

May 1981

Vol #7

Food Back

VE3OSR

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- President:** Harvey Smith, VE3FOT
- Vice. Pres:** Laverne Wyville VE3LPT
- Sec.-Treas:** Jack Avis, VE3DTS
- Editor:** Jim Harron, VE3BFV
- Technical Director:** Don Richards VE3IDS

Send Feedback correspondence to- Georgian Bay Amateur Radio Club
 General Delivery, Owen Sound.

MINUTES OF PREVIOUS MEETING

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THE APRIL MEETING OF THE GEORGIAN BAY AMATEUR RADIO CLUB WAS HELD ON THE 23RD OF APRIL IN THE OSCVI. THE MEETING WAS CALLED TO ORDER AT 20.15 HOURS BY THE PRESIDENT, VE3FOT, HARVEY. THERE WERE 19 PRESENT.

BUSINESS FROM THE MINUTES - THERE HAS BEEN NO FURTHER ACTION ON A NEW CLUB REPEATER. AS YET THERE HAS NOT BEEN A VISIT TO THE EMO SITE TO INSPECT THE RADIO FACILITIES. THE DATE FOR FIELD DAY STARTS SATURDAY JUNE 27TH AT 1800 UTC AND ENDS AT 2100 UTC SUNDAY JUNE 28TH. A COMMITTEE OF DON ROWE, VE3LZX; DON RICHARDS, VE3IDS; KART RIDDERBUSCH, VE3MTP; AND JEFF MARKLEVITZ, VE3KPT ARE TO FIND A SITE AND MAKE ALL ARRANGEMENTS FOR THE COMING FIELD DAY.

THE PRESIDENT REPORTED THAT PROGRESS WAS BEING MADE ON CHOOSING THE NEXT SLATE OF OFFICERS FOR THE CLUB.

DAVE, VE3DXO, OFFERED TO PROCURE ADDITIONAL COPIES OF THE GHARC CONSTITUTION AND TO HAVE THEM AVAILABLE AT THE NEXT MEETING.

MOE, VE3LPT MOVED THAT THE MEETING ADJOURN AND TERRY, VE3LPK WAS THE SECONDER.

HARVEY, VE3FOT, THEN GAVE AN INTERESTING TALK ON HYDROGEN FUEL. DON, VE3IDS, FOLLOWED WITH A BLACKBOARD TALK ON SEMI-CONDUCTORS. AFTER THE MEETING MOST OF THE MEMBERS MET AT THE A&W FOR A PINT OF HIRES ROOT BEER.

ANNOUNCEMENT--

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THE MAY MEETING OF THE GEORGIAN BAY AMATEUR RADIO CLUB WILL BE HELD ON THURSDAY MAY 21ST IN THE OSCVI AT 2000HOURS EDT. THE ELECTION OF OFFICERS WILL BE THE MAIN ATTRACTION PLUS OTHER GOODIES.

THE PROPOSED EXECUTIVE FOR 1981-1982

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PRESIDENT----- LAVERNE WYVILLE, VE3LPD
 VICE-PRESIDENT---- MOE HURLRUT, VE3LPT
 EDITOR OF FEEDBACK-- DICK SHAVE, VE3BIS
 PROGRAM DIRECTOR-- ANDY KALNINS, VE3LCZ
 TECHNICAL DIRECTOR-- DON ROWE, VE3LZX
 ASS. TECH. DIRECTOR-- DON RICHARDS, VE3IDS
 SECT. TREASURER---- DON RICHARDS, VE3IDS

ADDITIONAL NOMINATIONS WILL BE ACCEPTED FROM THE FLOOR PROVIDED THAT CONSENT OF THE NOMINEE IS GIVEN BEFORE THE NOMINATION.

NEW AMATEURS IN OUR DISTRICT-

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IT IS WITH PLEASURE THAT WE WELCOME THREE NEW AMATEURS TO OUR RANKS: VE3MTU, DAN GREY, PORT ELGIN, ONT.; VE3MTW, LLOYD KING, KINCARDINE, ONT.; VE3MTV, NORM RIGGAR, OWEN SOUND, ONT. MOE HURLBUT, VE3LPT, HAS EARNED HIS ADVANCED AMATEUR CERTIFICATE OF PROFICIENCY IN RADIO.

