

Esquisses biographiques

CARDE – CRDV – RDDC Valcartier

1945-2009

par

H.P. Tardif et Gabriel Otis

Avant-propos

Cette brochure a pour but de réunir sous une seule couverture, de courtes biographies d'anciens employés du CARDE/CRDV/RDDC Valcartier, dont principalement celles des chefs ou directeurs généraux et celles de quelques scientifiques qui y ont laissé leur marque. Elle a été réalisée par MM. Henri P. Tardif et Gabriel Otis.

Depuis sa retraite en 1990 comme Chef, CRDV, aujourd'hui RDDC Valcartier, M. Tardif a toujours continué de s'intéresser à l'histoire du Centre. Monsieur Otis, chef de la Section de la détection aérienne et en surface/optronique, au moment de sa retraite en 2005, s'est joint à lui pour entreprendre ce travail.

Cette compilation d'esquisses biographiques est une addition au capital de la connaissance du Centre et une autre contribution valable à son histoire. Nous tenons à féliciter les deux auteurs de cette initiative et à les remercier bien sincèrement pour le temps et la patience qu'ils ont consacrés à produire ce document.

La Direction

Préface

Dans le but de contribuer au capital de la connaissance du CARDE/CRDV/RDDC VALCARTIER et à sa conservation, nous avons pensé qu'il serait intéressant de rassembler dans cette brochure une série de biographies ou d'aperçus chronologiques de carrière d'anciens employés, dont celles des chefs ou directeurs généraux, celles de certains scientifiques qui ont eu des carrières remarquables au Centre, et de quelques autres qui se sont fait remarquer à l'extérieur après l'avoir quitté.

De plus, le Centre à son départ a démarré avec l'aide de nombreux scientifiques du Royaume-Uni dont certains avaient déjà une formation dans les domaines concernés : armement, explosifs, propergols, fusées et roquettes. Nous donnons quelques brèves notes les concernant, afin qu'ils ne soient pas complètement oubliés.

Ces biographies sont une source d'information sur les qualifications et la formation de ces employés du Centre et sur le niveau d'expertise requis. La politique d'embauche au Conseil de recherches pour la Défense à ses débuts, était d'employer les experts ayant l'expérience la plus pertinente. Par la suite, les nouveaux scientifiques au niveau d'entrée n'étaient choisis que parmi le premier dixième percentile de leur classe.

Cette compilation même très incomplète donne une bonne idée des personnages principaux qui y sont passés et pourra être utile à tous ceux intéressés à l'histoire de l'un des plus grands centres de recherches au Canada.

**Gabriel Otis
Henri P. Tardif**

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1) Biographies des chefs ou directeurs généraux

Depuis sa création en 1945 et jusqu'à nos jours, RDDC Valcartier a eu à sa direction, dix-sept Surintendants-Chefs, Chefs ou Directeurs-Généraux. Le Dr Poole était venu d'Angleterre en 1943 pour diriger l' *Explosives Experimental Establishment (EEE)* qui fut le noyau du CARDE lors de sa fondation en 1945. Cependant il décida de retourner en Angleterre à ce moment-là, et le Dr Rose du Conseil national des recherches fut nommé comme le premier *Chief Superintendent, CARDE*. Le tableau ci-dessous donne la liste des chefs depuis sa formation. Leurs biographies sont données dans les pages suivantes.

CHEFS ET DIRECTEURS GÉNÉRAUX 1945 CARDE / DREV / RDDC VALCARTIER 2010

Dr. H. Poole*	1943-1945
Dr. D. C. Rose	Mai 1945-octobre 1947
Dr. W. B. Littler	Octobre 1947-février 1949
Dr. C. Craig.	Juin 1949-octobre 1952
Dr. H. Barrett	Octobre 1952-novembre 1955
Brig. D. A. G. Waldock	Novembre 1955-mai 1959
Dr J. J. Green	Septembre 1959-juillet 1963
Dr. J. Léon L'Heureux	Août 1963-mars 1967
Dr. W.N. English	Mars 1967-juillet 1968
Mr. E. J. Bobyn	Septembre 1968-novembre 1972
Dr. A. Lemay	Novembre 1972-novembre 1976
Dr. G. W. Brownlee	Novembre 1976-août 1984
Dr. H. P. Tardif	Septembre 1984-janvier 1990
Mr. K. Peebles	Janvier 1990-juin 1992
Dr. J. Gilbert	Juin 1992-juillet 1995
Dr. R. S. Walker	Juillet 1995-1998
Dr. D. Faubert	1998-2006
Dr. Guy Vézina	2006 à ce jour

*Dr Poole était Directeur de EEE qui fut intégré au CARDE lors de sa fondation. Il retourna alors en Angleterre.

Donald Charles Rose

O. B. E. (1946), M. Sc., Ph. D., F. R. S. C.

- 1901 Born on April 17, 1901, in Prescott (Ontario)
- 1923 B. Sc., Queen's University (NRC bursary)
- 1924 M. Sc. (Eng. Physics), Queen's University (NRC studentship)
- 1924 Exchange Overseas Scholarship, Cambridge University
- 1927 Ph. D., Cambridge University
- 1927 Exchange Senior Studentship, Cambridge University and the Wills Physical Laboratory, Bristol
- 1929 Lecturer, Department of Physics, Queen's University
- 1930 Joins the National Research Council as Assistant Research Physicist
- 1938 Meets General McNaughton and orients his work towards National Defence problems such as projectile velocity measurements
- 1943 Is made Scientific Advisor to Chief of General Staff, DND and seconded to the Department of National Defence
- 1945 Chief Superintendent, Canadian Armament Research and Development Establishment, Valcartier, (Defence Research Board)**
- 1947 Principal Research Officer, Division of Physics, National Research Council
- 1961 Associate Director, Division of Pure Physics, National Research Council
- 1966 Retired from the NRC
- 1968 Consultant and Visiting Professor, Department of Physics, Carleton University
- 1971 Retirement
- 1988 Died on August 2, 1988 in Brockville, Ontario

Dr. Rose was Fellow, Cambridge Philosophical Society; member American Physical Society; President, Canadian Association of Physicists (1949-1950); chairman of UN Technical Committee on Outer Space (1959). In recognition of his scientific and organizational abilities, both during and after the war, he was appointed an Officer of the Order of the British Empire, a Fellow of the Royal Society of Canada, and received honorary degrees from a number of Canadian Universities.

