

R AND D IN CANADIAN INDUSTRY

FOR MY TALK THIS MORNING, I INTEND TO RESTRICT MY COMMENTS TO THE MANUFACTURING SECTOR OF CANADIAN INDUSTRY. WHILE THIS SECTOR HAS NO CORNER ON R AND D OR HIGH TECHNOLOGY, IT NEVERTHELESS IS THE SECTOR TO WHICH WE MUST TURN FOR THE CREATION OF JOBS FOR THE BURGEONING NUMBERS OF HIGHLY-EDUCATED YOUNG PEOPLE ENTERING OUR LABOUR FORCE. MANUFACTURING INDUSTRIES PROVIDE A MAJOR MARKET FOR THE TERTIARY OR SERVICE SECTOR OF INDUSTRY THUS CREATING A JOB MULTIPLIER EFFECT. MANUFACTURING BUSINESSES USE A WIDE RANGE OF SERVICES WHICH WERE FORMERLY FOUND WITHIN THE FIRMS' OWN OPERATIONS, BUT NOW ARE BEING OFFERED BY SEPARATE SERVICE COMPANIES CLASSIFIED IN THE TERTIARY SECTOR. FINALLY, CANADIAN MANUFACTURING IS IMPORTANT TO THE CANADIAN FORCES BECAUSE OF THE NEED FOR DIRECT SUPPORT, THE VITAL ROLE IT MUST PLAY IN THE MOBILIZATION BASE AND THE NEED FOR INDIGENOUS SKILLS, RESOURCES AND INDUSTRIAL PREPAREDNESS IN TIMES OF EMERGENCY.

THE STRUCTURE OF CANADIAN MANUFACTURING IS STRIKING BECAUSE OF THE LARGE NUMBER OF SMALL FIRMS COMPRISING THE SECTOR, AND BECAUSE OF THE LOW LEVEL OF TECHNOLOGY AMONG THE MAJORITY OF COMPANIES. OF THE APPROXIMATELY 32700 MANUFACTURING FIRMS IN CANADA, THE MEDIAN SIZE IS ELEVEN EMPLOYEES, AND 50% OF ALL

EMPLOYMENT IS IN FIRMS HAVING FEWER THAN 270 EMPLOYEES. ONLY ABOUT 2700 OF THESE FIRMS EMPLOY ANY ENGINEERS OR SCIENTISTS, THE MEDIAN SIZE OF UNIT BEING TWO ENGINEERS: AND ONLY 3% OF CANADIAN MANUFACTURING COMPANIES MAINTAIN ANY INTERNAL R AND D ACTIVITIES.

COMPARE THIS DATA WITH THE FACT THAT CANADIAN ENGINEERING SCHOOLS ALONE ARE GRADUATING APPROXIMATELY 4000 BACCALAUREATES A YEAR CURRENTLY, AND THE NUMBER IN THE PIPELINE NOW INDICATES THAT BY 1980, THERE WILL BE OVER 5800 BACHELOR GRADUATES IN ENGINEERING - AN INCREASE OF 45%. TECHNOLOGY STREAMS SHOW COMPARABLE GROWTH.

MANUFACTURING INDUSTRIES IN CANADA TODAY ARE IN SERIOUS TROUBLE. WHILE CURRENTLY THEY CONTRIBUTE SOME \$35 BILLION TO THE GROSS NATIONAL PRODUCT, (APPROXIMATELY 22%), AND EMPLOY SOME 2 MILLION PERSONS (20% OF THE LABOUR FORCE), IN 1975 CANADIANS IMPORTED \$26.5 BILLION OF MANUFACTURED GOODS, EQUIVALENT TO \$1150 PER CAPITA - THE HIGHEST LEVEL IN THE WORLD! THIS OFFSET OUR EXPORT EARNINGS PRINCIPALLY FROM RESOURCE PRODUCTS, AND CONTRIBUTED TO THE RECENT BALANCE OF PAYMENTS DEFICIT ON CURRENT ACCOUNT OF \$5 BILLION. IN "END PRODUCTS", THE DEFICIT HAS FALLEN PRECIPITOUSLY FROM A DEFICIT OF \$3 BILLION IN 1970 TO \$10.2 BILLION IN 1975 AND 1976. THE SINGLE LARGEST DEFICIT WAS IN MACHINERY - \$3.7 BILLION.