WORDS FROM YOUR EDITOR-

THIS IS THE LAST EDITION OF FEEDBACK THAT I WILL BE ASSEMBLING AND DICK, VE3RIS, HAS CONSENTED TO TAKE OVER THE REINS. I WISH HIM SUCCESS AND HOPE THAT HE CONTINUES TO RECEIVE LOTS OF MATERIAL FROM THE READERS. I HAVE BEEN MOST GRATEFUL FOR WHAT I HAVE RECEIVED. I APOLOGIZE FOR THE OCCASIONAL SKINNY ISSUE THAT WAS PRINTED BUT I AM A PROCRASTINATOR AND AM INCLINED TO LEAVE THINGS TO THE LAST MINUTE. PLEASE GIVE DICK THE SUPPORT THAT IS NECESSARY IF WE ARE TO HAVE A WORTHWHILE PUBLICATION.

FOR SALE-

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VE3DXO, DAVE, HAS FOR SALE A MULTI SEVEN 2-METER TRANSCEIVER WITH 9 PAIRS OF CRYSTALS INSTALLED, COMPLETE WITH POWER SUPPLY, PRICE NEGOTIABLE. PHONE 986-3082.

VE3EFX, BILL, HAS FOR SALE: LUNAR PREAMP FOR 432 MHZ. MODEL PAE-432-5. NEW. \$70.00.; DC CORD FOR FT-101 FOR \$5.00.; MOSELEY V-3 FIXED GROUND PLANE FOR 10-15-20 \$10.00.; 2-METER TRANSCEIVER STANDARD 12 CHANNEL CRYSTAL CONTROLLED WITH 4 CHANNELS INSTALLED. \$125.00.; A 2-METER TURNSTILE ANTENNAE FOR FREE.

VE3LPD, LAVERNE, HAS A 9-MONTH OLD ARCHER TV ROTATOR FOR SALE, COST \$109.00 AND WILL SACRIFICE FOR \$65.00. PHONE 538-1888.

JEFF, VE3KPT, HAS FOR SALE A HEATHKIT SB101 SSB TRANSCEIVER WITH 400KHZ. FILTER AND NEW HP-23C SOLID STATE POWER SUPPLY, FULLY OPERATIONAL. \$425.00, PHONE 519-363-2523, BOX 434 CHESLEY, ONT.

ACKNOWLEDGEMENTS--THE FEATURE ARTICLE ON LARGE POWER SUPPLIES WAS SUPPLIED BY ANDY, VE3LCZ, AND THE COMPUTER CORNER IS FROM "SPARKS" THE PUBLICATION OF THE NORTH SHORE AMATEUR RADIO CLUB, OSHAWA, AND SUBMITTED BY JACK, VE3DTS.

THE COMPUTERIZED LABELS WHICH WE HAVE BEEN USING WERE SUPPLIED BY BRIAN HARRON, SON-OF-THE-EDITOR.

TID-BITS- TV IS A DEVICE WHICH MAKES IT NECESSARY TO WAKE UP BEFORE GOING TO BED.

THREE FAITHFUL FRIENDS-AN OLD WIFE, AN OLD DOG AND READY CASH.

A TIP FOR THE WORKBENCH- A SQUARE OF SPONGE RUBBER CARPET UNDERLAY IS A HANDY THING TO HAVE ON THE WORKBENCH UNDER A PIECE OF ELECTRONIC GEAR WHEN YOU ARE WORKING ON IT. IT PROVIDES A NON-SLIP SURFACE FOR HOLDING A CHASSIS OR CIRCUIT BOARD AND IF THE DIMPLED SIDE IS UP, BOLTS AND OTHER LITTLE BITS WILL NOT ROLL ONTO THE FLOOR.

THE PRESIDENT'S MESSAGE

The April meeting was well attended, as usual, in spite of a postponement due to the long week-end falling on our usual date, We missed some of the regulars who were out of town or otherwise busy. The talk and demonstration given by Don VE3IDS on the basics of solid state devices seemed to be welcomed by a number of the members. The comments of many would indicate that a technical session such as this would be a worthwhile addition to all our programs. In spite of the fact that some of our members are very knowledgeable in matters electronic, there are many of us who have either forgotten some of our theory, or in the case of transistors and I.C's took our course and took our examinations at a time when such devices were in their infancy, or were not required . At any rate, I guess that even the most erudite of us can always learn something new. We are fortunate in having so many qualified people in our group and I hope that there will be more of the same at our subsequent meetings. Remember, if YOU have any skill or particular interest or knowledge of a subject which would be of interest to our group, do your thing, let the program director know of it, and let's have it. Also, there are no high walls separating Electronics from any other discipline. All human experiences and interests have a spill-over into others, even though the connection seems remote.

