

I AM DELIGHTED TO HAVE BEEN INTRODUCED BY A FELLOW ENGINEER,  
WHICH IS MOST FITTING FOR THIS OCCASION, AND NOT BY A  
BUREAUCRAT OR AN ECONOMIST WHICH HAS OFTEN BEEN THE CASE FOR ME  
IN THE PAST. IN THOSE CIRCUMSTANCES, I HAVE ASKED WHAT THE  
DIFFERENCE IS BETWEEN A DEAD CAT AND A DEAD ECONOMIST OR  
BUREAUCRAT LYING ON THE SIDE OF THE ROAD. THE ANSWER, OF  
COURSE, IS THAT THERE ARE SKID MARKS IN FRONT OF THE DEAD  
CAT!!

## CANADIAN ENGINEERING - THE NEXT ONE HUNDRED YEARS

LADIES AND GENTLEMEN, HONOURED GUESTS, FRIENDS AND COLLEAGUES; AS YOU KNOW, 1987 IS THE YEAR OF THE ENGINEERING CENTENNIAL IN CANADA.

ENGINEERS FROM ALL OVER THE COUNTRY ARE NOW CELEBRATING THE 100TH ANNIVERSARY OF ENGINEERING AS AN ORGANIZED PROFESSION IN CANADA.

FOR MANY MONTHS NOW, THE ENGINEERING CENTENNIAL BOARD, ITS MANY COMMITTEES, PROVINCIAL ENGINEERING ASSOCIATIONS AND SPECIALIZED TECHNICAL CORPORATIONS HAVE BEEN AT WORK ON PREPARATIONS FOR THIS GREAT EVENT, WITH THE CLOSE COOPERATION OF PRIVATE INDUSTRY AND VARIOUS PUBLIC BODIES.

UNDER THE THEME; 'MIND, HEART AND VISION; CANADIAN ENGINEERING; THE NEXT 100 YEARS, 'A MYRIAD OF ACTIVITIES AT THE REGIONAL, NATIONAL AND EVEN INTERNATIONAL LEVELS HAS BEGUN TAKING PLACE ACROSS CANADA. THESE ACTIVITIES SHED LIGHT ON THE MAJOR ROLE OF ENGINEERING IN THE DAILY LIFE OF ALL CITIZENS, AS WELL AS TAKING A LOOK AT FUTURE PERSPECTIVES. THUS, WE ALL WILL HAVE A GLIMPSE OF THE CURRENT STATE OF AFFAIRS IN THE MANY VARIED DISCIPLINES OF ENGINEERING.

THE FILM WE ALL JUST VIEWED CALLED THE "INVISIBLE PROFESSION" HAS CERTAINLY OUTLINED THE FACT THAT ENGINEERING PERMEATES OUR DAILY LIVES. I WOULD LIKE TO TAKE THIS OPPORTUNITY TODAY TO ILLUSTRATE THIS EVEN FURTHER. BUT BEFORE DOING THAT I WOULD LIKE TO REVIEW

FOR YOU THE BACKGROUND OF THE ENGINEERING CENTENNIAL YEAR.

THE CENTENNIAL THAT ALL CANADIAN ENGINEERS ARE CELEBRATING IS MORE PRECISELY THAT OF THE FOUNDING IN MONTREAL, IN 1887, OF THE CANADIAN SOCIETY FOR CIVIL ENGINEERING.

NEARLY ALL OF THE ACTIVITIES OF ENGINEERING PRACTICED IN CANADA HAVE THEIR ORIGINS IN CIVIL OR MILITARY ENGINEERING.

THUS, WHEN THE NAME OF THE SOCIETY WAS CHANGED TO THAT OF THE ENGINEERING INSTITUTE OF CANADA, IN 1918, THE PROFESSION WAS SPREADING OUT TO ENCOMPASS OTHER DISCIPLINES. THE NEW NAME ALSO MORE ADEQUATELY REFLECTED THE WORK ACCOMPLISHED BY SPECIALIZED ENGINEERS IN A COUNTRY IN FULL GROWTH. BEGINNING IN 1920, LAWS REGULATING ENGINEERING WERE ADOPTED IN SIX CANADIAN PROVINCES AND LATER IN THE REMAINING PROVINCES AND TERRITORIES.

