

December, 1983

Feedback

Monthly bulletin of

The Georgian Bay
Amateur Radio Club



GBARC

The Georgian Bay Amateur Radio Club (GBARC) is based in Grey and Bruce Counties and meets at 8 p.m. sharp on the third Thursday of each month, except July and August, downstairs in the Grey-Bruce Tourist Information Centre at Springmount, just west of Owen Sound.

The club marks its tenth anniversary this fall and winter. It was formed in late 1973 by a core of area amateurs consisting of Dick Shave, VE3BIS; Jim Vamplew, VE3CRV; Jack Avis, VE3DTS and Bill Hardie, VE3EFX.

Since then, the club has grown to about 60 resident and non-resident members.

The Georgian Bay Club operates a 2-metre FM repeater on 146.34 (in) - 146.94 (out) at 1200 feet ASL at Woodford, just east of Owen Sound. VE3OSR is an 'open' repeater and covers the area roughly from Collingwood to Southampton and from Durham to the Bruce Peninsula. Autopatch facilities are available.

The GBARC net meets every Sunday at 0930 local on 3.783 MHz with a rotating schedule of net controllers. Any amateur is invited to check in on phone or CW.

Club officers for 1983-1984

President	Bill Kohlman, VE3NEG
Vice-President	Jack Avis, VE3DTS
Secretary-Treasurer	Jim Harron, VE3BFV
Membership Secretary	Moe Hurlbut, VE3LPT
Program Directors	Don Finlayson, VE3JUO Harvey Smith, VE3FOT
Net Manager	Dave Dixon, VE3DXO
Feedback Editor	Rob Ludlow, VE3AQT
Coffee	Jack Barrett, VE3AUB

Past Presidents

1973-74-75	Jim Vamplew, VE3CRV
1975-76	Dick Shave, VE3BIS
1976-77	Dave Dixon, VE3DXO
1977-78	Ian Trenholm, VE3HIP
1978-79	Ian Sutherland, VE3HXX
1979-80	Don Richards, VE3IDS
1980-81	Harvey Smith, VE3FOT
1981-82	Laverne Wyville, VE3LPD
1982-83	Moe Hurlbut, VE3LPT

Dues

Annual dues for full club membership including a subscription to *Feedback* are \$10.00.

Feedback

Feedback, the monthly bulletin of the Georgian Bay Amateur Radio Club is published monthly and mailed to reach members prior to each regular meeting. Contributions, articles and letters are encouraged and should be sent to Rob Ludlow, VE3AQT, 847 15th Street East, Owen Sound, Ontario, N4K 1X7. Phone 371-1692. Deadline is the first Thursday of each month.

Information

More information on club activities may be obtained from the Secretary-Treasurer, Jim Harron, VE3BFV, RR2 Kemble, Ontario, N0H 1S0 or from the Membership Secretary, Moe Hurlbut, VE3LPT, Leith, Ontario, N0H 1V0, or from any other club official.

President's Report

I have a copy of the new TPC-24 and there are some significant changes, one of which is that candidates must now send in CW as well as receive.

I'm sure this will be a welcome addition and should pose no problem for any serious candidate. It also says, if you wish, you can bring your own bug, hand key or electronic keyer. Also on CW, candidates are allowed five errors plus two minutes at the end of the test to review their copy and correct or fill in mistakes. I am 100 per cent for these changes and they should make code tests easier to pass.

I feel home computers and many other activities are competing with ham radio for new members. Any change is acceptable as long as it doesn't degrade the high quality of new amateurs.

Another change is oral re-examination for essay-type questions. The TPC-24 says a candidate who has failed a technical portion of an exam because of his inability to respond in writing to an essay-type question may choose to respond orally in any subsequent re-examination. This gives the examiner more flexibility and it will be interesting to see how it is used.

Another interesting development is examination by pre-arrangement. An exam candidate may, by pre-arrangement with an examiner, be examined at any reasonable time and place of mutual convenience if he is not able to attend a scheduled examination because of illness, weather or other travel difficulties. (I wonder if that would include Grey-Bruce stormy winters?)

A lot of you oldtimers will say: "Well, that's the way I did it!" Right on, and I believe that is the way the DOC intends it.

The next exam date under the new TPC-24 is Feb. 4, 1984 with an application deadline of Jan. 4. The next exams after that are on April 18, June 20 and October 17 with application deadlines of March 21, May 23 and Sept. 19 respectively.

Recently, in a surprise move, the DOC also dropped the requirement to keep a log. I, for one, don't like this idea and continue to keep an accurate and active log. Not only is it a handy reference to fall back on for names, calls, etc. but it also serves as proof that you did or didn't operate at a specified time in case of neighbors complaining of RFI. I know of two cases where hams were accused of causing RFI. One wasn't even home and the second was watching his own TV. In talking to many hams on the air, most are still keeping their logs.

I would like to take this opportunity to wish all of you a Merry Christmas and hope Santa's bag is full of FT-1s, TS-930s, IC-751s and other nice goodies.

