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The Official Bulletin of the
OTTAWA AMATEUR RADIO CLUB INC.

Box 8873, Ottawa, Ont. K1G 3J2



VE3DQ
STAN HILL

Page 2 THE GROUNDWAVE - OFFICIAL BULLETIN OF THE OTTAWA AMATEUR
RADIO CLUB, Inc.

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THE OTTAWA AMATEUR RADIO CLUB, INC.
is an association of Radio Amateurs devoted to the promotion of interest in Amateur Radio communications in the Ottawa regional area and to the advancement of the technical competence and achievement of Club members.

THE CAPITAL CITY NET meets every Monday evening at 2000 hours on the Club repeater VE2CRA (146.34/146.94) to pass traffic and to make announcements of interest to Amateurs in the Ottawa regional area.

THE SWAP NET, a service to the Ottawa Valley Mobile Radio Club Inc., is repeated on the Capital City Net and is conducted by Ed Morgan VE3GX. To list items or make enquiries, call Ed at 733-1271.

An ENGRAVING PENCIL is available to Club members to mark their valuables for positive identification in case of loss or theft. For further information, contact Penny Robinson VE3ERO at 225-1276.

HOSPITAL VISITATIONS to any Amateur confined to the Civic Hospital will be made by Maureen Neill VE3FZY. If you know of any amateur confined there who would appreciate a visit, call Maureen at 725-4748 during the day or 233-9941 after 1730 hours.

SEE YOUR NAME IN PRINT!!-- in National and International publications. Write an article for the GROUNDWAVE and watch it travel! Many local articles have been reprinted in Club bulletins across North America. DEADLINE FOR COPY for all articles and announcements is the second Wednesday of each month.

REGULAR MEETINGS of the OARC, Inc. are held on the first Wednesday of each month (except July and August) at the National Research Council Auditorium, 100 Sussex Drive, Ottawa, at 2000 hours. A bulletin board is available for posting notices of interest to other members about 1915 h. For further details on the next meeting, see page 5.

MATERIAL PUBLISHED herein does not necessarily represent the official OARC viewpoint. Items may be reprinted by Amateur Radio or similar publications, provided that proper credit is given to the OARC.

THE OARC EXECUTIVE normally meets on the second Wednesday of each month in the Board Room of CFRA, 150 Isabella St., Ottawa at 2000 hours. Contact the president to confirm the date of the next meeting.

RENEW YOUR CARF AND ARRL MEMBERSHIP through the OARC to save money order and postal charges, and to help your Club. Contact the Treasurer for further details (see back cover).

SAFETY BELTS AND TWO METRE RIG are available for loan to club members. The two metre rig may be borrowed by members who must be hospitalized, and the safety belts and pole straps by any member (a \$100 refundable deposit is required for the latter). For the belts, contact Paul VE3ICV at 820-6643 if you live in the west end or Brian VE3JKZ at 523-1535 in the east end of town. Contact Brian for 2m rig. RADIO AMATEUR CALL BOOKS ARE AVAILABLE for use at the Orleans, Nepean, downtown and other city libraries. Enquire at the information desks of your local library for further information.

MINUTES OF THE OTTAWA AMATEUR
RADIO CLUB, Inc. 7 October 1981

Bill VE3ARZ, Vice-President, called the meeting to order at 2005 hrs. and welcomed visitors VE1AYE Herb, G8ECR Peter and VE3ECK Bert to the Club. No errors or omissions to the Minutes of the September meeting were noted, and the Minutes were adopted as published in the GROUND-WAVE on a motion by Merv VE3CV seconded by Joe VE2DZT. One member reported that he had not yet received his October issue.

Dave VE3KMV reported that 15 members assisted with communications for Shinerama, during which \$4700 was collected.

Bill reminded the Annual Club Auction and Flea Market to be held on October 24th at Canterbury High School. On a question by a member of the audience, Bill described the procedures and activities which will take place.

