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the canadian amateur

December 1977

No. 11

DOC controls linear amp sales

The Canada Gazette, Part II, for November 9, 1977, brings into force a DOC amendment to the Radio Interference Regulations which amongst other items, controls the use and sale of linear amplifiers at the point of sale. (SOR/77, 24 Oct. 77).

Proposals by the Department of Communications concerning the control of the use and sale of linear amplifiers, specifically in the General Radio Service, were published in the Canada Gazette, Part I, last January. At the time, CARF and other organizations believed that the proposals, while welcome, were insufficient to achieve the desired results. Con-

Continued on Page Nine



CARF the
canadian
amateur

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Editor:
VE3CDC Doug Burrill
Technical Editor:
VE3ARS Cary Honeywell
Publisher:
Steve Campbell

From the Front Office

Your hard-working HQ Office staff will soon be moving into new office accomodation. The temporary accomodation used up to the present suffered from lack of space particularly to store large stocks of publications, stationery and the like. The new quarters will be adjacent to the CARF National Station, VE3VCA. The telephone number is (613) 544-6161.

The past year has shown that the Canadian national Amateur society must possess a fully functioning and staffed HQ Office to cope with the amount of detail inherent in administrating such an organization. For example, the office staff will handle about 12,500 pieces of incoming mail and about 10,000 pieces outgoing through the year.

As for finances, there has already been a cash flow of \$50,000.00 income through the CARF books (and \$45,000.00 out-go). Two separate accounts are used by CARF; one is a current account for general affairs and the other is a high-yield savings account to hold the extra finances accruing from the fees from those members who take out multiple-year memberships. Life membership is a separate account again, as money from this source is invested in Canadian trust firms.

The demand for CARF publications has been spectacular. During the months of September and October the Office staff processed orders for 4,000 Certificate Study Guides, 1,000 Advanced Study Guides and 1000 Regulations Handbooks. Last year, in the same period, 2000 Certificate Study Guides and 500 Regulations Handbooks were ordered - the Advanced Study Guide not then available. This increased sale of publications, used by practically all Canadian courses on Amateur Radio, indicates that the strong increase in the number of Canadian Amateurs will be surpassed in the next period. There can be little doubt that a contributing factor to the increasing rate of growth of Amateur Radio in Canada is due to the CARF Amateur publications which are geared to our requirements.

This increasing rate has influenced the expansion and development of the Canadian national society. Initially con-

The Canadian Amateur is the official monthly publication of the Canadian Amateur Radio Federation, Inc. It is distributed to members and is available to others for \$7.00 per year. The Federation is incorporated and operates under a federal charter, with the following objectives:

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

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

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VE2RA Gene Lajoie, Rt 2 Perkins, Que. J0X 2R0.

VO1NP Nate Penney, Box 10, Shoal Harbor, Nfld. A0C 2L0.

Season's Greetings

CARF and the staff of The Canadian Amateur would like to wish the Amateur Radio operators of Canada a very Merry Christmas and a Happy New Year!

ceived as a federation of provincial societies, CARF changed to individual Amateur control and the new policy re GROUP members (available only to provincial, territorial and other Canadian national Amateur organizations) and AFFILIATE members (available to clubs and area/regional Amateur associations) gives your Federation a broader base of support and consultation.

AFFILIATE membership in the national society is now granted to any club at no charge providing that at least 5 members of the club are members of CARF. Such affiliation includes a subscription to the CARF News Service and News Release bulletins and the use of the free CARF out-going QSL service for the club station. The local club is unquestionably the best place to have Amateurs informed of events and developments and the Federation plans to involve Affiliates in discussing the pros and cons of matters affecting the Canadian Amateur Experimental Service with the results of these discussions guiding the CARF Directors in their decision making responsibilities.

A letter outlining this new policy has been forwarded to every club that we have knowledge of and suggest that you check that your club has been so informed and is seeking the benefits of affiliate status with the national society.

VE3AHU

ATTENTION:

New Horizon groups

The Penticton, B.C., club writes that the South Okanagan Amateur Radio Society would like to make contact with all other New Horizons Amateur Radio groups in Canada. Contact Ray Stevens, VE7DNR c/o South Okanagan Amateur Radio Society, 251 Dawson Ave., Penticton, B.C., V2A 2N4.

Correction

On pages 3 and 6 of our October issue the stories credited to VE1DW should read VE3IDW--somehow or other the '3' got left out and IDW became 1DW--sorry chaps! Also the story on weather broadcasts should show 161.65 not 161.5.

Jubilee medal for Amateur

VO1GP Edwin L. Samms has received the Queen Elizabeth Silver Jubilee Medal, in recognition of his work on behalf of the Muscular Dystrophy Association of Canada. Edwin and his brother Llewellyn (VO1GO - a silent key as of January 20, 1977) worked to provide motorized units for other people, who like themselves, are confined to wheel chairs. Edwin VO1GP is one of the more active amateurs in Newfoundland, and when visiting his family in Ontario and New Brunswick, he operates from these locations.

When friends congratulate Edwin on his award, he is quick to point out that he shares the honour with his mother and his late brother.

Edwin and his brother who was also confined to a wheelchair, learned of a program sponsored by the Dominion Stores while on a trip to Toronto in 1974. The program involved the collection of cash register tapes from shoppers at the Toronto stores. The store contributed \$1 for each \$375 worth of tapes turned in.

The Muscular Dystrophy Association estimated that due to articles and publicity about the two brothers that about 40 powered wheelchairs have been purchased under the plan.

Upon their return to Newfoundland the brothers started up the campaign in their home province and to date have been able to provide four chairs through the program.

Edwin's QTH is Pynn's Brook, Box 27, R.R.1 Deer Lake, Newfoundland.

VO1NP

TOP CANADIAN CLUBS FIELD DAY, 1977

Call	Xmtrs.
VE5UA	1
VE1FO	2
VE7SAR	3
VE3RC (2nd Yr.)	4
VE3OW	5
VE2BLW	6
VE3DRT	7
VE3ZM	9
VE3NAR	15
VE3WE	16



Canadian Repeater Advisory
Group

VE3DWL Hugh Lines

Good news from the Quesnel B.C. Amateur radio club via VE7DDB is that their new repeater VE7RQL is up and running on 146.46/147.06. It is located on Dragon Mtn. near Quesnel.

From south of the border, a tremendous amount of information has been forwarded to CRAG from Gary, W3DTN, regarding the proposed new repeater subband in the US from 144.5 to 145.5. Too much information to print has arrived and if anyone is interested in any specific portion of this proposal, let me know and I can forward it to you.

Lots of news from Ontario, VE3DVB in Kingston reports that he was unable to bring up the Elliot Lake repeater while on a recent trip. Anyone out there have any info on this repeater? Barry, VE3BXY, reports that the Port Colborne repeater VE3WFM no longer exists and that the Fonthill repeater VE3WCR is up on 147.90/147.30. In Ottawa, Mike, VE3

JCR, has a new repeater, VE3MIC, that provides a full-duplex autopatch. It's input is 222.58 with outputs on 147.3 and 224.18. In the London area, the boys of the South Huron ARC have a new repeater on the air from Hensall Ont. (40 m north of London, 35 m west of Stratford). No call sign was passed on, but it is on 146.31/146.91. Thanks to Bob VE3JEK for the above info. Jean VE3HNB reports on a proposed repeater for the Curran Ont. area (about halfway between Montreal and Ottawa). They are just getting organized and have not yet got frequencies assigned.

From the East coast, the Road to the Isles ARC reports via their bulletin that the Sydney ARC plans to install a new repeater on Hunter's Mtn. near Baddeck N.S. No call or frequencies yet.

Now, for those of you who think that there is a lot of news from Ontario in the column and little from the rest of the country, the reason is simple. YOU don't send any in. I can only pass on what I receive and 90% of what I receive comes from Ontario. How about you other nine provinces, and the north too. Isn't there any VHF activity out there?

The Personality Repeater

To those of you driving eastward and in the Fredericton, N.B. area we suggest tuning to 146.16/76, VE1PD.

You will hear some very familiar voices - like Jan Tennent of CBC TV fame: Gordon Sinclair, internationally known broadcaster, especially on CBC and CFRB-Toronto: Bob Leitch, CBC national newscaster: Jack Fenety, manager/announcer CFNB Fredericton.

Claude Bailey, VE1HU, technical director of the International Repeater Group has these voices on an hourly station identification tape.

VE1PD - Amateur radio gone a bit professional!

Joan Powell - VE3FVO
(Editor's note - Joan is Claude's daughter and her showbiz connections helped her get these voices for Dad!)

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Letters to the Editor

Dear Sir,

I have just received "The Canadian Amateur!" Very glad to hear about a Federation dedicated to Amateur radio in Canada only. With no hesitation I send you my order form.

The Canadian Amateur is a fine publication, but I would appreciate seeing some articles in French. As often as I can I read and talk other languages, knowing that this permits me to meet persons living a completely different experience. I don't see what would be wrong printing French articles and don't you think that the number of French speaking Canadians is worth it?

Pierre Fortin, VE2EZU .

Merci, Pierre, pour votre lettre d'appréciation. Nous aimerions beaucoup publier un édition bilingue mais malheureusement nous n'avons pas à ce moment, les ressources nécessaires.

Vous appréciez sans doute, le fait que nous devons faire face des réalités économiques et aussi le fait que la grande majorité de nos lecteurs sont d'expression anglaise. Veuillez noter bien que dans la situation inverse, RAQI fait face au même problème.

