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ASST. EDITOR	BARBARA ANN TAYLOR		

CLUB STATION.....VE3 NSR

CLUB REPEATER.....VE3 OSH 147.720 MHZ IN .... 147.120 MHZ OUT

2-METER NET CONVENES EVERY THURSDAY AT 19:30 LOCAL TIME ON THE CLUB REPEATER (OSH). AS PART OF THE NET CODE PRACTICE IS PROVIDED BY BERNIE (ATI) BEGINNING AT 20:30 LOCAL.

10-METER NET - A GROUP OF LOCAL HAMS MEET SUNDAYS ON 28.200 MHZ USING CW FROM 09:00 TO 10:00 LOCAL THEN SWITCH TO SSB PHONE UNTIL EXHAUSTED OR XYLS CALL DINNER.

CODE & THEORY CLASSES HAVE STARTED!!..... Rick 3ASH has signed up about 20 people for his Code & Theory class. There's room for more, so if you know of someone, have 'em call 434-2886. It's not too late!! The classes are Thursday nights from 7 to 10pm and they run straight through till spring. It's quite a thorough course. Call Rick for the fine print.

NEW!! SOCIAL MEETING TO HELD!! The usual December Wine & Cheese Party has been scrapped. The exec is working on a special Social Meeting to take it's place. It should be another great time! Elections will be held at the November meeting instead of December.

SEPT. 11TH MEETING Twenty-six members watched with great interest, an hour long film on technology of soldering, proved by Rick 3ASH. Ray tells me that nowhere in the picture show, did it say to use a one pound iron on IC's!! I shoulda' attended!!!!

NEXT MEETING, OCT 9th - THANKSGIVING! Yup! That's right, the Art Resource Centre is open for business on Thanksgiving, so we may as well use the opportunity by not rescheduling. Agenda- Surprise!! Keith Wyard-Scott is going to have a dandy prize for his next raffle, so bring some dough - boys!!!!

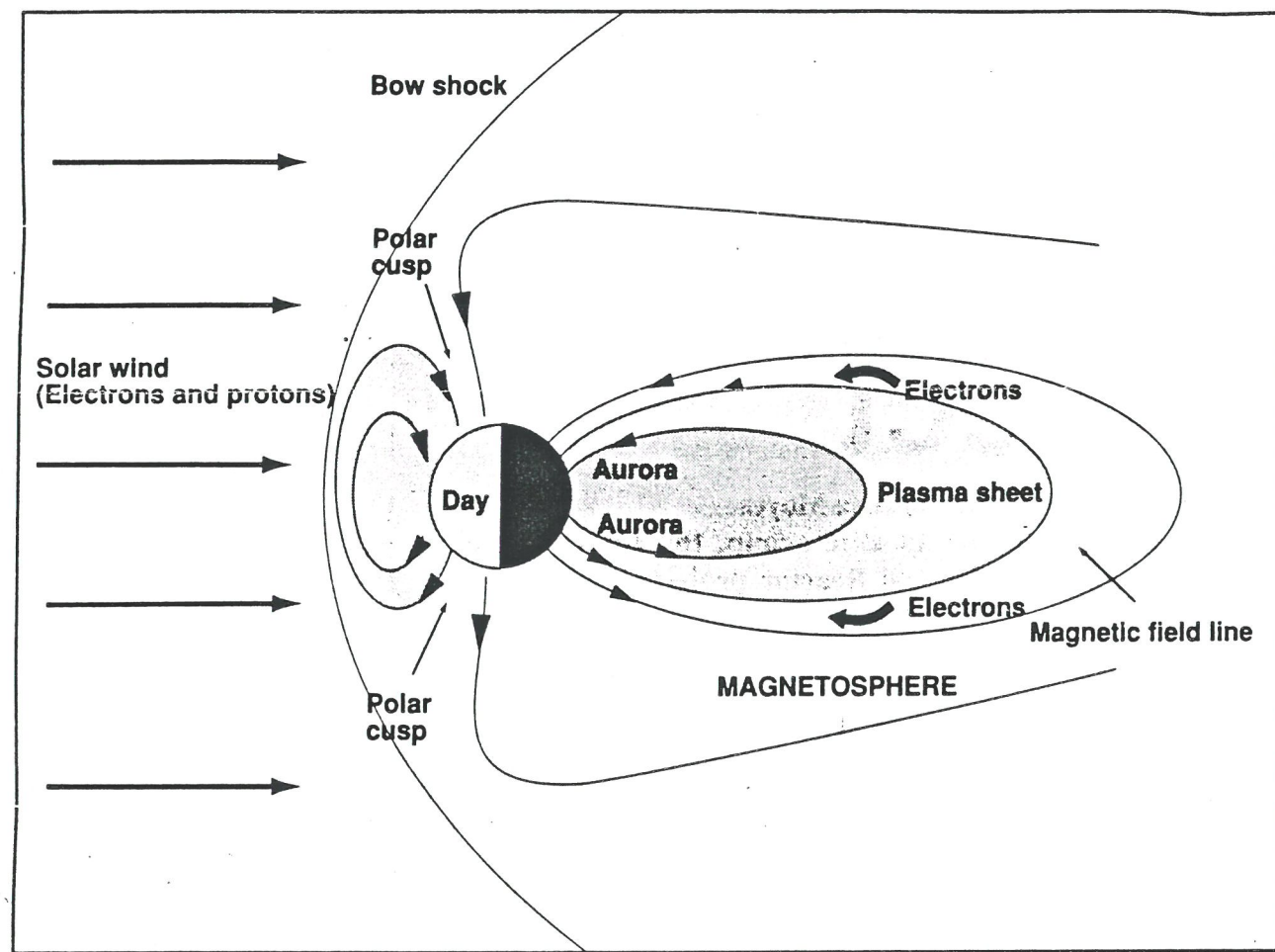
CONGRATULATIONS!! to Doug Barnes "VE3WJR" who recently got his ticket, also to Bernie, VE3TMD got a nice call. Bernie looks after railroad traffic for G.M. His phonetics are "Train Movement Director".