73s to all,

Bill, VE3NEG

Secretary-Treasurer's Report

Minutes

The November 17 meeting of the Georgian Bay Amateur Radio Club was called to order at 2000 hours with Bill, VE3NEG in the chair.

There were 22 members present with two guests, Larry Wedow, VE3MTG, who is now a member, and Clare Brodie, an SWL.

The October meeting minutes as published in Feedback were moved for adoption by Murray, VE3IXR and seconded by Ian, VE3HXX.

The Treasurer's report by Jim, VE3BFV, showed a bank balance of \$950.17 with petty cash of \$2.46.

Harvey, VE3FOT agreed to be and was named custodian of GBARC equipment.

The report from the repeater committee showed that the repeater was not operational. A motion to purchase the repeater from Jim, VE3CRV either as is or in fully serviceable condition was moved by Don, VE3JUO and seconded by Laverne, VE3LPD. It was passed with all in favor. The secretary was instructed to draft a letter to obtain a reply prior to the next meeting.

Mrs. Agnes Koepke was indicated she will support the club's efforts to secure the call sign of her late husband, Fred, VE3WF to use on special occasions such as Field Day and the Split Rail Festival.

Under New Business, there was a reminder to have the club's books audited.

The meeting adjourned at 2050 hours. Coffee and donuts were then available and Fred, VE3KPK gave an informative talk on the mysteries of communication using PTTY from the basics to advanced applications including the newest digital and packet technologies as communications systems.

Submitted by Jim, VE3BFV

Secretary-Treasurer

Trading Post

FOR SALE: HW-12 SSB monoband rig for 75 (covers 3.75 - 3.95)
First class condition. Complete with Heath AC power supply (HP-23). \$125.
DC supply for mobile operation also available. Price negotiable. No good offer refused.

Don, VE3JUO 538-3190

Editor's Notes

* Not too much from me this month . . . there was some concern expressed at the last meeting about the cost of mailing Feedback. The bigger it gets, the more it costs, of course, and the current level of dues cannot sustain the cost of mailing Feedback out at 48 or 64 cents each for much more than this year. There may be some talk within the next year about some sort of dues adjustment, especially if repeater improvements are made.

Anyway, I'm trying to keep Feedback tightly edited and laid out to economize on space but still provide what I hope is an interesting package.

* I ran into Jerry Dantzer, VE3CAC on 75 the other night having a QSO with Hart, MTP. Jerry and a group of members from the Port Elgin-Southampton area are planning to have a new repeater on the air in that area early in the new year. The Port Elgin Repeater Team (PEPT) which includes Jerry, Dick, BIS; Andy, LCZ; Rahn, MAI and Bill, NEG have a line on a fully packaged 50w repeater from London and while no frequency pair has yet been confirmed, they have a tentative confirmation on the call of VE3PER (Port Elgin Repeater). They hope to have the antenna up 170 feet on a tower five miles east of Port Elgin on the way to Burgoyne. The pattern is expected and intended to favor the southeast to fill the hole down Walkerton-Hanover-Wingham way, Jerry says. The group will probably welcome moral, technical, physical and financial help as the reality draws nearer.

* I hope everyone has safe, happy and relaxed holidays and as President Bill said, may Santa bring you your dream rig!

73, Rob, VE3AQT

LAST CHANCE FOR DUES!

This is a last reminder that dues for this club year (Sept. 83 to Sept. 84) were due as of Sept. 1 and memberships and Feedback mailings carried over from last year will cease if a renewal is not received by Dec. 31. At that time, a new and full roster of GBARC members will be prepared for inclusion in the January Feedback.

Membership is \$10 and dues can be mailed to the Membership Secretary, Moe Hurlbut, VE3LPT, Leith, Ont. NOH 1VO or brought to the Dec. 15 meeting.

Looking Back

Ten years ago this week, the GBARC meeting scheduled for December 13 was cancelled due to hazardous road conditions making it unsafe and unlikely members would make it to the meeting.

As a result, club business was conducted on the Sunday morning net on December 16. The bank balance as of Dec. 3 was \$50 and petty cash of \$22.63 brought the club's purse to a grand total of \$72.63.

It was decided that the club would have two classes of membership: Full for \$3 and Associate for \$1. Only licensed full members would be allowed to vote on club business.

As of December 23, 1973, GBARC membership stood at 40 consisting of 33 hams and 7 SWLs. Of this group, only 9 are still active in the club today, 10 years later.

Ten years ago, there was an average of 10 or 11 check-ins to the Sunday morning net, probably fairly similar to our current turnout.

It was announced that at the next meeting on Jan. 16, 1974, there would be discussion on framing a club constitution.

Boxing Day, Wednesday, Dec. 26, was a big day for the club. Jim, CRV had received permission the previous week to install antennas on the tower at Woodford and a party of sturdy souls went out to the site and completed much of the outside work thanks to co-operative weather. The volunteers were Jim, CRV; Cy, CC; Jack, DTS; Bill, DIQ; Dick, BIS; Terry, CAB and Bill Cox.