Par compte, afin d'atteindre les radio amateurs de langue française dans la mesure du possible, nous avons accordé à la RAQI les droits de publication, version française, de nos manuels au sujet des règlements et des guides d'étude pour l'obtention des certificats. En plus, nous avons mis à leurs dispositions des cartes QSL avec texte français.

Interference

The mysterious interference observed on the Amateur bands during the past year and which has been credited to Russian experimentation of some sort or another has prompted various explanations in the Western world. Here is a letter from an Ottawa man who has been researching the life and works of Alexander Tesla, whose discoveries and experiments made him one of the fathers of radio transmission.

The writer, Andrew Michrowski, has recently made headlines in the national press with his theories as to just what this interference signifies. We print his letter herewith and invite your comment.

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13. Crystal socket	for HC6/U, ceramic	\$.35
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15. Crystal.	10 MHz, HC25/U	\$ 7.50
16. Crystal.	100 KHz, HC13/U	\$13.00

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Thanks to the observations of hundreds of radio Amateurs throughout this planet, an understanding of the nature of the Soviet pulsed emissions has evolved within the Public Domain, and, because Amateur radio groups have lodged complaints to appropriate channels, unclassified monitoring was initiated in some nations - notably the Scandinavian States and Canada. These complaints permitted the analysis by independent researchers of the emissions.

In view of the fact that so many Radio Amateurs have become involved, it is just that they be offered an explanation as to the nature of the analysis.

Several characteristics predominate throughout the Soviet experiments as many Amateurs must have noticed, and may still verify, to their own satisfaction.

The signals are very powerful and their strength does not appear to diminish by distance from source. These signals originate at Riga and Gomel simultaneously. This strength has been calculated by the Danish Government to be 40 megawatts, 20 times stronger than the projected power of the U.S. Navy Project

"Seafarer" in Wisconsin, with its buried antenna.

First observed in mid-October 1976, these signals are pulsed at between 4 to 25 times per second and apparently are experimental in that they vary constantly in their frequency and other characteristics.

The emissions can be monitored anywhere on this planet, as they travel through and across the surface of the earth. This explains why observations could not have been made by all the Amateurs at the same time. Strangely enough, one random reading alone, say made in Melbourne, Australia would be sufficient to determine that the Soviets were "on the air" and experimenting.

Some emissions also have reciprocal pole readings of even greater strength than their originals, though these observations have a time lag which varies according to the location of the monitor. The rule for determining the time lag is that it will take about 108 minutes for the reciprocal to return to Riga or Gomel from the reciprocal pole. Thus, many Canadian amateurs will note that the reciprocal signal will by-pass their receiver at between 60 to 75 minutes after the first emission.

All these characteristics confirmed that the Riga/Gomel installation were a repeat of Nikola Tesla's magnifying transmitter of 1899.

Thanks to the insistence of the Radio Amateurs, Communications Canada was enabled to secure authority to set up prolonged monitoring throughout the Nation and to register professionally the nature of the incoming signals. These were found to be very clear and their patterns were most amazing to behold, especially to experts in various fields of electronics and the biological sciences.

Further research was made to determine the roots of these signals and it was found that they were extremely low frequency (ELF) with many resultant harmonics. Special monitoring devices -- Schumann detectors (pick-up coils of several thousand henry inductance with high permeability core) were installed and it was also found that these signals produced ELF magnetic fields of between at least 20 to 40 miles diameter.

It appears that the diameter of the magnetic field varies according to the

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latitude of the "Great Circle" the field moves through.

Circumstantial evidence then uncovered that the perimeter of such fields were approximately 2000 feet in radius and that their enclosing "Wall" would reach at least ten miles in height, producing various effects associateable with dielectric avalanches. -- Even one case of man-made aurora borealis was reported in Quebec Province during the spring of 1977.

Reports were noted of various physiological and psychological mood-altering effects associated with the passage of such fields. This would be expected, according to the existing scientific knowledge of the ELF magnetic fields.

Note was also taken that the winter

of the northern hemisphere was unusual in that three blocking mechanisms of unusual size were noted off the Western Soviet Frontier, and the West and East Coasts of North America, forcing the prevailing westerly winds to by-pass them, with resultant major alterations of weather patterns. These blocking mechanisms were not explainable by consensus within the scientific community -- and a look at Nikola Tesla's pioneer work with the magnifying transmitter of 1899 indicated that he himself had realised that weather would be modified with his standing wave patterns excited by the transmitter. A logical assumption was made that the Riga/Gomel installation had the capability of modifying the weather in such major proportions.

The rest is history.

From the Club Bulletins...

From the Kamloops ARC 'Splatter' comes news of an interesting development at the University of British Columbia. VE7BMK reports the following:

"The Department of Physics at UBC has accomplished a remarkable breakthrough in the development of a new type of storage cell that may revolutionize the whole battery business. The heart of the matter is the use of molybdenum dioxide as a cathode material in a solid-state mode. In the lead-acid, carbon-zinc and most other storage cells the ions are stored by surface action, whereas in the new cell the ions permeate the entire cathode. This results in a theoretical increase in efficiency by a factor of 25, although the practical battery will be about ten times as efficient as a lead-acid cell.

"The principle is applicable to cells from the tiniest ones used in hearing aids or heart pacers to those capable of powering an automobile or even a locomotive. Production in B.C. is expected to start within a year, and manufacture under licence will be available elsewhere. Apart from the high efficiency of this type of cell, there are other advantages. One is the fact that the key material, molybdenum dioxide occurs widely in nature, and is already mined in B.C. Another is the absence of gas build-up which sometimes causes explo-

sions in other types of storage cell. When production gets into full swing, there should be a price advantage, too."

From the VE6 News, published by the Amateur Radio League of Alberta, come items about the forthcoming Commonwealth Games to be held in Edmonton. First off, the prefix "CG" will be permitted to Amateurs residing within a fifty miles of Edmonton, (the site of the Games) instead of "V" "E", for all of 1978. The ARLA will also be awarding a trophy to commemorate the Games. It will be awarded to the "winner" of a recognized DX contest, the details of which will be announced later.

A station to be set up at the Games will be using the call "CG6A".

In the Quinte ARC "QRM", VE3RL, writes some timely words on the characteristics of those frequencies which may seem exotic to us at this time but which will become more significant within the next decade. He says:

"As the demand for more frequency space keeps increasing, it is apparent that both commercial and Amateur users will have to move to higher and higher areas of the spectrum to fill their needs.

"Operation in the gigahertz regions presents problems not found at the lower frequencies. For instance the problem of

rain and fog on the signals. Even at 450 MHz local fast scan TV men have found that in summer the leaves on trees cause attenuation not present in winter. Also on wet rainy days, the signals are attenuated.

"The effects of moisture in the air increase as the frequency goes up. In terms visibility it has been found that at 30 GHz when fog limits visibility to 150 ft. the attenuation is about .5DB per mile. It takes twice the moisture content to cut visibility to 100 ft. at which point attenuation is about 1.6 DB per mile.

"Molecular absorption is severe in the GHz region and there are resonant points. For instance there is a peak at 22.4 GHz.

"There are ways to get around some of these problems. Diversity transmission is one. A high percentage of rain occurrence is confined to small areas and use of two paths at spacings of just over 5 miles works wonders. Waveguides have been tried but attenuation is high in conventional types and losses increase with frequency. Experiments show that round waveguide and circular polarization cuts losses dramatically. Also loss decreases with frequency. Since the physical size also decreases with frequency it is possible to use a small pipe that can carry thousands of channels with low loss. In theory the losses would approach zero as the frequency approaches in-

finity. However the mechanical requirements become very stringent and the frequency is limited in practise. Any roughness inside the pipe for instance, causes a change of mode.

"Amateurs should become familiar with the gigahertz frequencies and how they behave. In the foreseeable future we are going to be using them..."

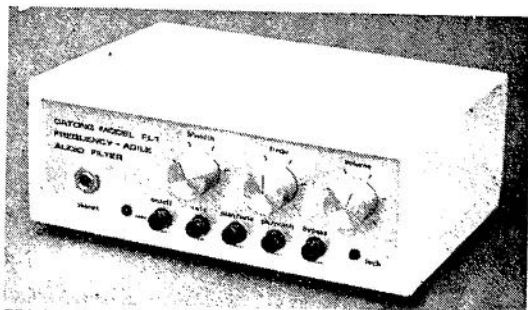
From the Scarborough ARC News comes a warning about certain TV converters. Gerry, VE3GNI, tells the story:

"...a neighbour (who had a TV converter) phoned to tell me that when I was transmitting, I was effectively blanking out his TV screen. I asked him if he had a converter.

I spoke to a Radio Inspector about the problem. "Is it a Hamlin Converter", he asked. "Yes, I said. Then he related to me a problem exactly the same and told me that it was discovered that the regulated supply, supplying voltage required for the varactor diode was picking up the RF and mixing it with the TV signal. Incidentally the frequency being used was in the 75 meter band.

I decided I would like to have a converter for my TV, so I phoned a company to bring in a Hamlin and Jerrold converter. The inspector said he didn't know of any problems with the Jerrold. I checked these at my own QTH and found

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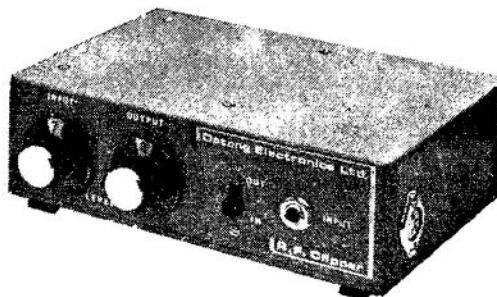
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the Hamlin "Clean" -- no interference when I keyed the transmitter, the Jerrold caused interference.