No one has informed me of our new amateurs from the class of '89. I would like to print who they are, what they are doing, rigs, antennas, bands, operating hours and call signs. Please drop me a line!!!!

--IF YOU WISH SUCCESS DON'T PUT YOUR WISHBONE WHERE YOUR BACKBONE AUGHT'A BE.--

# Sunspots can wreak havoc with utilities

Contributed by Andy Kalnins VE3LCZ



Details of the magnetosphere, showing the presence and effects of the solar wind.

By Grant Elliot

Few things are more welcome at this time of year than the sun's warming rays. Gone for another year are the dark, cold days of winter. This spring, however, the sun is a cause of concern for scientists, astronomers and staff at electric utilities.

## Erratic changes

They expect Old Sol to cause some trouble in the next while, but they're not really sure when, or why.

At 2:46 a.m. on March 13, a breaker opened at the Harmon hydro-electric plant, north of Kapuskasing.

According to Hydro's daily system report, the 70-megawatt Unit 1 was automatically removed from service after protection systems were activated. There was no immediate explanation for the interruption.

At 8:16 that evening, two capacitor banks at Belleville TS "tripped" out of service. In fact, the entire day had seen unexplained voltage fluctuations and erratic changes in primary demand in Ontario, Manitoba, British Columbia and several utilities in the United States.

These occurrences, though, were nothing compared to what was happening in Quebec.

At the same time as the

Harmon unit shut down, wild power surges took five major transmission lines that deliver electricity from James Bay to other parts of the province out of service. Most of the massive Hydro-Quebec system was crippled, and it took up to eight hours to restore power to Montreal and other areas of the province.

The sun is believed to be the culprit for these aberrations to electricity systems.

"We're currently in recorded sunspot cycle number 22, which began in September, 1986," says Rick Miller, senior meteorologist in Power System Operations Division. Sunspot cycles seem to peak every 11 years, although no one is sure why they follow that pattern.