George VE3BNO explained that we had bid \$329 to Crown Assets on an emergency power generator, but that our bid was unsuccessful. He pointed out that suitable generators were selling on the used market for considerably more than the \$300 limit previously authorized. Thus it was moved by George VE3BNO and seconded by Fred VE3IO that the Executive be authorized to spend up to \$400 for a suitable generator. The motion was carried. George asked that nay member becoming aware of a 2.5 kw generator being available contact the Executive.

John Mitchell VE3DYJ is Chairman of the nominating committee for the 1982 Executive. He now has four volunteers for the Committee and needs one more. The Committee will try to propose at least two nominees for each position. Other nominees may be proposed by the members at large by submitting a nomination sheet signed by the nominee, stating that he/she is willing to serve, plus the signatures of five other members.

Bill VE3ARZ asked the membership for information on a suitable speaker who could inform the members of chemical hazards in the Ham Shack. Two potentially hazardous substances mentioned were transformer oil and the internal components of some vacuum tubes. Anyone knowing of a suitable speaker was requested to contact Bill or any other member of the Executive.

Bill reminded members of the Club Certificate of Merit and requested nominations.

Ray VE3FN and George VE3BNO reported on the highly successful RSO Convention which was held recently in Waterloo. The atmosphere was very friendly and the technical sessions were excellent, covering such subjects as colour SSTV, DOC Forum, Packet Radio and computers in the ham shack. George VE3BNO noted that NBVM is not working out well in practice and that in the U.S., channelized compander SSB is replacing FM in the VHF Commercial communications area. He suggested that this is a development which should be watched closely by amateurs.

The RSO Convention attendees indicated that they considered the prices very reasonable. The social program was also excellent, starting with a German-style buffet and dance Friday evening and a buffet banquet and dance Saturday. The accompanying persons' program included a tour and a luncheon. There were hourly draws for valuable prizes including an FT-208, a Hammond Linear and a Hammond Antenna Tuner. There were over 600 registrants. The Convention finished with a Flea Market on Sunday.

Ray VE3FN reported on CRRL activities. Only one candidate was nominated for each of the vacant positions, which were therefor filled by acclamation: Mitch Powell VE3OT, President and Division Director; Tom Atkins VE3CDM, Vice President; George Simpson VE6AW, Western Director; Ray Perrin VE3FN, Central Director; and Albert Daemon VE2IJ, Eastern Director.

MINUTES --Continued

Ray VE3FN also reported that Bob Forbes had won his appeal against his conviction with respect to an anti-noise bylaw where he was charged with interfering with a neighbour's stereo. Because of the precedent setting nature of the case, the League paid all legal fees.

Bill VE3NR reported that CARF now has a very attractive crest available to members. These crests can be ordered through affiliated clubs, which will receive \$0.50 per crest on orders of ten or more. He also reported that affiliated clubs receive a rebate of 10% on all NEW memberships paid through the clubs. Effective November 1st, CARF membership fees will rise from \$10 to \$15 per year. Renewals received before this date may be at the old rate.

Bill VE3ARZ noted that the proposed new Canadian postal rates will have a significant effect on the cost of publishing the GROUNDWAVE, which will probably result in an increase in OARC Membership dues next year.

Bill also announced that *for this meeting only*, coffee would be \$0.25.

Fred VE3IO asked for a volunteer to assist a would-be blind amateur in his efforts to learn the code and theory.

Bill announced that any articles for the November Groundwave should be given to Murray VE3JSO at the meeting.

Fred VE3IO pointed out an error in last month's GROUNDWAVE--he has three inch torroids for sale (not eight inch as reported!).

Bill VE3ARZ suggested that someone should consider organizing transportation to and from Club meetings for handicapped and elderly members.

Ray VE3FN reminded members that the repeater VE3TWO provides code practice two nights per week.

It was reported that the CNIB provides Heathkit HW-12 rigs to blind amateurs for a very nominal rental fee of about \$15 per year.

