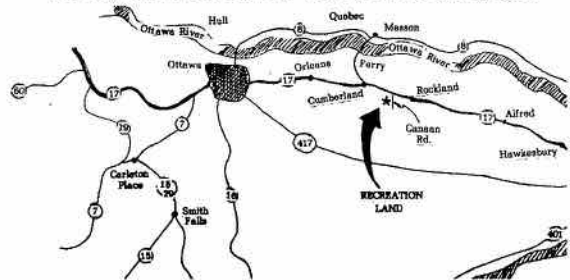
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CARF Infosection

Membership Report

The year 1979 again showed a substantial increase in CARF membership. Individual membership at beginning of 1979 was 4271 and, at the end of 1979, stood at 4854, an increase of 583. This does not include subscribers to TCA nor Affiliated club members.

This substantial increase was due to an increase of new members, an increase in former members renewing membership and a drop in the non-renewal rate to 15%.

Stories wanted for TCA

Wanted for TCA: News items, pictures, original stories and technical articles. Make pocket money by writing for The Canadian Amateur!

Technical articles are especially welcome. We can use simple construction projects, antennas, hints and kinks, explanations of the theory and practice of modern Amateur operations and equipment.

Photos should be glossy black and

white prints, although we can use colour prints. Written material should be typed, double-spaced. Legible handwriting is acceptable. Finished artwork and drawings will add to the value, but sketches and rough drawings are acceptable.

Send **Technical material** to: Technical Editor, CARF, Inc., Box 356, Kingston, Ont. K7L 4W2. Send **all other material** to Editor TCA, 151 Fanshaw Ave., Ottawa, Ont. K1H 6C8.

Swap * Shop

Single insertion is \$1.00 (minimum charge) for 10 words and \$1.00 for each additional 10 words. To renew, send copy and payment again. Deadline is first of month preceding publication.

Put your membership number and call (not counted), if any, at the end of your ad. Print or type your ad and include your address with postal code. If using a phone number, include the area code. CARF and The Canadian Amateur accept no responsibility or liability for content or matters arising from ads.

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

Send to CARF, Inc., Box 356, Kingston Ontario K7L 4W2.

FOR SALE: Owner must sell - no reasonable offer will be refused - Heathkit SB104 Transceiver c/w power supply, SB200 Amplifier, SB-614 Station Monitor, SB634 Station Console, HD 1410 Electronic Keyer, HM2103 RF Load Wattmeter, SB644A Remote VFO (unassembled), HAL-DKB 2010 Dual Mode Keyboard, Murch UT 200A Transmatch - all units complete with instruction books. Also Kenwood TS 700A 2 metre c/w Cushcraft 4 pole Collinear Antenna. K. Johnson, Box 38, R.R.#1 Midland, Ont. VE3EJJ. Phone 705-526-8034.

FOR SALE: Yaesu FT101EE with Spectronics Digital Readout. Both excellent condition. Extra Set Tubes. With mike, manuals, cables, etc. \$1125. Swan WM3000 Wattmeter \$80. Katsumi Auto CW Keyer with paddle, never used, \$100. Contact Brian VE7EJ, 5888 124 Street, Surrey, B.C. V3W 3W5. (604)-596-9839.

WANTED: Collins 30S-1. C. Gutman, 7526 Mountbatten Rd., Montreal, Que. H4W 1J9.



CARF Bulletin Station sked

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

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

OFFICERS

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(If you want to contact the Federation, write or call a Director in your region or write to CARF, Box 356, Kingston, Ontario K7L 4W2.)

VE7BBQ Peter Driessen, 1946 York Ave., Apt. 203, Vancouver, B.C. V6J 1E3. 604-732-3298.

VE6HO Jim McKenna, Box 703, Ft. McLeod, Alta. T0L 0Z0. 403-234-4068.

VE3FON Marv Nash, 43 Bruce Farm Rd., Willowdale, Ont. M2H 1G4. 416-223-5544.

VE3FTO Ed Sheffman, 182 Fenn Ave., Willowdale, Ont. M2P 1X9. 416-228-1701.

