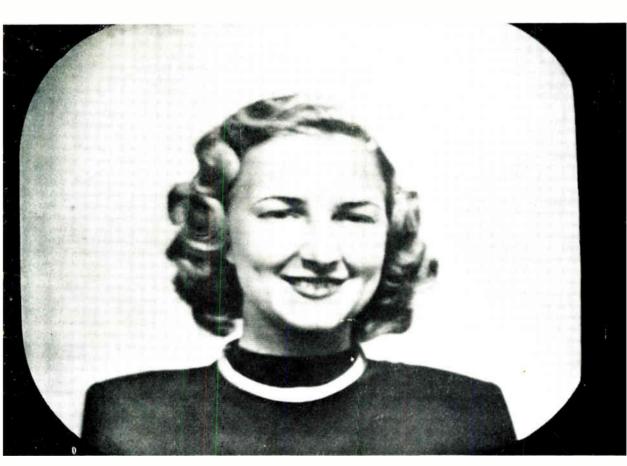


OCTOBER 1948

Vol. X No. 10

for the Pallo





OFFICIAL JOURNAL

THE CANADIAN AMATEUR RADIO OPERATORS' ASSOCIATION

TORONTO, ONTARIO



# HAMMAND

# Variable Condensers



**8000 SERIES**—Far medium and law power transmitters. Isalantite insulation with lang leakage path. Straight line capacity type with three paint panel ar sub base maunting. Available in twelve different madels, salid ar split statar type with .0375" and .080" spacing and maximum capacities af 25 to 341 mmfd.



9000 SERIES—Far medium and high power transmitters. Alsimag 196 ceramic insulation with statar maunted above to reduce capacity to ground. Straight line capacity type with  $\frac{1}{4}$ " shaft, three point panel and three point chassis maunting.

Available in twelve different madels, salid ar split statar type with .080" and .185" spacing and maximum capacities af 28 to 510 mmfd.



**NEUTRALIZING TYPE**—Far madern law capacity tubes. Alsimag insulation with palished aluminum discs featuring spring loaded adjusting screw.

Twa madels available, bath having a 7000 peak valt rating at minimum spacing and an 18000 peak valt rating at maximum spacing. Type 8401 has  $1\frac{3}{8}$ " diameter discs and a capacity range af 1.9 ta 4.7 mmfd. Type 8403 has  $2\frac{1}{8}$ " diameter discs and a capacity range of 2.2 to 7.8 mmfd.

DISTRIBUTED THROUGH LEADING JOBBERS FROM COAST TO COAST

# HAMMOND MANUFACTURING COMPANY

GUELPH · ONTARIO · CANADA





# POWER WIRE WOUND RESISTORS

# BUILT TO OUTLAST A LOT OF RIGS

IRC Cement Coated Power Wire Wound Resistors are built to do a job. They're built to do it better and longer than any other resistor type you've ever used before. They stand the overloads. Heat – even much more than 250 degrees Centigrade – does not cause them to deteriorate. Actual tests show their amazing superiority under moist or salt air conditions. Years of field service in the nation's most exacting jobs prove their durability beyond any question of doubt. They will not let you down!

# POSITIVE CONTACT Eliminates Adjustable Resistor Troubles

The recently developed Type X band now supplied at no extra cost on all IRC adjustable resistors of 25 watts and up assures smooth, fool-proof adjustment. No oxidization or corrosion at point of contact – no wire damage or breakage. Don't fail to ask your jobber to show you this important and exclusive IRC feature!



Cross section view of band on resistor.



Extra heavy steel band with flexible section for easy installation on resistor.

Stainless steel contact spring spot welded to band,



INTERNATIONAL RESISTANCE COMPANY =

Silver

contact

button.



Available from your jobber or nearest C-G-E office

48-TU-7R

# CANADIAN GENERAL ELECTRIC CO

**HEAD OFFICE - TORONTO** 

LEADERS IN RADIO, TELEVISION AND ELECTRONICS



VOL. X Na. 10



**OCTOBER** 1948

# Published by

# THE CANADIAN AMATEUR RADIO OPERATORS' ASSOCIATION

46 ST. GEORGE ST., TORONTO 5, ONTARIO TEL. Mldway 8235

# Contents

ŀ	'age
Editorial—What Price Security?	4
VE Get Acquainted Party	5
Traffic Handlers' Page	6
Ve3CCE	7
Ham Radio in B.C. Floods	8
Club Activities	9
DX News	12
National Repart	13
C. & U.S.R.S. Column	17

# **STAFF**

Editar T. G. E. Powell, Ve3ZE DX Editor

R. D. Carter, Ve3QD

Advertising Manager Dan Fairbairn

Authorized as second class mail, Post Office Department, Ottawa.

# CAROA

Affiliated with A.R.R.L. and R.S.G.B.

# **OFFICERS**

President

T. G. E. Powell, Ve3ZE

Vice-President R. A. R. Macdonald, Ve3APS

# **EXECUTIVE** COMMITTEE

The Officers and,

W. H. Anderson, Ve3AAZ

D. G. Hall, Ve3TB

A. A. McArthur, Ve3DJ

A. Palmer, Ve3WK

J. V. Perdue, Ve3QK P. Posnikoff, Ve3BBN

J. Staley, Ve3GR

H. A. M. Whyte, Ve3BWY

# DISTRICT REPRESENTATIVES

F. G. Gribben, Ve2XR R. C. Hunt, Ve3WX Les Saul, Ve4FJ Bill Gordon, Ve5MW W. R. Savage, Ve6EO Ernie Savage, Ve7FB Jack Spall, Ve8AS

CAROA

# What Price Security?

Security is an economic condition that is sought by most thinking men. An ambition to achieve it inspires the constructive use of the present, and sane planning for the future. Its existence brings peace of mind; its absence, mental distress.

Setting sail along a well-plotted course will not necessarily bring us into the harbour of security for storms and rough waters may beset us and thwart our most ambitious efforts. On the other hand, it is improvident to leave port without benefit of charts and a clear cut understanding of our navigation intentions. We may reach our harbour in safety, but if we do it will be largely a matter of chance and good fortune.

Security, however, is a relative thing. The yard-stick used by one man to measure security may differ broadly from the gauge used by another. One may view security as being represented by steady employment with its constant income that enables him to purchase all the things dictated by whim and fancy. To that man, sufficiency of the present defines security.

His neighbour, however, may have an entirely different conception of security. To him, the present may be merely a means to an end. He may regard security as the ultimate result

All amateurs will hear with regret of the passing of K. B. Warner, W1EH, secretary of the A.R.R.L., on Sept. 2, as result of a heart attack. The president has written to Mr. George W. Bailey, president of A.R.R.L., as follows:

"It is with regret and a deep sense of loss we learn of Ken Warner joining the ranks of silent keys.

"Through the years he had become a symbol of amateur radio, and was an outstanding exponent of the amateur code. To him and his efforts at international conferences belongs much of the credit for our continuing privileges. His editorials, especially of recent writing, have displayed a breadth of vision unsurpassed since the days of Maxim.

"All members of the Canadian Amateur Radio Operators' Association join me in this expression of sympathy to his family and associates. Amateur radio, and every radio amateur, have lost a friend." of provident planning for a care-free and moderately comfortable life in the years of his eventide, with provision against the exigencies of intervening years. Of the two men, the latter seems to stand on more solid ground.

There are cases where a sense of security is nothing more than that - something which exists in the mind, and which has no basis in fact. That is dangerous. Some of us go forward with a blissful feeling of safety when true security is non-existent. We fail to realize that many of the things we enjoy at any given moment are possible only because of current factors, and we utterly fail to appreciate that some untoward event may terminate many of the pleasurable things we enjoy and accept as a matter of course. When that happens, we become conscious of the fact that security did not exist but, in its place, smugness and a complacency towards potentialities. To our detriment, we awaken to a belated realization that we had not planned for dealing with such an emergency.

Complacency is to be feared wherever it is found. If it exists among we people who constitute the amateur radio fraternity, we should do all things possible to eradicate it. There is no security in complacency, nor is it always to be found in the fact of possession. Oftentimes, security is represented by the protective forces we create for the retention of that which we possess.

There is potential danger, for instance, to be found in the taking of a false sense of security to our operating position for the enjoyment of 80, 40, 20, 10, and so on. That is complacency. Periodically, the leaders of amateur radio thought bring this to our attention through their writings. Unfortunately, many of us read and forget and, alas, some of us do not even read. There are those of our members who are the personification of complacency because there is no justification for, and much to fear from, a smug assumption that the frequencies of 1948 will be the frequencies of decades everlasting.

The man who saunters through this life hanging crepe all over the place is to be deplored. So also is the man who wanders down the street with his eyes shut as he veneers himself with the extreme optimism of a self-satisfied conviction that nothing can or will happen to him. The things that befall him are the things from which he would have been spared had he kept his eyes open and firmly fixed on his objective as he planned his steps. The man with his eyes open clearly sees all the

obstacles in his path and circumvents them to eventually arrive at his destination without mishap. But his progress from one point to another is an objective progress. In other words, he plans his future. He organizes his senses and organs into a safe and efficiently functioning unit so that he successfully achieves his purpose. By so doing, the future holds a continued enjoyment of the pleasures of the present.

Security, then, to a considerable extent, depends upon organization and planning. It logically follows that the things that befall us as a consequence of the lack of security are extensively due to the absence of organization and planning. Mishaps take their greatest toll when they strike a centre of disorganization.

A hundred people all under the shadow of a common threat, and who are unorganized, will be vulnerable so long as they remain one hundred individuals. Let them organize into a unit with plans to put into effect and the tale takes on a different ending. Trade unions, co-operative organizations, industry associations and other organized entities having a common bond of association are evidence of the efficiency of organized protection and are a clarion proclaiming a wide-spread belief in the value of that type of organization.

CAROA is just such an association. It is the organized voice of Canada amateur radio in matters which are distinctly Canadian. CAROA represents the efforts of Canadians to gain amateur radio security for the future. Through the medium of CAROA, Canadian amateurs hope to walk down the street with their eyes open.