A supplement to the Clubs Directory was published in last month's issue of the GROUNDWAVE.

It was reported that the Radio Shack "Weather Cubes" are again on sale for about \$15. A recent Club project resulted in a design for a modification which will permit these radios to receive in the two metre band. George VE3BNO reported that there will be a weather station in operation in the Ottawa area within six months which will make the sets useful in the unmodified state.

Doug VE3CDC reported that despite rumours to the contrary, there is still no BY (Peoples Republic of China) amateur operation, and that such operation is likely a long way off. He suggested that Tom Wong VE7BC will likely be among the first to operate in China when this can be done.

Prizes for the annual Home Brew Night were: Drinking Glasses and Jogger Sweatshirt courtesy of the Citizen and VE2DZT; 1982 DX Call Book courtesy of Bytown Marine; the book 1001 Electronics Circuits; 5/8 whip for two-metre hand-helds; packet of maps for ham use; and 1980 Radio Amateur Handbook. The following entries were submitted, in the order determined by the judges:

1. Brett VE3JLG showed his incomplete packet radio system which is based upon a 6502 microprocessor.

2. Dave VE3KMV displayed several items he had built including a copper-pipe J antenna for two metres using less than \$10 in parts; a KIM-1 based microprocessor security control with eight sensors and a 1-watt two metre transmitter; a two metre cavity filter; and a "fast" nicad battery charger with sensing circuitry to change to a slow charging rate as batteries charge.

NEXT MEETING

The next regular meeting of the Ottawa Amateur Radio Club, Inc. will be held on Wednesday November 4th 1981 in the Auditorium of the National Research Council, 100 Sussex Dr., at 2000 hours. The bulletin board will be available for notices at 1915 hours, so come early and have an "eyeball" QSO with some of your fellow members.

"Put down your pencil and really read Morse Code--no oil--instant speed change" will be the illustrated talk by Dick Atkinson VE3JBO at the next meeting.

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MINUTES--Continued

3. John VE3DQM showed his two metre amplifier made for only a few dollars using an old, junked GE transmitter. He also described a similar amplifier made from a DT-45 which provides 65-70 watts output.

4. George VE3BNO showed one of the prototype 30 MHz i.f. strips which will be used in the Canadian Amateur Satellite. It features 70-80 db gain with an 8-pole crystal filter.

5. Bob VE3MPG showed his well constructed, neatly packaged digital clock made from Radio Shack parts.

6. Bill VE3NR showed a home-made dummy load and described the precautions which must be taken in order to achieve a 1:1 SWR through to 30 MHz.

All the entrants were congratulated for their efforts.

Bob VE3MPG presented a slide show of the activities at Field Day 1981. Included were shots of the site (including the uncut grass), the raising of the antennas and various stations and operators. The show was interesting to all, and brought back memories to those who participated. The meeting adjourned at 2154 hours on a motion by Lloyd VE3AYE seconded by Murray VE3JSO

PRESIDENT'S COLUMN

Once again another Home Brew night has come and gone, and even though I was unable to make the meeting, I'm told that the event was its usual success. Congratulations to Brett VE3JLG, the first prize winner, on his packet radio system, and congratulations to all the other members who brought along their work. Although there were perhaps fewer entries than in some other years, the quality was very high. It is good to know that despite the proliferation of commercial equipment, home brew is very much alive in the OARC. The quality and inventiveness of some of the newer members to the hobby were especially refreshing.

As the present executive slowly winds down its year in office, the nominating committee is busy burning the phone lines and shuffling names to put a slate of candidates together. It is hoped to have at least two nominations for each post, so if you've been asked to stand, do give it your serious consideration. It is inevitable that the nominating committee can't possibly hope to know of more than a small percentage of Club members, so don't forget that any group of five members can also nominate an individual for the executive. All club members are strongly urged to participate.