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Elections are upon us, once again. Elsewhere you will find a slate of candidates presented by your Nominating Committee. Look it over and be prepared to nominate any others who you feel would do a ^{better} ~~good~~ job in the office. Remember to get the Candidates agreement to stand.

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The thoughts in Para I above go double for articles for FEED-BACK.

VE3FOT

COMPUTER CORNER

Last time, we were discussing the microcomputer, uC, the word byte, which means, or stands for 8 bits in an 8 bit machine, was referred to and now we will refer to half a byte, or nibble. Since we count from 1 through F in a hexadecimal system, and 1111 adds up to F, we need to split the 8 bits into 2 sections, so 1111 1111 stands for FF. Unless the actual language of the computer which is called the machine language is used, one does not have to deal with bytes or nibbles but it helps to know what occurs inside the computer.

With the widespread availability of the micro at the corner store it is necessary to be able to 'speak' to the computer and this is done in a formatted way by using a high level language. One of these is called BASIC and it was developed in Dartmouth College in the US many years ago. the word BASIC is an acronym, where each letter stands for a word. BASIC means Beginners All purpose Symbolic Instruction Code.

If you purchased a TRS-80, APPLE or PET computer, you would use the BASIC language. While it would appear to be difficult to use, with sufficient practice the average person would quickly adapt to it. One thing about this language is that it doesn't tolerate any errors. If you don't follow the format, it comes back to you with rude remarks.

Computers are advertised as having 4K or 8K etc. This refers to the the actual memory part of a computer, or storage and working area. The 8 bit computers mentioned above have a full capacity of 64K memory locations which is actually 65,536. In terms of letters, or numbers it means you could store that many of them away, But wait! When you use BASIC, the program itself may require 8K minimum so it is wise to get sufficient memory for your computer. There is a 4K basic but it is very limited in it's capabilities.

Many people purchase a computer for the purpose of playing games, while others use them for calculations, bookkeeping etc. They have widespread use on the amateur bands and it would seem that nearly all RTTY users have in their shacks either a uC or some other form of gear with micro capabilities. On 20 meters, much of the chatter concerns their useage and/or problems but the ham population has gone for the TRS-80 in a big way.

What are some of the uses for the computer? While they are numerous, here are a few that come to mind:

- Automatic beam headings.
- QSL card organization.
- Information retrieval. (articles of interest etc.)
- RTTY Automatic ID, Brag Tape etc.
- Tuned Circuit calculations.
- Mortgage payment schedules
- Contest Info

Bernie

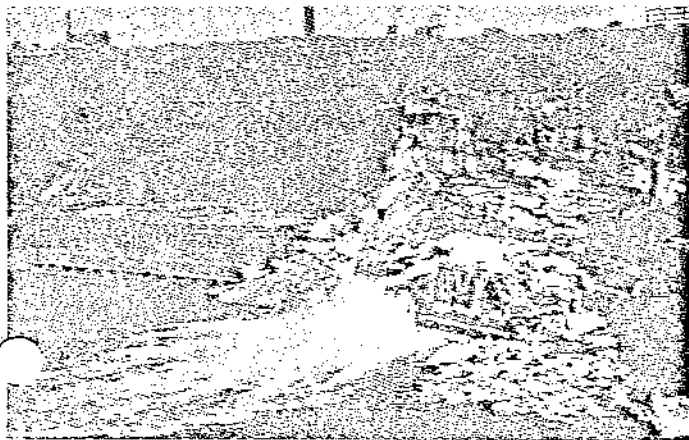
VE3ATI

Early Power at Niagara

Coureurs-de-bois, forced to portage around the 'Great Falls', marvelled at the huge cataracts, and a Jesuit, Father Hennepin, wrote of the great beauty, rumbling noise and the "power and majesty of the Lord."

Power from the Niagara River began in the 18th century; first with water driven saw mills, grist mills and then with water driven turbines which by means of shafts, belts and pulleys, turned industrial machinery.

As more and more independents hooked up to the river, the U.S. side became honeycombed with water tunnels and canals. Engineers believe these hidden and forgotten water courses were a contributing factor in the collapse of the large Schoellkopf Generating Station, which fell into the river in 1956.