THE YEAR 1925 SAW THE FOUNDING OF THE ASSOCIATION OF CONSULTING ENGINEERS OF CANADA. THIS ASSOCIATION TODAY HAS SOME 850 MEMBER FIRMS AND REPRESENTS MORE THAN 150 SPECIALTIES.

SEVERAL YEARS LATER, IN 1936, THE DOMINION COUNCIL OF PROFESSIONAL ENGINEERS WAS FOUNDED CHANGING ITS NAME TO CANADIAN COUNCIL OF PROFESSIONAL ENGINEERS IN 1957. I HAVE THE DISTINCT HONOUR AND PRIVILEGE TO SERVE AS THE PRESIDENT OF CCPE BEGINNING IN MAY. IT IS A FEDERATION OF THE 12 PROVINCIAL AND TERRITORIAL

ASSOCIATIONS WHICH LICENSE ALL PROFESSIONAL ENGINEERS ACROSS CANADA.

BY CELEBRATING THE CENTENNIAL OF THE ENGINEERING INSTITUTE OF CANADA, WE ARE ALSO TURNING THE SPOTLIGHT ON 100 YEARS OF PROFESSIONAL ENGINEERING IN CANADA. AND SO TO BETTER HIGHLIGHT THIS EVENT, MEMBERS OF THE THREE MAJOR ASSOCIATIONS WHOSE ORIGINS I HAVE JUST DETAILED, CAME TOGETHER AND CREATED THE ENGINEERING CENTENNIAL BOARD INC.

TO SHOW THE TRUE COLORS OF THE CENTENNIAL, THE BOARD SELECTED THE THEME MIND, HEART AND VISION; CANADIAN ENGINEERING; THE NEXT 100 YEARS. THUS, WE SITUATED THE YEAR UNDER THE SIGN OF THE FUTURE; BUT THIS FUTURE MUST REFLECT THE HIGHEST QUALITIES OF THE MEN AND WOMEN WHO WILL BUILD IT, FOR THE GREATER GOOD OF SOCIETY.

THE FUTURE OF ENGINEERING IS INTIMATELY LINKED TO THAT OF CANADIAN SOCIETY, MIND, HEART AND VISION CONSTITUTE, IN THIS SENSE, THE VERITABLE FOUNDATIONS OF THE COMMITMENT OF CANADIAN ENGINEERS TO SOCIETY.

IN ORDER TO PLACE ENGINEERING IN ITS PROPER PERSPECTIVE, AND TO BE ABLE TO OUTLINE TO YOU SOME OF THE CONCERNS I HAVE FOR THE FUTURE, I WOULD LIKE BRIEFLY TO GO OVER THE PAST AND LOOK AT THE PRESENT. THE WAY I'VE CHOSEN TO DO THIS TODAY IS TO REFER TO THE TEN MOST REPRESENTATIVE FEATS OF CANADIAN ENGINEERING OVER THE

LAST 100 YEARS. THESE ACHIEVEMENTS WERE ANNOUNCED BY PRIME MINISTER BRAIN MULRONEY AT THE INAUGURATION OF THE CANADIAN ENGINEERING CENTENNIAL, IN OTTAWA, ON JANUARY 22.

A COMMITTEE OF THE ENGINEERING CENTENNIAL BOARD, CHAIRED BY JURY PRESIDENT JAMES W. MACLAREN, P.ENG., A CONSULTING ENGINEERING FROM TORONTO, SELECTED FROM MORE THAN 100 PROJECTS SUBMITTED BY CANADIAN ENGINEERS TEN ENGINEERING ACHIEVEMENTS SELECTED ON THE BASIS OF INNOVATIONS THAT HAD THE GREATEST IMPACT ON THE DEVELOPMENT OF OUR COUNTRY.