So, I bought the Hamlin Serial No. 7611223913. It is a good converter. But what about my neighbour? His is also a Hamlin.

I called my neighbour and asked if he had time to check something with me. I loaded the transmitter and when I keyed it, the problem was still present. When he disconnected the converter and connected the cable directly to the set, no interference was present. I took my converter over to his place, came back

and transmitted again. No interference. Aha, I said: "They fixed it on the new models.

So beware of Hamlin Converters Serial #75-----. My neighbour's is 75-04020320. Electrohome who market this converter will fix the problem by installing a choke, 2 capacitors and tune it up for reasonable sum. The new converter has an AC cord with one blade on the plug wider than the other. It will only go in the wall receptacle one way. That is how you can distinguish the newer one and also the serial number begins with 76-----.'

Linear Amps

Continued from Page One

sequently, after careful study a number of recommendations were prepared. These, as outlined in our April 1977 edition, were based on comments received from members and were believed necessary to do the job properly.

The CARF recommendations provided for the control of the sale of transmitters as well as linears capable of operation on GRS frequencies, forfeiture of equipment upon conviction, positive identification of the purchaser and warning against making false statements on the Declaration Form required by the DOC.

While it is disappointing that the CARF recommendations were not incorporated, recent discussions with DOC officers reveal that further regulations are about to be promulgated. Under these proposed new regulations the mere possession of a linear amplifier will be illegal, insofar as the GRS is concerned and be sufficient evidence for conviction.

Since prosecution would be for breach of a regulation and not for a breach of Section 11 of the Radio Act a Minister's Order for Prosecution will not be required and action could be instituted by a regional office without reference to and approval by Headquarters or the Minister.

When a linear amplifier is purchased the newly promulgated amendment requires both the purchaser and the vendor to sign a declaration with the objective of identifying the purchaser. In addition the purchaser must declare that he knows that the use of the linear on a GRS (CB)

station is illegal. The declaration must be forwarded to DOC HQ within 10 days of the purchase, where it could form the basis of investigation and simplified prosecutions in the case violations are discovered.

I might be an interesting exercise for readers, the next time they are in their local radio dealer's shop to check on his knowledge of the new regulation and the penalties thereunder...like a fine up to a 'G note' or a term in the clink up to six months.

Now, let's see some action.

New net

Here is some news from Jim McKenna, VE6HO, CARF Director who has been getting around the West recently.

On September 15th I attended a meeting of the CNIB at Calgary. The main purpose was to try and get underway a monitoring net during the day along the same line of ONTARS. (A direct steal of the idea, by the way, altho I don't think the RSO will mind). Harvey, VE6AVV at Nanton, Peter, VE6CHR at Calgary, VE6CFE, Mary, also at Calgary and a member of the CNIB, Kim, VE6OM, the secretary of the Southern Alberta Amateur Radio Club, yours truly and others have been talking this over for some time. VE6AVV said; "All right, let's start it!" so we did. Mary, 6CFE did most of the spadework getting the meeting organized and, finally getting together, the groundwork was laid.

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We monitor 3770 kHz, same frequency as the Alberta Public Service net uses in the evening, and we try and have a monitor service from 7 or 8 a.m. until 1800 daily. It seems to be working out quite well anyone looking for an Alberta amateur call (including BC and Sask.) on the frequency during the day and it's proving a real boon to those equipped with mobile 75 phone. It has recently been announced that they're going to use the name ALTARS. (Similarity with ON-TARS is probably deliberate!)

VE3DDS at Canada's
first World Dental Congress

Amateur station at Dental Congress

Canada's first World Dental Congress was held in Toronto Oct. 23 to 27. Dentists and dental personnel from all parts of the globe took part in this Congress, as did Amateur radio operators.

The station was Drake line equipment with a tower loaned by Samson Towers and a Hygain TH3 to top it off. In addition, there was 144 MHz operation and slow scan TV.

The purpose of this station was to provide fraternity for visiting dentists who were radio amateurs, and to interest others in this hobby.

Under the chairmanship of Arthur M. Gee VE3DHQ and with able assistance from Dr. George Knight VE3CAQ, Dr. Howard Young VE3DDS, Dr. Ted Sparrow VE3BQN, Dr. Sam Zane VE3BOZ, Dr. Brian Chapnick VE3GMZ, Dr. Ed Bilkey VE3GVL and Dr. Don Davis VE3DQR, the station logged about 100 contacts.

Phone patch contacts were made with stations in Peru and Argentina and the station range provided mostly 5/9 reports from Japan, Europe, Asia, South America and the U.S. One contact of particular interest was made in the Netherlands with the President of the Netherlands Dental Association.

The station's official call belonged to 'Doc' Young VE3DDS - a real natural for the World Dental Congress.

New exec for SONRA

The annual meeting of SONRA, The society of Newfoundland Radio Amateurs was held on November 1, in St. John's, Newfoundland and elected are the following officers for the coming year:
President - VO1FX - John Tessier
Vice President - VO1MR - John Walsh
Secretary - VO1IM - Eric Salter
Treasurer - VO1CR - Charlie Phillips
Directors - VO1KM - Bill Coffen, VO1HP
Frank Davis, VO1MG Hal Dickinson
Immed. Past President - VO1NP - Nate Penney

VO1NP

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This handsome QSL card is offered to CARF members at a special price of \$12.50 postpaid per 200 card lot (Ontario residents add 7% Sales Tax).

The standard design will be printed with your name, call and address, as shown -- Printed in blue ink on buff card stock with the outline map in silver. The 3 1/2 x 5 1/2" cards are printed on one side only. A plain reverse side gives lots of space for comments and the address.

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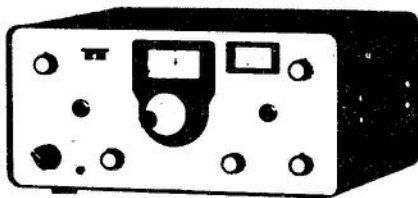
OBJECTIVE: To design a no-compromise HF transceiver for the beginning Ham or Old Timer and at an economical, affordable price.

CRITERIA: Cw transmit, cw and ssb receive. Full break-in. 70 watts input. Full band coverage 80-15 meters, 1 MHz on 10. All solid state. Instant,

no-tune band change. Built-in regulated power supply. Overload protection. Linear crystal mixed VFO. Direct frequency readout. Offset receiver tuning, defeatable. Built-in speaker. Sensitive receiver section. High selectivity — three position. Sidetone with adjustable level. Full line of matching accessories.

THE RESULT . . . TEN TEC *Century/21*

The Century/21 was designed and tooled from scratch for high performance cw. A unique Double Direct Conversion receiver performs as well as the conventional superhet. Broadband transmitter with instant break-in is a highly desired luxury. Accessory keyer and crystal calibrator available now, with additional accessories to follow. And . . .



THE AFFORDABLE PRICE:

- Century/21, Model 570 \$399.00
- Century Keyer, Model 670 \$ 37.00
- Century Calibrator, Model 276 \$ 37.00



For further information, write:
TEN-TEC, INC.
 SEVIERVILLE, TENNESSEE 37862
 EXPORT 5715 LINCOLN AVE., CHICAGO, ILL. 60646



To start off, here is a rig that was stolen in the Ottawa area: One KDK-14X Mk II Serial #5653 and one Unimetric Marlin 23 Channel GRS set Serial No. 50100119. Owner VE7DHE Al Ethier. Contact CARF, Box 356, Kingston, Ont. K7L 4W2.

In your October issue, I read that a stolen rig column will be started if enough people are interested. I had a FDK Multi 7 # 90223 2m FM Mobile transceiver stolen two years ago in Cornwall. This unit, as far as I know, is in the hands of an Amateur in Montreal. I am sure that the one who has it does not know it is stolen. Many thanks.

Claude J. Ray VE3BTM
1309 Farcelle Ave.
Cornwall, Ont. K6H 3K9

Re your article about stolen gear... I had stolen from my car, a ICOM 22S 2 meter rig with mike and all! Serial # 620 6363. Many thanks for a good idea.

Martin Hornstein VE2ADQ
2160 Cote Vertu Road
Montreal Quebec.

Stolen from VE3DHQ's car in a parking garage in Toronto was a Midland International Model 13-500 VHF transceiver, black, about 8 x 9 x 2", serial # 30300961. VE3DHQ advises that it may well be the only transceiver of this model in Ontario and should be easy to identify. If you see such a unit at a hamfest etc. call VE3DHQ at 416-233-0445 or write to him via CARF.

Equipment Review

Last month "we" reviewed the Kenwood RT-7500 2-metre FM transceiver. That "we" is not the "Royal We" so often heard in Amateur monologues (euphemistically called Ragchews or Roundtables); "we" represents the dozen or so amateurs who operated, fondled and fiddled with the device, and whose opinions were solicited for the review.

This month, we were going to do the same skit with another device of interest to Canadian Amateurs. Please try to imagine the excitement when it was announced that the object of our attention for this month was to have been something not only sold in Canada but also made in Canada! This binge of nationalism was quickly ended by a few sobering discoveries after close inspection of the device and accompanying paperwork.

Ignoring the urging of a portion of the "we" that a report be written telling it the way it appeared (and in effect

executing a coast-to-coast blackball on the gear), I've decided instead to first request that the Canadian manufacturer and/or the Canadian distributor be given the opportunity to respond to what amounts to an accusation of sloppy workmanship and dubious quality control.