THE PROBLEMS CONFRONTING OUR MANUFACTURING INDUSTRY ARE COMPLEX AND MANY, THEY ARE CAUSED BY:

- THE REDUCTION OF TARIFFS THROUGH GATT AND OTHER AGREEMENTS,
- INCREASING LABOUR COSTS AND LIMITED DOMESTIC MARKETS,
- APPARENT APATHY BY THE GOVERNMENT POLICY MAKERS TOWARD MANUFACTURING INDUSTRIES,
- REDUCED PRODUCTIVITY PER WORKER AND A NEGATIVE ATTITUDE BY MANY TOWARD THE WORK ETHIC AND THE EASE OF WELFARE PAYMENTS,

THE ONLY WAY OUT OF THE DILEMMA IS THROUGH THE CREATION OF AN ENVIRONMENT CONDUCIVE TO THE NURTURING AND GROWTH OF IMPROVED INDUSTRIAL TECHNOLOGY, AND INDUSTRIES BASED ON NEW TECHNOLOGY. THE ESTABLISHMENT OF AN AUTONOMOUS CAPABILITY FOR TECHNOLOGICAL INNOVATION IN SELECTED SECTORS WILL HAVE TO UNDERLAY ANY NEW INDUSTRIAL STRATEGY FOR CANADA. WE NEED POLICIES THAT REWARD SUCCESS, TO ALLOW WELL-MANAGED AND PROFITABLE MANUFACTURING FIRMS TO GROW ULTIMATELY TO BECOME WORLD-SIZE INDUSTRIES.

SUCH OBJECTIVES CALL FOR LONG-TERM PLANNING OF A SCALE NEVER ATTEMPTED BEFORE IN CANADA. THEY DEMAND AN OVERHAUL OF CORPORATE TAX POLICIES. THEY SUGGEST A REVIEW OF GOVERNMENT

PURCHASING PRACTICES AT ALL LEVELS - FEDERAL, PROVINCIAL AND MUNICIPAL - TO BUY CANADIAN WHEREVER PRACTICAL, AND TO MUSTER CANADIAN PURCHASING POWER ABROAD TO PROVIDE OUR MANUFACTURING INDUSTRIES WITH MORE CLOUT IN THE INTERNATIONAL MARKETPLACE. POLICIES CONCERNING THE EXPORTING AND IMPORTING OF CANADIAN INDUSTRIAL TECHNOLOGY NEED TO BE ADDRESSED WITH THE OBJECTIVE OF MAXIMIZING THE BENEFITS TO CANADA.

BUT IT IS NOT MY PURPOSE HERE THIS MORNING TO FURTHER MY DIATRIBE ON CANADIAN INDUSTRIAL TECHNOLOGY POLICY. I WOULD LIKE TO DRAW UPON THE RESULTS OF A STUDY WE CONDUCTED IN 1975 ON DND INDUSTRIAL R AND D STRATEGIES AND POLICIES TO SHOW HOW DIFFICULT IT IS FOR AN OPERATING ENTITY OF GOVERNMENT TO MEET ITS OWN PROCUREMENT OBJECTIVES, WHILE AT THE SAME TIME SERVING THE CAUSE OF INDUSTRY WITHOUT THAT CAUSE BEING WOVEN INTO THE BASIC FABRIC OF ITS DEPARTMENTAL OBJECTIVES.

CANADA'S COMMITMENT TO NORTH AMERICAN DEFENCE AND TO NATO ASSURES A CONTINUING DEPARTMENTAL DEMAND FOR HIGH TECHNOLOGY SYSTEMS COMMENSURATE IN PERFORMANCE WITH AND COMPLEMENTARY TO PLANNED AND EXISTING EQUIPMENT IN THE DEFENCE FORCES OF OUR ALLIES. THE ROLES PLAYED BY THE CANADIAN DEFENCE FORCES EITHER IN THE PROTECTION OF CANADA OR WITH OUR ALLIES CALL FOR SYSTEMS NO LESS SOPHISTICATED THAN THOSE USED BY THE MUCH

LARGER DEFENCE FORCES OF OUR ALLIES. THE QUANTITIES REQUIRED BY CANADA, HOWEVER, ARE OFTEN INSUFFICIENTLY LARGE TO JUSTIFY THE NON-RECURRING COSTS ASSOCIATED WITH RESEARCH, DEVELOPMENT AND PRODUCTION OF MAJOR, COMPLEX SYSTEMS. CONSEQUENTLY, THE PRACTICE HAS BEEN TO PURCHASE SUCH SYSTEMS OFF-THE-SHELF FROM CONTRACTORS THAT HAVE HAD ACCESS TO THE MAJOR MILITARY MARKETS WHERE NON-RECURRING COSTS CAN BE SPREAD ACROSS A LARGER NUMBER OF UNITS.