—R.M.

# **VE-GET-ACQUAINTED PARTY**

Phone or CW

Call CQVE/CQVE/CQVE and sign call letters. See how many Ve stations you can work in 24 hours out of 33 hours.

Here is also a chance to win a wave certificate:

When—Saturday, Nov. 27, Sunday, Nov. 28, 1948.

Starting Time—3 p.m. P.S.T., 4 p.m. M.S.T., 5 p.m. C.S.T, 6 pm E.S.T.

Ends—Nov. 29, 12.01 P.S.T., 1.01 a.m. M.S.T., 2.01 a.m. C.S.T., 3.01 a.m. E.S.T.

Scoring Points—6 points per QSO, if Ve8; 4 points per QSO, all other districts. If a member of CAROA, bonus of 25. Add total QSO points and multiply this by the sum of different sections worked.

Use any choice of authorized bands. Same station may be worked once on each band. Any station reported working out of the bands will be disqualified.

On your log indicate each change in band and type of emission. Also mark each station worked if a CAROA member. If more than one operator works from your station, submit a separate score and log for each.

Come on boys - Make this one of the biggest Ve contests.

You do not have to be a CAROA member to enter this contest.

Sec. Contest Committee,
ART PALMER Ve3WK.
P.S.—All logs must be in by Dec. 15, 1948.



"Miss Canada 1948," honey - blonde **Betty** Jean Ferguson, being televised at the RCA Victor Exhibit at the The 20-year-C.N.E. old Halifax beauty, whose appearances at the C.N.E. were a succession of personal triumphs, poses at the right for the television camera. On the cover is a photograph of the television screen which Miss Ferguson's picture was received first the television screening ever made of "Miss the smiling Canada."



1948 -



OCTOBER XTAL

# TRAFFIC HANDLERS'

In response to many requests, we present the news of traffic and the people who handle it in this new XTAL department. Comments on this procedure are invited.

We would like to publish from time to time news on all nets in operation in Canada, for the use of traffic men in routing messages through best chanels.

## QBN QBN QBN DE VE3

Many hams on the 80-meter CW band have doubtless heard the above hieroglyphics going out over the air nightly on 3535 Kc and doubtless wondered what it was all about.

To many of the younger set of radio hams it probably sounded as though a bunch of Ve3's were hogging that frequency every night, but 3535 Kc is the frequency of what is known as the Beaver Net, which was organized long before World War II, and was revived again during the season of 1946-7, and really hit its stride in the 1947-8 season with coverage from Windsor right through to Montreal nightly.

The net meets nightly at 7 for the handling of message traffic, and last year the following stations were active on the net: Ve3AWJ, Windsor; OI, Belle River; TM, Leamington; ATR, Kincardine; DH, Ottawa; DU, London; CY, Kitchener; BCS, Dundas; BME, Stratford; BMG, Hamilton; SF, Bloomsburg; XO, Toronto; AWE, King; GI, Kingston, and Ve2GL, Montreal. Later this year BUR, Windsor; BNC, Kitchener; BND, Belleville, and APS of Toronto also joined the ranks.

During the past season schedules were kept with the following nets, and towns and cities: W. Va., NYC-LI, E. Mass., E. Pa., U.S. Trunk Lines, Trans-Canada Trunk Line "I", Powassan, North Bay, and Pagwa. Stations from various nets often report in to the Beaver Net with traffic for Ontario or other Canadian points. Ve3TM, OI, SF, AWE and DU were all active on Trunk Line "I" during the winter and handled traffic from coast to coast which originated on the Beaver Net, and we hope to be able to do the same again this year.

Section net certificates are issued to a station after he has reported into the net for ten nights and shows an interest in traffic handling. This is not a ragchewing net, but strictly traffic, and only when the net is declared free by the net control station is any ragchewing permitted. Speed is not an essen-

tial, but accuracy is, and above all, brevity is the password in network operation. Anyone desiring information on the Beaver Net please communicate with Ve3DU, D. S. Hutchinson, 90 Wellington Rd., London, Ont.

## TRAFFIC NET NOTES

Develop confidence of the general public. Third party traffic is one way of doing this.

Learn how to deliver third party messages. There are still a great many to whom a message means death or grief of some kind, so do not call persons on the telephone and announce: "I have a message for you." The shock of such or similar announcements may prevent their being unable to accept your anniversary or other greetings. Develop a more cautious or cheerful approach when delivering messages.

Remember secrecy and do not discuss or give out information regarding third party traffic to anyone other than the sender and addressee or stations handling this traffic. There may be exceptions but use your own better judgment in this matter.

The delivering of messages affords an excellent opportunity for soliciting return traffic. This originated traffic helps to keep our nets active.

713 Rielle Ave., Verdun, Que.

XTAL Editor.

Many thanks for fb article on traffic and a very good plug for a most necessary part of ham operating. At last traffic is being plugged in Canada, and boy, do we need it! The American nets are yelling their heads off for Ve outlets.

Please consider me as one who wishes to help put Canada to the forefront in traffic. I am QRT at present but will be back in traffic for the grand opening October first. Then I will be associated with trunk line S and also the swing shift net. Also keep a sked from Toronto with Ve3WK. When active again I will be able to QSP anywhere in the U.S.A. This fact alone will show the necessity of better Ve co-operation in the way of traffic. When on again I shall be running 50 watts, VFO on 80 and 40 and will gladly arrange to carry on skeds with anyone who would be einterested. So if things start to perk up please keep me in mind.

Now regarding traffic counting for monthly credits I don't see where it is so confusing. It is relatively simple and quite easy to use. In a nut shell it is as follows:

An originated message is one that is started by the station operator who is tabulating his total. Every message he originates counts as one point. Every message he receives via radio and retransmits via radio counts two points. Every message he receives via radio for delivery from his station counts as one point. Now I think extra delivery credits is the confusing part. An extra point is counted every time a message for delivery has to be phoned out, delivered in person, mailed or, as sometimes happens, placed on commercial lines. Illustrating a simulated traffic count from this station it would look as follows:

I originate 10 messages in one month. count for originating 10 points. I receive three messages via radio for some other station outside my city which I can't serve via telephone. I receive three points when I receive these messages and three more when I clear them via radio; total, six points. I have two messages for Montreal, both of which I phone to the addressee. I count two points when I deliver them and two extra for using the telephone. I also receive one message directed to me personally. As I do not use extra effort to deliver it, I count one point. Now, totalling my traffic count for the month it looks as follows:

Originated, 10 (sent originally from station): relayed, 6 (three messages handled twice by radio); delivery, 3 (three messages directed to me for delivery); extra delivery credit, 2 (counted because two messages were phoned); total, 21. Tom Stacey, Ve2XB.

## Editor, XTAL:

Your editorial on traffic handilng very opportune and well written. Trust it will go long way toward influencing Canadian amateurs.

Walt, Ve3BUR

Ve3ATR is on 7265 Kc at 7.30 to 8 nightly, trying for contacts with stations interested in joining the "Ontario Net." Stations in Northern Ontario are especially needed for this new 7 Mc net.

A new Eastern Ontario Net is being organized by Burt Coy, 3GI. The frequency is 3740. Give Burt a call for more dope.

Ve2GM, Bert Altherr, of 268 Guilbault Ave. in Longueuil, Quebec, is looking for fellows interested in forming a Quebec net on 80 CW. Drop him a line if you are interested.

	Tra	ffic	Reports		
3ATR	1	47	3DU	************************	13
3APS		61	3BUR	***********	64

## OARTA FAIR STATION Ve3CCE

By Sid Sheard, 3BCL

"This is Ve3CCE at the Central Canadian Exhibition, Ottawa, calling CO with traffic." That was a pretty familiar sound on 3820 during the week of Aug. 23 to 28 and meant a lot of hard work and fun to the boys of the Ottawa Amateur Radio Transmitting Associa-

They decided at one of their regular meetmeetings to try to attract a little attention to the ham fraternity by setting up a ham station at the Ottawa "Ex."

So-on Tuesday, Aug 17, armed with reels of co-ax cable, Ve3BCL's transmitter, tools and lots of ambition, the Ottawa gang started into set up the station.

The next day was "antenna day," and of course it rained. In fact it poured, and Jim Hood, 30A, with his crew of "trusties" crawled around the slippery wet roofs putting up a 75-meter doublet, 40 and 20-meter doublets, and a 10-meter folded dipole.

The 75-meter transmitter, running 375 watts to a pair of HK54's, was tried out and worked fine, but the next worry was "P.A.I." (public address interferance).

The big P.A. system used to handle the band concerts was found to be 12 inches behind the booth and no amount of filtering seemed to have any effect. The only solution was to use FM during band concert time, which they did. Unfortunately the CW rigs had to go off the air completely during such periods. On Monday, Aug. 23, the club was on the air with three transmitters, Sid Sheard's (3BCL) on 75 fone using the call Ve3CCE, Charlie Picke's on 10 fone using the call Ve3RF/3, and Eric Bodley's (3AK) rig on 20-40 CW using the club's call, Ve3RC/3. Later in the week Jim Waterman's (3NT) rig went on for Ve3RC/3. All in all, it was a hot and hectic week. The station attracted lots of attention. A recorded rebroadcast made by Ve2SA in Verdun was of particular interest. A total of 355 messages were accepted, 176 of which were cleared during the week. The balance will be cleared by club members from their home stations.

Complete co-operation was shown by all the 75-meter fone gang in keeping 3820 clear and was greatly appreciated, and the way the gang took the traffic was splendid.