## Largest on record

"Cycle 19, which occurred during the 1950s, is the largest one on record. Some astronomers think number 22 will equal or exceed the intensity of number 19," Miller says.

Solar flares, which explode from huge sunspot areas, may cause what are called solar magnetic disturbances (SMDs). These solar flares produce tremendous amounts of electromagnetic energy and particles.

"The release of these particles, or protons, enhances the solar wind and, when strong enough, causes a disruption in the earth's magnetic field," says Miller.

The particles spiral along the earth's magnetic field lines. The most vivid display of this activity is the

phenomenon of the "northern lights" or aurora borealis (aurora australis in the southern atmosphere).

## In Caribbean

During the week of March 10, aurora borealis could be seen in such southerly locations as the Caribbean islands. Scientists claim that to be a "once in a lifetime occurrence."

Solar flares are monitored in the sky by satellites and on the ground by optical and radio telescopes as scientific establishments around the world spend hundreds of millions of dollars each year to get a better grip on the when and why of solar magnetic disturbances.

The International Scientific Radio Union sponsors a worldwide forecasting and warning agency for SMDs. The world warning centre is at the Space Environment Services Centre in Boulder, Colorado. There are regional warning centres in Moscow; Paris; Darnestadt, West Germany; Tokyo; Sydney, Australia; and Ottawa. Solar monitors aboard satellites operated by the U.S.-based National Oceanic and Atmospheric Administration (NOAA) transmit signals to the Space Environment Centre.

The federal government's Geophysics Division in Energy, Mines and Resources in Ottawa receives information each day from Boulder. EMR also operates magnetometers at 13 locations across Canada. "The unit of measurement is called a nanotesla," says Ija Hruska, an EMR geophysicist in Ottawa. "The earth's magnetic field gives an average daily reading of about 30 nanotesla. On March 13, our Ottawa magnetometer gave us readings slightly over 2,000 nanoteslas."

Solar storm activity is assigned a number, from zero to nine, and is measured on a "K scale", similar to the Richter scale used to record the earth's tremors.

On Friday, March 10, Hruska knew the sun had unleashed a huge flare, its bark and bite headed toward the earth. The Geostationary Operational Environmental Satellite (GOES) sensed the flare. The readings were received at Boulder. Sometimes, though, after travelling 150 million kilometres, signals can be difficult to interpret.

## Tidal wave

"There's quite a bit of difficulty in predicting solar flares and their effect on the earth's magnetic field," Hruska says.

But, if it's strong enough, the so-called solar tidal wave will reach the earth no sooner than 48 hours and sometimes its effects won't be felt for up to four days, if at all.

But the solar monitoring centre in Colorado had received enough information from its satellites to issue a warning. Hruska and her staff at EMR received the warning and issued a bulletin. "Magnetic fields will reach active conditions Sunday, March 12."

Kevin Thompson, also with Power System Operations Division, received the subsequent bulletin from EMR. He suspected the geomagnetic-induced currents they'd produce would play tricks with Hydro's protection and control systems.

## Canadian Shield

"SMDs tend to upset power system equipment in regions of igneous geology, such as the Canadian Shield, and the ground currents caused by SMDs affect auto-transformers, capacitor banks, potential and current transformers," Thompson says.

Ontario Hydro isn't exactly in the dark when it comes to SMDs. Since 1982, Hydro has been monitoring ground-induced currents in the heart of the Canadian Shield -- at

the Wawa, Lakehead and Kenora transformer stations -- in Northwestern Region.

"Monitors at those stations recorded exceptionally high readings on March 13," says Thompson.

Hydro's efforts and expenditures toward a better understanding of SMDs are paying off. "We've set up a computer link with Boulder that gives us information about solar disturbances. We get data from Colorado and from EMR's magnetometers at Glenlea (Manitoba), Ottawa and St. John's (Newfoundland)," Thompson adds.

The computer hook-up, which was being tested prior to going into service, worked well on March 13, 18 days before official start-up.

## Hourly basis

Information from the computer system was sent on an hourly basis to system operators at the Richview Control Centre. What was learned from those strange days in mid-March has been presented to the Northeast Power Co-ordinating Council.