WHILE THERE HAVE BEEN ARRANGEMENTS FOR PRODUCING SIGNIFICANT PORTIONS OF COMPLEX MILITARY SYSTEMS SUCH AS FIGHTER AIRCRAFT IN CANADA, THE RELATED R AND D BY AND LARGE HAS BEEN CONDUCTED ELSEWHERE - CERTAINLY SINCE THE ARROW IN 1959. FOR MILITARY SYSTEMS OF LESSER COMPLEXITY, AND CERTAIN SUBSYSTEMS SUCH AS AVIONICS EQUIPMENT, CANADIAN INDUSTRY DOES MAINTAIN A STRONG CAPABILITY IN R AND D, AND COMPETES SUCCESSFULLY IN WORLD MARKETS.

THE REALITY OF THE PRESENT SITUATION IS THAT:

- CANADA IS NOT MILITARILY INDEPENDENT, AND CARRIES A COMMITMENT IN NORTH AMERICAN DEFENCE AND WITH NATO, REQUIRING CERTAIN STANDARDIZATION OF DEFENCE HARDWARE.
- MANY OFF-THE-SHELF MILITARY SYSTEMS AND EQUIPMENTS MEETING CANADIAN REQUIREMENTS ARE AVAILABLE ELSEWHERE AT LOWER DIRECT COST TO DND, AND AT LESS RISK.

- CANADIAN INDUSTRY NOW LACKS THE CAPABILITY AND CAPACITY FOR MANAGING THE DESIGN AND DEVELOPMENT OF MAJOR WEAPON SYSTEMS, BUT IS SLOWLY REGAINING GROUND IN THIS CONNECTION.
- THE SIZE AND OWNERSHIP STRUCTURE OF DEFENCE - RELATED CANADIAN INDUSTRY, WITH SOME NOTABLE EXCEPTIONS, RESULTS IN AN R AND D CAPABILITY THAT IS NOT WELL MATCHED TO DND NEEDS.
- THE TECHNOLOGICAL STRUCTURE OF CANADIAN DEFENCE INDUSTRIES HAS BEEN MOULDED MORE BY THE MILITARY EXPORT MARKET THROUGH DITC THAN BY DND.

DESPITE THESE FACTS, DND DOES USE HIGH TECHNOLOGY CANADIAN INDUSTRY TO ACHIEVE SEVEN PURPOSES:

1. TO DESIGN, DEVELOP AND SUPPLY NEW MILITARY HARDWARE WHERE A WORLD-CLASS INDUSTRIAL CAPABILITY HAS BEEN ACHIEVED.
2. TO EFFECT DESIGN CHANGES AND MODIFICATIONS TO EQUIPMENT BOUGHT ELSEWHERE.
3. TO PERFORM SUBCONTRACT WORK ON MAJOR DEFENCE SYSTEMS PURCHASED ABROAD TO MAXIMIZE CANADIAN CONTENT, AND TO UNDERTAKE OTHER OFFSET MILITARY CONTRACTS SO AS TO PERMIT DND THE OPTIONS IT NEEDS IN BUYING MILITARY EQUIPMENT FROM OTHER COUNTRIES.

4. TO PERFORM WARRANTY, REPAIR AND OVERHAUL SERVICES AND PROVIDE SPARES FOR EQUIPMENT IN INVENTORY.
5. TO CONDUCT CONTRACT RESEARCH.
6. TO CONDUCT CONTRACT DEVELOPMENT LEADING TO PROTOTYPE AND LIMITED-QUANTITY PRODUCTION.
7. TO CONDUCT IN-DEPTH ANALYSES AND STUDIES WHERE DEPARTMENTAL RESOURCES ARE INSUFFICIENT.