VE2SY Lionel Bonhomme, 22 Cinq-Mars, Hull, Quebec J8Y 6B7. 613-771-4953.

VO1NP Nate Penny, Box 10, Shoal Harbour, Nfld. AOC 2L0. 709-466-2931.

BANNED COUNTRIES LIST

Iraq, Khmer Republic**, Libya, Somalia, Turkey, Viet-Nam, Peoples Democratic Republic of Yemen. ** Station XU1AA has been authorized to exchange communications with Amateurs of other countries. Note: The calls 7OA to 7OZ are assigned to the Peoples Republic of Yemen.

THIRD PARTY TRAFFIC AGREEMENTS

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

RECIPROCAL OPERATING AGREEMENTS

Austria, Barbados, Belgium, Bermuda, Brazil, Colombia, Costa Rica, Denmark, Dominica, Dominican Republic, Ecuador, Federal Republic of Germany, Finland, France, Guatemala, Honduras, Iceland, India, Indonesia, Israel, Luxembourg, Netherlands, New Zealand, Nicaragua, Norway, Panama, Peru, Phillipines, Poland, Portugal, Senegal, Sweden, Switzerland, United Kingdom, U.S.A., Uruguay and Venezuela.

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

CARF News Service Radio Bulletins are heard from its key station VE3TCA every week, using the facilities of Ottawa's Carleton University Amateur Radio Club station VE3OCU. Here is the sked:

Sundays:

| | | |
|----------------------------------------------------------------------------------------|------------|-----------|
| 1745 Z | 14.140 MHz | SSB |
| 1930 Z, | 14.077 MHz | CW 15 wpm |
| (approx.) 2130 Z | 14.077 MHz | RTTY |
| (After CARFNET; first in 5 level Baudot at 45.5 baud, then 8-level ASCII at 110 baud.) | | |
| 2300 Z | 3.755 MHz | SSB |

Tuesdays:

| | | |
|--------|-----------|-----------------|
| 0100 Z | 3.590 MHz | CW 15 wpm |
| 0130 Z | 3.610 MHz | RTTY (as above) |

(Note that times shown will be Sunday p.m. and Monday evenings in North America.)

OTHER CARF NEWS STATIONS

VE7TCA:

| | | |
|---------------|-----------|-------------------------|
| Mondays 0230Z | 3.618 MHz | RTTY |
| | | 5 level |
| 0245Z | 3.755 MHz | SSB (After BC ARPS Net) |

VE5WM: nightly 0100 Z 3.785 MHz SSB (Sask Phone Net)

Sundays 1530 Z 3.780 MHz SSB (ARES Net)

VE5GG

Thursdays 1830 Z 14.077 MHz RTTY 5 level

A number of two metre repeaters provide local coverage. VE7BBQ is on VE7RPT 34/94 Thursdays at 2000 Pacific Time and VE5WM is on VE5KE 46/06 nightly at 0300 Z.

Moving-Renewing?

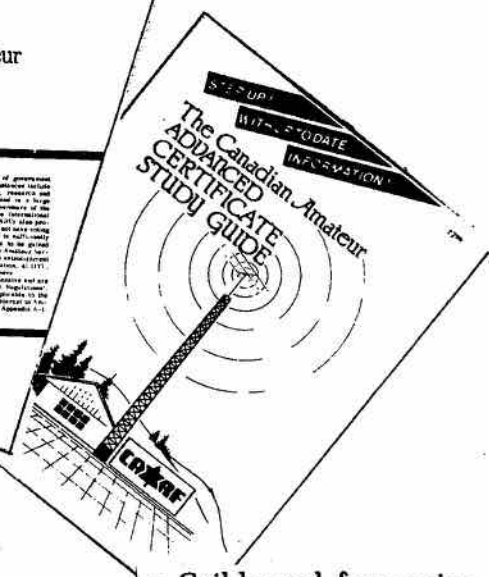
If you are changing your address or renewing your membership, please send the change, cheque or money order to CARF, Inc., Box 356, Kingston, Ont. K7L 4W2, where CARF and TCA records are kept in the administrative offices of the Federation. Please do **not** send them to the Editor, who happens to live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