Operators at the booth during the week were: Bob Armstrong, 3RF; Eric Bodley, 3AK; Harry Hayes, 3BEB; Laurie Nutt, 3BFZ; Ted Hollinsworth, 3PG; Les Card, 3BPS; Doc Vermander, 3BOC; Charlie Gobeil, 3BSV; Roy Holland, 3TT; Sid Sheard, 3BCL; Charlie Picke, 21Z; M. Charbonneau; Don Doshney, 3RM; Jim Waterman, 3NT; Dinny Croft, 3DT; George Roach, 3BNO; Bob Edwards, QSY to page 15

# Ham Radio in B.C. Floods

Sometimes it seems radio hams are among the world's most modest people. After trying for weeks, we have received the report on flood work by Ve7's. We present the official summary, as given in the B.C. Amachewer.

Amateur radio had another opportunity to prove its worth in late May and early June when British Columbia's worst flood since 1894 swept the Fraser Valley, causing the loss of several lives and many millions of dollars. The record shows it was not found wanting.

First organized on-the-spot emergency net was set up in New Westminster May 27 when AKG offered his 10 meter mobile services to the chief of police. FY became control of a mobile patrol of the Queensboro dykes, including even a portable marine on board UD's fishboat. This activity was stepped up June 1 when high tides backed up the already high water. During the next five days roaming transmitters discovered several bad breaks. Fast radio action was a deciding factor on several occasions. Queensboro was one of the few places not flooded.

BQ's report mentions Mrs. ADO, FY, AIE, AKG, BQ, AEC, AJN, IA, AFJ, AGZ, ER, ABQ, UD, VZ, SWL's Ralph Murray and Slim Shrop. Twenty-four hour operation for three days preceded the army's taking over. A car was even stationed at the sand pit to direct sandbags where needed, when needed. AEC lists ABO, JT, AKG, AJN, FY, BA, WO, BQ, AEC and SWL Ralph Brooks. On June 5 the army moved in, taking over communications.

Meanwhile, local stations in the upper valley had been having a bad time. The Dewdney-Deroche-Mission area was in need of more communications. With the New Westminster setup well in hand, some found themselves free to help out. A motor cavalcade of eight cars landed in Mission at 1 a.m. (our correspondent doesn't say what day). Two operators left on a navy boat immediately for Deroche. They had along a 2 KW gas plant which was in continuous service for two weeks. Dewdney was also linked up in a matter of hours. Tenmeter mobiles were sent out looking for trouble spots.

Static was bothersome at the City Hall Hq., Mission, so a relay point was set up on Mount Mary Ann overlooking the whole valley. All links were on 24-hour duty, passing traffic for navy, army, B.C. police, flood control and Red Cross. Co-operation was excellent. These circuits functioned for two weeks with minor changes to fit conditions. Some of the fellows were in the field the whole time, others for two or three days as their time off permitted.

Active in this phase were EK, AIE, AFJ,

AKG, AJN, BQ, UE, ADF, AFE, XC, NM, TE, ABP, AS, AEC, ALM, AGZ, ABX, AKK, GS, ZZ, MH, AGP, LF, AFN, SWL's Ralph Murray and Slim Shrop.

Meanwhile, on the other side of the river, the area from Fort Langley to Chilliwack was receiving the best efforts of the Fraser Valley Amateur Radio Club members, aided by the odd W7 and some outside help. ADZ set up a link from the Glen Valley dyke to the nearest telephone in the early hours of May 29. AFB and DQ got into it the hard way, sandbagging. Brain triumphed over brawn, however, and they put their talents to better use on a radio circuit, setting up shop in the Ridgedale area late May 29, operating as long as required.

WI at Abbotsford became net control for the area, links being set up as the need arose and withdrawn when the local battle was lost or won. Some evacuations were over routes not recommended to tourists or for transporting radio equipment, however solidly built.

The club's report mentions ADZ, AFB, DQ, WI, AFN, W7FOR, who acted as relay for some 10-meter traffic, navy men from the station at Abbotsford, transient hams and small boys who acted as runners.

Chilliwack was on the map with RS being bolstered by the arrival from Vancouver of AV, who had previously gone to Mission but found the district overmanned. Accompanied by ADM, AV arrived at 4 a.m. after a mountain detour which necessitated some repairs. At 6 a.m. they met local officers and agreed to operate under Red Cross, co-operating with army and flood control. At 9 a.m. shop was set up at RS's and contact established with Vancouver and valley points. Coat buttons and beer bottle necks were used for insulators. ADM mobile went out on the dykes. After a few days the station was moved to a more central point. A lot of sleep was lost at first due to lack of relief operators for a 24-hour watch. With two transmitters and receivers, it was easy to throw the wrong switch, talk into a dead mike, and get calls mixed. Mosquitoes, black flies and no-see-ums were ter-To keep them out, operation at night was without lights, doors and windows closed. The heat in the tiny room was then a problem.

TE turned up to help AV and ADM for the last week. H. Creber, ex-R.C.A.F., some of the Abbotsford boys and a couple of others filled in the odd time.

Back in Vancouver, FB had monopolized the 5 o'clock net and the Vancouver end of things by virtue of a 24-hour watch, ready to answer any call any time. His report covering May 26 to June 13 fills 3 pages of foolscap. Water

reports from Quesnel and Lillooet were relayed via SL. The station became the clearing house and information centre for Vancouver.

At FB watch keepers were AFN, YA, AAX, XW, AER, OJ, AOB, AL, RF, AOV, AOW, AFC, FB, BQ's XYL, Jim and Edna Hill, Mickey Kidd and Col. Hutchings. They made 1482 contacts and handled 517 messages.

Later some others, notably AEC, who had been at New Westminster and up the valley, and returned to set up a Vancouver link, helped share the load. AEC operated 24 hours June 2-9, on four-hour schedules till the 12th, working into up-valley points. AEC's upper valley report lists ALM, AGZ, AFJ, BQ, BA, AFL, ADF, XC, AV, TE, NM, ABP, AEX, AKK, AS, GS, AIE, AJN, ZZ, AKG, AFN, MH, AGP, LF, AEC, SWL's Slim Shrop, Ralph Brooks.

At Kelowna one 19 set and 7ACL's home rig were set up in CKOV's studios where emergency power was available in case the city power failed, a 19 set was installed in an auto belonging to CKOV for work in connection with mobile parties engaged in flood control in the area. FS and SC set up circuits on 40 and 80 meters CW with AEX and RU and the AFARS Station 7ND in Vancouver and Traffic considered very urgent by local civic authorities was handled.

Early in the affair need of some kind of organization was evident. The B.C.A.R.A. took matters into its own hands and appointed BJ co-ordinator on June 2. He devised the channel system which was put into effect June 7. FB, on 3850, scheduled AEP, Kamloops; ZL, DW, Williams Lake; EI, Bralorne; FT, SO, Vernon; SL, Ashcroft; LK, Prince Supert; WI, Abbotsford; AV, JF, B.C.E.R. liaison, with partial contracts ACW, Pt. Alberni; CX, Alberni; YI, Nanaimo; CB, Victoria; ACJ, New Westminster; SW, Victoria; UA, Powell River.

Channel B, presided over by AEC, 3825 Kc, scheduled MX, Cloverdale; ALM, Mission (local to ADF, Dewdney; BQ, Deroche), EK, Agassiz; WI, Abbotsford; AV, Chilliwack; FY, New Westminster; ER, Surrey.

Channel C, ND, 3715 Kc; Channel D, AEU, 3.5 and 7 Mc, and Channel F, US, 3800 Kc, provided province-wide, W7 and Ve6 contacts, as did TC on 7 Mc. AC helped out without being included in the plan, as did several others.

The official closedown came at 1300 on June 13. Other links shut down at various times previously as the need for them ceased. Amateur radio in B.C. sat back to survey a job well done and to plan the next one better.

The South Okanagan A.R.C., Penticton, was ready with portable gear when calls came from Hedley and Keremeos, but landlines held and help was not necessary. YE had previously been appointed co-ordinator and had everything lined up.

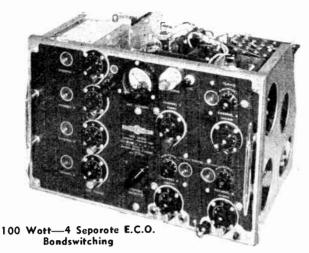
# **CLUB ACTIVITIES**

The Queen City Amateur Radio Club, one of Toronto's oldest radio clubs, has resumed activities. The first post-war meeting will be held on Tuesday, Nov. 9, at 8 p.m. at 80 Kalmar Avenue, Toronto, Ontario. All members of the "Mystic Knights of the Ether" are requested to be on hand for the purpose of electing officers and debating on clubhouse locations. All Brother Knight Hawks and others are invited to attend. For information contact Harold Kenmare, HOward 3340, Ve3JO, or Karl Emes, Ve3RG, or Art Palmer, Ve3WK.

On Oct. 16 the St. Maurice Valley A.R.C. will celebrate the silver jubilee of foundation by a banquet in Three Rivers. Since 1923 the presidents have been Geo. Hebert, J. L. Blondeau, Geo. Kemp, Ve2EK; Donat Houle, Ve2TR; J. G. Bordeleau, Ve2DD. Monthly meetings have an average attendance of 75% of its 35 members, all licensed. The association has an organized emergency corps, two OBS's, one ORS, two OPS's, some WAC and WAS. The boys of the St. Maurice Valley can be heard on every frequency from 80 to 2 meters, on phone or CW. The honorary president, Dr. J. O. H. Ricard, Ve2AT, has had his ticket since 1914, and he is still active on 75-meter phone, although he is 80 years old. He uses also a rotary beam on 2 meters. He has operated from 600 meters to 2. Secretary is Rev. C. E. Robert, 2EC, 445 5th Ave., Grandmere, Que.

At long last the Brandon and district gang have formed Brandon A.R.C. with a membership of 23. Ve4IF is president, Ve4DN vicepresident, and Ve4GE secretary-treasurer. Ve4AO handles public relations. We are hoping our membership will increase now that holidays are over. The organization meeting was held in May with a very fine turnout. There is quite a good representation from Camp Shilo and the members are most enthusiastic. A successful picnic and field day was held at Brandon airport on June 13. Sept. 26 has been chosen for the fall picnic, which will be held at Camp Shilo. A code class is in progress, with Ed. Morgan as instructor. He also gives instruction in transmitter and receiver construction. A great deal of club activity is planned for the coming season.