Schoellkopf Plant Collapse - 1956

Mechanical to Electrical

The change from mechanical power to electrical came in 1881. Three names spring out of the past: Schoellkopf, who built a small generating station; and Brush, who constructed an electric generator for arc lights at Niagara.

The electricity to run the Brush Generator was supplied by Schoellkopf's little power plant and so was born one of the first hydro-electric generating and distribution systems anywhere in the world.

Direct Current

The Brush Generator produced enough power to operate 16 arc lights, using direct current.

The market for electricity at Niagara was limited, but a major shipping and industrial centre existed at Buffalo, about 20 miles away.

At that time, with the direct current system, it was impossible to deliver electricity from Niagara to Buffalo.

The Third Man

The transmission problem was solved by Nicola Tesla with alternating current and in 1895, the Niagara Falls Power Company ordered dynamos, transformers and transmission line hardware.

Almost unnoticed, the system went into operation in 1896.

The Second Revolution

The first industrial revolution is credited to the steam engine of James Watt. The electricity flowing through power lines to Buffalo marked the second industrial revolution - greater in its effects than the first.

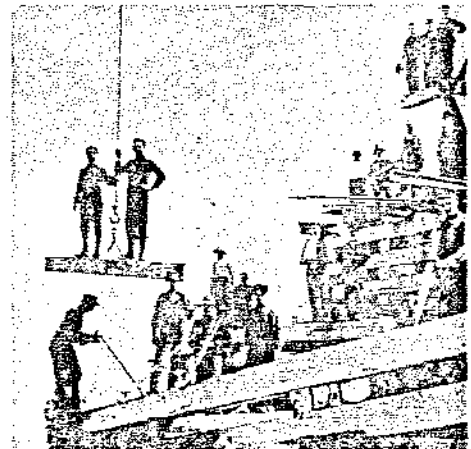
Now, electricity could be generated and transmitted to serve the social, agricultural and industrial needs of a new society.

Power Plants

With distance transmission a reality, the investment and engineering world descended on the Niagara Peninsula.

American, Canadian and British businessmen formed companies and acquired leases for the diversion of waters from the Niagara River and Welland Canal.

Using water from the Welland Canal, Hamilton interests first received power from their DeCew Falls Generating Station near St. Catharines in 1898, a distance of 35 miles (1930).



Toronto Power G.S. Construction - 1900

On the Niagara, generating stations were constructed, delivering power around the turn of the century: Canadian Niagara Power (U.S.) 1905; Ontario Power, 1905 (1917); and Toronto Power, 1906 (1922) (1944).

The Toronto Power Plant was purchased by Hydro in 1922 and closed in 1944. The Ontario Power Generating Station was purchased in 1917 and still generates 25 cycle power, along with 4 units at the Queenston-Chippewa Development on the lower Niagara River. The U.S. owned Canadian Niagara Power Company now allows Ontario Hydro to use its water diversion supply and is refunded its electricity, generated by the more efficient Ontario Hydro units.

Private vs. Public Power

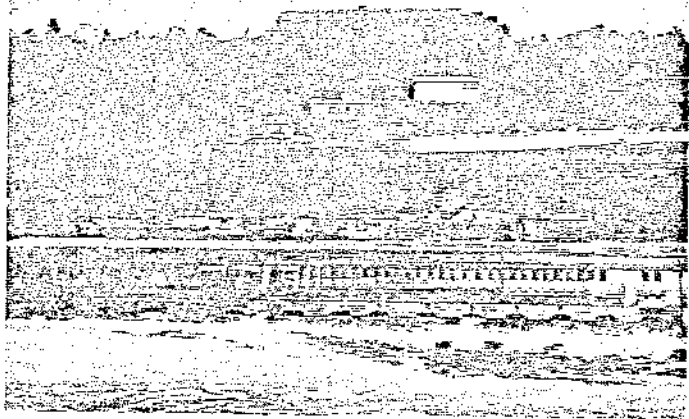
The generation, distribution and sales of electricity by private companies were opposed by factions wanting a publicly-owned, province-wide utility system.

Sixteen municipalities met to start a public power system, and seven entered an agreement to appoint commissioners.

In 1903, Guelph, Ingersoll, Woodstock, Stratford, Brantford, Toronto and London signed the documents

5 Years Young!

for the establishment of a system in Ontario for "cheap power". London was represented by its Mayor, Adam Beck.