On Friday, Dec. 28, CRV, BIS, Van, ARV and Ken Slack went back to the site and got OSP operating on 34/94 but a malfunction sent it QRT not long after. Later that night, CRV, ARV and CAB returned and repaired a pitted relay contact.

Also 10 years ago, Feedback Editor Bill Hardie, VE3EFX, was not too happy with the Post Office. He wrote to them to complain that on Monday, Dec. 3 he had mailed 35 pieces of third class mail in Tiverton destined for Warton, Owen Sound, Southampton, Port Elgin, Paisley, Goderich, Woodstock and Toronto. The mail for Paisley and Southampton arrived on Dec. 7, one piece of mail reached Owen Sound on Dec. 8 and the remaining pieces were still en route. Bill was told that mail for local points was first sent to Kitchener for sorting and redistribution, even mail going from Tiverton 20 miles away to Paisley!

Wherever they're sending it these days, to be fair, the mail service certainly seems to have improved from some of the horror stories we used to hear about the post office. There are always isolated examples of delayed delivery but by and large, Canada Post seems to have got its act together.

Now, if only we could mail Feedback for 6 cents like then!

Compiled by Rob, VE3AQT
with old Feedbacks
courtesy of Dick, VE3BIS

Bits 'n' Pieces

Santa Claus will be doing his thing on the ham bands this month for those of you with little ones. Each year Gord, VE3GIN, in Bancroft dons the appropriate garb and takes to the airwaves to talk to the kiddies. This year it's Dec. 19 at 4 p.m. on 7055 and then on Dec. 21, 22 and 23 at 6 p.m. on 3755. More details on the CJ Net.

* * *

Apparently the DOC is planning major and sweeping changes to the Amateur Service because it is costing too much. The DOC is looking for ways to cut back but no specific announcements have yet been made. The feeler the department put out last year to test the water on club-administered exams could have been the thin edge of this wedge. We'll all be fascinated to see what's planned because whether changes are made with or without amateurs' consultation, we will all be affected . . . probably for the worse.

* * *

The CPRL is looking for good examination questions for future DOC exams. If you have some ideas send them to CPRL, Box 7009, Station E., London, Ont. N5Y 4J9. All questions will be reviewed by both CPRL and CARF and if approved, forwarded to the DOC for possible inclusion in their question bank.

* * *

Some amateurs are asking CPRL to ask DOC to reinstate RTTY on at least part of the 7.05 - 7.1 MHz portion of 40 metres. Almost all foreign RTTY operation is centred on 7.09 and the feeling is that Canadians ought to be able to work this frequency. CPRL is also asking the DOC to eliminate the need for CW ID after RTTY transmissions, especially those using ASCII or Baudot.

* * *

U.S. amateurs are now calculating power in terms of PEP. New FCC rules impose a maximum of 1500 watts PEP on most xmsns. AM double sideband (is anybody still using that?) transmissions will continue to be governed by the old 1000 watts DC to the plate rule until 1990.

* * *

Still stateside, the APRL is opposing FCC plans to create new repeater frequencies on 10 metres because they could result in interference to satellite downlinks in the 29.5 MHz area.

* * *

Australian amateurs, who have never been able to buy cheap equipment, have recently been hit with a new 30 per cent tariff.

The government duty was aimed at thwarting commercial radio users who had been importing duty-free ham equipment and converting it to their own uses. Unfortunately this shotgun type of approach by government isn't too selective and amateurs are being stung too.

* * *

During the recent U.S. rescue mission in Grenada, the FCC gave a limited number of U.S. hams permission to operate outside normal phone bands and even outside normal amateur bands to maintain contact with Mark Bartella, KA2ORR on the island. Because of the general news blackout imposed by the U.S. military amateurs quickly were approached by the news media for information. Many reporters wanted to conduct interviews over the air but that is forbidden by the FCC. They had to settle for second-hand accounts of what was said. Now several prominent U.S. amateurs are urging a reassessment of that rule. This seems like one of the best ways amateurs can increase their public service profile through the news media . . . providing communications for fast-breaking news stories in emergency situations.

* * *

On the topic of third party traffic and ethics . . . there have been a few cases of amateurs being asked to phone patch or relay traffic about someone's death to a relative. What would you do if this very real possibility arose? We hope the originating station would better if it wasn't necessary but what if normal communications circuits were out and a relative needed to know about funeral arrangements? Is this our function? Do we want to be the bearer of bad news to someone we don't know? Or, do we have to take the good with the bad in our role as traffic handlers? This issue perhaps deserves some thought.

* * *

It appears amateurs can also be left exposed if, in offering their services to public agencies, they incur loss or damage or injury or, heaven forbid, even death. The Kitchener-Waterloo ARC recently queried the DOC on this point which in turn consulted with the Workers' Compensation Board. The Board's solicitor indicated that persons who volunteer or are called upon to act in an emergency would not be covered under the Workers' Compensation Act for any injuries unless they were employees of the municipality or province. Amateurs participating in an emergency situation (presumably whether real or simulated) would not qualify as such employees and therefore would not be covered under the act. Talks with the Emergency Planning Co-ordinator for Ontario have produced the assurance that he will seek amendments to the act to cover hams.