Naturally, electric utilities can't do much to manage Old Sol's outbursts (sunspot cycle No. 22 is expected to peak in 1990). But with the new computer system in place, Hydro hopes to minimize the impact of future solar magnetic disturbances.

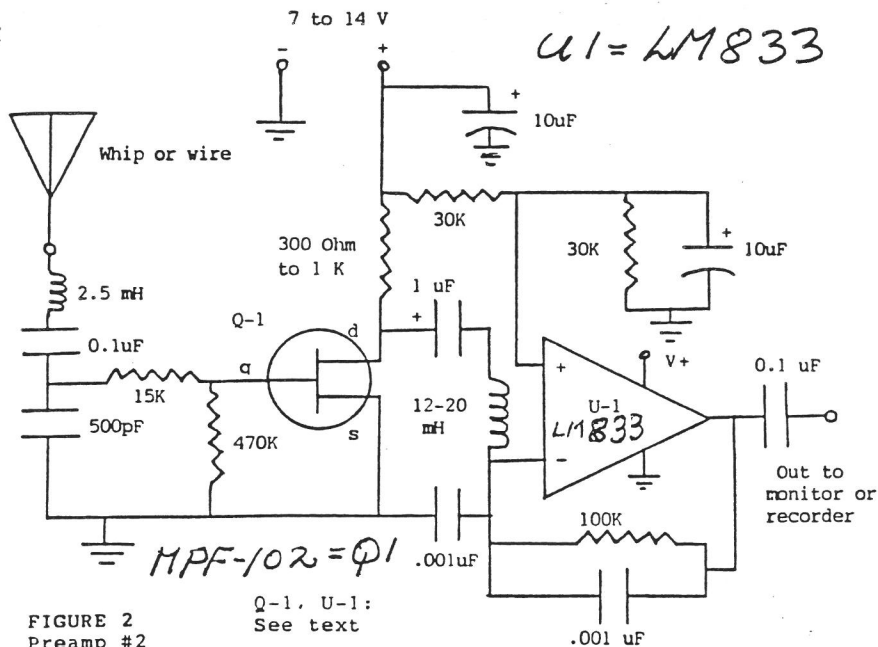


FIGURE 2  
Preamp #2

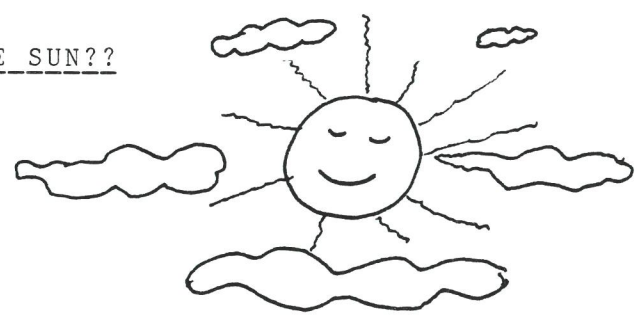
## WHISTLER RECEIVER

There is plenty of "UMPF" available at the output to feed the "mike input" of a tape recorder. A small Radio Shack utility Amp with headphones would be a good monitor. The antenna can be an "active whip" or 1000' of wire. High Freq. roll off starts at about 10Kc.

From "The Low Down"



# WHAT'S NEW UNDER THE SUN??



I.C.'S The modern Integrated Circuit, the technique of folding more than one amplifying and other control components into one package was old hat back in the '20's. Professor Manfred Von Ardenne had developed this scheme and by 1926 started producing a single tube receiver that included in its envelope, three triodes, two anode resistors, two grid resistors and two coupling condensers. An external tuned circuit, earphones and battery terminals converted this tube into a complete receiving detector followed by two stages of resistance coupled audio amplifiers. You can imagine the problems Von Ardenne had to solve before perfecting this tube. Condensers and resistors had to be constructed of materials that would not change value under extreme temperatures nor de-gas and create a defective vacuum. A completely new "getter" technique had to be developed also. Radio Lisenze taxation in Germany at that time was based on the number of tubes in the set. It is said this was the incentive to spur the production of the IC vacuum tube.. Millions had been produced by 1939 in order to give the masses the opportunity to receive the voice of der Furer. After WWII, Von Ardenne fell into the hands of the Russian Bear and was not heard from again until the mid-fifties.