I mentioned in last month's column the onset of what looks to be a good DX season on the lower bands. Anyone on 80 metres around sunrise in September was treated to some fine propagation to the Pacific. Working VK and ZL became a daily occurrence and was so predictable as to almost be a bore. Other nicities contacted included Japan, Tahiti, Tuvalu, Kiribati, and Wallis Island. One thing I noticed was that the DX stations heard me a lot better than I heard them, so my efforts will be directed toward a receiving antenna that is less noisy than the vertical I am now using.

--Continued on Page 8

YOU THINK YOU HAVE TVI PROBLEMS?

Guglielmo Marconi needed police protection from people who threatened to kill him because they thought his radio waves were harmful. The frightened people complained that the radio signals were passing through their bodies and making it impossible for them to sleep. A wealthy woman charged that the waves made her feet itch. A German man publicly made plans to go to England and shoot Marconi, but he was turned away by British authorities.

The hostility toward the inventor came after years of being ignored. In 1894, the 20-year old electronic pioneer coaxed his crude equipment to send a signal a few feet across his room. Next year, his signals spanned the length of his father's home in Bologna, Italy. When Marconi

patriotically offered his invention to the Minister of Posts and Telegraphs, he was snubbed.

Marconi packed his equipment and with his Irish mother, sailed to England. Surely, he thought, the world's greatest maritime power could use ship-to-shore communications. British customs officials ignored his frantic efforts to explain that his radio was not a bomb. The delicate instrument was damaged by their forcing it open.

The following year, a family friend helped him gain the attention of the British postal authorities and he demonstrated that he could send a signal from the General Post Office to a nearby building. The press and public showed no interest in the feat.

Marconi then constructed a bamboo tower that thrust his transmitter 90 feet into the air and sent his wireless signals nearly two miles. He had built something too big to be ignored and the press took notice. Years later, he sadly observed, "The calm life is over."

The publicity aroused fears in a previously indifferent public about the possible harmful effects of radio waves. A flood of crank mail --- some containing threats on his life --- came pouring in. Guarded by police, Marconi moved his operation to Wales in 1897. Soon he was transmitting signals out 25 miles, then to 150, and in 1901 had spanned the ocean with his wireless signals.

It was more than two years after this that the public outcry diminished enough for Scotland Yard to withdraw the police guards protecting the man who developed radio for the world.

deworldradio/Ham Hum

WHAT'S IN A DIODE

It was a little update radio club meeting where the lecturer held up a power supply diode hardly bigger than the end of a kitchen match-head. There were only a dozen fellows there, including in the back row old BJ, smoking his pipe as usual (yes, you can still smoke at some radio clubs). His name was Bill Jones, but he dates back to a time when hams used a "sine" on the air instead of their name and everybody still called him BJ. If the lecture was dull, as this one promised to be, he would like as not doze off until the scattered applause at the end woke him up.

"Now", the lecturer went on, "if I slice this diode rectifier into two halves, what do I see? Anybody want to make a guess?" His audience, mostly newcomers, looked at each other and scraped their feet on the floor. "How about you, BJ? Would you like to tell us what's in a rectifier?"

Old BJ took his pipe out of his mouth and blew a couple of smoke rings. His eyes took on a dreamy, far-away look and after a minute he said, "What do I see in a silicon rectifier? I see the warm, blue glow of 866's and I hear the grunt of a pole pig when I hit my old bug."

I see selenium and copper-oxide rectifier stacks (dry rectifiers, we called them), and I can still see the little square pieces I sawed out of their plates to make my own diodes. I see the little 866 juniors and the good old 82s and 83s --- good jugs in their day. I see too the long line of hard vacuum tubes that went down before them --- the 5R4GY, the 5Z3, the half-wave 81, way back to the old UX280, the granddaddy of them all, I guess. Let me see, did the UX have long pins and the UV short ones or was it the other way round? I guess it rightly don't matter anymore, does it?" Even old BJ's voice grew dreamy as he went on.