* * *

Libby Stevens, VE3IOT of Thornhill, is co-ordinating a campaign to raise money for a special wheelchair for Jocelyn Lovell, Canada's gold medal cyclist who has been left paralyzed after an accident cycling in the summer. Jocelyn is now a quadriplegic (no use of arms or legs). He lived next door to Libby and had an interest in electronics. It is hoped that after therapy, Jocelyn will be able to become involved in amateur radio. There has been good interest and response from Ontario clubs for this project. Libby is seeking Dominion Stores or Best For Less cashier tapes for the wheelchair and any other considerations in either money or equipment would be welcome. It's probably best to correspond with her directly if you wish to help Jocelyn get mobile and on the air. Her address is 21 Ida St. Thornhill, Ont. L3T 1X4. Ph. 416-889-0295.

* * *

Amateur Radio terms for beginners:

HAM - It's better than being called a turkey. Besides, ham costs \$1.89 a pound more than turkey.

AMATEUR - Definitely not professional, but above CB'ers. Fortunately not classified as EXPERT.

EXPERT - "X" is the unknown and "spirt" is a drip under pressure.

MORSE - A funny language used by hams who can't spell words with vowels.

Q CODE - Used by hams who can't spell at all.

599 - A report given to all contacts regardless of how they sound to avoid hurting anyone's feelings.

TVI - A phenomenon that only appears on the TV set of the neighbor you don't get along with.

GRID DIP - Not quite as tasty as onion dip with ripple chips.

REPEATER - The clown who comes on top of the weak CW station you're trying to copy with an endless CQ, CQ, CQ, CQ, CQ, CQ, CQ, CQ, CQ, CQ, CQ . . .

SHACK - Highly appropriate name for the place where hams hang out and operate from. Characterized by loads of spare parts, wires, boxes, books and junk.

SLEET - The stuff antennas have to be put up in or they won't work properly.

* * *

* * *

The ARRL will publish a special Antenna Compendium next May. Potential contributors of unpublished papers are invited to send a one-page typed double-spaced abstract to QST Technical Editor Paul Rinaldo, W4RI at ARRL, 225 Main St., Newington, Ct., U.S.A.

* * *

Now that Texas Instruments' personal computer division has bitten the dust and moved over for the biggies such as IBM and Apple and Commodore, reports are that the TI-99/4A which initially came on the market a few years ago for \$1,150 U.S., will now be offered for sale for about \$50 U.S. This would make it one of the better buys around and with about half a million sitting in warehouses, there should be enough to go around. The TI99 is a good machine, but there had to be victims in the market battle for consolidation. TI has promised to offer service on the system and there are tons of software left around so it won't be obsolete for a few years. Could be a good way to get into computers and onto RTTY at the same time!

* * *

Your insurance policy may cover you falling off your tower or roof but does it cover you hitting the ground?

* * *

Future Meetings

Thursday, December 15, 1983: Bernice Finlayson, XYL of Don, VE3JUO, will be providing a few Christmas goodies to have along with Jack, AUB's coffee. Program Director Don has set this meeting aside without a formal program so we can all have a ragchew-informal bull session and mini swap shop. Now may be a good time to go through those junk boxes and bring some of that stuff to the meeting to sell, trade or give.

Thursday, January 19, 1984: Paul Caccamo, VE3K0I, who recently moved from the Warton area to points south, is expected to brave the wintery weather (if possible) and renew acquaintances with GBARC members and give a talk on an as yet unspecified topic.

Forum

The following views are presented as food for thought and to stimulate discussion on an issue that we will be hearing more on as years go by.

Why Must We Learn Code?

By Bill Lippman, W6SN

Isn't all this wailing about and against a no-code licence a little illogical? Code became a requirement because all radio communication then was by code. Today, almost none is. Only a few amateurs and a handful of outmoded commercial and maritime services use CW.

In today's hyper-electronic age, requiring code proficiency to operate radiotelephone (which almost all hams want to do) is like making you learn to ride a motorcycle to drive a car. Silly, eh?

The great majority of hams forget the code as soon as they get on phone. The feeling of many outspoken opponents of a no-code licence is that everyone else should suffer because they did. Human perhaps, but not logical. Forcing people to learn code has not filled our CW bands. CW portions of the bands are not much used compared with the SSB segments.

Hams may lose the CW bands to some other more pressing use if we don't use them. Maybe we should stop pushing an anachronism and let the phone bands expand. You can force a ham to learn code but you can't make him use it.

Let's get smart.

and . . . from an editorial in 73 Magazine:

The conclusion is inescapable that the real need for Morse Code no longer exists.