THESE PURPOSES AMPLIFY THE RESEARCH, DEVELOPMENT, PROCUREMENT (RDP) FUNCTIONS NORMALLY ASSIGNED TO INDUSTRY. IN THIS (RDP) SEQUENCE, RESEARCH IS CONDUCTED MAINLY BY THE DRES (FORMERLY THE DEFENCE RESEARCH BOARD'S LABORATORIES) WITH SOME INDUSTRIAL SUPPORT, WHILE THE DEPARTMENT MUST DEPEND ENTIRELY ON INDUSTRY FOR DEVELOPMENT AND PROCUREMENT.

HIGH TECHNOLOGY INDUSTRIES SPONSOR THEIR OWN R AND D FOR THREE BASIC REASONS:

1. TO CREATE NEW OR IMPROVED PRODUCTS, PROCESSES OR SYSTEMS WITHIN EXISTING PRODUCT LINES.
2. TO MAINTAIN A TECHNICAL CAPABILITY FOR SUPPORTING PRESENT PRODUCT LINES.
3. TO EXPLORE AND ENTER NEW FIELDS OUTSIDE OF PRESENT PRODUCT LINES.

IN CANADA, R AND D FUNDS CAN BE AUGMENTED BY A NUMBER OF SHARED-COST PROGRAMS SUCH AS THOSE OFFERED BY DITC AND NRC.

R AND D PROJECTS ELIGIBLE FOR SUCH SUPPORT MUST MEET CERTAIN MARKETING, TECHNICAL AND MANAGEMENT CRITERIA DESIGNED TO SUPPORT CORPORATE-TYPE OBJECTIVES, FULLY-FUNDED R AND D PROJECTS LET BY OTHER GOVERNMENT DEPARTMENTS, INCLUDING DND, SUPPORT THEIR OWN DEPARTMENTAL MISSIONS AND OBJECTIVES.

CONTRACT R AND D IS PURSUED BY CANADIAN HIGH TECHNOLOGY COMPANIES INTERVIEWED DURING OUR STUDY IF IT

- SUPPORTS ONE OR MORE OF THE REASONS GIVEN FOR COMPANY-SPONSORED RESEARCH, OR
- CONTRIBUTES TO OVERHEAD COST RECOVERY IN THE TECHNICAL DIVISIONS OF THE COMPANY, WHETHER OR NOT IT SUPPORTS ANY OF THE REASONS GIVEN FOR COMPANY-SPONSORED RESEARCH, OR
- IS VIEWED BY THE COMPANY AS A BUSINESS IN ITS OWN RIGHT.

CONTRACT R AND D INVOLVES THE COMMITMENT OF CAPITAL AND HUMAN RESOURCES WITHIN THE FIRM WHICH OTHERWISE MIGHT BE DEPLOYED MORE DIRECTLY IN THE PURSUIT OF SHORTER-TERM CORPORATE OBJECTIVES, SUCH OPPORTUNITY COSTS ARE INCREASINGLY BEING WEIGHED IN CORPORATE DECISION MAKING, FEWER AND FEWER FIRMS ARE SHOWING INTEREST IN R AND D CONTRACTS UNLESS THEY ALIGN DIRECTLY WITH COMPANY GOALS, FOR CORPORATE SURVIVAL, SUCH GOALS MUST BE PROFIT RELATED SO THAT, WITH THE EXCEPTION

OF SOME SMALL FIRMS THAT USE CONTRACT RESEARCH AS A BUSINESS IN ITSELF, THERE NEEDS TO BE SOME HOPE OF PROFIT-BEARING PRODUCTION RESULTING FROM THE FIRM'S PARTICIPATION IN R AND D.