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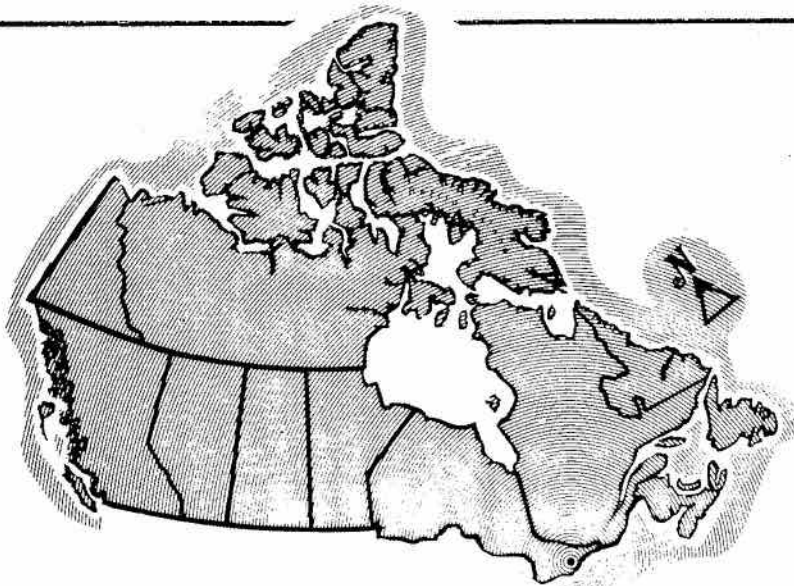
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* IF RENEWING MEMBERSHIP NO IS: _____

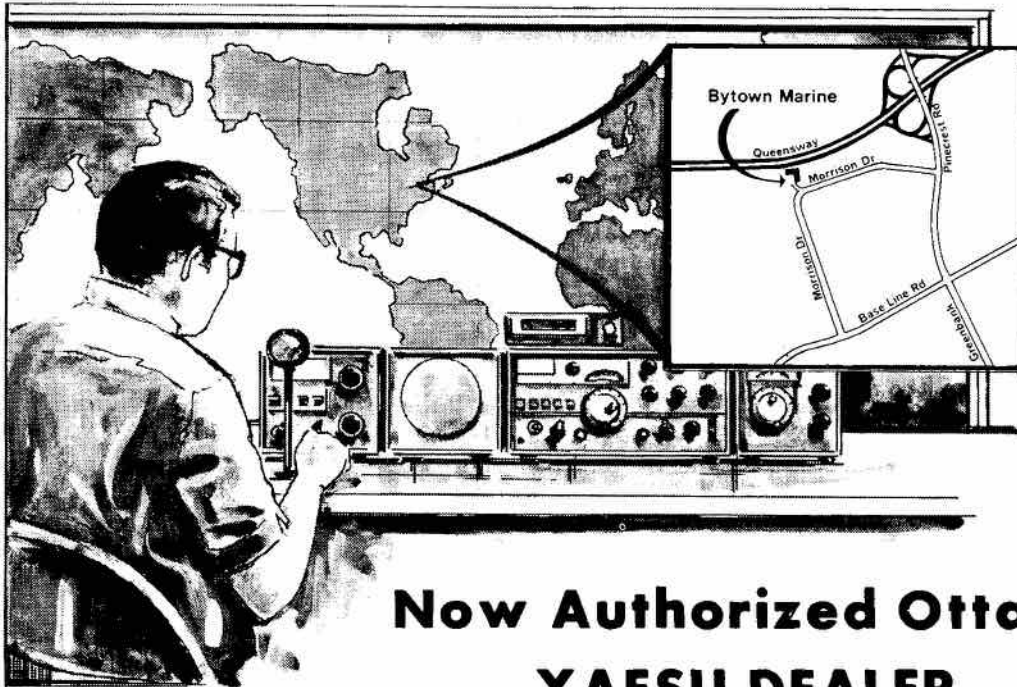


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