Morse Code, with its relatively slow speed and its requirement for two experienced operators who are devoting 100 per cent concentration to the job of sending and receiving is probably the worst possible system we can think of for using radio.

We're going into a digital world of messages, pictures, voice and music. If we don't keep up with all this we are going to find ourselves left behind and redundant.

One rig passing traffic at 1000 wpm (about 1200 Baud) can do the work of 200 trained hams using 200 rigs and CW on 100 channels. We can get our rigs to work at 9600 Baud which gives us about 8500 wpm. Thus it would take 1700 hams to keep up with one little box with a couple of ICs in it.

(End of 73 editorial)

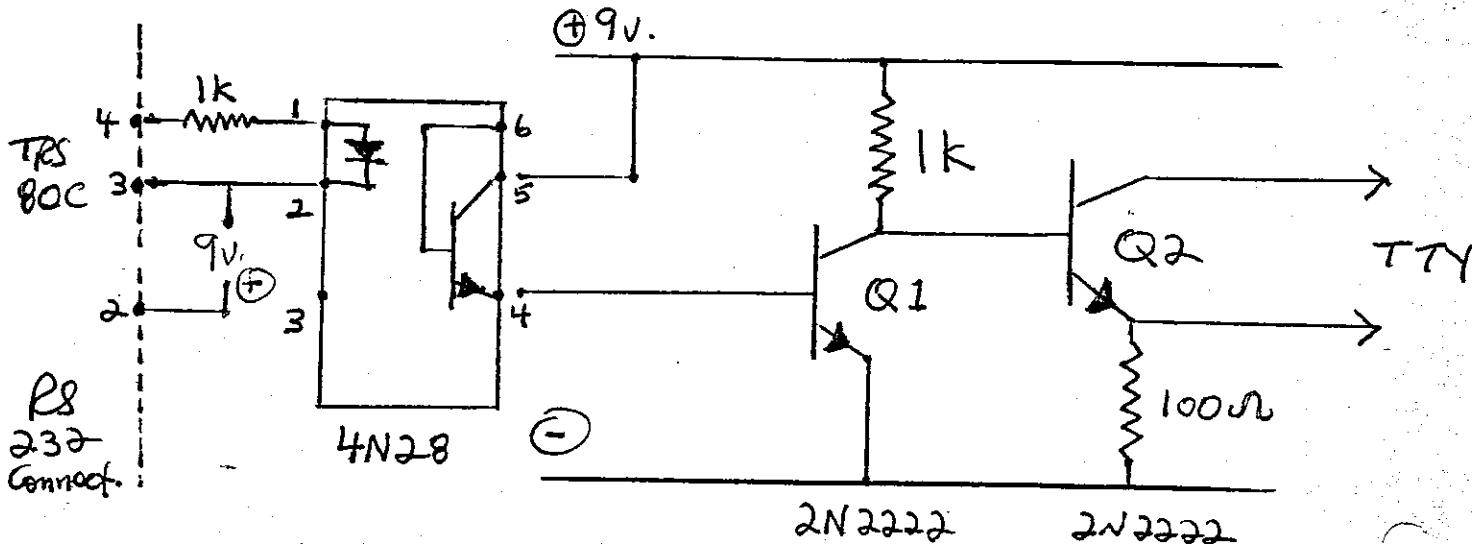
We probably all agree that there should be hurdles to get into ham radio to serve as a quality control valve and to ensure sincerity and proficiency among amateurs. But perhaps these points are well-made, as difficult as they may be to accept. Are we living in the past? This is sure to be an issue next time the TPC is reviewed.

Bob, VE3AQT

Computers

RUN A TRS80C AT 110 BAUD

The software below will allow you to use a TTY33 with your TRS80C by slowing the Baud rate of the COCO (color computer) down to 110 Baud. Use the RS232C interface and voilà, your COCO has a printer.



* The current loop for the TTY is supplied by the TTY through Q2.

```
120 CLEAR 25,16334
140 DATA 52,20,246,0,111,193,254
150 DATA 38,20,246,0,156,92,241
160 DATA 0,155,39,14,129,13,38
170 DATA 7,190,160,2,173,3,134
180 DATA 10,53,20,57,52,2,134
190 DATA 13,190,160,2,173,3,134
200 DATA 10,173,3,53,2,32,236
210 FOR D=16335 TO 16383
220 READ E:POKE D,E:NEXT D
230 POKE1021,PEEK(359)
240 POKE1022,PEEK(360)
250 POKE1023,PEEK(361)
260 POKE359,126:POKE360,63:POKE361,207
270 POKE149,2:POKE150,10
280 POKE155,72
290 POKE151,128
300 END
```

When you are ready, change "300 NEW" and RUN. You cannot list it after that.

Bill, VE3NEG

Net Control Schedule

This is an extract from the full, current net control schedule published by Net Manager Dave Dixon, VE3DXO in the last Feedback. There are still some delinquent or forgetful net controllers so please take note of when you are expected to take the duty and if you can't, let Dave know or arrange for an alternate.