Therefore you won't be reading about a piece of equipment this month. Instead I would like you to help me and your fellow Canadian Amateur: Please write to The Canadian Amateur telling us, in as much or as little detail as you like, of Canadian manufacturers of Amateur radio equipment.

This is not to be construed as encouragement for some Canadian manufacturer to start now -- rather, who, right now, has a device for sale suitable for the Canadian Amateur? You tell us and we'll spread the word coast-to-coast. For this time around, we are interested in Amateur-only equipment;

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DRAKE TR-33C \$289.00 + \$4.00 shipping
 DRAKE 1525EM \$ 63.00 + \$1.50 shipping
 DRAKE AA-10 \$ 63.00 + \$2.00 shipping
 DRAKE AC-10 \$ 64.00 + \$4.00 shipping
 DRAKE MMK-33 \$ 16.00 + \$3.00 shipping
 DRAKE 7079 \$ 13.00 + \$0.50 shipping

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 PRICE LIST & LITERATURE

The DRAKE TR-33C

Amateur VHF FM Transceiver



- Hand Held Convenience, 12 Channel Capability
- SCPC (Single Crystal Per Channel) Frequency Control
- Lower Receiver Battery Drain
- Expanded Portable Antenna Choice

• 12 Channels—only one crystal per channel provides simplex OR repeater operation on ANY channel. 2 channels supplied. 5 transmit offset positions, 3 supplied. • All FET front-end crystal filter for superb receiver intermod rejection. • Small convenient microphone included. • New lower power drain circuit on squelched receive. • Nicad rechargeable batteries supplied. • Built-in battery charger. • Ac and dc power cords supplied. • Telescoping screw-on antenna supplied, rubber helix optional. • Channel indicator light when using external dc supply. • Carry strap supplied. • Meter indicates receive strength, xmit output, or battery voltage. • External speaker jack on rear panel. • Auxiliary jack on rear panel—may be used for tone-pad connections, etc. • Traditional R.L. Drake service backup.

DRAKE TR-33C SPECIFICATIONS

GENERAL: • **Frequency Coverage:** 146-148 MHz, 12 channels (2 supplied: 146.52 and 146.94). Crystal determines receive frequency. • **Transmit frequency offset for repeater operation** determined by 5-position switch: Simplex, +600 kHz, and -600 kHz supplied, any two additional offsets available with accessory crystals. • **Power requirements:** 13.0 volts dc \pm 15% external supply OR internal battery supply. • **Current Drain (Batteries):** Squelched receive, 30 mA; transmit, 400 mA. External supply: above plus 45 mA for channel switch indicator lamp. • **Antenna:** 50 ohm external antenna through SO-239 connector OR screw-on telescoping whip antenna supplied, may be replaced with rubber helix antenna. • **Dimensions:** 5.5" x 2.8" x 8.5" (13.8 x 5.8 x 21.6 cm). • **Weight:** 4.4 lbs (2 kg).

RECEIVER: • **Sensitivity:** less than 5 μ V for 20 dB noise quieting. • **Selectivity:** + 30 kHz adjacent channel rejection greater than 75 dB. • **Modulation acceptance:** at least \pm 7 kHz. • **Intermodulation Rejection:** 70 dB referenced to sensitivity level. • **First I-F:** 10.7 MHz with monolithic crystal filter. • **Second I-F:** 455 kHz with ceramic filter. • **Audio Output:** nominal 1 watt at less than 10% distortion into 8 ohm built-in speaker or external speaker.

TRANSMITTER: • **Rf Output Power:** 1.5 watts minimum with 13.0 volts dc supply. • **Frequency Deviation:** Direct frequency modulation adjustable to at least \pm 7 kHz deviation, factory set at \pm 5 kHz. • **Separate microphone gain and deviation adjustments** • Drake 1525EM Push Button Encoding Mike can be used direct with no modification.

DRAKE TR-33C ACCESSORIES

Drake AA-10 Power Amplifier

10 dB power increase greatly adds to the transmitting distance covered by any 2-meter fm transceiver running up to 1.8 watts output



Small size: 2"H x 2.1"W x 5.5"D (51 x 52 x 140 mm)

Drake AC-10 Power Supply

Powers the AA-10, TR-22C, TR-33C and TR-72. Simultaneously can charge the TR-22C/33C nicads. Supplies 13.8 volts up to 3 amps from 120 V-ac 60Hz input. • **Accessory Crystals.** • **Model No. 1333 Drake MMK-33 Mobile Mount.**

- Model AA-10 Power Amplifier
- Model AC-10 Power Supply
- Accessory Crystals
- Model MMK-33 Mobile Mount
- Model 7079 Vinyl Carrying Case

Drake 1525EM Push Button Encoding Mike



- Microphone and auto-patch encoder in single convenient package with coil cord and connector. Fully wired and ready for use.
- High accuracy IC tone generator, no frequency adjustments.
- High reliability Digitran[®] keyboard.
- Power for tone encoder obtained from transceiver through microphone cable. No battery required. Low current drain.
- Low output impedance allows use with almost all transceivers.
- Four pin microphone plug: directly connects to Drake TR-33C without any modification in transceiver. Compatible with all previous Drake and other 2 meter units with minor modifications.

don't bother us with 11 metre afterburners capable of conversion to Amateur use!

In closing, I would be quite interested to hear what you've bought from a Canadian manufacturer because I too am a consumer of electronic goodies and am

reluctant to pay 11% exchange on US dollar, 12% federal sales tax plus 15% duty, plus shipping, which comes to about one and half the south-of-the-border price. So who are the Canadian manufacturers, what are they making, and what do you think of it?

Symposium nixes Novice

Representing 27 organizations from coast-to-coast, more than one hundred Amateurs attending the first DOC/CARF National Amateur Radio Symposium in Ottawa turned down the novice certificate proposal and in an enthusiastic, unopposed vote, endorsed a VHF-and-up "no-code" Experimenter Certificate.

The meeting, convened by the Canadian Amateur Radio Federation and which was probably one of the most significant events in Canadian Amateur radio, took place at the National Conference Center on November 26.

Despite an untimely snow storm which prevented a few of those invited from getting to Ottawa, the attendance surpassed expectations. The fifteen DOC officials and the Amateurs attending the affair concluded that it was a resounding success ... so much so that at the invitation of the Director-General of DOC's Telecommunication Regulatory Service, Dr. John deMereado, your national Federation agreed to hold another one in 1978 and to make the symposium a continuing annual affair, to be held in different centres each year.

The four workshops on "Amateur Radio in the 1980s", The Future, The Novice Certificate, The Experimenter Certificate and the one on Regulations met during the morning session. After an excellent buffet lunch, at which the DOC's Assistant Deputy Minister for Services, Mr. Jean-Paul Lefebvre, spoke to the group, all those attending assembled in a plenary session to hear the recommendations of the working groups.

A problem with the Regulations group was the lack of time to give due consideration to the extensive area and number of subjects which needed to be covered. As the group spokesman put it, "We

OKAYS EXPERIMENTER 'NO-CODE'

could have started on Wednesday and still not have been finished by Saturday". Discussion ranged from tower legislation and interference to the deletion of sections of the regulations which are redundant in the light of today's technology, such as logging mobile operation.

The group recommended that a number of changes be made and that in general the codified Amateur regs presented by CARF to DOC last spring, which included a number of changes to update the rules, be followed when DOC rewrites the present ones. Among these suggested changes was a recommendation to consider the elimination of domestic sub-band allocations which designate the frequencies to be used for various emission modes.

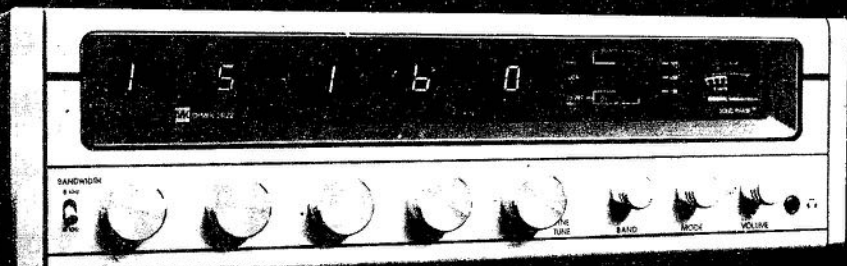
The workshop on the future delved into the use of satellites, new modes of transmission and the advent of micro-processors on the Amateur bands. It was pointed out that Amateur experience is a valuable complement to professional and academic training and this "hands-on" the equipment experience will prove even more valuable in the future.

The report of the group on the novice certificate noted that the group opinion although not unanimous was nearly so, with only 3 for, with 12 against. The rationale on which the decision was based was that in today's rapidly climbing curve of new licensees in Canada, primarily due to formal study courses in schools, there was no need to lower the present standards to meet an objective of increasing the number of licensees.

The point was made in the general assembly that with the elimination of the age restriction and the lowering of standards we could, as has occurred in other jurisdictions, see the ludicrous

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ALL NEW
fully synthesized **DR22 Receiver**
general coverage receiver
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FEATURES

- Shortwave, CB, ham radio, ships at sea, overseas phone calls, etc.
- Hi Fi, SWL, commercial, industrial and government uses.
- High level RF front end for excellent inter-modulation rejection and sensitivity.
- Crystal filters in first and second IF amplifiers; ceramic filter in third IF.
- Quartz crystal tuning accuracy at all frequencies, no crystals to buy.
- Built in power supply for 110-120 or 220-240 VAC switchable, 50-60 Hz.
- Solid state, phase locked, digital synthesis tuning.
- Extreme ease of tuning at all frequencies.
- No mechanical tuning dial error or backlash.
- Switch selectable 4 or 8 kHz RF bandwidth.
- Built in monitor speaker with external speaker connectors.