References:

- 1) Canadian Who's Who 1964-1966 and 1993.
- 2) Donald Charles Rose 1901-1988, An Obituary by Ian McDiarmid

William Brian Littler

B. Sc., M. Sc., Ph. D.

- 1908 Born in England
- 1929 B. Sc., Manchester University
- 1930 M. Sc., Manchester University
- 1932 Ph. D., Manchester University
- 1932 Scientific Officer, Royal Arsenal, Woolwich
- 1947 Chief Superintendent, Canadian Armament Research and Development Establishment, Valcartier, (Defence Research Board)**
- 1949 Superintendent, Explosives Research and Development Establishment Waltham Abbey (Propellants & Explosives Research)
- 1952 Director, Ministry of Supply (Ordnance Factories)
- 1955 Principal Director, Ministry of Supply (Scientific Research Defence)
- 1956 Director General, Ministry of Supply (Scientific Research Munitions)
- 1960 Deputy Chief Scientist, Ministry of Defence (Army)
- 1965 Minister, British Embassy, Washington DC (Defence R&D)
- 1969 Chemist in Charge, Royal Ordnance Factory, Bridgwater (QA Directorate)
- 1972 Retirement
- 1999 Died in Sevenoaks, Kent, England

Dr. Littler graduated in Chemistry and was an Associate Fellow of the Institute of Chemistry GBI.

Reference: Biographical Database of the British Chemical Community 1880-1970, The Open University

Carleton Craig

B. Eng., M. Eng.

- 1913 Born in Ottawa (Ontario)
- 1930 B. A., McGill University
- 1934 B. Eng., McGill University
- 1935 M. Eng., McGill University
- 1936 William Scott Professor of Civil Engineering, McGill University
- 1940 Chief Ground Instructor, Elementary Flying Training School No 4, Joint Air Training Plan
- 1941 Technical Assistant to Director General Army Engineering Design Bureau, Department of Munitions and Supply, Ottawa
- 1945 Associate Professor of Civil Engineering and Vice-Principal of Dawson College, McGill University
- 1947 Chief Superintendent, Canadian Armament Research and Development Establishment, Valcartier, (Defence Research Board) (on loan from McGill University)**
- 1949 Associate Professor of Civil Engineering and Vice-Principal of Dawson College, McGill University

Carleton Craig was a member of the Corporation of Professional Engineers, P.Q., of the Engineering Institute of Canada, the American Society of Civil Engineers, the Franklin Institute of the State of Pennsylvania Sigma Xi, and of many other organizations.

Reference: Canadian Who's Who 1961-1963

Brig. Donald Albert Waldock

B. Sc.

- 1917 Born in Ramsgate (England)
- 1936 B. Sc. in Science and Electrical Engineering, University of London. (He is also a graduate from the Royal Military College of Science and Technology, Shrivenham, England)
- 1936 Installation and Maintenance Engineer, British Broadcasting Corporation
- 1939 Enlisted in Royal Corps of Signals and commissioned the following year
- 1940 Serves with the British War Office and British Army Staff, Washington, DC
- 1946 Joins the Royal Canadian Army as Major and Technical Staff Officer in the Directorate of Armament Development
- 1946 Appointed Deputy Director of Armament Development, Army HQ
- 1952 C. O. Canadian Armament Design and Experimental Establishment and Deputy Chief Superintendent Canadian Armament Research and Development Establishment
- 1955 Director Armament Development, Army HQ
- 1955 Seconded to Defence Research Board as Chief Superintendent, Canadian Armament Research and Development Establishment, Valcartier**
- 1959 Director of Strategic Studies, NDHQ Joint Staff
- 1961 Deputy Q. M. G. (Equipment Engineering)
- 1964 Director General Engineering (Land)
- 1966 Deputy Chief Engineer, Technical Services BR, NDHQ
- 19?? Retired from the Canadian Forces as a Lieutenant General
- 2003 Died on 24 March 2003

Reference:

- 1) Canadian Who's Who 1964-1966
- 2) Obituary in: "Old Manwoodian Association Newsletter", May 2003

Joseph John Green
M. B. E., B. Sc., D. I. C., Ph. D.

- 1905 Born in Portsmouth (England)
- 1928 B. Sc. (Physics), Royal College of Science, London University
- 1929 D. I. C. (Aeronautics)
- 1930 Aeronautical Research, National Research Council
- 1943 Chief Research Engineer, RCAF Test and Development Establishment
- 1945 Chief Research Aero. Engineering, Air Transport Board
- 1949 Chief, Division "B", Defence Research Board, and Scientific Advisor to Chief of Air Staff, RCAF
- 1955 Defence Research Member, Canadian Joint Staff and Defence Research Attaché, Canadian Embassy, Washington, DC.
- 1959 Chief Superintendent, Canadian Armament Research and Development Establishment, Valcartier**
- 1963 Director of Research, Litton Systems (Can) Ltd.
- 1971 Consultant

Dr. Green was a member of many scientific associations, advisory committees and boards, and he was the recipient of many awards. In 1943, he was awarded the MBE and in 1945, the King's Commendation for Valuable Service in the Air.

Reference: Canadian Who's Who 1984

Joseph Léon L'Heureux

B. A., B. Sc., M. A., D. Eng.

- 1919 Born in Gravelbourg (Saskatchewan)
- 1940 B. A., University of Ottawa (Mathieu College, Gravelbourg)
- 1944 B. Sc., University of Saskatchewan
- 1947 Joins the Canadian Armament Research and Development Establishment, Valcartier, as a Research Scientist
- 1948 M. A. (Electrical Engineering), Johns Hopkins University
- 1949 D. Eng., Johns Hopkins University
- 1949 Project Engineer on development of air-to air guided missile project Velvet Glove at CARDE
- 1952 Superintendent Guided Missile Wing, CARDE
- 1956 Deputy Chief Superintendent, CARDE
- 1960 Attends National Defence College, Kingston, Ontario
- 1961 Scientific Advisor to Chief of General Staff
- 1963 Chief Superintendent, Canadian Armament Research and Development Establishment, Valcartier**
- 1967 Vice Chairman, Defence Research Board, Ottawa
- 1969 Chairman, Defence Research Board, Ottawa
- 1977 Retires from the civil service
- 1999 Died on November 23, 1999 in Ottawa, Ontario

Dr. L'Heureux was an Officer in the RCCS 1943 to 1947, a member of the Science Council of Canada, President of ACFAS (Association canadienne-française pour l'avancement des sciences) 1969, member of Sigma Xi and of many other scientific associations.