TO GIVE YOU SOME IDEA OF THE SCOPE OF DEFENCE INDUSTRIAL R AND D IN CANADA, A FEW FIGURES MIGHT HELP. UP TO THE MID-1960'S, DND WAS BY FAR THE LARGEST CONTRIBUTOR TO INDUSTRIAL R AND D OF ALL FEDERAL GOVERNMENT DEPARTMENTS. IN 1966, DND CONTRIBUTED 46.5% (\$35.1 M) OF THE TOTAL FEDERAL R AND D SUPPORT TO INDUSTRY. BY 1975, THE FIGURE HAD DROPPED TO 7.9% (\$13.2 M) AND NOW DITC CONTRIBUTES THE LARGEST SHARE AMOUNTING TO 57.7% (\$96.0 M). THUS IT IS NOT SURPRISING TO SEE LESS AND LESS INTEREST IN PERFORMING R AND D FOR THE DEPARTMENT. THE SUPPORT OF CANADIAN INDUSTRY IS NOT A PRIMARY DND OBJECTIVE, THUS IT IS NOT SURPRISING THAT THE REALITIES OF CANADIAN MANUFACTURING BECOME REFLECTED IN THE DEPARTMENT'S USE OF THAT SECTOR.

OF THE TOTAL R AND D PERFORMED BY ALL OF CANADIAN INDUSTRY IN 1971, AMOUNTING TO \$500 MILLION, A SURPRISING TWO THIRDS WAS PAID FOR BY INDUSTRY ITSELF, ONE QUARTER BY GOVERNMENT (BOTH FEDERAL AND PROVINCIAL); THE REMAINING FUNDS WERE FROM FOREIGN SOURCES. FIGURES FOR THE DEFENCE COMPONENT ARE NOT AVAILABLE.

WE ESTIMATED THE SIZE OF THE DEFENCE INDUSTRIAL R AND D BASE IN CANADA. BASED ON STATISTICS FOR THE FISCAL YEAR 1974-75, THE DEFENCE TECHNOLOGY BASE AMOUNTS TO ROUGHLY \$100 MILLION. IT CONTAINS ABOUT 3000 PERSONS INCLUDING 1000 PROFESSIONALS, SPREAD AMONG SUBSTANTIALLY 175 SEPARATE COMPANIES. A TOTAL OF 589 COMPANIES, HOWEVER, WERE INVOLVED IN RDP ACTIVITIES FOR THE DEPARTMENT IN 1975.

ANOTHER IMPORTANT INDUSTRIAL GROUP WITHIN THE HIGH TECHNOLOGY SECTOR IS THE SPACE INDUSTRY. STARTING WITH THE DESIGN AND MANUFACTURE OF THE ALOUETTE AND ISIS SERIES OF IONOSPHERIC RESEARCH SATELLITES, THE INDUSTRY NOW HAS REACHED THE \$30 MILLION ANNUAL SALES LEVEL, CLIMBING TO \$75 MILLION ANTICIPATED BY THE EARLY 1980's. INITIALLY, IT WAS A SMALL OFFSHOOT OF THE MILITARY INDUSTRIAL GROUP: BUT IT HAS BECOME A STAND-ALONE INDUSTRY CONCENTRATED NOW IN ONE COMPANY AND ITS FIRST TIER OF SUPPLIERS - SPAR AEROSPACE PRODUCTS LIMITED. TOTAL MANPOWER DIRECTLY INVOLVED IN SPACE CONSISTS OF ABOUT 430 ENGINEERS AND TECHNICAL SUPPORT PEOPLE - A NUMBER THAT WILL DOUBLE OVER THE NEXT FIVE YEARS.

ASIDE FROM MAJOR SUBCONTRACT ACTIVITY IN CANADA TO MEET TELESAT CANADA'S REQUIREMENTS, THE PRINCIPAL SPACE ACTIVITY NOW IN CANADIAN INDUSTRY IS THE REMOTE MANIPULATOR SYSTEM (RMS) BEING DEVELOPED AS CANADA'S CONTRIBUTION TO THE NASA SPACE SHUTTLE

PROGRAM. IT IS A \$90 MILLION PROGRAM OVER THE NEXT FIVE YEARS AND IS CREATING A NEW CANADIAN INDUSTRIAL INFRA-STRUCTURE. IT IS BEING DEVELOPED BY SPAR AS PRIME CONTRACTOR WITH CAE AND DSMA AS MAJOR SUBCONTRACTORS.