The Fraser Valley Amateur Radio Club has its headquarters in Abbotsford, British Columbia, known as the "Hub of the Fraser Valley." The present executive is: James Fraser, Ve7AFB, president; Gordon Stemson, Ve7DQ, vice-president; Don Clarkson, Ve7FQ, secretary-treasurer. Meetings are generally held the 1st, 3rd and 5th (if any) Tuesdays of each month. Headquarters are under construction. Communications should be addressed to the Secretary, Fraser Valley Amateur Radio Club, Abbotsford, B.C.



# TA 12-G TRANSMITTER

These can be easily converted to 20-40-80 meters. Crystal required for 10 meters. Each electronic coupled oscillator dial has 3,000 divisions enabling quick precision shifting. This transmitter was constructed of the highest quality of precision parts, with laboratory precision. Four separate output tanks; one 4-position selector switch having seven sections which change the ECO, IPA and output tanks simultaneously. RF ammeter reads antenna current. Pair of 807's in final. Complete with tubes and two printed sheets conversion data

# MP28B Power Supply and Modulator

Designed to operate the TA12-G from a 24 volt D.C. source, these dynamotor power supplies deliver 540 volts at 450 ma. They also house the speech amplifier, pair of 807 modulators, modulation transformer, and control relays, etc. Complete with tubes. New \$28.50 Used

# JUNCTION BOX AND CABLE ASSEMBLY

With all necessary connectors for a complete installation of the TA12-G Transmitter and the RA10-DB Receiver \$15.00

TERMS: Cash with order or 10% deposit on C.O.D. orders.

# War Surplus **BEN**

AIRCRAFT RAD



The MN26-C Radio Compo 12 tube superhetrodyne rec Band 1, 150 to 325 kcs; Band 3, 695 to 1,500 kcs. loop crank, left-right in junction box and cable asse new and complete with tul

# **ARMY WIRELES**

EDWARDS SU
575 MT. PLEASANT RD
TELEPHONES HY

# BARGAINS!

O EQUIPMENT

# **Radio Compass**



ss is a remotely controlled eiver. Frequency range—Band 2, 325 to 695 kcs; Consists of receiver, loop, licator, azimuth control, nbly. Brand es \$89.00

# SETS, No. 19 Mk. III

putstanding values available.
Mcs to 8 Mcs and 230 Mcs
stallation kit comprising 16
es and microphones, aerials
lamps, and dynamotor power
Brand new and in oriainal

\$49.95



Sparton

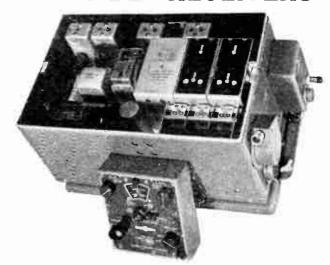
# O-1 MA. METER

Precision-built by Sparton of Canada. Black bakelite case 3" square-face. Brand new in original box Has O-100 ma. scale. Priced so low you can buy more than one.

Each \$5.95

Lots of 3 or More \$4.95 Each

# **RA10-DB RECEIVERS**



PPLY HOUSE, TORONTO 12, ONT.

TERMS: Cash with order or 10% deposit on C.O.D. orders.

# DX NEWS OF THE MONTH

Bear in mind when you read what follows that it is being written the first week in September. Conditions have been deplorable and night after night nothing comes through but the odd European and Central American. The few reports we've received this month from across the country, all say the same thing, so if the column is not very interesting blame conditions and the scarcity of reports.

Ve3AGC adds a few new ones in HZ1AW, I1BCB (Trieste) and KX6AF, and almost has the 3-element ready to up. 3BNL had a motor trip to New Orleans and the boys say Jack was visiting some of the high-powered W4's to find out how it's done; may be libel, at that, or could be those southern belles. 4RO is getting ready for dx contests coming up and will bear watching. 3ADV drops a nice letter with a list of J QTH's. Fred used to do this job and knows all the grief that goes with us, hi. We are not listing these at this time as all J's can be reached via forwarding bureaus. Thanks anyway, om. 8AS in Whitehorse also has poor condx but nails VR3A on phone. Fb, Jack and could use that one mycle for the property of the state of the self. 5QZ has finally upped power to a single 813 with 800v on the plate and adds OA4BG and VS6AE for a couple of new ones. He's another disappointed ham with holiday condx. Know how you feel, Cliff, as I had the same luck. 10M besides working I6USA, CT3AA, ZB2A and a bunch of South Americans helps 10K get married. Rumour has it the gang helped speed this up to get Jack off the air so they could catch up. We don't believe this, and extend to 10K and the xyl our best wishes. 10M, by the way, was high man in the Halifax dx contest, and our congratulations on a fine performance. 1PQ adds EK1IB and KB6AD and others and also had a hand in 10K's wedding. Looks like a real dx setup. 1NE seems the sole exception to the rest, and works ZD8B, MB9BJ, GC4LI, HK3CV, F8NE (Corsica) PZ1OY, YN1MH, ZP3AW, 1S1AHK, ZC1CL and ZD9AA for new ones. Fb, Jack, and need that ZD9 here. My apologies also for incorrectly listing his totals. There's also a long list of other good dx stations, so it shows it can be done even when things are tough. 3BHX snagged 3QE for his new call. 3AZO is now 3OH. 3AGP is now 3TF. There are more, but that's all I have heard of so far. VelAQ is now officially dead and came to life as Ve2BV. Lots of luck with the new call, O.M. So we're dropping 1AQ listing and hope to seen see you in there again Don. 3BLY is sorry school will now interfere with dx but promises to keep plugging. 7AF1 now QRO with 807 and works PK6XA, KB6CT, ZS1BK as well as Europe finally for his WAC. Keep up the good work, Harry. 7HC still grubbing for gold and getting carries as the back of the control of the c for gold and getting anxious to be back at the rig. He got his DxCC after 3½ months' wait

and the cards for WAZ are in Herb Becker's hands now. Fb, Gord, and our congratulations. Heard ZCICL and VS4AC (Laccadive Islands) in QSO the other evening. You should have heard QRM when they finished; guess everyone in the band was calling one or other of them. Both were on same frequency too, so that only made it worse.

Well, I'm off for a week's fishing after muskies, so may be able to write a fishing column next month.

Please keep those reports coming through, gang, as it's the only way I have of getting the dope.—73.

Station	P.W. Total	Zones	1948 Total	Zones
4RO	161	40	100	
7HC	151	40		
3QD	171	38	126	36
31J	127	37		
2WW	122	37	117	35
1PQ	112	36	61	
3ACS	103	35	49	22
3AVA	103	32	66	23
3AGC	118	31		
1NE	91	32	91	32
10 <b>M</b>	76	$27^{\circ}$	31	7
5QZ	54	26	48	25
8AS	55	25		
3QE	54	24	51	23

1EA 120, 3AAX 102, VO6EP 100, 6FK 93, 7EH 77, 3BNQ 76, 3TB 75, 3BWY 75, 3BBZ 72, 3LJ 72, 5JV 72, 3BBN 70, 3AGX 66, 3QB 61, 4RP 55, 3BNL 52.

The editor informs me of XTAL schedule calling for copy earlier, so please get your reports away as soon as possible after the end of each month. Send all contributions to Roy Carter, 304 Brookdale Ave., Toronto 12, Ont.

# LAPEL BUTTONS

# For CAROA Members

Do you know that any member can obtain one of these handsome buttons by merely writing to HQ CAROA, 46 St. George Street, Toronto and enclosing postal note for 75c. We will send immediately your own CAROA lapel button.

## NOW IN STOCK—NO WAITING

Identify yourself at Hamfests, outings, etc., in the coming season.

SEND FOR ONE NOW

# TIONA

## Ve2

Floyd G. Gribben, Ve2XR, D.R., 5120 Westbury Ave., Montreal. Phone EL. 5387. Apparently a lot of the boys took their holidays at the same time as your scribe, for it doesn't look like there's much news this month; I of Bourlamaque sent in his monthly letter (it arrived too late for inclusion in September issue. Should arrive in my hands around 20th of each month). Here's what Guy had to say. His Harvey-Wells TBS-50 rig developed trouble and he's rebuilding the power supply. He got himself a handful of rocks, so he should be back in business by now. ABS, of the same area, fractured a bone in his foot at work so his baseball activities were terminated—(looks like that 19 set's going to get a lot of use while that foot heals, eh, Herb?) ABU of the same neck of woods, had burn-up trouble in his 19 set. KH of Montreal should have his VHF reevr going again after rebuilding the front end to improve SN ratio. XR and xyl spent vacation at WK's hideout near Lachute and just over a hill from KH's summer retreat. PK of Montreal West snagged his first KH6 and several Og5's on ten fone recently. Tommy Cunningham, a former Montreal ham under the call JK, visited some of the boys recently and reported that his new call is 4FX in Winnipeg. JJ visited QS's summer spot at Plage Laval. New voices on ten fone are AAL. AAR, ACR, CV, all of Montreal area. LO of Drummondville followed through with his usual letter of the month. John says he's a bachelor these days as he came to Montreal recently to put his xyl and the two traffic hounds had a good long gab. John also visited NR in Lachine who is rebuilding ad who will have a rig that will be the envy of all. John also says AAG is a new ham in Drummondville who works on 40 and who has run up a total of 200 QSO's in the short time he's been on. (What's your address, OM?) John closed his letter and gave us this month's contribution to the BEEF DEFT. . . . "From an American ham to 2LO (John) . . . Can't you hook up Sherbrooke in your traffic net? It's the WORST place to try to get traffic tory will be but just a pleasant memory. Those that worked so hard to make this hamfest a success can now take that well-earned rest after a job well done. For those that were not able to attend and who would like to know what went on, yours truly will endeavour to give you a word picture of the proceedings in next month's column (should be sobbered by then!) WW, the Montreal dx man, started out for the Bendix Air Derby in the U.S. on Labor Day week-end. Don's Mosquito

developed carburetor trouble on the way to the race. Sorry you didn't make it. Don. GE of Pointe Claire is still beam-dreaming. WY took in the Toronto "Ex" Labor Day week-end and reported that there was no ham set up at the fair this year due to television link there with Buffalo, N.Y. Our first Ve tangle with TVI. The worst is yet to come, eh, Ross?

ham set up at the fair this year due to television link there with Buffalo, N.Y. Our first Ve tangle with TVI. The worst is yet to come, eh, Ross?