SPECIFICATIONS

■ Frequency coverage:	50 kHz to 29.7 MHz, continuous. Digital synthesis in 5 kHz steps, fine tune for ± 5 kHz.				
■ Reception modes:	AM, upper sideband, lower sideband, CW.				
■ Sensitivity for 10 dB S + N/N:	100 kHz	200 kHz	300 kHz-20MHz	20-29.7 MHz	
	CW, SSB	10 μ V	2.0 μ V	0.5 μ V	1.0 μ V
	AM	30 μ V	6.0 μ V	1.0 μ V	2.0 μ V
■ RF Bandwidth:	-3dB @ 4 kHz or 8 kHz, and -60dB @ 10 kHz or 14 kHz				
■ Dimensions & Wt.:	(W x D x H) 17.5 x 14.5 x 5.1 inches. Shpg. Wt. 19 lbs.				

DR22 features and specifications unmatched under \$2900.



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picture of a five-year old child legally playing with radio equipment which could cause serious interference problems, and injury or death to the child. As one member of the audience put it, such a case would be "like giving a child a hand grenade to play with and then telling him not to pull the pin". The general assembly also emphatically turned down the novice certificate in a 65 to 21 show of hands.

Dr deMercado commented that since the original proposal was published last year he had heard no arguments which would compel him to join the clamor for a novice license". In fact, he continued, under the circumstances, "there was no way he could justify a stand before his Minister or the Treasury Board to ask for the additional money and resources" which the advent of a novice class would precipitate.

Questioned as to why, if this was the feeling in DOC, the Department had proposed the novice ticket, Dr deMercado pointed out that it was not a DOC proposal but one which had been submitted to the Department by the ARRL Canadian Division and some others from time to time and that the novice idea was therefore put out for informal comment last year along with the experimenter certificate and both were included in the symposium to obtain first-hand reaction.

The whole assembly then heard the recommendations of the working group on the "no-code" experimenter certificate. The symposium information packet included a draft of the syllabus of examination and the qualifications for the controversial proposal. It was quite detailed and thus vastly different from the vague proposal put out in June 1976 by the Department. The draft proposed a "no-code" certificate with the former HF privileges removed and starting at 144 MHz, with a very tough set of exams set at an engineering level. The oral portion could be taken at Regional offices while the written exams would be marked at DOC head office in Ottawa.

The working group recommended some changes to the proposal, such as removing the age restriction and raising the lower frequency limit to 220 MHz. The rationale for beginning at 144 is that the two metre band offers a good interface between the new licensees and the other two classes of Amateurs.

As the afternoon progressed with many questions and with explanations which had been totally lacking until now, it became clear that the rationale which unfolded to back up the proposal could hardly be disputed. The relatively small group of highly qualified experimenters who go on the air under this new ticket would lead the way to Amateur utilization of new transmission techniques and use of the VHF and UHF bands now relatively unoccupied. They could, as has been done in the past by the pioneers who keep opening new areas in higher and higher frequencies, open new vistas for Amateurs with, as has happened, the occasional spin-off for the advancement of commercial telecommunications to the country's advantage.

Eastern countries, Dr. deMercado noted, encourage their Amateurs in such experimentation and we would do well to keep pace with them.

Those who, in the face of the logical arguments brought out, were wavering in their support of the experimenter certificate, had a tough time to reply to the question, "When were you last on 1215 megs, or for that matter 220?"

As explained by Dr. deMercado in the sociologists' language we have been used to "man-man" communication radiotelephone, for example) and we are now entering the "man-machine" era where an Amateur station is using some form of microprocessor or 'computer' to perform certain functions. The age of "machine-machine" communication is rapidly approaching and the advent of experimenters highly qualified in the computer and new transmission methods would bring new technologies to the Amateurs of Canada.

After further consultation on the question of whether the lower limit will be 144 MHz or 220 MHz and the consideration of suggestions re the age limit removal and the exemption from examination of individuals holding certain qualifications, the proposal will appear for public comment in the Canada Gazette, Part 1, in January or February. Promulgation of the new ticket could be in the late summer, with the first licences activated in late August or September. Dr. deMercado did not foresee any fiscal problem with the administration of the new class of certificate because he did not visualize any more than two or

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OF ADVANCED ENGINEERING AND UNIQUE
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YOU MAY NEVER HAVE OWNED A
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*Phase lock-loop (PLL)
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*Hybrid Digital
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equipment...not an
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*Rugged 6146-B final
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*Cooling fan standard
equipment...not an
accessory.

*Microphone provided.

*Dual RIT control
allows both broad and
narrow tuning.

*All band 80 through
10 meter coverage.

*Multi-mode USB, LSB,
CW and AM operation.

*Extraordinary receiver
sensitivity (.3u S/N 10 db)
and oscillator stability
(100 Hz 30 min. after
warm-up)

*Fixed channel crystal
control on two
available positions.

*RF Attenuator.

*Adjustable ALC
action.

*High performance
noise-blanker is
standard equipment
...not an accessory.

*Built-in VOX and
semi-break in CW
keying.

*Crystal Calibrator and
WWV receiving
capability.

*Phone patch in and
out jacks.

*Separate PTT jack for
foot switch.

*Built-in speaker.

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three hundred "experimenters" being active at any one time.

All in all, the objective of the symposium, which was to provide the DOC with the opportunity of hearing various views on Amateur matters and vice versa successfully accomplished.

It should be noted that the expressions of opinion of those attending were just that ... the "votes" were in no way deemed to be binding or restrictive on the future actions of the Department. They did, however, along with the lively and informative discussions which accompanied them, provide both DOC and the Amateurs with clarification of various points and issues. Then too, the meeting proved to any DOC officials who might up to this time have thought of the Amateur Experimental Service as a sort of GRS with an examination requirement, that it is worthy of support and that its members are responsible individuals from all walks of life who, in the aggregate, possess a wealth of

knowledge and experience in telecommunications which makes them a valuable human resource.

The symposium, which was an unqualified success, was convened and organized entirely by the Ottawa headquarters of your Federation with the assistance of local Amateurs and the Department of Communications officials "from top to bottom", without whose full and whole-hearted co-operation and collaboration the symposium could not have been initiated, let alone carried out successfully.

Thanks too, is due in great measure to the Amateurs of Canada, whose support in memberships and the purchaser of CARF publications put the Federation in the financial position to afford this and future symposiums.

(Editor's Note: this story of "Amateur Radio in the 1980s" is, due to printing deadlines, necessarily lacking in much of the detail. The January issue will contain a more complete, illustrated account.)

Technical Talks

Turnabout

OR
CONVERTING HAM STUFF
TO CB STUFF

Most SSB GRS equipment can be converted to Amateur use, and makes dandy mobile or base ten-metre stations. Most of these sets are 23 channel synthesized rigs employing a complex system of xtals and oscillators.

The granddaddy of them all, the early Johnson 350, is possibly the easiest to convert due to its simplicity and ruggedness. It is strongly advised to obtain at least a schematic diagram of the set before attempting surgery; also it will make my job of explaining the various steps a lot simpler. (The Sam Photofact books cover every set ever produced.)

Basically, there are two options: 23 Channel ten-metre operation, or continuous coverage of the whole or a portion of the band.

Let's start with converting the Johnson 350. This is a two-channel SSB-only rig sporting a sensitivity of 0.2 microvolts and other nice specs. Conversion

takes about an hour or two and involves removing capacitors, trimmers and several wires, the manufacture of a simple coil, changing xtals and tune-up. Consult the schematic and figures shown here.

Remove the following from the board completely -

Trimmers: C79, C81, C82, C84.

Capacitors: C80, C90, C83, C85.

All (two) xtals, marked in the 11 MHz range but do not remove the sockets.

Disconnect the following wires -

From C77 to centre of S3B, leaving the wire on C77, it's needed later.

All wires on S2A; leave the centre connected to ground.

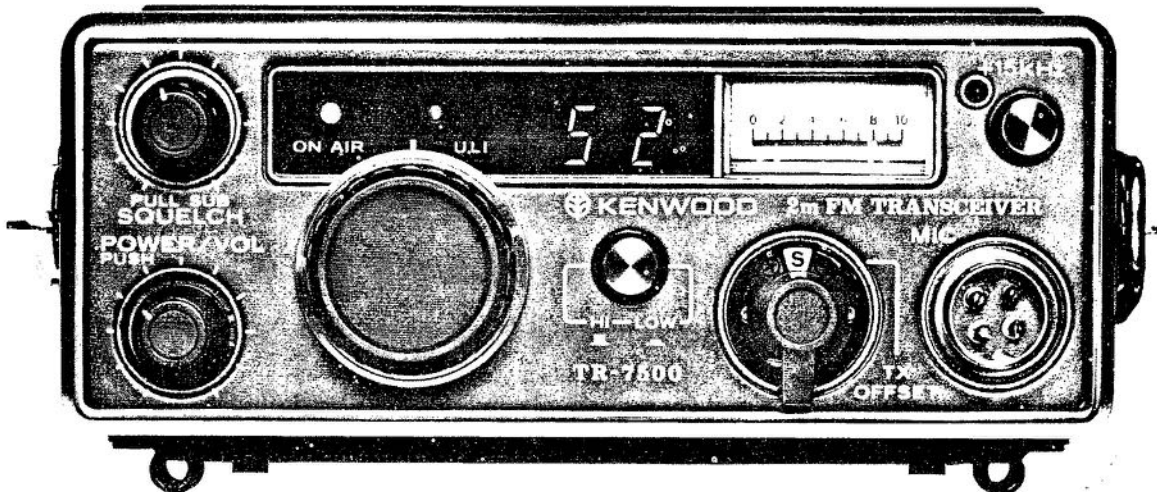
All wires on S3A. (C77 is connected to, or was connected to, the centre of S3B).