AS AN AEROSPACE ENGINEER, I AM DISAPPOINTED THAT NEITHER THE AVRO ARROW, THE ORENDA ENGINE SERIES, NOR THE PRATT AND WHITNEY AIRCRAFT COMPANY PT-6 WERE NOT SELECTED. HOWEVER THAT'S AN AEROSPACE ENGINEER'S POINT OF VIEW AND WE ALL HAVE OUR FAVOURITES. I HAVE CHOSEN TO GROUP THEM UNDER THE THREE SECTORS OF TRANSPORTATION, ENERGY AND COMMUNICATIONS. I DRAW YOUR ATTENTION TO THE FACT THAT NOT ONLY DID THEY INDIVIDUALLY AND COLLECTIVELY CONTRIBUTE TO THE DEVELOPMENT OF OUR COUNTRY, BUT ALSO THEY ULTIMATELY HAD A SPIN-OFF EFFECT INTO OTHER INITIATIVES AT HOME AND ABROAD.

TRANSPORTATION SECTOR:

- THE DEVELOPMENT OF THE RAILWAY NETWORKS ACROSS CANADA
- THE BUILDING OF THE ST-LAWRENCE SEAWAY
- THE DE HAVILLAND BEAVER AIRCRAFT

- THE BOMBARDIER SNOWMOBILE

ENERGY SECTOR;

- THE ENGINEERING ACHIEVEMENTS OF HYDRO QUEBEC
- THE DEVELOPMENT OF THE ATHABASCA OIL SANDS
- THE CANADIAN NUCLEAR POWER SYSTEM
- THE PETRO CHEMICAL COMPLEX OF POLYSAR LIMITED IN SARNIA

COMMUNICATIONS SECTOR;

- THE ALOUETTE SATELLITE
- THE CREATION OF THE TRANS CANADA TELEPHONE SYSTEM

THE PRIME MINISTER TOLD THE INVITED GUESTS AT THE INAUGURATION  
EXPERTISE IS NOW BEING UTILIZED IN THE SOVIET UNION AND CHINA  
THE SAME HOLDS TRUE FOR OUR NUCLEAR POWER SYSTEMS. THE CANDU  
NUCLEAR REACTOR SYSTEM HAS ACHIEVED WORLD-CLASS DISTINCTION AS A  
COST COMPETITIVE, SAFE REACTOR WITH <sup>A</sup>THE FUEL CYCLE THAT DOES NOT  
REQUIRE ENRICHMENT, AND HAS THE SPECIAL FEATURE OF ON-LINE  
REFUELING. IN THE ENERGY SECTOR, THE ATHABASCA OIL SANDS HAVE  
PROVIDED TO CANADA A HIGH LEVEL OF SECURITY OF OIL SUPPLY.

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CEREMONIES IN OTTAWA THAT "IT WOULD BE IMPOSSIBLE TO IMAGINE THIS COUNTRY WITHOUT THE DARING AND COURAGE OF THE MANY ENGINEERS WHO BUILT IT. THE WORD 'EXCELLENCE' IS ALWAYS ASSOCIATED WITH CANADA'S ENGINEERS." MR. MULRONEY THEN WENT ON TO SAY THAT "ENGINEERS ARE ALWAYS ON THE CUTTING EDGE OF NEW TECHNOLOGY AND HAVE THE REPUTATION OF BEING INNOVATIVE AND HIGHLY SKILLED PROFESSIONALS."

TO MOST OF US, THESE ENGINEERING ACHIEVEMENTS ARE ALREADY RECOGNIZED AS BEING MAJOR ACCOMPLISHMENTS. WHAT I DRAW YOUR ATTENTION TO IS THE FACT THAT THEY HAVE SPAWNED NEW INDUSTRY.