ACF of Verdun runs 12½ watts to an 807 (he emphasizes the ½) on ten and gives it the AF with 7C5's. Art is dabbling with a 2L beam as well. JV of Verdun is designing new 3L wide-spaced rotary clothesline. CB of Verdun is planning a new rig ending with PP 35T's but construction will be slow to ease the financial pain. He says he's going to put in a phase modulator too. He hears you guys on a BC-348. ACK of Verdun is re-building an FM fone for ten ending in an 807 and is determined to put the works on one chassis. LS of Verdun uses PP 807's on ten fone and twiddles the dial of an HRO. AFB, known as Jack Barron of 1730 Dorchester St., West in Montreal, is another lad from G-land who became one of us. His old call was G8RN. Jack operates 20 fone and is planning T40's to modulate his moth-balled 808's. His antenna is a sectionalized doublet. To change bands he takes to the roof and clips in or out the necessary wire! A BC-348 does the listening. NN of 2189 St. Catherine St. W. in Montreal, turns out to be Thomas Watson. Tom bangs the brass on 40 with a VFO and 813. The RF finds its way to a single wire fed Hertz. The things he hears come in on a home-made superhet. KD of Montreal snagged his first KP4 on ten fone and for good measure bagged a few more a few days later. AEI is on 80 CW with a 19 set at 1205 MacKay St. in Montreal. He's Ralph Mullins and he hears you on his S-40. I regret to announce that Hamdom has lost one of its greatest leaders and one of its strongest advocates. A man whose words throughout the years have been read by amateurs in every corner of the globe. A man who gave us wisdom, and who taught us fairness and brotherliness. A man who taught us fairness and brotherliness. A man who taught us fairness and brotherliness. A man who thought on the sturdy foundation he has hequenthed us. Let us now, us Ve2's, as fellow amateurs, convey our deepest sympat Fame with teur history.

From a most reliable source it is learned that a log book proposition has been made to CAROA. They tell me the price will be right too! Watch for it! Sorry I didn't have much news for you this month gang. Hope I can do better next time. Why not read the other fellows' columns? They write up some mighty interesting news on the lads in the other parts of the country. Find out what the others are doing elsewhere. Read on! Then wait till we meet again here in November. 73—Floyd.

W. Bert Knowles, Ve3QB, D.R., Lanark, Ont.—The response with reports has been very good this month. 3AFI has a 636 preamp, and says it works fb on ten. AAQ has a f0-ft. tower complete with ladder, tuning platform and five-element beam. GH is wondering what kind of beam to put up. BKO gave an interesting that kon ham radio in G-land at the Niagara Club. . . . Why not write up an account for XTAL? BJG is putting up a new beam. Wendell Strawway, a well-known SWL from Detroit, visited QB, AOU, GO, DD, RG, YS, AZH,

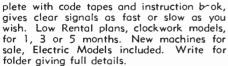
AHP, and then took in the Goderich hamfest. BNO is working portable in Ottawa on ten and six. BCL has rig in cellar and controls it by a dial in his living room. BEB is getting his ten mtr. beam ready with rotator for dx season. 3YC is rebuilding his P.P. 810's on ten fone. 3BPR is working dx on 20 CW. BSU is on ten with an 815. BCL, BBW, AGU, RF and RM are on two. BJE has new QTH with PLENTY of antenna space. BGI is rebuilding using 6L6-807-811 for 10, 20 and 40. 3PH is dxing but ALU manages to sneak in one on Gord. 3PA has portable at summer cottage. BBQ is moving to clear up key clicks. BNI is on 40 QTU? BHU, who has been working 20 with a 459A, is going to higher power. AZZ has a lazy "H" on twenty and claims he is the dx king: the QSL mgr, seconds it. ANH has new rig running 400 watts on 40 and 20 CW. ALT has 30-foot tower for twenty vertical. PH and BJE are preparing rigs for six; keep an ear to the north, you six-meter men of the south. 3CK motored to Fort William for his vacation. 3AAU is ex-G3YU. 3BWY was in eastern Ontario on motor trip and visited. to Fort William for his vacation. 3AAU is ex-G3YU. 3BWY was in eastern Ontario on motor trip and visited AJS and QB. 3YJ had a week's holidays on Mississippi Lake and operated portable with a command set and had over 100 contacts. 3JW heard someone using his call. 3AC jr. op. is working in a radio store for the summer. 2AM ex-3ABG will be back on the air this winter. 3RM went to Toronto operating P-M on the way. 3UJ is now on the air at Hyde Park with a BC457. 3YJ reports good hamfest at Goderich. AHP and KM won horseshoe pitching contest. 3DIJ was noticed pitching the shoes. good hamfest at Goderich. AHP and KM won horseshoe pitching contest. 3DU was noticed pitching the shoes. 3BEK and BUS of Sudbury flew to the hamfest. 3DU won the gadget—a low frequency command set. Fred 3AIU and his mother did an excellent job as hosts, and much of the success of the hamfest is due to their efforts. 3GB/2 with ¾ watt into antennae kept sked with 3YJ/3 on Mississippi Lake. 3AOU visited W2OY. 3PH visited AGG, ALW, QB and the Peterboro district. W4JGA called in to see your D.R. on his way to Toronto Excelled in to see your D.R. on his way to Toronto Exit in the property of the property 11. Jim here shack. DIF is active on (3, 10, and 11. Jim kept in touch with ir. op. in Quebec City via 2RM and LZ. 3WZ is having trouble with VFO. AGG is going to build VFO. BCP has closed down. BAJ has sked with ATR, who is trying to form a 40-meter net. BAJ wants a VO QSO and QSL before that country is lost. YA hopes to get on 20 soon. BAR is working in Toronto now and has a two-letter call. BBM and BCJ are back on the air after being away with a telegraph survey gang for the summer. BCJ says he is going to build a 200-watt fone job. This to you all who have sent in reports, and as we close for the month of August we hear from WSPUN that KBW of the ARRL has passed away and amateur radio has lost another prominent member. BUR is on Beaver net using BC457. AKO will be in second year engineering physics at U. of T. ADM has moved to Sioux Lookout to commete with LZ for dx. 3LZ went to Ottawa for his vacation. 73—Bert. 73-Bert.

## Ve4

Les Saul, Ve4FJ, D.R., St. James, Man.—Due to the summer doldrums things have been comparatively quiet in the Ve4 area. Everybody has been away on holidays,

# LEARN CODE this easy way

 This automatic INSTRUC-TOGRAPH machine will teach you quickly to send and receive code (Morse or Continental). It comes com-



Also Day, Night and Home Study Courses in all branches of Radio Communications.

> RADIO COLLEGE OF CANADA 54 Bloor St. W. - Toronto

Conodion Rentol Hdgtrs. for over 10 Years

building, rebuilding or tearing down equipment, as the case may be. Then, of course, many of the boys are tearing what little hair they have left out by the roots as they try to line up the many little odds and ends in preparation for the hamfest on Sept. 12. There has been some activity, however. HB is struggling with a pernickity home-built superhet and expects to be on shortly. KW, with only 23 watts, is astounding the 20-meter phone men with his low-power results. LC is still amassing tubing for that 20-meter beam. Although exclusively CW, NX has been informed that his modulation is lousy. MC is rebuilding and trying to dispose of his old rig. NG is having condensation troubles since the shack is located in the basement. SR now boasts a the shack is located in the basement. SR now boasts a new three-element rotary. TJ is the ubiquitous one on 20. TB is building a super-deluxe receiver and has even gone so far as to order a special chassis. GW is trying to find elements for a 20-meter beam. The gang around gone so far as to order a special chassis. GW is trying to find elements for a 20-meter beam. The gang around Brandon have not been too active during the summer but things are looking up for fall and winter. Ve4AP has been busy building transmitters and travelling. AO and HD are on 20 meters occasionally; AU and NB and YW are experimenting on 2 and 6 meters. CI has had antenna worries, but all seems to be under control now and Alex has been doing fine on 20 meters. DN is on 20 meters now with a three-element rotary beam, 4D32 final, and is doing very well for himself. EN is on 10 meters. IF and 6E are on 20 meters and are hoping to be on 10 and 75 this winter. DH is rebuilding and will soon be heard on 20 with a very f5 sig. QD has not been active the last year, due to rebuilding, but was all ready to get on the air with his new rig (813 final) when he blew the modulator transformer; tough luck, Barney. LN has been too busy this summer to be on the air very much; board of trade duties keep Art on the go pretty well. BL, formerly a Ve3, will soon be heard on the air. 73—Les.