"I see car radios with OZ4s and synchronous vibrators and, yes, in a corner of our old garage, I see my 1920 battery charger and I can almost still hear the stout hum of its synchronous half-wave buzzer that they used to use before somebody came up with the tungar bulbs. And speaking of buzzers, I suppose that you might call my push-pull UV202 rig of those days in a self-rectifying hookup. Each tube conducted on alternate halves of the AC cycle and the note was about halfway between a spark rig and a CW set. I can also see a glistening chunk of galena surrounded by Wood's metal in a little cup with a cat's whisker feeler; rectifiers --- rectifiers all!"

RJ's head nodded a little and his voice grew a little indistinct and the fellows in the front row turned their heads to catch his words. "I see --- I see my little board shack in the backyard under the cage antenna when I was about 16 years old, and the rows of mom's jelly glasses full of borax solution bubbling and sizzling and ..." The voice flattered and stopped --- BJ had dozed off.

"Well", the lecturer said softly, "I thought a diode was just a little chunk of silicon that we went to the radio store to buy when we needed a

rectifier, but old BJ has shown us there is a good deal more in it than that!"

de Bob Kuehn in
The Ground Wave

MARITIME BOOTLEGGERS

The figures are startling. One out of three maritime Amateur Radio stations uses a bootleg call sign. Well-meaning amateur radio operators are contributing to this illegal operation on the high seas.

"Here's all you do, George, to use this equipment. Once you are beyond the three-mile limit, just consider yourself in international waters, and anything goes. Here, look through the Callbook and come up with a call sign that's not issued; or missing. Go ahead and start using that call sign and no one will be the wiser. Even if they do catch on, how are they going to get you?"

The word is out. They are catching on. There is a way of dealing with the bootlegger who is using Amateur Radio equipment without the proper license.

Why are so many mariners looking to Amateur Radio? First of all, the equipment is significantly lower priced than conventional marine single-sideband equipment. Ship-to-shore communications for telephone calls can get expensive too. Most high seas phone calls will run from \$5-\$10 for just a few minutes. The mariner has heard about the tremendous range of Amateur Radio and the fact that there are maritime mobile nets that will handle his phone calls free of charge.

The mariner is also lured into bootlegging Amateur Radio call signs when he finds out what a fabulous rig the new ICOM 720 transceiver is. One wire gets cut and, presto, he can transmit on any of the maritime frequencies.

de Worldradio
(To be continued)

PRESIDENT'S COLUMN--Continued

The Radio Society of Great Britain has announced the results of the 1981 Commonwealth Contest. Yours truly was gratified to note that his effort placed him fifteenth world wide, fourth in Canada, and first place in Ontario. Once again, my pride is not in the least bit tempered by the fact that I was the only VE3 to submit a log!

+ for family membership, except for +
+ full-time students and those over +
+ the age of 65 for whom the rates +
= will not change. The reason for the +
++rate increase is the expected in- +
= crease in postal rates for mailing +
+ the GROUNDWAVE. If these increases +
+ are approved, members may renew at =
+ the current rates up until and in- +
+ cluding the evening of the next +
+ meeting. +
+====+

73,

Brian VE3JKZ

HISTORICAL NOTES

by Alan Boyce VE3LNH

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CHEMICAL HAZARDS FOR THE RADIO AMATEUR

It has been suggested that a speaker be obtained to give a presentation on the hazards of certain chemicals with which a radio amateur might come into contact. Transformer oil and cadmium salts were mentioned as two examples. If anyone is aware of someone qualified to talk on this subject, please contact any member of the Executive.

I was cleaning out an old trunk for my grandfather recently when I discovered a yellowed relic that spaks of some fascinating history.

The headline of the Toronto Globe and Mail for Friday July 2, 1948 read "Four Power Rule of Berlin Ended, Russia Declares". The story described the early stages of the Berlin Blockade and the airlift of food and medical supplies.