TRANSISTORS The first tube-less receivers were publicly demonstrated in 1927. The inventor, Mr. J. E. Lilienfeld brought upon himself with this demonstration, the wrath of the multi-million dollar world wide tube industry. His first proto-types were unreliable and required many sensitive adjustments. Even after several succussful demonstrations, he found his credit frozen and backing hard to find. The tentacles of big business reached everywhere. In perusing his two patents filed in 1928, it is apparent he used exceedingly small contact areas upon thin oxides and talked of molecular thicknesses. The device had a base but the emitter and collector were labelled "contact plates".. His patent #1,900,018 definitely shows a transistor symbol. Lilienfeld never did raise the funds needed to further develop his brainchild.

## SILENT KEY

It is with sadness we record the passing of another NSARC member. Ron McAllister, SWL, Oshawa. Few members had the opportunity to know Ron. I first met him about 15 years ago. He was a resident of Manchester at that time and heavily into CB radio. He ran a small CB shop in his home at the corner of 7A and 12hwys. Ron did a great job of peddling my Low Pass filters into the Durham Region.

Ron had signed aboard NSARC for the Code & Theory class. He aspired to become part of the Ham fraternity but an illness came on and he was forced to abandon his dream.

He spent a good deal of time assisting with kid's hockey teams and Jr. Leaques. Ron was constantly volunteering. He would have made a good contributing member.

He leaves his wife Janet, daughter Nichol and two sons, George and Ian.

THINGS TO SPEND MONEY ON

Any of us who are old enough to grunt when getting in or out of the easy chair will remember "Spike Jones and his City Slickers". Whenever a record of his came on everyone faced the radio with a smile and all talking ceased in order to catch every sound this genius of musical comedy had to offer. How can we forget "En Der Fuhrer's Face" or "Cocktails for Two" with lots of "glugs", raspberries and cookoo sounds thrown in. Well, I just finished sending off my order for a cassette containing some of Spikes work when it struck me that perhaps the rest of the club would be interested where I get all this neat memorabilia. Drop a line requesting a catalogue to Vestal Press P.O. Box 97, Vestal, New York, U.S.A. 13851-0097. They offer rare books and recordings for the Wireless Buff and other hobbieists. Need a few more rolls for your Player Piano? They got 'em.

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SANTA CLAUS PARADE

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Ralph VE3CRK and Glen VE3LIZ are looking for volunteers with 2 meter walky-talkies to help provide communications for the Oshawa Annual Santa Claus Parade. Please lend a hand, you'll love it! Give Ralph a call at 576-8738 or Glen at 725-1545.. Oshawa needs you on November 25th! You are guaranteed a lot of fun while helping!!!!

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Bill VE3CMM informs me that the Wellington County Museum has a fine collection of early radio on display until November. If your out to see the Autumn colours you will want to drop by and see it. It's about a ½ mile west of the Fergus four corners. A good quality display! Bill still has about a dozen hard cover copies of Fesenden left. Bill did radio history buffs a real service when he bought up a case or more of this "hard to find" edition a gew years ago. If you'd like one, give Bill a call at 839-1437.

- - - - -

Roy VE3AAF reports medium to fair turnouts on the Thursday night 2 mtr. get-together. Roughly 50% are NSARC members. Glen 3LIZ has been relieving Roy every 3rd or 4th week. It's a welcome relief for Roy as the Club Net is a time consuming endeavor.