References:

- 1) Canadian Who's Who 1993
- 2) Obituary - Ottawa Citizen (26 Nov. 1999) and Le Soleil (25 novembre 1999)

Edward Joseph Bobyn

B. Sc., M. E. E.

- 1921 Born in Krydor (Saskatchewan)
- 1944 B. Sc., University of Saskatchewan
- 1943 Served till 1947 with the Royal Canadian Corps of Signals as Lieutenant
- 1948 M. E. E., Johns Hopkins University
- 1948 Joins the Canadian Armament Research and Development Establishment, Valcartier, as Head, Instrumentation Section
- 1950 Deputy Superintendent, Guided Missile Wing
- 1955 Superintendent, Guided Missile Wing
- 1958 Superintendent, Systems Wing
- 1960 Chief of Systems Research, SHAPE Air Defence Technical Centre, Holland
- 1964 Chief Superintendent, Suffield Experimental Station, Ralston, Alberta
- 1968 Director-General, Defence Research Establishment Valcartier, Quebec**
- 1972 Deputy Chairman (Scientific) Defence Research Board
- 1974 Chief of Research and Development, Department of National Defence
- 1983 Retires from the Public Service
- 1983 Consultant, research and development
- 1995 Died on 16 May 1995 in Ottawa, Ontario

Mr Bobyn was a member of the Scientific Committee of National Representatives, SHAPE Technical Centre, of the NATO Advisory Group for Aerospace Research and Development, of the NATO Defence Research Group, of the Engineering Institute of Canada, the Association for Advancement of Science in Canada and of many other scientific associations. He was also a member of the Ukrainian Professional and Businessmen's Association, the Ottawa-Carleton Board of Trade, the Rotary Club, Sigma Xi, and Honorary Fellow of the Canadian Aeronautical and Space Institute. He was awarded the Queen's Silver Jubilee Medal 1977, the Centennial Medal 1967, and the C. V. S. M. & Clasp Victory Medal.

Reference: Canadian Who's Who 1994

André Lemay

B. Sc. A., D. Sc.

- 1927 Born in Sherbrooke (Quebec)
- 1951 B. Sc. A. (Chemistry), Laval University
- 1954 D. Sc. (Physical Chemistry), Laval University
- 1954 Joins the Canadian Armament Research and Development Establishment (CARDE) as a Research Scientist
- 1961 Group Leader, Radiation Physics, Aerophysics Division
- 1967 Section Leader, Hypersonic Physics, Aerophysics Division
- 1967 Attends National Defence College, Kingston Ontario
- 1968 Appointed Director, Aerophysics Division, Defence Research Establishment (DREV)
- 1971 Appointed Deputy Chief, DREV
- 1972 Appointed Chief Defence Research Establishment, Valcartier**
- 1976 Directeur Général, Institut national de la recherche scientifique (INRS), Université du Québec
- 1987 Retires from university service.

During his career at CARDE/DREV, Dr. Lemay was a member of numerous NRC and DRB committees related to plasma physics, and of the Board of Directors of INRS-Énergie 1970-1971. He was also a member of the Association canadienne-française pour l'avancement des sciences (ACFAS). As part of the Technical Cooperation Program involving Great Britain, the United States, Australia, New Zealand and Canada, Dr. Lemay represented Canada as Director of Sub-Group "D" on guided-missiles from 1968 to 1971.

After joining the Université du Québec, he was involved with numerous committees and boards of directors: member of the Assemblée des gouverneurs de l'Université du Québec (1976-1987), member of the Conseil d'administration de l'Institut Armand-Frappier (1976-1983), member of the Commission de planification de l'Université du Québec (1976-1987), member of the Conseil d'administration de la Conférence des recteurs et des principaux des universités du Québec (CREPUQ) (1978-1980), member of the Comité consultatif de l'Institut de génie des matériaux du Conseil national de recherches du Canada (CNR) (1978-1981), member of the Comité exécutif de l'Association des directeurs de recherche industrielle du Québec (ADRIQ) (1978-1981), member of the Conseil des recherches des Sciences et de génie du Canada (1991-1994), and president of the Groupe d'action pour le développement technologique et industriel de Québec (1985-1987).

Reference: Private communication

Wilmot Grant Brownlee

M. Sc., Ph. D.

- 1926 Born in Regina (Saskatchewan)
- 1944 Joins the Canadian Forces
- 1952 Active war service in Korea for two years with the Royal Canadian Horse Artillery
- 1956 M. Sc. (Mechanical Engineering), California Institute of Technology
- 1959 Ph. D. (Mechanical Engineering and Physics), California Institute of Technology
- 1959 Assigned to Defence Research Establishment Valcartier (DREV)
- 1964 Leaves the Canadian Forces as a Major, RCA, and joins the staff of the Defence Research Board
- 1968 Superintendent, Propulsion Division
- 1973 Appointed Deputy Chief, Defence Research and Development Valcartier
- 1978 Appointed Chief, Defence Research and Development Valcartier**
- 1984 Counsellor, Defence Research and Development, Canadian Defence Liaison Staff, Washington, DC.
- 1988 Retired from the public service
- 2007 Died on December 7, 2007 in Victoria, B.C.

Dr. Brownlee's field of research was solid propellant rocketry and combustion. He was a member of many scientific associations.

Reference: Obituary - The Globe and Mail (13 December 2007) and Le Soleil (13 décembre 2007)

Henri Pierre Tardif

B. Sc. A., M. Sc., Ph. D.

- 1925 Born in Ste-Hélène, Kamouraska County (Quebec)
- 1942 University Air Training Corps 1942-45, Canadian Officers Training Corps 1945-1948, RCE Chilliwack, Summer 1947
- 1948 B. A. Sc. (Metallurgy), Laval University
- 1950 M. Sc. (Metallurgy), Carnegie Institute of Technology, Pittsburgh, USA
- 1953 Ph. D. (Metallurgy), The University, Birmingham, England
- 1953 Joins the Canadian Armament Research and Development Establishment as Research Scientist
- 1955 Head, Materials Section
- 1966 Appointed Deputy Chief, Canadian Defence Research Staff, Canadian High Commission, London, England
- 1969 Director, Armaments Division, Defence Research Establishment Valcartier
- 1972 Attends National Defence College, Kingston, Ontario
- 1973 Appointed Assistant Chief, Defence Research Establishment Valcartier
- 1978 Appointed Deputy Chief, Defence Research Establishment Valcartier
- 1984 Appointed Chief, Defence Research Establishment Valcartier**
- 1990 Retired from the public service

Dr. Tardif was actively involved in the Canadian Institute of Mining and Metallurgy, the Canadian Council for Non-Destructive Testing Technology, the American Society for Metals and the Canadian Aeronautical and Space Institute as a member of their local chapters and numerous national committees. He was also a member of the Canadian Standards Association, the NRC Associate Committee on Aeronautical Structures and Materials, and the Groupe d'action pour l'avancement technologique et industriel de la région de Québec.