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CORRECTION to inside cover

For amateurs hospitalized at the CIVIC HOSPITAL. Maureen Neill VE3FZY. Home: 728-0544 (evenings) Work: 725-4740 (days)

An associated article announced that Germany had been given the right of self rule. It was hoped that a constitution would be drafted establishing "... a government of the federal type 'which will best be adapted to eventual establishment of German unity, at present disrupted'". We can read more than one irony in that, from our vantage point of thirty three years.

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CORRECTION to back cover

EMI Coordinator Fred Green VE3IO: Telephone number is 232-5950.

Several other stories rang a similar note:

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CORRECTION to inside cover

The telephone number for Ed Morgan VE3GX is 733-1721.

-- The Arab League was negotiating with Trans-Jordan and the U.N. over the creation of a Jewish State and the fate of Palestine, and there was disagreement over who should control Jerusalem.

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NOTICE OF FEE INCREASE

At the October 14th 1981 meeting of the OARC Inc. Executive, it was moved, and passed unanimously, subject to approval at the November General Meeting, that the 1981 membership dues be increased to \$8.00 for single membership and \$10.00

+ -- Yugoslavia's president Tito was trading rhetoric with Moscow and Albania over social and economic policies. +
+ -- President Juan Peron of Argentina used a golden microphone to open the Pan American Radio Broadcast Congress.

HISTORICAL NOTE -- Continued

-- The Irish Dial in Dublin was removing a statue of Queen Victoria to put up a parking lot.

And near the bottom of page ten appeared this humble announcement:

"RADIO TUBES MAY BE OBSOLETE,
NEW METAL NEEDS NO WARMUP"

"New York, July 1 (AP). -- A new kind of radio set, shows music begins instantly when the set is turned on, was shown by the Bell Telephone Laboratories.

"This set has no vacuum tubes. Nothing lights, nothing even glows, and nothing gets warm. The set always goes instantly because the usual warming up of tubes does not exist.

"The invention which replaces tubes is a tiny cylinder of metal. Although this cylinder acts like a radio tube, there is no vacuum, no grid, no plate and no glass to keep the air away.

"The new tube consists of two hair-thin wires that run down to the base of an empty tube and stand on a bit of metal not much larger than the head of a pin.

"This piece of metal is the secret. The metal amplifies the current that one wire carries to it, and the other wire carries away the amplified current.

"The power used today was less than that of an ordinary flashlight battery. The new tube is called a transistor. It is not on the market.

"The inventors are Dr. John Bardeen and Walter Brattain."

What is more, this newspaper had been placed in the trunk for its insulating properties, not for its historical value!

AMATEUR RADIO SATELLITETO RIDE PIGGYBACK ON SME

A second passenger will be going along for the ride in October when the giant Delta rocket clears the launch pad at the Western Space and Missile Center, Lompac, California, carrying the Solar Mesosphere Explorer (SME) into orbit.

1 The second passenger is the University of Surrey Satellite (UOSAT), a small scientific satellite constructed by an amateur group at the University of Surrey in Great Britain. This will be the ninth in the series of OSCAR satellites (Orbiting Satellite Carrying Amateur Radio) to be launched into orbit as piggyback passengers on U.S. launch vehicles.

The University of Surrey satellite has a number of features of interest to school science groups and radio amateurs. It is the first designed to transmit data, including pictures of the Earth's surface, in a form which can be readily displayed on a domestic television set. It will carry a voice synthesizer for "speaking" in English information on telemetry, experimental data and spacecraft operations, and most standard amateur VHF receivers will be able to listen in with a simple fixed antenna.

All previous radio amateur radio spacecraft launched either under the auspices of AMSAT, the Radio Amateur Satellite Corp. (the OSCAR series), or by the Soviet Union (RS-1 and -2) have been intended primarily for relaying radio signals, thus increasing the range of transmissions by radio amateurs.