## Ve5

We5

Bill Gordon, Ve5MW, D.R., Oxbow, Sask.—5RC is rebuilding and will have full coverage on phone and CW from 80 to 6 meters soon. 5YF is active on 40 meter CW. 5FY is building VFO and these two attended Calgary hamfest, had a week-end in Edmonton and a few days in Prince Albert, and also visited scattered hames in between. 5WS, xyl of 5FB, is being heard on 40 CW and is doing a nice job. 5KW is going on 75 meter phone and with that call he should have a powerful signal. 5PV is working lots of dx on 20-meter CW using about ten watts. 5AS has been building up some touch-me-not equipment that actually works. 5MQ has NBFM on 20 and 10 and it sounds very good. He is busy thinking up antennas at his new QTH. 5UC has band switching job. VFO, 6AQ5 driving an 813, but also has antenna trouble. 5UZ has a rebuilt job, PP 812's, 250 watts on phone. Got some clipping in his audio. 5JF has been making mobile contacts on 10 meters testing ground wave. Works for 3½ miles on 5 watts. Also been working crosstown on 6 meters NBFM using occillator which he finds not steady enough. 5DR not very active—a little 40 and 20 CW, rebuilding power supply for PP 807's. 5AJ keeps sked couple nights each week with ZL3A1 on 20. Has worked G. SM. OK. ON, F. VK, KH6; hopes to have 10-over-20 Hammond beam going soon. 5MX going on 20 and 40 CW with single 807; intends to get on 80 and 10 in fall. £RJ has new 10-meter 3-element rotary beam; has received good reports on the few contacts made with it. 5FL is on 80 CW and waiting for 10 to open up. 5FG chasing bugs out of new band switching rig. FOB has got himself a TB850 and is very pleased with it. He also has antenna problems. 5FD is still sticking eround 20 phone and has built a new receiver with enough gain to bulge out the windows. 5BF rebuilt shack and final power supply and has rig working ok on 6 meters soon now for sure, but converter not spotted yet. Traffic, 5UZ 2 msgs.—73 Bill. msgs.-73 Bill.

W. R. Savage, Ve6EO, D.R., 329 15th St. N., Lethbridge, Alta.—HW is back in Lethbridge, but he left his xyl in Calgary to take care of the garden. LB is a new call of the Exeter Sea Cadet Radio Club which is located at Lac La Biche. You can bet your boots that Pere will be heard over it. He claims this is the only cadet amateur radio station in Canada. PP claims it pays to have an envelope in the QSL Bureau; at least it is paying off for him. 21N. Phil Robinson, ex-6SO, writes and says he doesn't hear many 6th district boys down in Three Rivers, where he is now located. SR has a very nice layout now, from the looks of the foto sent the other day. Thx, Stan. MA is busy building a beam for 10 with the able assistance of 7WM. DR says he kicks his rig three times to turn it on and once to turn it off; certainly wouldn't call that remote control, Doc.

WB explains he listens in two mornings for Africans, WB explains he listens in two mornings for Africans, hears six of them, calls one and gets him first shot; nice going, Wally. EB says his freq meter is really fb and is right on the nose. OD has many late nights during and after the hamfest, HZ says he really had a good time at the hamfest; the only complaint seemed to be not enough sleep. BC is looking for an 829-B; he must be going mobile on ultra-high.

be going mobile on ultra-high.

OT has some 80-ft, poles up now and has promised a write-up as to the erection of such high sticks. Well, pass it along, Jack. It may help some of us. LA is getting his rye cut but is having some job collecting it as it keeps raining. LZ has been dolling up his rig with more pilot lights and switches. WS is using NBFM and it seems to be working out very nicely.

it seems to be working out very nicely.

TM now has a 10-over-20 beam on a 65-foot pole. Guess Mart expects to work some dx now. AO seems to have been bitten with the beam bug now. XX is back to normal again after an operation and complications. GD says he is open for ideas on how to get QSL cards from dx. May we suggest the first thing is to work them. Don't shoot now, Jim. HQ has been dogged with bad luck this year; first his house catches on fire while he family is away, and now he has car stolen while on bad luck this year; first his house catches on fire while the family is away, and now he has car stolen while on holidays at the West coast. PY now has WAC. Nice going, Bill, and tax for the information. BO is getting nice reports on 20 CW with his 807 rig. We hear that GD and AO are handling traffic from Calgary to GL's in Korea. FS has got his 144 Mc FM car equipment working fb; says he has to put a few more finishing touches on it. Tax to those who sent in info this month. and to those who didn't, please don't be so bashful, send some in for the next issue. 73—Bill.

## Ve7

Ernie Savage, Ve7FB, D.R., 4553 12th Ave. W., Vancouver, B.C.—The B.C.A.R.A. picnic was enjoyed by all and the children did have fun, even the older ones. 7US Wilf has done it afte rall the "no's" and is now VFO. 7PO Clarence is back home again after his trip through the backwoods taking pictures. 7BY Ronnie can now give a full story on what to look for in modulators when they give up their purpose and go hay wire. 7BY Ed and Suzan are on their holidays back to the middle U.S.A. W7JFB Mariam and Hank have been seen in Vancouver with a new "Studie." 7ALJ Hal and Biddy have been on holidays in northwest Washington and flew through Vancouver. 7ACF Adam has been heard back on 75. 7LK Bill said the boys at Sand Spit are heard quite often, so what say, Percy? 7OM Bill has been heard on 75 and on phone as we said. 7ID Ralph is the S.E.C. for B.C. and would like all B.C. to fill in the form in the Amachewer, also official C.E.C. bulletins Tuesday nights at six. Also 7FB Ernie has CAROA O.B. on Thursday night at six on 3850 Kc and at nine on 3925 or clear channel nearby. 7US Wilf has A.R.L. bulletins at midnight on 3850 Kc and 7AEU Herb on CW covers S.E.C. O.B. at 7010 Kc Tuesday and Thursday, A.R.R.L. O.B. heard also on 7010 Kc. Traffic for the east can be handled through 7EAU and any B.C. traffic can go through the five o'clock. 7EI Bob has finished the new rig but not enough drive to run the modulators. Bob has more irons in the fire looking for infc on portable ideas for UHF than can be tucked into the hip pocket, like the big bottle. 7GZ Frank will be keeping his rig together for a while—the xyl has come home from holidays! His problem right now is how can one utilize the radiation from 220 Kv power lines. 7QV George fondles a Cardox mike and is looking for infc on portable ideas for UHF than can be tucked into the hip pocket, like the big bottle. 7GZ Frank will be keeping his rig together for a while—the xyl has come home from holidays! His problem right now is how can one utilize the radiation from 220 Kv power l

# Ve3CCE—From page 9

3BEG; Ralph Bunt, 3MX; Marc Vermander, 3AWW; Terry Harbottle, 3AGU; Wally Hainge, 31B; George Davis, 3BBW; Bob Lajorie, Peter Mahoney.

A lot of credit for the station's success goes to the following hams who took traffic:

Ve3BCD, Ve2AK, Ve3BJJ, Ve3QB, Ve2AV, Ve3HD, Ve3HB, Ve3HJ, Ve3AUJ, W2NZC, W2MRO, Ve3XQ, Ve3MB, Ve2PT, Ve3AOV, Ve3ALJ, Ve3VI, W5BBR, Ve3BAP, Ve2DX, Ve2HM, Ve3AED, Ve2OD, Ve2SA, Ve3ANB, W1GXP, Ve1LM, Ve3AWH, W4GD, Ve3YP, W2OWH, Ve3ABB, Ve3YP, Ve3ABB, Ve W7QND, Ve2SV, Ve3QW, Ve3BES, Ve3JE, Ve2TH, Ve2XX, Ve3RH, W1GIX, W2YBK, Ve3AGG, W6OA, Ve3BAP, W6AOR, Ve3BIR, Ve3CK, Ve3JW, Ve3YK, Ve2HE, Ve2PF, W1GXP, W3VV, W1BIC, Ve3AG, W5BDX, Ve3WZ, Ve3BIF, Ve3ANV, W2GWP, Ve2MN, Ve3BQL, Ve3BND, Ve3BFZ.

Well, that's it. The dust has settled over the booth and the crowds have gone, but the gang at Ottawa had a lot of fun and are ready for the next "Ex", a bit more experience, and looking for a spot at the next Ex far away from P.A. systems!!!!

house and you will find from two to six amateurs drawing circuits on 2 x 4 or planks and then find when they cut the wood that they used the wrong mark two inches short or so. Of course they do say that between shims and water they can take up that. 7WI Wally should sound a lot better—the space in front has been filled up and no more whistles when he speaks. 7FQ has acquired a 1000-volt power supply and hasn't had the nerve to try the 807 on it yet. Herb and Ken are picking up parts and with the R.I.'s blessing they won't be long getting on the air. Wilf and Roy are new members to FVARC, wonder if they are tradesmen carpenters? 72T Tommy is taking a whirl at 40 with PP RK39 and even he tried the QST Clapp circuit like many others and found it FB. 7DB Bill won some of that folding stuff at the Horticultural Show. The Oliver Radio Club put on an amateur radio show and received bags of messages and also the usual questions. Can you tell me what is wrong with my radio? How much does a message cost? Boy, can I send all I want? 7PNE, the B.C.R.A. station, was on the air at the hobby show at Pacific National Exhibition, with a nice showing of amateur workmanship on receivers and transmitters; also 7MQ Archie's miniature beam that even turned back and forth on the little tower. 7AFO Bob is sure making a swell job of his rig and shack and those green poles aren't to make the borders of his garden! 7AL King has been thinking of going phone but looks like it's CW, I hope. Let's hear from you so we can let the gang know what you are doing. 73—Ernie.

## Ve8

Jack Spall, VeSAS, D.R., Box 268, Whitehorse, Y.T.—MI is now using a wide-spaced three-element rotary on 20 and keeping skeds with ZL2BT. MV has been transferred to new sigs station at Brocket, Man., and will soon be signing Ve4. VelMM is newcomer to Whitehorse. Neil hopes to be adding to the Ve8 QRM shortly. AK at Teslin now has airplane in which he makes frequent hops to Whitehorse. AO is outside for a two-month rest from tending the Whitehorse Airport marker on the shores of Lac Le Barge. AW is thinking of a three-element rotary to help his dx on 20 CW and fone. BQ and BT are new Whitehorse additions and will soon be on 40 CW. BL is heard on 40 CW with low power. AL has been doing some work on 80 CW but soon hopes to be on 20 fone when he gets a new antenna. AS is very despondent over poor conditions on 20 but managed to work VR3A and YS3PL on fone for two new countries. CUL, fellows—Jack. Jack Spall, VesAS, D.R., Box 268, Whitehorse, Y.T .-

# COUPON

Please enroll me as a member of the Canadian Amateur Radio Operators Association. I am enclosing a cheque ( ), money order ( ), postal note ( ) to the amount of two dollars which entitles me to all rights and privileges therein, and a year's subscription to XTAL magazine.