1983 Dec. 18 Walter, FFN
25 Andy, LCZ

1984 Jan. 1 Harvey, FOT
8 Jim, CBV
15 Laverne, LPD

DX'ing

AIR MAIL QSL CARDS - Under Canada Postal Guide Section 41.3 and 41.34, QSL cards may be sent air mail worldwide for the special rate of 48 cents per card. According to the Scarborough Club bulletin, this was confirmed by the main Toronto Post Office.

DX STAMP SERVICE - Active DXers, and even us inactive ones, are aware of the need to send self-addressed envelopes and international reply coupons (IRCs) to DX stations for their QSLs. Many, however, may not be aware that there is a less expensive alternative to the IRC when air mail return is preferred, especially for those countries which require four or five IRCs. The alternative is to send the DX station an SASE (stamped using the postage of his own country. You don't need to write to post offices all over the world, just George Robertson, W2AZX at the DX Stamp Service. An SASE to him at 7661 Roder Parkway, Ontario, New York, 14519 will get you the latest price list for stamps from almost any country on the DXCC list.

Samples of some typical air mail rates in U.S. funds are: A2, \$1.15; BV, 90¢; C6A, 75¢; EA, \$1.15; FM, \$1.05; G, 80¢; I, \$1.05; J3, J6 and J7 80¢; JA, \$1.20; TF, \$1.25; VP2V, 85¢; XE, 60¢; ZL, \$1.00; 4X, \$1.20; 5Z, \$1.25 and 9V, \$1.25.

Those are pretty expensive DX QSL cards, especially when you add the cost of printing and mailing your own card to him. But it all depends what sort of premium you put on DX QSLs.

These prices are a real alternative to IRCs and apparently George will process orders within 48 hours.

DEPARTMENT OF COMMUNICATIONS

RADIO ACT

Notice No. DGTR-018-83

Subject: Amateur Service—Countries that forbid radiocommunications with amateur stations under their jurisdiction—Transmission of international communications on behalf of third parties by amateur stations—Reciprocal amateur operating privileges

References: Article 32 of the International Telecommunication Union Radio Regulations and sections 50, 61 and 62 of the General Radio Regulations, Part II.

This notice replaces and cancels DGTR-010-82 dated 22 July 1982.

1. The following countries have notified the International Telecommunication Union that they forbid radiocommunications with amateur stations under their jurisdiction:

- Burma (Socialist Republic of the Union of)
Iraq (Republic of)
Libya (Socialist People's Libyan Arab Jamahiriya)
Pakistan (Islamic Republic of)
Somali (Democratic Republic of)
Zaire (Republic of)

2. Canada has concluded agreements with the following countries to permit the transmission by Canadian amateurs of international communications on behalf of third parties:

- Australia
Bolivia (Republic of)
Chile
Colombia (Republic of)
Costa Rica
Dominica*
Dominican Republic
El Salvador (Republic of)
Guatemala (Republic of)
Guyana
Haiti (Republic of)
Honduras (Republic of)
Israel (State of)
Jamaica
Mexico
Nicaragua
Paraguay (Republic of)
Peru
Trinidad and Tobago
United States of America
Uruguay (Oriental Republic of)
Venezuela (Republic of)

* Effective May 1, 1983.

3. Canada has concluded agreements or arrangements with the following countries to permit licensed amateur radio operators to operate radio stations while temporarily in the other country:

- Australia
Austria
Barbados
Belgium
Bermuda
Botswana (Republic of)
Dominica
Dominican Republic
Ecuador
Finland
France
Germany (Federal Republic of)
Greece
Guatemala (Republic of)
Haiti (Republic of)
Honduras (Republic of)
Iceland
India (Republic of)
Indonesia (Republic of)
Ireland
Israel (State of)
Italy**
Jamaica
Luxembourg
Malta (Republic of)
Brazil (Federative Republic of)
Chile
Colombia (Republic of)
Costa Rica
Denmark
Netherlands (Kingdom of the)
New Zealand
Nicaragua
Norway
Panama (Republic of)
Papua New Guinea*
Peru
Philippines (Republic of the)
Poland (People's Republic of)
Portugal
Saint Lucia
Senegal (Republic of the)
Sweden
Switzerland (Confederation of)
United Kingdom of Great Britain and Northern Ireland
United States of America
Uruguay (Oriental Republic of)
Venezuela (Republic of)
Yugoslavia***

* Effective July 20, 1982.

** Effective December 6, 1982.

*** Effective March 15, 1982.

Dated at Ottawa, this 14th day of September, 1983

R. W. JONES

Director, Operations Branch

Telecommunications Regulatory Service

(39-1-0)



"This system is not very friendly."