A THIRD HIGH TECHNOLOGY INDUSTRIAL SECTOR IS A RATHER LARGE GROUP OF RELATIVELY SMALL COMPANIES THAT SUPPORT CANADA'S RESOURCE INDUSTRIES. LED BY THOSE IDENTIFIED WITH GEOPHYSICAL EXPLORATION WHICH, AT BEST, IS A CYCLICAL BUSINESS, THE COMPANIES IN THIS LATTER GROUP RARELY EXCEED 100 EMPLOYEES, THEY ARE ESSENTIALLY SERVICE ORIENTED AND SUPPORT MAJOR PROJECTS LIKE THE TAR SANDS, BEAUFORT SEA DRILLING, OFFSHORE EXPLORATION AND OTHER LARGE-SCALE ACTIVITIES SUCH AS THE JAMES BAY POWER PROJECT. THESE COMPANIES IN ONE FORM OR ANOTHER HAVE BEEN AROUND A LONG TIME. IT IS JUST THAT THE NEW FRONTIER EXPLORATION ACTIVITIES HAVE MOVED TO MORE DIFFICULT REGIONS TO EXPLORE, REQUIRING HIGHER TECHNOLOGY TO SUPPORT THEM, AND ALSO THE ECOLOGICAL SENSITIVITIES OF THESE REGIONS HAVE REQUIRED MORE SOPHISTICATED TECHNIQUES TO RENDER THEM SAFER FROM MAN'S INTRUSIONS. IT IS NOT POSSIBLE TO ESTIMATE THE SIZE OF THE CANADIAN COMPONENT OF THIS THIRD SECTOR BECAUSE OF THE LARGE INPUT FROM THE U.S. AND FROM EUROPE TO SUPPORT THE NEW RESOURCE INDUSTRY PUSH.

IN CANADA THERE ARE SIGNS OF HORIZONTAL INTEGRATION IN THE HIGH TECHNOLOGY SECTOR. IN THE PAST, CANADIAN INDUSTRY, CERTAINLY THE AEROSPACE COMPANIES, HAVE BEEN SINGULARLY UNSUCCESSFUL IN EXPANDING THEIR BUSINESS TO NEW MARKETS. TODAY, HOWEVER, INITIATIVES ARE STILL BEING TAKEN. THE REMOTE MANIPULATOR SYSTEMS BEING DEVELOPED FOR THE SHUTTLE BY THE SPAR TEAM HAVE APPLICATION IN SUBMERSIBLES, NUCLEAR POWER STATIONS AND IN THE INDUSTRIAL MACHINERY FIELD. UNDERWATER USES OF THE RMS COULD BE IN DIRECT SUPPORT OF OFFSHORE OIL AND GAS. ANOTHER EXAMPLE OF HORIZONTAL INTEGRATION IS THE SONOBUOY TECHNOLOGY DEVELOPED BY HERMES ELECTRONICS IN DARTMOUTH, WHICH NOW IS BEING APPLIED TO A SERIES OF ELECTRONIC DATABUOYS FOR ENVIRONMENTAL MONITORING. HOPEFULLY, WE HAVE LEARNED SOME LESSONS FROM EARLIER FAILURES IN HORIZONTAL INTEGRATION AND THE NEW INITIATIVES WILL BE MORE SUCCESSFUL.

INCIDENTALLY, I HAVE LEFT OUT THE NUCLEAR INDUSTRY BECAUSE, UNTIL VERY RECENTLY, WORK IN THE FIELD HAS BEEN CONCENTRATED IN AECL AND ONTARIO HYDRO - BOTH GOVERNMENT-TYPE ORGANIZATIONS.

BEFORE CLOSING I WOULD LIKE TO TAKE A MOMENT TO GRIND AN AXE OR TWO. IN WALTER GORDON'S BOOK "STORM SIGNALS", HE PROVIDES THE FOLLOWING STATISTICS:

FOREIGN INVESTORS NOW CONTROL, IN CANADA:

58% OF ALL MANUFACTURING (MAINLY THE LARGER COMPANIES)

65% OF ALL MINING

99% OF PETROLEUM REFINING

74% OF OIL AND GAS

96% OF THE AUTOMOTIVE INDUSTRY

98% OF RUBBER

79% OF CHEMICALS

77% OF ELECTRICAL APPARATUS

A LARGE PART OF THE TOTAL SAVINGS OF CANADIANS IS USED IN EXPANDING FOREIGN CONTROL OF THE ECONOMY, AND 80 PERCENT OF THIS GROWTH IS CAUSED BY THE EXPANSION OF EXISTING FOREIGN SUBSIDIARIES WHICH ARE NOT TOUCHED BY ANY LEGISLATION. WHILE THERE ARE A NUMBER OF POTENTIAL CONTROL POLICIES THAT MIGHT BE APPLIED TO FOREIGN INVESTMENT, WE SEEMED TO HAVE TAKEN AN ULTRA TIMID AND IRRESOLUTE APPROACH IN DEALING WITH THE SITUATION.