Name
Call Letters
Address
City Prov
Licence Number
State your interest in radio if not
licenced
REMIT TO: The Canadian Amateur Radio Operators Association, 46 St.

George Street, Toronto, Canada.

# QVE

# CAROA Official Bulletins 75 Meters Each Thursday 9 p.m. Local Time

The undersigned stations have been appointed as CAROA Official Bulletin Stations. Be sure to listen for your district OBS for latest messages and bulletins of interest to all Canadian amateurs.

Ve1GD—3835 Kc—H. A. Garland Ve2DL—3827 Kc—R. Frenette Ve2TM—3842 Kc—Leon Baldwin Ve3QB—3835 Kc—W. B. Knowles Ve3CP—3775 Kc—T. Hunter Ve4KK—3820 Kc—B. Fowler Ve5FA—3848 Kc—W. A. G. Simpson \*Ve5GA—3847 Kc—W. T. Rogers Ve6OD—3801 Kc—E. A. Anderson Ve7FB—3825 Kc—H. E. Savage Ve8AS—3820 Kc—J. Spall

\*-10:00 p.m.

## SOMETHING NEW IN BCI

About two weeks ago, my neighbour next door came into the shack with a puzzled look on his face. I asked him what was the matter. "Well," he said bluntly, "as I was just about dozing off to sleep last nite after shutting off the lights and one of your BCI sets (they don't want me to fix the set as they like to listen to me, one in a million, fellows) all of a sudden you came blasting into the room. It's a good thing I knew who it was or I would still be shaking in my pyjamas."

Well, I decided I had better investigate the matter. Making a visit to my neighbour's house, I found out that the French doors were talking. My neighbour was good enough to get a screwdriver so that we could get in between the walls to see if there were any electrical fixtures there. To our amazement, the inside of the wall was bare. Nothing could we find there.

One side of the French door, when pushed into the wall about three-quarters of the way, could be tuned. I asked my friend, "What about the other panel?" He said, "Well, I didn't listen for the other one, as all I could hear was you coming in on the one panel."

Putting my ear to the other panel, sure enough, there it was (had someone working my rig). I started pulling the other panel out. Sure enough, it also could be tuned.

After standing there myself with a puzzled look, I finally looked up above the doors, and suddenly it struck me. The doors were sliding on a ¼-wave rod. With the beam pointed in that direction, approximately thirty feet from the beam, the signal was being rectified with a good Q5 signal; could stand about eight feet away and was Q5 all the way.

Before leaving, I told my friend, "What the heck do you want a receiver for? Throw it out the window."

ED. CAREY, Ve3BSK.

- A display of amateur equipment and operation was put on at the Firemen's Convention at Windsor by the Frontier Radio Club. A mimeographed outline of the exhibit and amateur radio was distributed to the many interested who called. Regular meetings of the club have been resumed.
- Ve7CN sends in a report on his UHF activities for the summer. Using a Hallicrafters model 36, SX28A and VHF152, and 85 watts input to an 829B final, he has made 51 contacts in 15 states and B.C. He is interested in trying the 325-mile jump from Prince Rupert to Vancouver on 14.4 if he can find a partner in Vancouver.

# C. & U.S.R.S.

## By Sid Prior

This month we have two things to write about, first the contest and second the gen on the set-up of the SWL station of the chaps who kindly phoned and wrote me, and I would like to hear from more of the boys on the receiving end of ham radio, as CAROA executive and myself want to make this department as newsy as possible.

Now about the contest. Here we have the rules governing it, and I have made them as simple as I could so we will have no doubt in our mind:

1-Contest starts Nov. 1, 1948, 1 a.m.

2-Contest runs for 5 months, Nov. 1 to March 31, 12 midnight, 1949.

3-Contest results must be in by 12 midnight

May 31, 1949.

4-Contest is purely on stations heard and

verified by QSL cards.

5—Contest will be in two parts: 1, Most Ve and W stations heard and verified by QSL card. 2, Most dx stations heard and verified by QSL cards. Dx is defined as any country other than Canada, United States and Mexico.

6-Contest prizes will be awarded to SWL in each class with greatest number of QSL cards dated between starting and finishing date of

7-Judges' decision will be final, and all QSL cards will be returned.

Prizes will be announced later, but they will be worth going after, that's for sure.

You will see by the rule that you have April and May to receive all your cards from stations

heard and who intend to reply.

This is your party, and it's up to you to put this contest over, and may I say to the licensed operators who may receive a heard call or letter, will you kindly reply to the SWL's and make them happy. Thanks.

Next our SWL home stations:

Allan Montgomery, 20 Pears Ave., Toronto-Receiver, 1155. A technician with the Bell Division of Northern Electric Mobile Service. Allan was in radar during the war.

Jack Gillis, 447 Mortimer Ave., Toronto—Receiver, S.X.28A; listens on all bands; antennas are a long wire and a dipole on 20

(at last you're in the news, Jack).

A very nice letter from: Mike Wormley, C.R.S. No. 1, 1 Lestrange Place, Toronto. Mike is 16 years old and uses a No. 19 set and an Echophone E.C. 10; at present building a preselector for 10 and 20. He slumbers with dreams of a VHF converter and an antenna system that's out of this world. May your dreams come true, Mike. Here's a lad who is a member of CAROA, ARRL, ISWC, and on the Radio Club Executive Committee at Upper Canada College. Nice going, Mike, and I see by the crystal (X or Y cut) that you will have your ticket one of these fine days.

When any of our SWL's want a CRS number, just drop me a line or telephone, and you will be placed on the register.

Thanks for your letter, Bert Knowles, Ve3QB of Lanark, Ontario.



# TRANSMITTING

Amphenol's new Twin-Lead transmission line eliminates the effects of moisture because of its novel construction of two conductors carried in opposite walls of a polyethylene tube. Losses are extremely low as the dielectric between the conductors is largely air. The tubular construction holds surface moisture well outside the strong field between conductors with the result that bad weather conditions have little effect on characteristic impedance.

The conductor size is more than adequate to handle 1 kilowatt of radio frequency power. Since the conductors are appreciably heavier than those used in standard receiving Twin-Lead, the RF resistance losses will be much lower. Their weight also assists in providing adequate support for a suspended transmission line. The round shape presents little wind resistance and the tendency to flutter is eliminated.

Amphenol's new Twin-Lead-14-076-is also ideal for FM and Television installations. Where the best reception day after day is desired, be sure to use this new weatherproof tubular line.

oot tubuw. Radio Amateurs — Is your name on our list to receive the Amphenol Engineering News regularly? If not, we shall be glad to put it on at your request.

# AMERICAN PHENOLIC CORPORATION

1830 South 54th Avenue, Chicago 50, Illinois COAXIAL CABLES AND CONNECTORS - INDUSTRIAL CONNECTORS, FITTINGS AND CONDUIT - ANTENNAS - RADIO COMPONENTS - PLASTICS FOR ELECTRONICS

# COMPLETE!

ARMY WIRELESS SET NO. 19, MARK III

# **Brand New**

2-8 Mc and 230-240 Mc

In Original Cases, Complete with Variometer, Installation Kit, 3 Sets Phones and Mikes, Aerials, Extra Set of Tubes, Instruction Manual, Diagrams, Dynamotor.

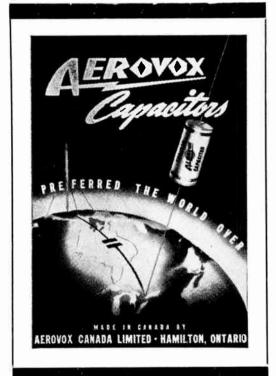
Ready to operate on 12 or 24 V. DC, may be converted to 110 V. AC.

\$49.95 Cash or \$10 Down Balance C.O.D.

J. B. HUNTER

**VE3ANE** 

17 Edgewood Cres. RA. 4975



# **WANTED** — SOME ACTION!

Many of you are now engaged in making plans for the Fall and Winter operating season. These months ahead, due to our increased numbers, will bring us the biggest ham-band congestion of all time! It will be a veritable jam session! A full-fledged Operation Sardine! Can we, you and I, do anything to lessen the sting? Why, sure! Just take stock of ourselves and see where we can improve our equipment and operating techniques. While on this subject, let's take a flash-back view of dealings on this topic as reprinted from Ve2XR's Ve2 news column in the June issue of XTAL, appearing under his regular monthly feature called "BEEF DEPT." His words should convey our thoughts on this subject. "The A. R. R. L. has a voluntary organization in the U.S. known as Official Observers (0.0.). These fellows monitor the ham bands and note off-frequency and other poor operations and report their findings to the fellows concerned, thus tending to keep ham operating at a higher level. In so doing, these lads are keeping their own house clean and are at the same time keeping the F.C.C. out of their hair. In this country CAROA should sponsor a similar group. To differentiate, they could be called Official Monitoring Stations (O.M.S.) We could give this group the authority they would need to get the desired results. The Dept. of Transport is only interested in our BCI and off-frequency operations (and our \$2.50) so we can't expect them to do our dirty work. We were given our bands as they are (certainly bad, aren't they!) so we must do our own housecleaning. Only when our own methods fail to correct offenders should we ask the D.O.T. for aid in enforcement. As a suggestion, the D.O.T. could call for license suspension from one to 12 months depending on the nature of the infraction. Sounds tough, but it has teeth! Just what we need to make a plan such as this worth while. Our bands certainly can be a lot better than they are, so let's start the ball rolling. If you feel an organization of ham band observers is needed in Canada, then send your suggestions and comments to CAROA at HQ. Let's get going on it now!"

■ XTAL is on a schedule! It is proposed to mail December issue in the first week of the month, with regular appearance in the first week every month next year. Our deadline has been backed up so that it is necessary for copy from contributors to reach D.R.'s earlier. Short club announcements and ham ads will be accepted until the tenth of the month for insertion in the following month's issue.

If you missed announcement of the VE Contest, it's on page 7 of this issue.