Technical Notes

Finnish firm develops method to send data by meteor trails

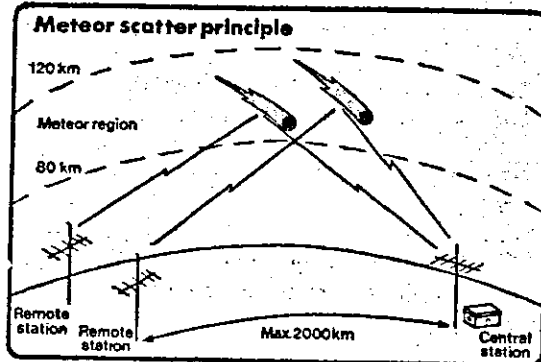
Showers of meteors rain down on the earth every moment of the day. Vaisala, a Finnish electronics company, has developed a method of using this constant bombardment to transmit data cheaply over long distances.

Originally this method of data communications was discovered by radio amateurs more than 25 years ago to extend their range of communications up to 2,000 kilometres on the VHF frequency band.

Vaisala has turned the idea into a commercial system for use in its automatic weather station to build an environmental data acquisition network. Its main application is in sparsely populated countries where there is a poor communications infrastructure and where costs must be kept low.

Meteor scatter uses ionized meteor trails to reflect or reradiate VHF radio signals between two locations. These trails are produced as the meteors enter the earth's atmosphere and burn up. This usually happens at a height of between 80 to 120 kilometres. The trails, which are typically 25 kilometres in length, do not last for long, being only a few seconds in duration.

The usable time, however, to send information in the VHF band is normally only a few hundred milliseconds. In addition, most of the meteors are



small so that they measure only a few millimetres across. Yet they can allow short bursts of data to be transmitted.

In practice, the remote stations listen for transmission from the central station. When it is able to receive broadcasts from the centre it knows that there is a meteor trail available on which to broadcast and immediately begins to transmit weather data. With such a short available transmission time the remote station may take several bursts to transmit all the data.

It has been estimated that about 10 billion small meteors enter the atmosphere every day so that it is possible to detect trails at least three to 10 times every second of the day. It is the sheer number of particles and their fairly regular occurrence that makes meteor scatter such a reliable form of communications. The availability of low and very high frequency equipment keeps down the cost.

Vaisala has carried out experiments in Finland and Swaziland on the transmission of weather satellite systems, having developed the technology itself. The first commercial system is expected to be installed later this year in Finland.

Vaisala is one of the leading companies in the world for weather data gathering. It has about 25 per cent of the world market for radio sondes which are used to detect conditions in the earth's upper atmosphere.

Radio sondes, which contain several sensors transmitting data back to earth, are usually attached to weather balloons. Every year more than 800,000 sondes are released into the atmosphere.

The company has developed its own expertise in computing and electronics — even to the extent of building its own silicon chips for use in sensors. It does not believe in buying in much of its high technology and spends 17 per cent of its total

turnover on research and development.

From its original beginnings in sensors the company now provides a whole range of services in weather information gathering and claims to be one of the few companies in this field which can actually provide everything from the basic sensors to complete weather stations with computers and telecommunications.

It believes that its meteor scattering system will have applications in many of the world's developing countries, which are becoming more aware of the need to gather data on weather for applications such as crop control.

However, Vaisala is not alone in its interest in meteor scatter. Over the past five years several networks have been built and have been active in use. Most are in North America, such as the U.S. Department of Agriculture's Snetel system. This has 500 remote unmanned weather stations transmitting snow, temperature and precipitation data which is used to forecast water supply and river flows.

In Alaska, a similar system looks at a wider range of weather information. Military interest has also been aroused to the possibilities of meteor scatter communications in case of nuclear war,

because of its reliability.

Meteor scatter antennas are smaller and equipment is less complex than other forms of communication that can transmit over long distances. This is a very important factor when a weather network may have tens or hundreds of stations gathering data, many of which may be far away from human dwellings.

Remote stations usually consist of several sensors, a computer processor, transmitter and receiver, power amplifiers and power equipment. The most important need for a meteor trail transmitting station is that the antenna must have an unobstructed view of the sky.

Meteor scatter systems in use today typically transmit at a rate of between two and five kilobits a second using a system of phase shift key modulations that has the advantage of a very narrow bandwidth.

Meteorologists have successfully used the ionized trails in the studies of high altitude winds. The trails reflect and radar signals can be tracked by a specially built radar. Much of the information on atmospheric circulation at these high altitudes is derived from such observations.

LENGTH OF 80 METER ANTENNA SYSTEM, 3500 KC TO 4000 KC

(DECIMAL TO FRACTION CONVERSION INFORMATION ON REVERSE SIDE)