Fix jumper wires between the following holes left vacant in the board:

C80, C90, and from the hot side of

ORDER NOW

TR-7500



There are a number of good 2 meter FM transceivers on the market. You may already own one. But, even if you do, we suggest that you put your radio to this test. And, if you're thinking of buying one, this test should be a helpful guide.

\$429.

Is it PLL synthesized?

Does it have 100 channels (88 pre-programmed)?

Does it have 12 extra diode programmable channels?

Does it have single knob channel selection?

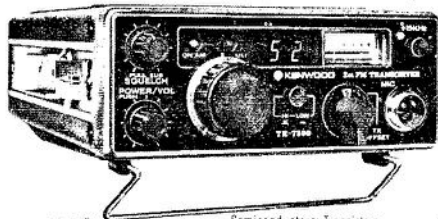
Does it have a LED digital frequency display?

Does it have a powered tone pad connection?

Does the receiver have helical resonators?

NO	YES
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

If your answer is NO to any of these, the TR-7500 is the radio that you should own. And, in addition to these important features, you get proven Kenwood quality, value and service.



TR-7500
Specifications

NEW!

Semiconductors: Transistors 41
FETs 8
ICs 7
Diodes 35

Frequency Range: 146.01 to 147.99 MHz
Mode: FM
No. of Channels: 100
Operating Temperature: -20 to +50 degrees C
Power Voltage: 11.5 to 16.0V DC (13.8V DC nominal)

Grounding Polarity: Negative ground
Antenna Impedance: 50 Ohms

Current drain: Less than 0.5A in receive with no input signal
Less than 3A in transmit (4W)
(4W) Less than 1.5A in transmit (LOW) (at 13.8V DC)

Dimensions: 172 mm (6-3/4") wide
250 mm (9-7/8") deep
75 mm (2-15/16") high
Weight: Approximately 2.2 kg (4.8 lbs.)

TRANSMIT SECTION
RF Output Power: High: 10 Watts
Low: 1 Watt (approximately)

Modulation: Variable reactance frequency shift
Frequency Deviation: - 5 KHz
Spurious Radiation: Better than -60dB

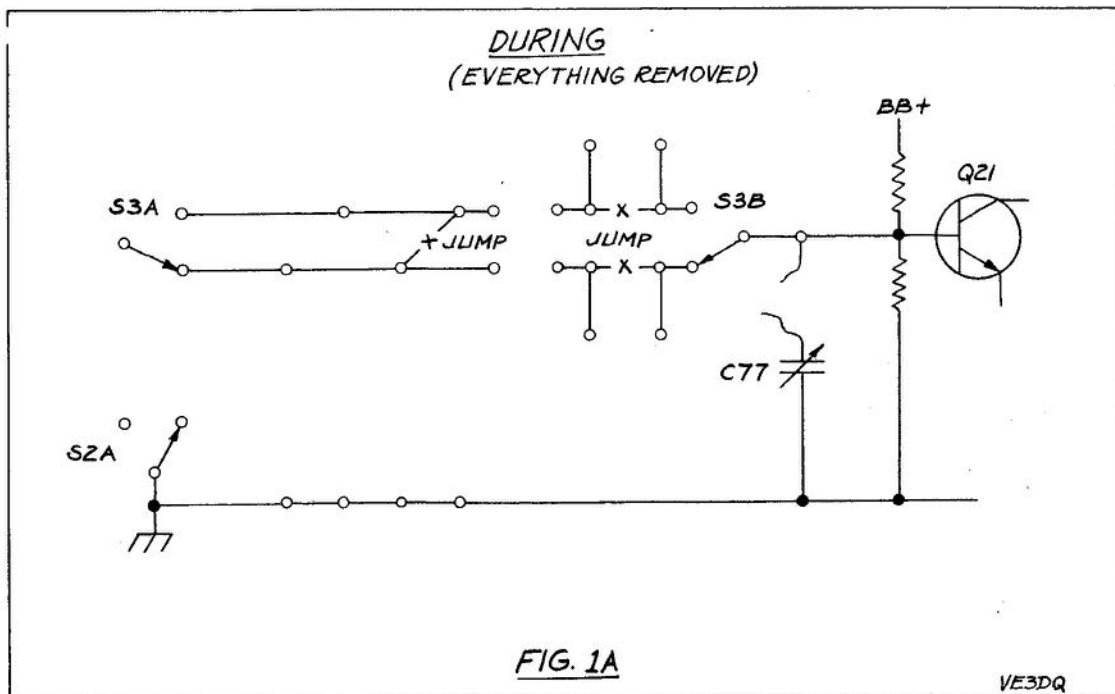
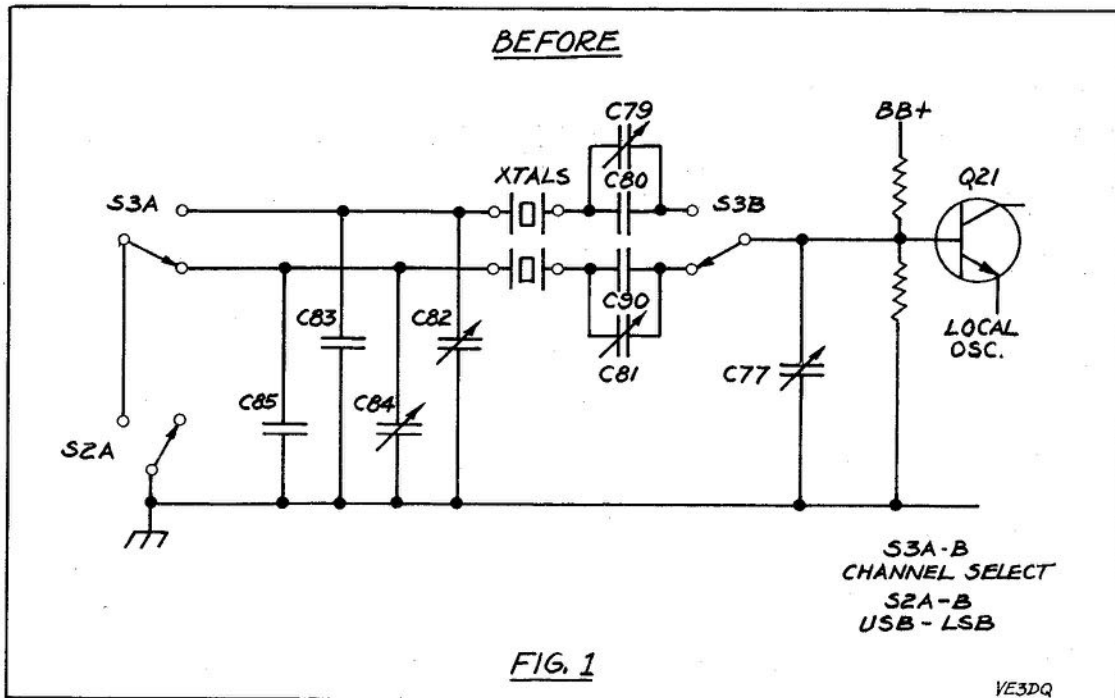
Tone Pad Input
Impedance: 600 Ohms
Microphone: Dynamic microphone with PTT switch, 500 Ohms

RECEIVE SECTION
Receive System: Double conversion superheterodyne
Intermediate Frequency: 1st IF: 10.7 MHz
2nd IF: 455 kHz
Sensitivity: Better than 0.4 μ V for 20dB quieting
Better than 1 μ V for 30dB S/N

Squelch Sensitivity: Better than 0.25 μ V
Selectivity: 12kHz at -60dB down
40 kHz at -70dB down
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C83 to the hot side of C85. (See Fig. 2)

Install coil in vacant trimmer holes on the board; make sure no unauthorized contacts are made to the printed wiring, scrape away if needed. One side of the coil goes from the junction jumperwire C83-85 and the other side of the coil goes,

to the unconnected wire on C77 (which was taken from the centre of S3B).

Install two new xtals in the sockets. (e.g., 12.45 and 12.50 MHz)

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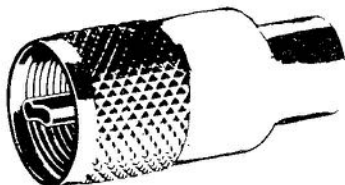
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or less coverage can be obtained by adjusting the coil, however the figures given above are the result of much tinkering and will give the best results. A ten-position switch and ten crystals will cover the whole band. My set, however, covers only the most active portion of the band as outlined above. Xtal formula is (Desired Frequency plus 8.75 MHz) divided by 3.

Let me explain the secrets of this set-up.

The 12 MHz xtal frequency is tripled by T6 and combined with the carrier frequency of 8.75 to give the output frequency in the 28 MHz range. The xmit carrier frequency and the receiver I.F. frequencies are the same (8.75) resulting in a very simple and effective system.

It is possible to "bend" the xtal a fair amount; a feat done by the coil and C 77. (This was the "Clarifier" and is now the tuning control.) The xtal is bent upwards by 20 kHz and down by 130 kHz. Too much inductance in the coil will stop oscillation but too little will not provide enough "spread". Values given should work nicely, however a bit of coil tinkering might be needed in some cases.