As part of the Technical Cooperation Program (TTCP) involving Great Britain, the United States, Australia, New Zealand and Canada, Dr. Tardif represented Canada as a member of the Materials Sub-Group and of the Armaments Sub-Group for many years. He is a Fellow of the Institute of Metal since 1968 and a Fellow of the American Society for Metals since 1970. He has a wide range of interests, including history and genealogy. Following his retirement he published three books and a few brochures concerning the history of the Establishment.

Reference: Ottawa's Senior Executives Guide 1987, Communications NovaPlus Inc.

Ken Peebles

B. Sc., M. Sc.

1940	Born in Winnipeg, Manitoba
1962	B.Sc. (Electrical Engineering), University of Manitoba
1987	M.Sc. (Electrical Engineering), University of Pennsylvania
1971	Joins the Defence Research Establishment Ottawa as a Defence Scientist in the field of electromagnetics
1981	Attends National Defence College, Kingston, Ontario
1982	Director, R&D Communications and Space at CRAD Headquarters
1986	Director, Electro-optics Division at Defence Research Establishment Valcartier
1990	Appointed Chief, Defence Research Establishment Valcartier
1992	Appointed Chief of Research and Development, Department of National Defence
2000	Appointed Director of the NATO R&T Agency in Paris.
2003	Retired

Mr. Peebles' international experience has been extensive. His involvement in NATO R&T has included both AGARD and the DRG (Defence Research Group) at all three levels of both organizations. He was Canadian National Leader of DRG Panel 8, Chairman of the AGARD Guidance and Control Panel, Canadian National Leader of the DRG, Canadian Member of the AGARD National Delegates Board, and Canadian Member of the RTB. In addition, he was a Principal of the TTCP Organization (comprising Canada, Australia, New Zealand, the United Kingdom and the USA) as well as Canadian Principal of seven bilateral defence R&D agreements. His other NATO experience which is worthy of note is Mr. Peebles' leadership of the task group which created the NATO R&T Strategy.

Jacques Gilbert

B. A., B. Eng., M. Eng., Ph. D.

- 1932 Born in Lac-au-Saumon, Matapédia County (Quebec)
- 1951 B. A., St. Dunstan's University, Prince Edward Island
- 1955 B. Eng. (Engineering Physics), McGill University
- 1955 Joins Canadian Aviation Electronics as a design engineer
- 1956 Accepts a research assistantship at McGill University
- 1957 M. Eng. (Electronics Engineering)
- 1957 Joins the Defence Research Establishment Valcartier (DREV) as a Research Scientist in the fields of radar countermeasures and microwave spectroscopy
- 1965 Is awarded a defence research scholarship at Laval University
- 1968 Ph. D. (Molecular Physics), Laval University and returns to DREV
- 1973 Attends National Defence College, Kingston, Ontario
- 1974 Appointed Director, Electro-optics Division, DREV
- 1985 Appointed Director, Energetic Materials Division, DREV
- 1989 Appointed Director, Command and Control Division
- 1990 Appointed Deputy Director General, DREV
- 1992 Appointed Director General, Defence Research Establishment Valcartier**
- 1995 Retired from the public service

Dr. Gilbert was Chairman of the Technical Cooperation Program (TTCP) (US/UK/CA/AU/NZ) Subgroup J (Electro-optics) and Canadian National Leader of NATO Panel IV (Optics and Infrared). He was a member of the Ordre des ingénieurs du Québec (OIQ), and of the Canadian Association of Physicists.

Reference: Private communication

Robert S. Walker

B. Sc., M. Sc., Ph. D.

- 1950 Born in Nova Scotia
- 1973 B. Sc. (Honours Physics), Acadia University
- 1975 M. Sc. (Engineering Physics), McMaster University
- 1977 Ph. D. (Electrical Engineering), McMaster University
- 1977 Scientific Officer, DREA, Halifax and Head Signal Processing Section
- 1990 Director, R&D Communications and Space at DRDC Headquarters
- 1993 Attends National Defence College, Kingston, Ontario
- 1994 Deputy Director General, Defence Research Establishment, Valcartier (DREV)
- 1995 Director General, DREV and Scientific Advisor Land, DND**
- 1998 Director General Research and Development Programs, DRDC Headquarters
- 2005 Assistant Deputy Minister (Science and Technology) DND, and Chief Executive Officer, Defence R&D Canada

Dr. Walker is the principal Canadian representative to the NATO Research and Technology Board (RTB) of which he has been Chairman as of April 2009. He is also the principal Canadian representative to the Technology Cooperation Program (TTCP). In addition, he provides departmental input to national issues in science and technology by sitting on a number of interdepartmental committees of assistant deputy ministers.

His achievements have been recognized by the international community in 2001 with a TTCP Personal Achievement Award, by the Deputy Minister in 2003 with a DM Commendation and by DRDC in 2005 with the Agency Performance Excellence Award.

Reference: Official DND communiqué

Denis Faubert

M. Sc., Ph. D.

- 1953 Né à Valleyfield, Québec
- 1970 Commission d'officier des Forces canadiennes, collège militaire royal de St-Jean
- 1975 B. Sc., Collège militaire royal de St-Jean
- 1977 M. Sc., Université Laval
- 1979 Officier d'entretien des télécommunications, Station des Forces canadiennes de Holberg, Colombie-Britannique
- 1980 Ph. D., Université Laval
- 1980 Scientifique militaire, CRDV
- 1983 Officier de télécommunications, BFC Shearwater, Nouvelle-Écosse
- 1984 Scientifique de la défense (radar), Centre de recherche pour la défense Ottawa
- 1987 Chef de groupe, Radars Doppler à impulsions, CRDO
- 1991 Chef de section, Systèmes électro-optiques passifs, CRDV
- 1995 Directeur intérimaire, Division de l'électro-optique et de la surveillance, CRDV
- 1995 Directeur général adjoint, CRDV
- 1998 Conseiller scientifique au Chef de l'état-major de l'Armée
- 1998 Directeur général, R et D pour la défense Canada – Valcartier**
- 2005 Directeur général du programme de R et D, R et D pour la défense Canada, Ottawa
- 2006 Chef d'état-major pour le Sous-ministre adjoint (S et T) – R et D pour la défense Canada Ottawa
- 2007 Directeur principal, Institut de recherche d'Hydro-Québec

Liste des récompenses et distinctions professionnelles :

- 2008 Prix Summa-carrière. Faculté des sciences et génie de l'Université Laval
- 2005 Prix du Sous-ministre de la défense pour l'innovation
- 2005 Prix Hommage - Fidéides de la Chambre de commerce de Sainte-Foy – Distinction d'équipe.
- 2004 Certificat d'excellence de la commission 'Sensors and Electronic Technology' (SET) de l'OTAN
- 2002 Finaliste – Prix de rayonnement hors Québec de la Chambre de commerce de Québec.
- 2001 Prix du Chef de la Fonction publique fédérale.
- 2001 Finaliste Fidéides de la Chambre de commerce de Sainte-Foy – Organisation publique/parapublique de l'année. Distinction d'équipe.
- 2000 Prix d'excellence en administration publique - Institut d'administration publique de Québec – Distinction d'équipe pour le développement des affaires au CRDV.
- 2000 Finaliste Fidéides de la Chambre de commerce de Sainte-Foy – Organisation. publique/parapublique de l'année. Distinction d'équipe.
- 1983 Certificat de mérite du Sous-ministre adjoint, Matériel. Pour contributions exceptionnelles au Centre de recherches pour la défense Valcartier.