FOR LONG, DEPENDABLE SERVICE

SPECIFY
and USE

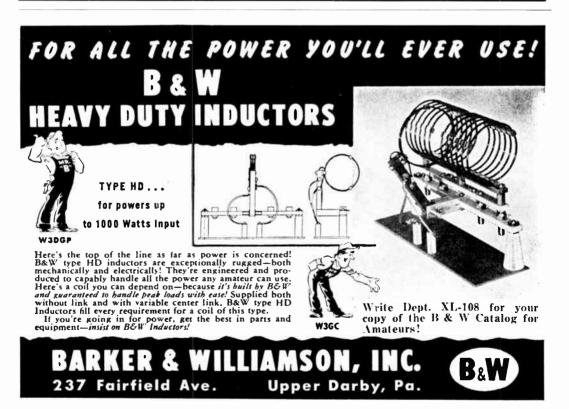




# Westinghouse

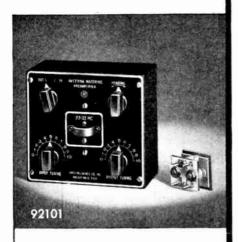
CANADIAN WESTINGHOUSE COMPANY LIMITED

HAMILTON, CANADA



Conodion Representative: WM. F. KELLY CO., 1207 Boy St., Toronto

# Designed for Missing Application



# The No. 92101—Antenna Matching Preamplifier

The Millen 92101 is an electronic impedance matching device and a broad-band preamplifier combined into a single unit designed primarily for operation on 6 and 10 meters. Coils for 20 meter band also available. This unit is the result of combined engineering efforts on the part of General Electric Company and the James Millen Manufacturing Company, The original model was described in G.E. Ham News. November-December, 1946. The No. 92101 is extremely compact, the case measuring only 61," x 53," x 3". The band changing inductor unit plugs into the opening in the front of the panel. Plug is provided for securing power requirements for the 6Ast tube from the receiver. Coaxial connectors are furnished for the antenna and receiver connections.

# JAMES MILLEN MFG. CO., INC.

MAIN OFFICE AND FACTORY

MALDEN

MASSACHUSETTS



# HAM-ADS

Copy for Ham-Ads must be received before the tenth of the month preceding issue. Rote is 25 cents per line.

FOR SALE—HQ-129-X, new condition, motching speaker. C. A. Clemens, Lloydminster, Sosk.

FOR SALE—Receiver, AR-6, converted to 110 V.A.C., 60 cycles. \$40 tokes it. Apply Ve1HW.

BUILDING o house—Grey HT9, xtols, coils 4 bonds, \$425; HQ129X, \$225. F.O.B. Ve6VZ, Lloydminster.

QSL Cords Printed—1,000 1 colour, \$6.00; 1,000 2 colour, \$8.00. W. J. Wiskin ond Co., 105 Princess St., Kingston, Ont.

QSLS for discriminating homs. Distinctive! Colorful, Highest quality! \$1.50 per 100. Samples 10 cents. Ve3QS Print, 344 Pape Ave., Toronto.

FOR SALE—R1155A, new, converted to 25 cycle operation, separate power supply (Hommand). Hear it in operation. First \$75.00 takes it. Less loud speaker. Phone daytime LY. 5488 or write W. G. Amas, 33 Superior, Mimico, Ont.

BC348Q and 1155A receivers, fully converted and complete with amplifiers and speakers, new. BC221 with built-in AC supply and modulation, new. 1000-volt 40-m.o. power supply, double filter. All reasonable. 28 Rectory Road, Weston, phone 1047J.

FOR SALE—Horvey-Wells Xmtr, complete with power supply, mike, crystol—cost me \$185, will take \$165. This Xmtr covers oll bonds from 2 to 80 meters. Only used one month. Still under worronty. Dovid Shopsowitz, Ve3BYW, 149 Pendrith St., Toronto.

FOR SALE: 28 Mc. 'phone tronsmitter, 65 wott, 815 finol, complete, \$100. Brond new BC454A receiver, 3 - 6 Mc., \$12. Brand new BC625A (SCR522 tronsmitter), \$18. R1154 transmitter, \$10. 15" concert dynamic speoker, 390-ohm field coil, push-pull 6L6 output tronsformer, \$18. Slightly used tubes, one eoch, T20, T40, T55, 813. Four unused 812 tubes. Ve3XJ, 335 Beresford Ave., Toronto 9; phone JU. 4676.

JAMES MILLEN MFG. CO.
INC., Products are represented in Canada by
ASTRAL ELECTRIC CO.
56 Wellington E., Toronto, Ont.

OCTOBER XTAL

1948

# Get the C. E. S. Habit for Ham Gear Now

# MILLEN

92101-R9ER wi	th 27-32 mc coil	\$33.25
46906—48-55	mc coil	4.25
46920—13-15	mc coil	. 4.25
See Millen od	apposite for fuller of	detoils.

# Learn Code the Easy Way With the INSTRUCTOGRAPH

This machine will send telegraphic characters at any desired speed, thus taking the place of an operator-instructor, and enables anyone to learn code without any further assistance.

"Juniar" Model comes complete with five code tapes and instruction book. Can be furnished with 110V - 60 cycle or spring wound motor \$32.00 Additional Tapes—Elementary, words, plain language, mixed code, etc., ea. \$1.50

Please specify American Marse or Continental code tapes required.

# **WAR SURPLUS**

Heavy duty relay 110V - 25 cycle makes two circuits and breaks two. Can be used to control high power transmitter...... \$3.95

# **BLILEY AX2 CRYSTALS**

40 and 80 meter amateur bands mounted in holder with pin spacing .486 in., diam. .093 in. Two can be mounted in an octal socket \$3.50

# S. METER

2" square bakelite case, calibrated 0-9 in "S" units to mid scale, remainder of scale reads to 40 DB over \$ 9, opening in rear for illumination \$7.95

QSL Cords, per	100	1.50
Sami	ples on request.	





# HAMMOND SPECIAL ITEMS

Tuna Description	Your Cost
Type Description 16725—Tronsformer, Pri., 115V,	
16760—Tronsformer, Pri., 115V,	5.35
60 cycle, sec. 25V, 3A, CT.	4.00
1321—10 Meter, 3 Element Rotary Beam	34.50
1322—20 Meter, 3 Element	
Rotary Beam 22737—Power Transformer, Pri.,	91.50
115V, 25 cycle, sec. 115V, 30 MA, DC., "B" supply only for C2 freq.	1.70
meter 22955—Power Transformer, Pri., 115V, 25 cycle, sec. 5V 3A, 12.6V 4.5A, 300-0- 300V 110 MA., to supply	1.70
265V DC for No. 19 MK 111 Tank Set	6.10
3A, 675-0-675V, 100 MA., to supply 550V DC for No. 19 MK 11 Tank Set	6,10
23310—Fil. Transformer, Pri., 115V, 25 cycle, sec. 12.6V 3A CT., 5V 3A CT. for Fils. AC Conversion SCR 522	4.80
722	7.00

# **RECEIVERS**

HQ129X—Hammarlund	259.50
Speaker for above	16.00
SX43—Hallicrafters, 25 cycle	300.00
SX43—Hallicrafters, 60 cycle	285.00
R44—Speaker for above	26.00

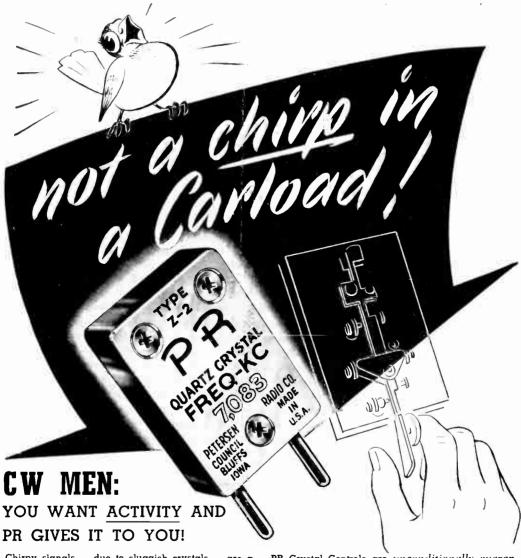
# HAMMOND R.F. CHOKES

•	DC MA	Indu	ctonco	חכ	Por	Your Cost
2	500		uh		Ohm	.35
4	125	2.5	MH		Ohms	.41
5	250	1.6	MH	13	Ohms	.59
3	500	35	uh	.25	Ohm	.78
)	400	4.4	MH	12	Ohms	1.11
2	1000	3.2	MH	6	Ohms	1.45





TORONTO — MI. 2481 — 543 Yonge St. MONTREAL — PL. 3421 — 275 CRAIG ST. WEST



Chirpy signals...due to sluggish crystals...are a thing of the pre-war past for amateurs who insist on PR Crystal Controls. Yes — PRs follow your bug at high speed — on the highest frequencies. You get perfect keying activity without sacrifice of crystal output by excessive "backing off." This means more excitation to the final, higher input potential, more watts in the antenna, better final efficiency . . . clean keying with the weights off!

PR Crystal Controls are unconditionally guaranteed. Low drift at all frequencies...less than 2 cycles per MC. Accurate within .01 per cent. Exact frequency (integral kilocycle) at no extra cost! Gasket sealed against contamination. Stable under the most severe high power output conditions. Available for ALL BANDS at your jobber now! Accept no substitute! Petersen Radio Company, 2800 West Broadway, Council Bluffs, Iowa. (Telephone 2760)



10 METERS PR Type Z-5.

M

20 METERS PR Type Z-3.

40 & 80 METERS PR Type Z-2. Harmonic oscillator. Ideal for "straight through" mobile operation. High activity. Heavy drive without damage in our special circuit

Harmonic oscillator. Low drift, High activity. Can be keyed in most circuits. High power output. Just as stable as fundamental oscillators

Rugged, low drift fundamental oscillators. High activity and power output with maximum crystal currents. Accurate calibration