Nothing was done to change either the P.A. or the squelch circuitry as the latter comes in handy, when standing by for the Oscar satellite.

It's nice to have some vernier device on the shaft of C77, or even a small direct reading dial.

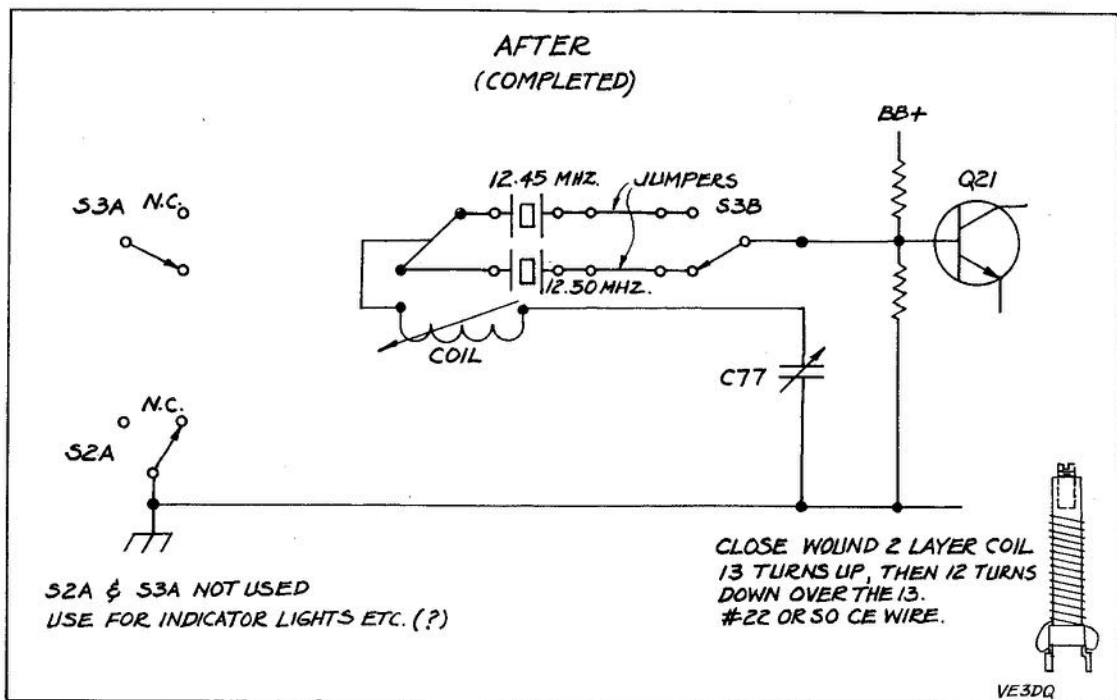
How does it perform? Well, one day I was working a LU6 somewhere in the jungle of the Amazon when a FT 101 broke in (a VE3 station) and also established contact with the LU 6. VE3COO was "mucho stronger" which doesn't mean too much but shows you that the thing "gets out" rather well.

I have constructed a power supply for my rig and mounted the whole kaboodle on a chassis, installed a Millen 10037 dial on a false front and replaced the slide switches with toggles.

The next step was the construction of a "linear". Although there are plenty of "blackbox" amplifiers on the (illegal) CB market the cost of these devices is unbelievable. The amplifier is a one tube affair (6BQ5) driven into sheer exhaustion and putting out 30 Watts (60 PEP), of clean signal. In all, it is certainly worthwhile to invest some time and very little money (\$14.35 for two xtals and a coilform) to own a dandy special ten metre rig.

The band is open today, and I've just finished talking to Mabio, LU3EDO in Buenos Aires. "Sorry you guys did not get through to him; all you need is "high" power and a old CB set!"

VE3COO John Oosterdag

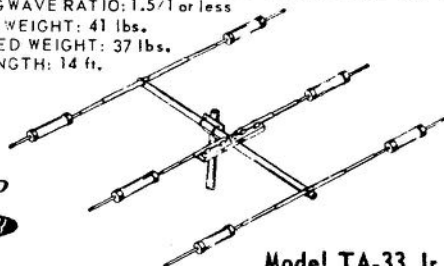


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Model TA-33 for 10, 15, and 20 meters

The Mosley TA-33 three element beam provides outstanding 10, 15, and 20 meter performance. Exceptionally broadband - gives excellent results over full Ham bandwidth. Exclusive Mosley trap design offers resonant frequency stability under all weather conditions. Element center sections are of double thickness aluminum to reduce sag. Boom requires no bracing. Heavy duty universal mounting plate fits masts up to 1 1/2 inch O.D. Antenna handles full KW AM/CW or 2 KW P.E.P. SSB input. Feed with one coax line, RG-8/U recommended. The TA-33 may also be used on 40 meters with TA-40 KR conversion. Complete with Hdw.

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



Model TA-33 Jr.

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

The Classic 33 10, 15, and 20 meters

Beam designed to provide the extra gain for working hard-to-reach DX. Incorporates exclusive Mosley "Weather-Proof" traps with resonant frequency stability. Features new boom to element clamping and balanced radiation. Hardware is stainless steel. Feed with 52 ohm RG-8/U coax. Fits up to two inch mast. Use with most heavy-duty rotors. 1 KW AM/CW or 2 KW P.E.P. SSB input.

FORWARD GAIN: Full 8 db. compared to reference dipole or 10, 1 db. over isotropic source.

FRONT-TO-BACK: 20 db. or better on 15 and 20; 15 db. on 10 meters.

STANDING WAVE RATIO: 1.5/1 or better.

MAXIMUM ELEMENT LENGTH: 27 ft.

ASSEMBLED WEIGHT: 42 lbs.

BOOM LENGTH: 18 ft.

SHIPPING WEIGHT: 47 lbs.

TURNING RADIUS: 16 ft.

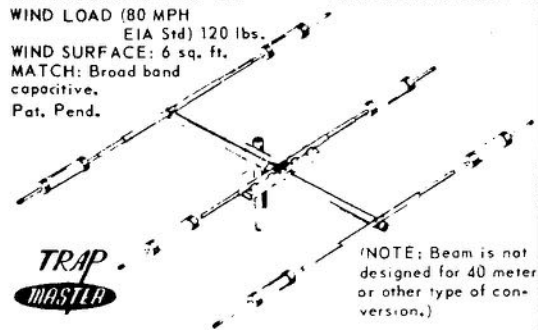
WIND LOAD (80 MPH

EIA Std) 120 lbs.

WIND SURFACE: 6 sq. ft.

MATCH: Broad band capacitive.

Pat. Pend.



(NOTE: Beam is not designed for 40 meter or other type of conversion.)

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Technical and Operational Characteristics of the Amateur Radio Service

Note: This official International Telecommunications Union (ITU) paper was drafted by VE3UD, Bud Punchard, chairman of the CARF Working Group which is making recommendations to the federal government as to the frequency allocations for the Amateur Service, which Canada can put forward at the ITU World Administrative Radio Conference in Geneva in 1979. "WARC '79" will determine the re-allocation of the radio spectrum for international use during the next decade at least.

In conjunction with Bud, Department of Communications officials edited the paper and it was then submitted to the ITU by Canada. Accepted as an official ITU document, it was then made available to member nations as a background information paper for the use of various ITU committees, with the recommendation that these committees include it in their reports to the 1979 conference.

The paper is unique in that it marks the first time that one which deals with the activities of the Amateur Service has been written, accepted and circulated in the ITU. (A previous paper dealt

with the Amateur Satellite Service alone.) Its value lies in the fact that it informs the myriad of engineers, technical and diplomatic personnel who make up the ITU staff and delegations, as to the significance, extent and usefulness of the worldwide Amateur Radio Service.

Amateur organizations may find the paper useful when dealing with newspaper, radio or television reporters. It can also form the basis of an interesting talk to non-Amateur organizations.

The paper's official title is: C.C.I.R. Study Groups Document Doc. 2/219 - E, dated May 17, 1977. 'C.C.I.R.' stands for the ITU 'Consultative Committee on International Radio'. It consists of various international Study Groups which meet in joint sessions to finalize recommendations on matters affecting the worldwide use of radio.

A limited number of copies of this important international paper, drafted by an official of your national, all-Canadian Federation, are available from CARF to member organizations on request.

Introduction

The CCIR is charged with "the formulation of recommendations directly connected with the establishment, development and improvement of telecommunications". The amateur radio service, a radio service recognized in the ITU Radio Regulations, has contributed significantly to development trades and continues

to contribute to its improvement in many countries, members of the ITU. This paper was therefore written for the information of Study Groups 2, 3, 5, 6, 7 and 8 and it is recommended that it be included in the reports of the chairmen to the Special Joint Meeting and to the 1975 WARC.

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BRIEF HISTORY OF THE AMATEUR RADIO SERVICE

It was an amateur, Guglielmo Marconi, who first put electromagnetic waves to practical use for communication without wires in 1896. By 1912 hundreds of amateurs were experimenting with wireless transmission and their use of the spectrum received national recognition in the U.S. and Canada. They were permitted to experiment with all of the so called "useless" wavelengths below 200 metres. Amateurs soon discovered that the shorter waves were capable of providing longer range communication, particularly during daylight hours.

The introduction of vacuum tubes between the years 1906 and 1920 allowed radio amateurs to use continuous wave telegraphy and to develop modulation methods for broadcasting voice and gramophone records. This led to the birth of the broadcasting industry at that time. The increased efficiency of vacuum tube transmitters and receivers resulted in two-way contact between the U.S. and France in 1923 on the "impossible short-wavelength" of 100 metres.