Représentation internationale

- 2007- Membre du CA de l'International Electric Research Exchange
- 2007- Responsable Hydro-Québec pour le Comité international sur les grands réseaux électriques
- 2003-04 Président du Groupe de soutien en science des armées australienne, britannique, canadienne et américaine (ABCA)
- 2002-04 Président, Commission 'Capteurs et technologie électronique' (SET) de l'Organisation pour la recherche et la technologie de l'OTAN.
- 1999-02 Vice-président, Commission SET de l'OTAN.

Référence : Communication privée

Guy Vézina
B. Sc., M. Sc., Ph. D.

- 1963 Born in Québec City
- 1986 B. Sc. (Electrical Engineering), Laval University
- 1988 M. S. E. E. (Electrical and Computer Engineering), University of Massachusetts, Amherst.
- 1992 Ph. D., Australian National University, Canberra Center for Information Science Research, Canberra (Australia)
- 1988-92 Research Assistant at the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Canberra (Australia)
- 1989 Visiting Researcher, Carnegie Mellon University, Pittsburgh, USA
- 1992 Joins DREV
- 1994-97 Canadian Scientific Lead, BICES Team, NATO Shape Technical Center, Den Haag, Netherlands
- 1998 Section Head, Information and Knowledge Management Section
- 2003 Director Science & Technology C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance), managing the DRDC Valcartier C4ISR R&D Program, Ottawa
- 2006 Director General, DRDC Valcartier and Scientific Advisor for the Land Forces**

During his career Dr. Vézina initiated and managed several projects including Technology Demonstration Projects as well as industry-academia partnership projects. Some of these won nominations and awards for excellence (tel*WEB* project, a 2-year partnership between Absolu Technologies Inc., Québec-Telephone and DREV was finalist of the OCTAS Innovation 1998; the *Passport* Project, a 2-year partnership between DREV, ATS Aerospace and CRIM won the OCTAS Innovation 1996). As a scientist, Dr. Vézina also served as the Canadian scientific lead in the NATO BICES project.

Over the years he has been active with national and international organizations including the NATO Research & Technology Organization, the Technical Cooperation Program, CRIM and Laval University. In the scope of his various functions, he represented the Department of National Defence with respect to R&D cooperation with the Communications Security Establishment, the Canadian Space Agency and the US and Allied Space Programs.

Since 2006, in addition to serving as the Scientific Advisor to the Land Forces responsible for DRDC Land S&T program, he is the vice-chairman of the NATO Research & Technology Organization, Information Systems Technology Panel since 2008.

Reference: Official DND communiqué

2) Biographies de quelques scientifiques remarquables

Au cours des années, le CRDV a connu de nombreux projets d'envergure qui l'ont fait connaître internationalement. On peut citer à cet égard la fusée Black Brant, le programme de caractérisation de la haute atmosphère avec ses lancements de ballons-sondes, les canons à gaz léger, le laser TEA CO₂, les leurres pyrophoriques, etc. Ces projets ont eu des répercussions et des retombées importantes dans l'industrie ou encore sur le plan de l'avancement des connaissances. Par le fait même, le CRDV a été le milieu de développement de nombreux scientifiques qui ont atteint une notoriété internationale. Certains de ces scientifiques ont percé de façon plus marquante par leur niveau reconnu d'expertise, par leur productivité scientifique en matière de publications et de communications, par l'impact et l'influence de leurs travaux sur leur domaine d'expertise et par la reconnaissance qu'ils ont reçue de la part de leurs collègues et leurs pairs. D'autres scientifiques ont percé par leur capacité de gestion et sont devenus directeurs d'organismes importants et ont exercé une influence de premier ordre sur leur milieu.

Parmi ces scientifiques remarquables, certains ont fait carrière principalement au CRDV, alors que d'autres se sont illustrés surtout après avoir quitté et trouvé un emploi à l'extérieur.

Jean-Louis Boivin

B. A., B. A. Sc., D. Sc.

- 1919 Born in Baie St-Paul, Charlevoix (Québec)
- 1941 B. A., Laval University
- 1946 B. A. Sc. (Chemistry), Laval University
- 1948 D. Sc. (Chemistry), Laval University
- 1948 Joins the Canadian Armament Research and Development Establishment Valcartier, as a Research Scientist
- 1952 Group Leader, Organic Chemistry
- 1958 Head of Chemistry Section
- 1966 Attends National Defence College, Kingston, Ontario
- 1967 Director, Propulsion Division
- 1968 Deputy Director General, Defence Research Establishment Valcartier
- 1971 Appointed Chief of Scientific Programs, Defence Research Board and later with Chief Research and Development (CRAD)/NDHQ
- 1975 Appointed Counsellor Defence Research and Development, Canadian Defence Liaison Staff (London)
- 1978 Retired from the civil service

Dr. Boivin was a Fellow of the Chemical Institute of Canada, a Fellow of the Chemical Society (London), Member of the American Chemical Society, Councillor of Chemical Institute of Canada (1962-1964), Director of ACFAS (1970-1974), Member of the NRC Associate Committee on Aviation Security (1972-1975), Member of the Scientific Commission of INRS (Institut national de la recherche scientifique - Université du Québec), Member of the Scientific Commission of INRS-Énergie, Chairman of the Scientific Commission of ACFAS (1970-1975) and Member board of Directors of SCITEC (1973-1975).

He is the author or co-author of 41 scientific papers in scientific journals, 50 technical reports, and has eight patents on explosives, nitrogen and fluorinated compounds, propellants, plastics, and elastomers.