The University of Surrey satellite has a different function: its purpose is to stimulate a greater practical interest in space science among students in schools, colleges and universities and to provide radio amateurs with a tool for studying the ionosphere through which their transmissions travel.

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-- Continued on p 10

Amateur Satellite -- continued

The spacecraft carries a number of experiments for scientific research. These include a series of radio beacons transmitting at different frequencies; two particle counters to provide information on solar activity and auroral events; and a magnetometer--identical to that carried on the Voyager missions to Jupiter and Saturn--for measuring the Earth's magnetic field. These experiments will permit a detailed study of how phenomena such as solar activity affect the transmission of radio signals through the ionosphere.

One experiment of special interest to school and college science groups is an Earth-pointing camera, covering a 500 by 500 kilometer area of the Earth's surface. The image will be formed on a solid-state charge coupled device and stored in the spacecraft computer until transmission to ground. Unlike images from conventional weather satellites, the picture will be transmitted in such a way that it may be readily received and stored by a simple receiver and can be displayed on any domestic TV set. Experimental data in graphic form will also be available by the same link.

An electronic voice synthesizer controlled by the on-board computer will "speak" details of telemetry, experimental data and spacecraft operations. Speech will be in English, and the vocabulary will be about 150 words.

Transmissions will be on 144,825 MHz and any standard unmodified narrow band frequency modulation amateur receiver should be able to receive them by means of a small pair of crossed dipole antennae.

If successful, the experiments should help overcome the difficulties faced by most amateurs trying to enlarge their knowledge of Morse Code. Any radio amateur will be able to use his or her equipment to learn about that area of space surrounding the Earth which most affects the quality of radio transmissions. The potential

exists for amateurs to make a contribution to space science comparable with that of amateurs in such fields as astronomy and orinthology.

The satellite was built at the Department of Electronic and Electrical engineering of the University of Surry at Guildford. Project manager is Dr. Martin Sweeting, a graduate of the Department. Primary sponsors of the project are the United Kingdom, the United States and West German sections of AMSAT; British Aerospace; British Telecom; Ferranti Ltd.; MEL Ltd.; Recal Ltd.; and the Radio Society of Great Britain. More than 20 other companies have provided components, effort and other support.

----Courtesy NASA News, National Aeronautics and Space Administration, Washington, D.C., U.S.A. 20546

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DRAFT SYLLABUS TRC-24

The DOC has revised the Syllabus for all amateur examinations. This draft of TRC-24 is now available from CRRL, Box 7009, Station E, LONDON, Ontario, N5Y 4J9. There have been some drastic changes, so anyone interested, or anyone conducting classes for prospective amateurs is well advised to obtain a copy. --courtesy Halifax A.R.C.

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YORK NORTH A.R.C. FLEA MARKET

The York North ARC is holding its fifth annual fleamarket on Saturday 14 November 1981 at the Newmarket Community Centre, Newmarket Ontario. The town of Newmarket is just North of Toronto and easily accessible by Highways 11, 400 or 404. The fleamarket will operate 0800-1400 F.T, with doors open earlier for exhibitors. General Admission is \$1.50 which includes a door prize ticket. Admission for Exhibitors is \$3.50 which includes a door prize ticket and one table. The talk-in station, VE3YNA, will be operating 146.225 MHz simplex and through the local repeater, VE3YRO 147.225 input

THE OTTAWA AMATEUR RADIO CLUB, Inc.
P.O. Box 8873
OTTAWA, Ontario, Canada.
K1G 3J2



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Archivist	VE3CNJ	Ontario K1G 1M1	:
Net Mgr. &	Ken Kendall	777B Springland Drive, OTTAWA	731-0892 :
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Chairman	VE3IO	Ontario K1S 1R2	596-9359 :
Membership	Jack Garrett	3011 Rankin Street, OTTAWA	521-6528 :
Chairman	VE3HJI	Ontario K1V 8L2	993-9740 :