It was not until 1924 that the harmonically related 160, 80, 40, and 20 metre Amateur bands were allocated. From then on amateur radio developed very rapidly as the numbers of licensed amateurs increased. To counteract the interference caused by the crowding of many signals into narrow frequency bands, many new techniques were developed to improve the stability and quality of signals and the selectivity and sensitivity of receivers. Many of these improvements found their way into commercial equipment and systems.

The 1927 Washington ITU Conference added the 10 and 5 metre bands for amateur use. Amateurs improved frequency stability by use of quartz crystal controlled oscillators, frequency multipliers and power amplifier systems. In the late 1920's simple regenerative receivers gave way to the more selective and sensitive superhetrodynes. Amateurs developed single signal receivers to overcome interference problems due to crowded band conditions. These were the forerunners of the single side band transmission systems which were introduced in the 1960's.

After World War II amateur radio activity increased rapidly with all-continent daylight two-way contacts com-

monplace on the 10 and 20 metre bands. In 1947 the Atlantic City ITU Conference allocated bands at 144, 220, 420, 1200, 2300, 3300, 5650 MHz and 10 and 21 GHz to the Amateur Service. Frequency modulation began to replace amplitude modulation as amateurs moved into the VHF region above 28 MHz in the 1950's and 1960's.

In 1976 the world population of amateurs was about 750,000. At the present world growth rate of 7 1/2 % per year, there will be about two million amateurs by the year 2000.

CURRENT AMATEUR RADIO ACTIVITIES

Amateurs are now involved in many aspects of communication and experimental work over a wide range of the spectrum. These activities are briefly outlined herein except for amateur satellite work which is discussed in (ITU CCIR) Report 542 (Rev 76).

SINGLE SIDEBAND TRANSMISSION (A3 MODE)

Single sideband systems had not been extensively applied before the late 50's when amateurs began to build and use practical SSB transmitters and receivers to reduce serious interference from overcrowding. The superiority of SSB was quickly established and recognized to the extent that it has been widely adopted by commercial and military services.

TRANSCEIVER AND NET OPERATIONS

A significant advance was made by amateurs during the late 1950's and the 1960's when they developed and promoted tunable and stable transceivers capable of transmitting and receiving on the same frequency for every setting of a single tuning dial. Previously, separately tuned transmitters and receivers, calling and receiving on different frequencies, were wasteful of time and frequencies.

An important outgrowth of transceiver technology is the ability to operate tens of stations on a single frequency under a net control station. In the last fifteen years, amateurs have established telephony and telegraphy nets operating on local, national and international bases. With up to 100 stations checking in to a net control station in an orderly fashion, contacts between stations can be quickly

established. The appropriate stations can then move off the net frequency to pass traffic or experiment. Hundreds of different kinds of nets with multiple purpose objectives are now in operation on all bands up to 450 MHz. Strict self-policed operating discipline makes their performance extremely efficient. Some nets operate continuously from 7 am to 6 pm daily, year in and year out, recording hundreds of check-ins per day. Others operate for an hour a day, week or month. The main benefit of net operation is the development of operating techniques and skilled operators.

C.W. TELEGRAPH (A1-MODE)

Continuous Wave Telegraphy is the oldest form of wireless communication. Proficiency in the transmission and reception of the international Morse Code is an international requirement for licensing of amateurs. Over the years specialized equipment and techniques have emerged to increase the efficiency of this mode of operation. Amateurs have developed specialized radio frequency crystal filters for reducing the bandwidth to as low as 50 hertz. During the 1950's electronic tube keyers were common but now are replaced by sophisticated solid state designs. More recently, keyboard keyers and video display units have become available.

RADIO TELETYPE (RTTY)

Amateurs were quick to adapt commercially obsolete teletype machines for radio use. This required development of special demodulators, terminal units and work and space units. RTTY nets are operating on established frequencies throughout the bands with world wide contacts commonplace.

TELEVISION

Amateurs experimented with crude on-the-air scanning disk television in the 1920's and 1930's many years before commercial television was realized. A great deal of experimental work took place in the 1950's so that by 1960, monochrome TV was accomplished by Amateurs. By the early 1960's colour TV had been transmitted.

By slowing down scan and frame rates and using long persistence cathode ray tubes, amateurs have reduced TV

bandwidths below 3 kHz. This permits transmission on SSB on the Amateur H, F bands below 38 MHz. Two way world wide picture contacts are being made daily, especially on the 14 MHz band.

MOONBOUNCE

To obtain long distance contacts, amateurs have bounced signals off the moon on 50, 144, 220, 432, 1296, and 2304 MHz. High gain multi-element antenna arrays (up to 160 elements), parabolic dishes up to 28 feet in diameter, legal power of 1 KW and the most sensitive receivers have overcome the 260 DB or greater path losses to produce transmission between all continents at 432 MHz.

FACSIMILE (A4 AND F4 MODES)

Amateurs have been experimenting with the transmission of graphic information such as diagrams, maps and photographs for many years using amplitude modulation A4 on the 50, 144 and 220 MHz bands. Frequency modulation F4 is permitted on all amateur bands above 50 MHz. This activity is somewhat limited by lack of standardization of equipment.

METEOR TRAIL SCATTER

Some work has been done by amateurs using scatter reflections from ionized meteor trails in the 50, 144 and 220 MHz bands, especially during meteor showers in August and December. This system produces short bursts of signal paths from stations from 300 to 1000 miles apart. As a result of successful work by amateurs, commercial interests are proposing systems which would permit up to 100 transmissions per hour, limited to low volume message traffic and data collection from distant points not normally accessible on line of sight VHF systems.

PROPAGATION STUDIES

With thousands of amateurs using the HF and VHF bands it is obvious that a great deal has been learned about the propagation characteristics of each of the bands as they vary from day to night, season to season and over the 11 year sun spot cycle. Much information has been gathered about forward scatter, back scatter, sporadic E, F₂ layer reflection, TE mode, the effect of the

Publications:

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aurora, tropospheric ducting, etc. This knowledge has contributed to the bank of information being assembled in commercial and government organizations by professional engineers and scientists.

REPEATERS

The 144 MHz band is one of the best for local communication. Because signals are shaded and reflected by trees, buildings, wires and hills, amateurs began experimenting with remote repeater stations as early as 1932 in an effort to increase range and reliability. Today, there are repeaters operating all over the world on the 50, 144, 220 and 420 MHz bands. Narrow band FM (F3 mode) is employed with transmitting and receiving frequency pairs separated by 600 kHz. Frequency plans have been set up informally to minimize direct interference and intermodulation effects. A great deal of development has been done to improve the sensitivity and selectivity of receivers and to improve duplexing filter techniques, collinear antennas, frequency synthesizers, timing units, vehicle noise suppression, selective tone access systems, code identifiers etc. Many of these improvements have been adopted by commercial designers.

EMERGENCY OPERATIONS AND PUBLIC SERVICE

Radio amateurs have vividly demonstrated the value of their acquired skills during emergencies and disasters in many parts of the world. Again and again they have shown ingenuity and resourcefulness by providing communication services under the adverse conditions which usually accompany disasters. Although organized as "contests" the annual "field day" exercises give enthusiastic and dedicated amateurs the opportunity to show how efficient communications can be quickly established between thousands of stations, without access to primary electric power sources. In many cases, stations set up under similar circumstances have provided the only means of communication to and from, and within, disaster areas on a local, national and international basis.

Training to prepare for emergencies usually takes the form of providing communications for community events such as regattas, car and snowmobile

rallies, ski marathons, community walks etc. Other public service activities include hurricane watches, eye bank nets on a national scale co-operating with the official eye banks, weather nets and unofficial communications for the purpose of providing medical information to remote locations.

FREQUENCY SHARING

Sharing of some of the HF bands with other services has not been satisfactory to amateurs mainly due to long range propagation on the lower frequencies. Only limited portions of some of the bands are usable by radio amateurs in Region 2 because of fixed services and broadcasting in Regions 1 and 3. Amateurs have found that narrower, but exclusive, HF bands, world wide, are more useful than wider bands shared on a secondary basis. Sharing on bands above 50 MHz has so far been satisfactory due to normal short range propagation, but local interference can occur.

SUMMARY

Most Administrations are well aware of the importance of maintaining a high degree of capability in the electronic art for applications in communications, industry and science. Encouragement of amateur radio by Administrations is a sound way to build a knowledgeable pool of radio operators and electronic experimenters. A strong body of amateur radio operators provides a "ready made" source of proficient and experienced communication experts both technical and operational.

BANNED COUNTRIES LIST

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

*-Stations XV5AA, XV5AB and XV5AC were authorized to exchange communications with Amateurs of other countries by the former Saigon regime.

**-Station XU1AA has been authorized to exchange communications with Amateurs of other countries.

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Note: all Commonwealth countries are eligible for reciprocal operating privileges to Canadian Amateurs.

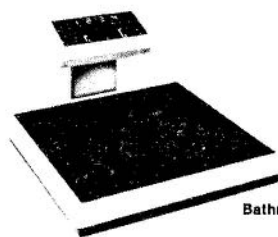
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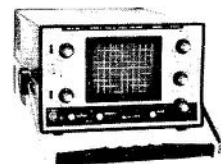


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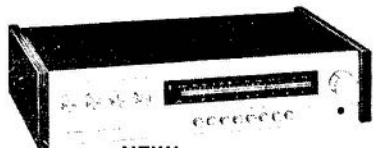
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