Dr. Boivin was a specialist in the synthesis of nitroguanidine, a very important component of triple-base gun propellants which considerably reduced the erosion of gun barrels. He is the first Defence Research Scientist to receive an award for his work. (Time, February 6, 1956)

References:

- 1) Private communication
- 2) Time (Canadian Edition), 6 February 1956: "Discoverer's Reward"

Jacques Beaulieu

M. Sc., Ph. D.

- 1928 Né à St-Jean-sur-Richelieu.
- 1954 Maîtrise ès sciences (physique et mathématiques) de l'Université McGill.
- 1954 Employé comme scientifique à CARDE. Travaux sur les radars et les engins téléguidés.
- 1962 Obtient une bourse d'études du Conseil de recherches pour la défense pour faire des études de doctorat au King's College de l'université de Londres.
- 1965 À son retour à CARDE, on lui confie la tâche d'établir un laboratoire dans le domaine de l'électro-optique.
- 1968 Premières expériences réussies menant à la mise au point du laser au bioxyde de carbone à pression atmosphérique et excitation transversale (CO₂ TEA). Ces travaux sont alors gardés sous le sceau du secret en raison des implications militaires de cette percée technologique.
- 1970 Divulcation et publication de la découverte du laser CO₂ TEA.
- 1971 Quitte le CRDV pour assumer la direction du département de R&D de la compagnie Gen-Tec, nouvellement licenciée pour commercialiser les lasers CO₂ TEA.
- 1974 Retour au CRDV pour y entreprendre des travaux sur les lasers chimiques.
- 1983 Affecté au programme Low-Level Air Defense (LLAD) à titre d'expert-conseil. Ce programme aboutira à la sélection du système de défense antiaérien de la Compagnie Oerlikon et à l'implantation d'une usine de production à St-Jean-sur-Richelieu.
- 1991 Quitte le ministère de la Défense pour se joindre à la firme québécoise COSEM Neurostim qui étudie et met au point d'un nouvel implant cochléaire.

Liste des récompenses et distinctions professionnelles :

- 1971 : doctorat *honoris causa* de l'Université de Moncton.
- 1971 : médaille Archambault de l'ACFAS.
- 1978 : médaille Thomas Eadie de la Société royale du Canada.
- 1980 : premier récipiendaire de la médaille J.-Armand Bombardier de l'ACFAS.
- 1980 : élu membre de la Société royale du Canada
- 1986 : prix Denis Gabor décerné par la Society of Photo-optical Instrumentation Engineers.
- 1993 : médaille de l'Association canadienne des physiciens.
- 1999 : Grand chevalier de l'Ordre national du Québec.
- 2002 : doctorat *honoris causa* de l'Université Laval.
- 2002 : Ordre du Canada.
- 2004 : médaille commémorative du 50^e anniversaire du couronnement de la reine Élisabeth II.

Référence: Communication privée

Gerald Vincent (Gerry) Bull

Ph. D.

- 1928 Naissance de Gerald Vincent Bull le 9 mars à North Bay, Ontario
- 1951 Devient le plus jeune Ph. D. en physique au Canada à l'Université de Toronto
- 1951 Employé comme scientifique en aérophysique à CARDE
- 1958 Nommé directeur de la Division de l'aérophysique dès sa formation. Au cours des années, il conçoit l'idée de lancer des petits satellites dans l'espace au moyen de supercanons.
- 1961 Démissionne de son poste à CARDE le 15 avril pour devenir professeur, puis directeur du "Space Research Institute" de l'Université McGill, et directeur de projet HARP (High Altitude Research Program)
- 1965 Avec un canon du HARP, il lance en septembre un projectile à une altitude de 112 milles, un record d'altitude qui tient encore aujourd'hui
- 1967 Fin du HARP, à la suite de l'annulation du financement canadien et américain
- 1968 Création de la SRC (Space Research Corporation) dont la mission principale est la mise au point de canons avancés. Cette firme possède la caractéristique unique d'être à cheval sur la frontière internationale entre les États-Unis (North Troy, NY) et le Canada (Highwater, Québec)
- 1969 Démissionne de son poste à McGill
- 1973 On le fait citoyen américain en 2 jours avec 18 ans de rétroactivité par un acte spécial du congrès.
- 1977 Implication dans la vente de "pièces forgées" et de marchandises pour 30M\$ à l'Afrique du Sud, alors sous embargo pour la vente d'armes. Enquête de la GRC et du FBI. Déboires avec la justice.
- 1980 Reconnu coupable le 16 juin d'avoir contrevenu à l'embargo. Condamné à 6 mois d'emprisonnement. Dissolution de la SRC au Canada.
- 1981 S'installe en Belgique où il rétablit la "SRC International". Vente de canons et d'obus à la Chine.
- 1988 Début des efforts de commercialisation des supercanons.
- 1989 Obtient un contrat de l'Iraq pour mettre au point une série de canons géants (projet Babylone).
- 1990 Assassiné le 22 mars à son appartement de Bruxelles.

Références:

- 1) Dale Grant: Wilderness of Mirrors: The Life of Gerry Bull, Prentice Hall, Canada, 1991, 209 pages
- 2) Norman Lester: L'Affaire Gerald Bull, Éditions du Méridien, 1991, 214 pages
- 3) William Lowther : Arms and the Man – Dr. Gerald Bull, Iraq and the Supergun, Doubleday Canada Ltd., 1992, 298 pages
- 4) James Adams: Bull's Eye – The Assassination and Life of Supergun Inventor Gerald Bull, Times Books, New York, 1992, 317 pages

Pierre Roney
B. Sc., M. Sc., D. Sc.

- 1931 Born in Gloucester, England
- 1954 B. Sc. (Honours), Battersea College of Technology, London University
- 1954 Military service in the British Forces (1954-1956)
- 1956 Joins the Guided Weapons Division, Elliott Bros. Ltd.
- 1958 Joins De Havilland Aircraft of Canada
- 1960 Joins the Canadian Armament Research and Development Establishment Valcartier, as a research scientist
- 1970 On educational leave without pay with a DRB scholarship
- 1972 D. Sc. in theoretical physics (summa cum laude) from the Université Libre de Bruxelles
- 1972 Returns to DREV to conduct research activities on passive telemetry and on a new theory of atmospheric spectral lines, specifically to explain and characterize the water vapor continuum in the infrared.
- 1995 Retires from the public service
- 1995 Died in Ste-Foy, Québec.

In the mid-1980s, Dr Pierre Roney initiated the development of a technique for passive ranging. In the context of military targets, passive ranging is very attractive because it does not require the observer to radiate signals which could permit detection by an enemy. The basic idea was to exploit the known effects of atmospheric absorption on the infrared spectral radiation emitted by all bodies. The technique was validated through experiments in the DREV 5.7-km propagation range. During the course of this work, it was realized that available atmospheric transmission models, whilst highly sophisticated, were inadequate in certain theoretical aspects. The problem lay with the theory of spectral lines broadened by molecular collisions. The new theory developed by Dr. Roney has been published as three papers in the prestigious Journal of Chemical Physics. This work has had significant impact on atmospheric remote sensing and pollution detection.

In recognition for his most valuable work, the Pierre Roney Award for Excellence was created at DREV in 1995. This special award is given every two years and honours scientists for their remarkable achievements.