THE MULTINATIONAL CORPORATIONS WHICH ACCOUNT FOR THE MAJOR PORTION OF FOREIGN OWNERSHIP HAVE EVERY RIGHT TO MOVE FROM COUNTRY TO COUNTRY MAXIMIZING PROFITS AND MINIMIZING COSTS. THEY SHOULD BE WELCOME IN CANADA, BUT THE GOAL WOULD BE TO EXTRACT THE MAXIMUM OF CONCESSIONS IN TERMS OF INVESTMENT IN CANADA AND EMPLOYMENT OF CANADIANS, WITHOUT DRIVING THEM

TO OTHER COUNTRIES. OUR BATTLE IS WITH OTHER NATIONS, NOT THE MULTINATIONALS WHO MERELY ARE THE MEDIUM FOR ATTRACTING CAPITAL AND THE JOBS AND PROSPERITY TO GO WITH IT. WE HAVE NOT YET TESTED HOW FAR WE CAN GO IN CONTROLLING OUR INDUSTRIAL DESTINIES AND FOREIGN INFLUENCE.

GROWTH OF SUCH HIGH-TECHNOLOGY FIRMS AS IBM, XEROX, TEXAS INSTRUMENTS AND POLAROID IN THE PERIOD 1945-75 AVERAGED AN ANNUAL RATE OF 16.5 PERCENT IN SALES, 10.8 PERCENT IN JOB CREATION. COMPARABLE INDUSTRIES IN CANADA HAVE NOT GROWN AT NEARLY THESE RATES AND SOME EVEN HAVE DECLINED. THE CAUSE HAS BEEN ATTRIBUTED TO ECONOMIC FACTORS SUCH AS THE SMALLNESS OF THE CANADIAN MARKET AND HIGH CANADIAN UNIT LABOUR COSTS (LOWER PRODUCTIVITY), BUT IN THE HIGH TECHNOLOGY SECTOR SUCH AS AEROSPACE AND ELECTRONICS, DELIBERATE GOVERNMENT POLICY IS TO BLAME.

THE FIGURES QUOTED ABOVE SHOW MANUFACTURING TO HAVE THE LOWEST FOREIGN INVESTMENT. AS MIGHT BE EXPECTED, IT IS THE SMALL, LOW-TECHNOLOGY COMPONENT OF MANUFACTURING THAT COMPRISES THE BULK OF THE CANADIAN-OWNED SEGMENT OF MANUFACTURING WITH A FEW EXCEPTIONS LIKE NORTHERN TELECOM AND SPAR.

I WOULD LIKE TO CONCLUDE BY REFERRING BACK TO THE EARLIER STATEMENTS CONCERNING THE GROWING NUMBER OF YOUNG, QUALIFIED ENGINEERS ENTERING THE LABOUR FORCE, AND THE HIGHLY FRAGMENTED STRUCTURE OF OUR MANUFACTURING INDUSTRY. BASED ON 1971 DATA,

OUR TOTAL LABOUR FORCE HAD ONLY 25 ENGINEERS PER 10,000 EMPLOYEES IN CANADA, COMPARED WITH ALMOST 2½ TIMES AS MANY IN THE U.S. A NATIONAL INDUSTRIAL TECHNOLOGY POLICY MUST BE AIMED AT REDRESSING THIS IMBALANCE IF THERE IS ANY HOPE FOR THE BULK OF THESE YOUNG PEOPLE TO ATTAIN THEIR PROFESSIONAL ASPIRATIONS.

I ALSO WOULD ARGUE THAT THERE IS A CASE FOR ALL GOVERNMENT DEPARTMENTS - FEDERAL, PROVINCIAL AND MUNICIPAL - TO REALIGN THEIR PRIORITIES TO BE CONSISTENT WITH THE NEED TO SUPPORT CANADIAN MANUFACTURING THROUGH THE EFFECTIVE DEPLOYMENT OF GOVERNMENT PURCHASING POWER.

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