Roy is sporting a new VCR camera and made real good use of it last week end. He and Mark 3ORZ, travelled to Ottawa to ride old CPR#1201. The Bytown Steam Locomotive Society sponsored a run from Ottawa to Pembroke. What a beautiful sight it was! The old 1201 made a stop somewhere in a pasture where all passengers de-trained to take photos. The Engineer backed the train down the rail a mile or so, paused, brought her boiler up to 250psi, then let her rip! All six drivers bit hard into soft steel as she made for a photographic pass. With her bell clanging, whistle shrieking, steam hissing alternately from her mighty pistons, she went thundering by. Black smoke rushed up her flue with a hurricane force! Like a massive black iron monster with brass and chrome a-gleamin', she went thundering and bellowing past hundreds of whirring and clicking cameras! A proud and awe inspiring sight to behold! Mark got some dandy recordings of the accoustics while Roy filled his film to the brim with this rare and historic sight. I wish I were there.

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Statistics show that in 1940 each car on the road had an average of 2.2 persons, in 1950 it was 1.4. At this rate, by 1990 every third car on the road will be empty.

RIDE-ATHON - WASHOUT!!! Sept. 16th was the Annual Horse Back Ride-Athon for the Handy-capped Association. This being a Saturday, of course it rained cats n' dogs. Only 30 riders braved the elements to ride the grueling 25km. Ray 3OUB, reports that there was only one cowboy, all the rest were cowgirls! A noble and successful effort in providing communications was given by Walter 3DYE, Lorne 3EIS, Ray 3OUB, Hugh 3EVJ, Richard 3RJB and his 12 year old son who helped log. Well done guys!!



NSARC VOLUNTEERS MAN VE3CNE!!

Seventeen stout hearted members travelled to Toronto's Exhibition grounds to man the Amateur Radio Booth. Operating VE3CNE and demonstrating Ham Radio to the thousands of inquisitive Exhibition visitors, the following members did their part to further Amateur Radio in the eye of the public.

3SJ, Jack; 3ASH, Rick; 3FMI, Tom; 3CRK, Ralph; 3LLZ, Bob; 3LIZ, Glen; 3IMR, Aldo; 3IMB, George; 3MID, Joe; 3PXY, Elmer; 3IYL, Irma; 3MHP, Jerry; 3RJB, Richard; 3YPO, Norm; 3OUB, Ray; 3POJ, John; 3JNC, Helmut.

CORN ROAST - GIANT SUCCESS!!!!!!

Nearly eighty hungry people showed up at the beautiful Harmony Valley Conservation Area to enjoy the delicious corn and partake of the camaraderie that permeated there. Among the crowd could be seen many past members, new members and even some OT's. It was nice to see Charlie 3EHA and his lovely wife Jennie again. While munching on a cob, Brian 3RFF described how he and Richard 3RJB had been chatting through 30SH from Balsam Lake only to find they were located a mere 500 yards from one another!! The following are some of the calls recorded at the roast whom we see little of but would surely like to see again. There were more but unfortunately we didn't get 'em all.

Keith, 3MUA and his lovely XYL, Dave 3CLL, Neil 3SST, Paul 3KPB, Noel 3IOG, Matthew 3SOL, Gerry 3MHP and John 3POS.

The membership owes a lot to those who devoted so much time and effort in providing the necessities for this happy outing. It sure was a success! Thanks to Eric 3HMG and his daughter Sandy who worked so hard husking corn. Bob 3LLZ and Ron 3AIY who spearheaded the whole thing. Ron's wife Helen helped a lot too. I hope I didn't miss anyone. Without these fine people the Corn Roast would not have been.

OLD TIME RADIO PROGRAMS (More things to spend money on)

I have been purchasing from the following company for five years now and I feel confident in them. If you like old time radio programs, then these are the guys. Ask for their catalogue. Hall closet Cassettess, P.O. Box 421, Morton Grove, Illinois U.S.A. 60053. They run a nice store front operation in Chicago. You may want to ask about the calendar they sell (1930's) which features a cover from Liberty Magazine on each months page. I'm beginning to collect quite a selection of Christmas programs. If you send a cheque you will pay a fortune in exchange and handling charges. Use a postal money order, or cheaper still, use your Masa-Charge.

SUNDAYS AT 9:00 p.m. THE "Experimenters Round Table". Call for VE3HMG  
VE3OSH or VE3DKW.