PRIX D'EXCELLENCE SCIENTIFIQUE PIERRE L. RONEY

Instauré à la mémoire de Pierre L. Roney

Scientifique émérite qui a œuvré au CRDV de 1960 à 1995

Reference : Private Communication

Luc R. Bissonnette

B. Sc., M. Sc., Ph. D.

1942	Né à Ste-Claire, Dorchester (maintenant Beauce-Nord) (Québec)
1962	B. A. (Arts), Séminaire de Québec
1966	B. Sc. (physique), Université Laval
1970	M. Sc. (génie aéronautique), Princeton University
1970	Ph. D. (génie aéronautique), Princeton University
1970	Stage post-doctoral à l'Institut de mécanique statistique de la turbulence, Université d'Aix-Marseille, France
1971	Scientifique de la défense, CRDV
2006	Prendre sa retraite

Expérience professionnelle

Durant sa carrière comme scientifique pour la défense à RDDC Valcartier (1971-2006), il a travaillé dans les domaines suivants:

- Mesure, modélisation et mitigation : a) de l'éblouissement thermique sur la propagation atmosphérique de faisceaux laser puissants et b) de l'effet de la turbulence atmosphérique sur la propagation des ondes optiques et infrarouges (scintillation, brouillage de phase, distorsion d'image, etc.);
- Modélisation et exploitation de la diffusion multiple pour la mesure à grandes résolutions spatiale et temporelle de la concentration des particules d'aérosols atmosphériques pour la prédiction des performances de systèmes électro-optiques de surveillance et de conduite de tir.

Production scientifique

Auteur/co-auteur de 35 articles scientifiques publiés dans des revues scientifiques spécialisées et avec comité de révision, de 42 rapports scientifiques révisés par des pairs et de 64 publications dans des comptes-rendus de conférences.

Détenteur d'un brevet d'invention américain intitulé '*Multiple Scattering Technique Lidar*', #5239352, 1993.

Associations, récompenses et distinctions

- Membre, *Optical Society of America* et *Sigma-Xi Society, McGill Chapter*.
- Éditeur associé, *Optical Engineering*, 2001-2005.
- Président, *21th International Laser Radar Conference*, Québec, 2002.
- Prix d'excellence Pierre Roney (RDDC Valcartier), 2000.
- Membre, *International Coordination-Group on Laser Atmospheric Studies (ICLAS)*, 2000-2006.
- Membre, comité du programme, Institut canadien pour l'innovation en photonique (ICIP/CIPi), 2002-2005.
- Membre, *Committee on Laser Atmospheric Studies (CLAS)* de l'*American Meteorological Society*, 1999-2002.
- *Editor's Award, Journal of Atmospheric and Oceanic Technology*, 2000.
- Médaille commémorative du jubilé d'or du couronnement de la reine Elizabeth II, 2003
- Certificat de mérite, Groupe Matériels du ministère de la Défense nationale, 1981.

Référence: communication privée

Robert J. L. Corriveau

B. Sc.

- 1951 Naissance
- 1974 B. Sc. (physique), Université du Québec à Trois-Rivières
- 1974 Scientifique de la défense, CRDV
- 1977 Scientifique au Night Vision & Electro-optics Laboratory, Fort Belvoir (VA)
- 1978 Scientifique de la défense, CRDV
- 1983 Scientifique au Air Force Space Division, Los Angeles (CA)
- 1984 Scientifique de la défense, CRDV
- 1985 Officier d'état-major, Directeurat R et D Air, QGDN, Ottawa
- 1987 Officier d'état-major, Directeurat R et D Communications et espace, QGDN, Ottawa
- 1988 Chef, Section de métrologie balistique, CRDV
- 1990 Directeur, Division de l'électro-optique, CRDV
- 1992 Collège de la défense nationale, Kingston
- 1995 Directeur général adjoint, CRDV
- 1995 Vice-président, Technologie et développement des affaires, Institut national d'optique
- 2002 Vice-président principal, Transferts technologiques et développement des affaires, Institut National d'Optique
- 2004 Vice-président, Marketing et développement des affaires, PhasOptx Inc.
- 2005 Président-directeur général, Institut canadien pour les innovations en photonique

Référence: communication privée

Robert Collin

B. Sc., Ph. D.

- 1951 B. Sc. degree (engineering physics) from the University of Saskatchewan in 1951.
- 1951 Attends Imperial College in England for graduate work.
- 1954 Obtains the Ph. D. degree in electrical engineering from the University of London.
- 1954 Scientific Officer at CARDE, where he worked on missile guidance antennas, radomes, and radar systems evaluation.
- 1958 Joined the Electrical Engineering Department at Case Institute of Technology (now Case Western Reserve University), Cleveland, Ohio. During his tenure there, he has served as Chairman of the Electrical Engineering and Applied Physics Department for five years and also as Interim Dean of Engineering for two years.

He is the author/co-author of more than 150 technical papers and five books on electromagnetic theory and applications, including Foundations for Microwave Engineering, Antennas and Radiowave Propagation, Principles and Applications of Electromagnetic Fields (co-author with R. Plonsey), and Antenna Theory, Parts I and II (co-editor with F. Zucker and contributing author). His classic text, Field Theory of Guided Waves, is also a volume in the series.

Professor Collin is a life fellow of the IEEE and a member of the IEEE Microwave Theory and Techniques Society and the IEEE Antennas and Propagation Society (APS). He is currently a member of the Administrative Committee of the APS. He is a member of U.S. Commission B of URSI and a member of the Geophysical Society.

Other honors include the Diekman Award from Case Western Reserve University for distinguished graduate teaching, the IEEE APS Distinguished Career Award (1992), the IEEE Schelkunoff Prize Paper Award (1992), the IEEE Electromagnetics Award (1998), and an IEEE Third Millennium Medal in 2000. In 1990, Professor Collin was elected to the National Academy of Engineering.

Pierre Lavigne
B. Sc., M. Sc., Ph. D.