Ontario Power G.S.
Niagara River - 1905

Adam Beck

Beck was a natural leader and he led the public power group through the many skirmishes, battles and almost bloody war to achieve the goal of people ownership of a provincial power utility, supplying electricity to the municipalities, farmers and industrial users.

On May 14, 1906, a bill for a publicly-owned power system was passed and on June 7, 1906, the first commission of Adam Beck, J. S. Hendrie and Cecil B. Smith was appointed.

Crazy Canucks

One of the Beck promises was the transmission of electricity from Niagara Falls to the City of Toronto, supplying municipalities en route.

The Hydro Engineering Department advised Chairman Beck that they could build a line at 110,000 volts for about three and a half million dollars.

Beck and his young Canadian engineers were ridiculed world wide.

Not only was it impossible to transmit electricity at such a high voltage, but the estimated cost supplied by the engineers was judged to be ridiculous.

The Canadian engineers were called foolish, young whippersnappers and crazy canucks.

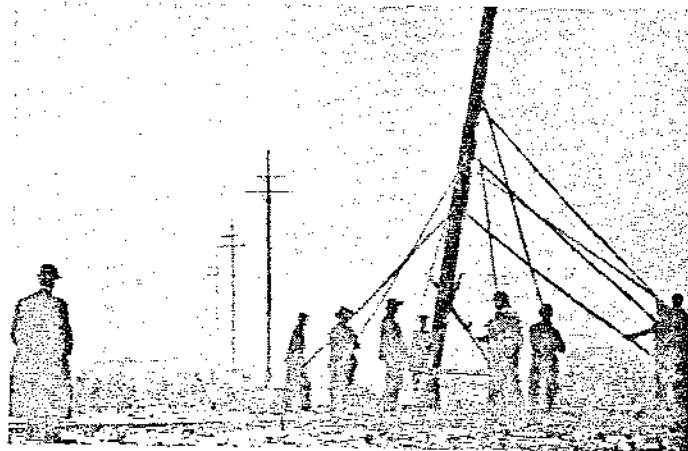
Actual construction of the line was left to Fred A. Gaby and Harry Acres. The Engineering Department designed new type insulators, a new steel reinforced aluminum cable (A.C.S.R.) and the line was built.

Niagara electric power was supplied to Berlin (Kitchener) in 1910, and to Toronto in 1911.

First Hydro G.S.

While the Commission had purchased completed generating stations, the first built by the young power authority was at Wasdell Falls. Placed in service in 1914, the station was retired in 1955.

A prefabricated 156 kilowatt generating station called a mini-hydel is now being tested at this site on a three year program.

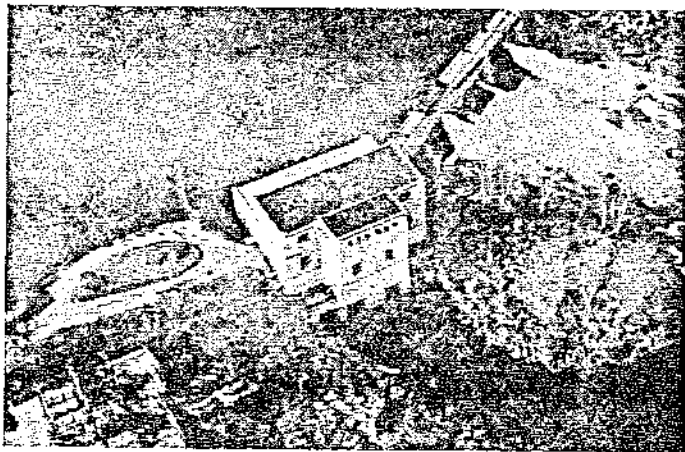


Line Construction - Early 1900
Foreman with First Hard Hat (Derby)

The Big One

Estimated at twenty-four million dollars for 300,000 kilowatts, the Queenston-Chippewa Generating Station, on the lower Niagara River, was upgraded to 414,000 kilowatts at a staggering eighty million dollars.

When the water from the upper river flowed through the first of ten units in 1922, a large sign lit up to announce - "The Largest Hydro-Electric Plant in the World - Ultimate Capacity - 650,000 horsepower".



Wasdell Falls G.S. on the Severn River - 1914

More Building - War - Shortages

The addition of new stations and lines continued, but slackened off during the war years of 1939 - 45.

With the war over, demands for electric power increased and Hydro struggled to supply its customers, while building much needed facilities.