KC	FT.	IN.	KC	FT.	IN.	KC	FT.	IN.	KC	FT.	IN.	KC	FT.	IN.
3500	133	8.57	3600	130	0.00	3700	126	5.83	3800	123	1.89	3900	120	0.00
3505	133	6.28	3605	129	9.83	3705	126	3.78	3805	122	11.95	3905	119	10.15
3510	133	3.99	3610	129	7.67	3710	126	1.74	3810	122	10.01	3910	119	8.31
3515	133	1.72	3615	129	5.52	3715	125	11.70	3815	122	8.08	3915	119	6.48
3520	132	11.45	3620	129	3.38	3720	125	9.67	3820	122	6.15	3920	119	4.65
3525	132	9.19	3625	129	1.24	3725	125	7.65	3825	122	4.23	3925	119	2.82
3530	132	6.93	3630	128	11.10	3730	125	5.62	3830	122	2.31	3930	119	1.00
3535	132	4.68	3635	128	8.97	3735	125	3.61	3835	122	0.40	3935	118	11.19
3540	132	2.43	3640	128	6.85	3740	125	1.60	3840	121	10.50	3940	118	9.38
3545	132	2.02	3645	128	4.74	3745	124	11.59	3845	121	8.59	3945	118	7.57
3550	131	9.97	3650	128	2.62	3750	124	9.60	3850	121	6.70	3950	118	5.77
3555	131	7.75	3655	128	0.52	3755	124	7.60	3855	121	4.80	3955	118	3.97
3560	131	5.52	3660	127	10.42	3760	124	5.61	3860	121	2.92	3960	118	2.18
3565	131	3.31	3665	127	8.33	3765	124	3.63	3865	121	1.03	3965	118	0.39
3570	131	1.10	3670	127	6.24	3770	124	1.65	3870	120	11.16	3970	117	10.60
3575	130	10.90	3675	127	4.16	3775	123	11.68	3875	120	9.28	3975	117	8.82
3580	130	8.71	3680	127	2.08	3780	123	9.71	3880	120	7.42	3980	117	7.05
3585	130	6.52	3685	127	0.00	3785	123	7.75	3885	120	5.55	3985	117	5.28
3590	130	4.34	3690	126	9.95	3790	123	5.79	3890	120	3.70	3990	117	3.51
3595	130	2.16	3695	126	7.89	3795	123	3.84	3895	120	1.84	3995	117	1.75
												4000	117	0.00

LENGTH OF 40 METER ANTENNA SYSTEM, 7000 KC TO 7300 KC

KC		FT.		IN.		KC		FT.		IN.		DECIMALS OF AN INCH		FRACTIONS OF AN INCH		DECIMALS OF AN INCH		FRACTIONS OF AN INCH	
7000	66	10.20	7100	65	10.92	7200	65	0.00	0.015	1/64	0.515	33/64							
7005	66	9.60	7105	65	10.32	7205	64	11.40	0.031	1/32	0.531	17/32							
7010	66	9.12	7110	65	9.84	7210	64	10.80	0.046	3/64	0.546	35/64							
7015	66	8.52	7115	65	9.24	7215	64	10.32	0.062	1/16	0.562	9/16							
7020	66	7.92	7120	65	8.76	7220	64	9.72	0.078	5/64	0.578	37/64							
7025	66	7.32	7125	65	8.16	7225	64	9.24	0.093	3/32	0.593	19/32							
7030	66	6.84	7130	65	7.56	7230	64	8.76	0.109	7/64	0.609	39/64							
7035	66	6.24	7135	65	7.08	7235	64	8.16	0.125	1/8	0.625	5/8							
7040	66	5.64	7140	65	6.48	7240	64	7.68	0.140	9/64	0.640	41/64							
7045	66	5.16	7145	65	6.00	7245	64	7.08	0.156	5/32	0.656	21/32							
7050	66	4.56	7150	65	5.40	7250	64	6.60	0.171	11/64	0.671	43/64							
7055	66	3.96	7155	65	4.80	7255	64	6.00	0.187	3/16	0.687	11/16							
7060	66	3.36	7160	65	4.32	7260	64	5.52	0.203	13/64	0.703	45/64							
7065	66	2.88	7165	65	3.72	7265	64	4.92	0.218	7/32	0.718	23/32							
7070	66	2.28	7170	65	3.24	7270	64	4.44	0.234	15/64	0.734	47/64							
7075	66	1.68	7175	65	2.64	7275	64	3.84	0.250	1/4	0.750	3/4							
7080	66	1.20	7180	65	2.16	7280	64	3.36	0.265	17/64	0.765	49/64							
7085	66	0.60	7185	65	1.56	7285	64	2.88	0.281	9/32	0.781	25/32							
7090	66	0.00	7190	65	1.08	7290	64	2.28	0.296	19/64	0.796	51/64							
7095	65	11.52	7195	65	0.48	7295	64	1.80	0.312	5/16	0.812	13/16							
						7300	64	1.20	0.328	21/64	0.828	53/64							
									0.343	11/32	0.843	27/32							
									0.359	23/64	0.859	55/64							
									0.375	3/8	0.875	7/8							
									0.390	25/64	0.890	57/64							
									0.406	13/32	0.906	29/32							
									0.421	27/64	0.921	59/64							
									0.437	7/16	0.937	15/16							
									0.453	29/64	0.953	61/64							
									0.468	15/32	0.968	31/32							
									0.484	31/64	0.984	63/64							
									0.500	1/2	1.000								

468000
 FREQUENCY = LENGTH IN FEET AND INCHES.

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