WE ALL KNOW THAT THE DEVELOPMENT OF THE RAILWAY SYSTEMS ACROSS CANADA OPENED UP THE WEST AND RESULTED IN CANADA BEING TRULY "FROM SEA UNTO SEA". HOWEVER THE RAILWAY LAID THE FOUNDATION FOR THE DEVELOPMENT OF THE TELEGRAPH SYSTEM. ULTIMATELY THE TELEPHONE SYSTEM EVOLVED. WE NOW HAVE A NATION WIDE TRANS-CANADA MICROWAVE TELEPHONE NETWORK. AS A RESULT OF THESE ACHIEVEMENTS CANADIAN ENGINEERS BECAME LEADERS IN RELATED TECHNOLOGY TO THE POINT THAT TODAY WE ARE CALLED UPON AROUND THE WORLD TO DEVELOP TELECOMMUNICATIONS SYSTEMS. THIS EXPERTISE CONTRIBUTED TO CANADIAN ENGINEERS BECOMING WORLD RENOWN IN SATELITE COMMUNICATIONS.

WHILE THE BEAVER AIRCRAFT CONTRIBUTED TO THE OPENING UP OF THE NORTH, IT ALSO RESULTED IN THE CREATION OF NEW BUSINESSES AND INDUSTRY. MAX WARD BEGAN HIS OPERATION WITH THESE PLANES IN YELLOWKNIFE. HE SUBSEQUENTLY EXPANDED HIS OPERATION AND TODAY RUNS A MAJOR INTERNATIONAL AIRLINE.

CANADIAN HYDRO ELECTRIC PROJECTS ARE SIGNIFICANT IN THEIR OWN RIGHT. WHAT BECOMES EVEN MORE IMPRESSIVE IS THE FACT THAT SUCH CANADIAN

*expertise is now being utilized in the CANDU reactor here. The*

SAME HOLDS TRUE FOR OUR NUCLEAR POWER SYSTEMS. THE CANDU REACTOR IS RECOGNIZED TO BE AT THE FOREFRONT AROUND THE WORLD.

*modern system has fuel cycle that does not require uranium, and has the special feature of producing*  
IN THE ENERGY SECTOR, THE ATHABASCA OIL SANDS HAVE ASSURED OUR FUTURE OF INDEPENDENCE OF OIL SUPPLY.

*a high level of security*

THE DEVELOPMENT OF THE PETRO CHEMICAL INDUSTRY IN SARNIA HAS SPUN-OFF MORE THAN 2,000 NEW ENGINEERING PRODUCTS.

ENGINEERING HAS PLAYED A LEADING ROLE IN THE DEVELOPMENT OF OUR COUNTRY. BUT WHAT LIES IN THE FUTURE?

*What?*

THE DEVELOPMENT OF NEW CAPABILITY AND THE IMPROVEMENT OF WHAT WE ALREADY HAVE ARE BOTH BASED ON THE APPLICATION OF SPECIAL ENGINEERING KNOWLEDGE. DEVELOPING SUCH KNOWLEDGE IS AN ENGINEERING FUNCTION. AS WELL THERE ARE FORCES THAT ARE PUSHING AND PULLING RESEARCH TO THE FOREFRONT OF THE BUSINESS AND POLITICAL AGENDA.

IN CANADA THERE IS GOOD NEWS AND BAD NEWS. THE GOOD NEWS IS THAT WE ARE A RESOURCE-RICH NATION WITH WEALTH IN THE GROUND ALL AROUND US. THE BAD NEWS IS THAT WE ARE A RESOURCE NATION WITH <sup>OUR</sup> WEALTH <sup>STILL</sup> IN THE GROUND! WE HAVE BEEN ABLE TO ENJOY A HIGH STANDARD OF LIVING BECAUSE OF OUR FORESTS, OUR WATER, OUR ROCKS, AND OUR SOIL. ON THE OTHER HAND, AS THE WORLD MOVES TOWARDS A KNOWLEDGE-BASED ECONOMY, AND ITS COMMODITIES BECOME, RELATIVELY SPEAKING, LESS VALUABLE THAN NEW, KNOWLEDGE INTENSIVE PRODUCTS, WE ARE REQUIRED TO MAKE CHANGES. BUT IT IS VERY DIFFICULT TO CHANGE A SOCIETY WHOSE HABITS AND INSTITUTIONS ARE THOSE OF A RESOURCE PRODUCER. SUCH A COLONIAL TYPE