Through a mutual aid system, needed power was purchased from neighbouring utilities and repaid in later years with sales to these utilities.

(Continued on Page 10)

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Peace, Water and Coal

Hydro planned the last of the large hydraulic sites and the first of its thermal stations, while keeping a watchful eye on happenings at a place called Chalk River.

The water diversion treaty at Niagara with the U.S. in 1950 allowed the building of the 1,400,300 kilowatt Sir Adam Beck Generating Station II on the lower Niagara River, coming into service in 1954.

The treaty gives power authorities in New York and Ontario an added benefit by the reduction of the volume of water going over the falls at night and in the winter, allowing for pump/storage/generating reservoirs on both sides of the border.

Planned by Adam Beck in 1917, the Robert Saunders 912,000 kilowatt station on the St. Lawrence River near the historic Long Sault rapids was finally started up in 1958.

Two coal-fired stations were put into service in 1951, the 1,200,000 kilowatt Hearn plant in Toronto and the 264,000 kilowatt Keith plant in Windsor, now mothballed.



Sir Adam Beck G.S. #1 (1922) and #2 (1954) with pump/storage reservoir - Niagara River

The 22 megawatt nuclear generating station achieved full power in 1962.

Douglas Point N.G.S.

Started while the Nuclear Power Demonstrator was still under construction, the 220 megawatt station, owned by AECL and operated by Ontario Hydro, produced power in 1967 and was the forerunner of the much larger Pickering and Bruce Nuclear Power Stations.

Bruce Heavy Water

To supply Canadian reactors (CANDU) with the heavy water (D2O) needed, the first heavy water plant was commissioned in 1973 by AECL and purchased by Hydro in 1974.

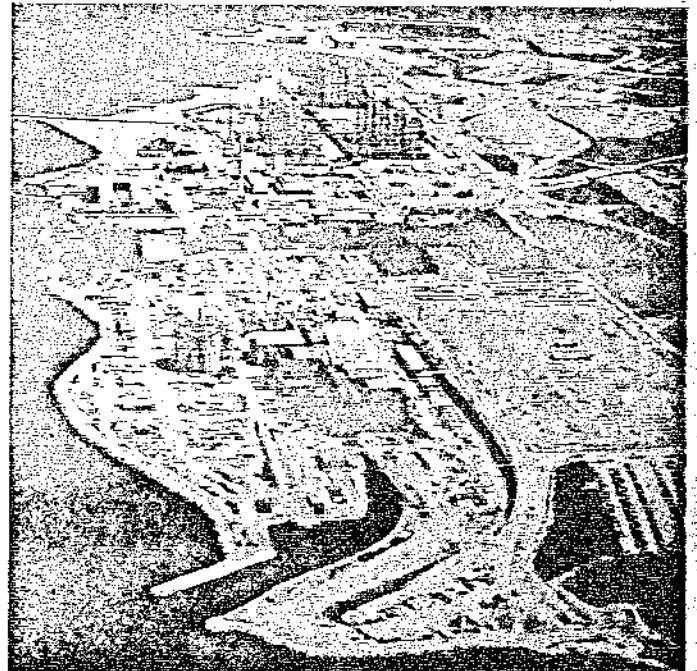
A second heavy water plant is being commissioned on the same site and a third is mothballed.

Pickering, Bruce and Darlington

The Pickering Nuclear Generating Station 'A' east of Toronto produced power in 1971 and with 'B' will total eight 542 megawatt units.

The Bruce Nuclear Generating Station 'A' produced first power in 1977 and with the 'B' plant will total eight 791 megawatt units.

Construction of the Darlington Nuclear Generating Station was started in 1977 and will total four 881 megawatt units.



The Bruce Nuclear Power Development

Future

With the exciting possibilities of multi-energy supply to industry, agriculture and aquaculture at the Bruce Nuclear Power Development, the Ontario Hydro team, those "young whippersnappers" and some not so young, still hold high the motto:

DONA NATURAE PRO POPULO SUNT.

ZEEP-NRX-NRU

With other coal-fired plants under construction, Hydro was aware of the success of scientists, engineers and mathematicians at Chalk River.

An atomic pile called ZEEP (Zero Energy Experiment-Pile) went critical in 1945 followed by research reactors NRX in 1947 and NRU in 1957.

Working with AECL and CGE, Ontario Hydro stepped into the nuclear age with the decision to build a Nuclear Power Demonstrator at Rolphton.