1943 Né à St-Paul de Chester (Québec)
1971 M. Sc., Université Laval
1972 Scientifique de la défense, CRDV
1976 Ph. D. (physique), Université Laval
1978 Chef du Groupe Technologie laser, CRDV
1980 Professeur, INRS-Énergie et Matériaux, Université du Québec, Varennes
1987 Directeur scientifique, Institut national d'optique
1995 Directeur, INRS-Énergie et matériaux, Université du Québec, Varennes
1999 Vice-président Recherche, valorisation-recherche Québec
2007 Retraite

Principales réalisations scientifiques :

52 articles dans des revues avec comité de lecture
30 publications dans des comptes-rendus de conférences
64 communications dans des congrès scientifiques
29 rapports scientifiques
1 brevet d'invention

Référence : communication privée

Sir Colin James Maiden **M. Sc., D. Phil.**

- 1933 Born in Auckland, New Zealand on 5th May 1933
- 1954 Civil Engineering degree, Auckland University College
- 1955 Rhodes Scholar (October 1955)
- 1956 Master of Engineering degree (Aeronautics) in May 1956 in absentia, Auckland University College, after writing final examinations in London
- 1957 D. Phil., Oxford University, November 1957
- 1958 Accepts a position as Defence Scientist Grade 3 at CARDE to work on hypersonics, high speed flight and re-entry physics under Dr. Gerry Bull
- 1959 Head of the Hypersonic Physics Section. Works on the Joint US/Canadian anti-ballistic missile programme
- 1960 Attends Anti-Missile Research Advisory Committee (AMRAC) meetings as Canadian representative. Presents several papers on his work in Boston, at Eglin Air Force Base, Florida, and in Zurich at the Second International Congress in the Aeronautical Sciences
- 1961 Accepts a senior lectureship in the Department of Mechanical Engineering in the Engineering School at the Auckland University College
- 1962 Accepts a position in the Materials Sciences Department of the General Motors Defence Research Laboratories in Santa Barbara, California
- 1966 Transferred to the GM Research Laboratories in Detroit, Michigan, in September
- 1971 Vice Chancellor, University of Auckland, until his retirement in 1994

During his career, Sir Colin was chair of dozens of committees and boards of directors, including the following: N.Z. Energy Research and Development. Committee (1974-1981), NZ Synthetic Fuels Corp. Ltd (1980-1990), Town Insurance Co Ltd (1988-2004), Fisher & Paykel Ltd. (1978-2001), Independent Newspapers Ltd (1989-2001), New-Zealand Steel Ltd (1988-1992). He has received many awards and distinctions: Honorary Doctor of Laws (Auckland), Queen Elizabeth Silver Jubilee Medal (1977), Medal of University of Bonn (1983), Thomson Medal, Royal Society of New Zealand (1986), Symons Award, Association of Commonwealth Universities (1999). He is also the author of numerous scientific and technical papers.

In Chapter 5 of his autobiography (see reference), Sir Colin describes his three years (1958-1961) in the Aerophysics Wing of the Canadian Armament Research and Development Establishment in Valcartier, where he worked under the well-known and ill-fated Dr Gerry Bull. He soon became Head of the Hypersonic Physics Section and carried out work in the development of aeroballistics ranges, hypervelocity light gas guns as well as in the measurement of radiation from projectiles and in hypervelocity impact studies, all cutting edge technologies at the beginning of the space race. Many papers were presented on his work at international conferences which showed that CARDE was well ahead then in these fields of research.

References:

- 1) The International Who's Who, 2003
- 2) Sir Colin Maiden : « An Energetic Life – an Autobiography ». Dunmore Publishing, Wellington (New Zealand), 2008.

The following is taken from the book jacket:

“Colin Maiden was a New Zealand Rhodes Scholar at Oxford in the late 50s, a research engineer in space and defence science in Canada and a leading General Motors engineer and executive in the US, Vice-Chancellor of the University of Auckland for 24 years, and professional company director or chair of companies such as NZ Synthetic Fuels, NZ Refining, Transpower, Fisher & Paykel, Farmers, NZ Steel, and Independent Newspapers. This autobiography provides fascinating insights into the operations and the challenges over the years of many of these core New Zealand businesses.

This is a compelling account of a truly energetic life, and revealed as the reader travels with the author are the talents, and the consequent considerable contribution, of a New Zealander who has earned wide respect. Few other New Zealanders have been involved at the highest levels in such a variety of activities in this country and overseas as Sir Colin”.

3) Employés ayant quitté le CRDV pour le secteur industriel ou universitaire

Note : cette liste non exhaustive est la mise à jour d'une liste dressée de façon informelle en 1995. Elle n'inclut pas les noms d'employés qui ont quitté le CRDV et qui sont demeurés à l'emploi du ministère de la Défense.

Personnel scientifique :

Abi-Zeid, Irène	1988-2004	Université Laval
Angers, Claude	1967-1976	ENAP
Ardouin, Pierre Dr		Université Laval
Bagnulo, Attilio	1982-1998	Shape Technical Center, The Hague (The Netherlands)
Beaudoin, André	2000-2002	Service canadien des forêts, Ste-Foy
Beaulieu, Jacques Dr		Directeur R&D, Gentec (1971-1974)
Bédard, Jean	1967-1972	Bombardier ; CRIQ (agent de recherches)
Bélanger, Jean-Yves		Directeur R&D, SNC/CAL
Bertrand, Guy	1951-1970	Directeur R&D, Bombardier ; PDG, CRIQ
Bérubé, Jean-Noël	1973-1976	Vice-président, Bomem (1976-1994)
Blais, René	1964-1969	
Blanchard, M. Dr		Université Laval
Bonnier, Deni	1981-1998	Scientifique à l'Institut National d'Optique (1998-2002) Président, Obzerv Technologies
Boudreault, Yves		Lockheed, Ottawa
Bourassa, Jacques		Président, Groupe Conseil Solivar
Bourassa, Paul		Université de Sherbrooke
Bourget, Claude	1979-1986	Oerlikon Canada, Bromont
Brown, Terrance Dr		NRC
Buijs, Henry Dr		Bomem
Bull, Gerald Dr	1951-1961	Directeur, Projet HARP, Université McGill Président, Space Research Corporation
Caron, Hervé	1974-1978	CRIQ, Chef de groupe
Caron, Jean-Yves		Université Laval
Charest, Jacques Dr		Président, Dynasen, Santa Barbara, CA (USA)
Chinnik, Robert		Telesat Canada (décédé)

Chollet, Pierre		Noranda Research Centre ; Université McGill
Cloutier, Gilles Dr		Président, Conseil des Recherches de l'Alberta ; Recteur, Université de Montréal
Cloutier-Marquis, Suzanne	1980-1987	Loto-Québec, Montréal
Colle, Alain		SNC/CAL, Montréal
Collins, R		Université Laval
Cowan, Phillip		A fondé sa propre firme
Cumming, Jules		Syracuse University ; Université Laval
Comming, Cameron Dr	1956-1974	Vice-Président Marketing, Barringer Research Ltd.
Corriveau, Robert	1974-1995	PDG, Institut Canadien pour les Innovations en Photonique
DeCarufel, André		Siège social, Université du Québec
Demers, Louis	1984-1999	Vice-président, Obzerv Technologies
Dion, André Dr		MIT, Boston
Drolet, Jean-Pierre Dr	1971-1975	Vice-président R&D, IVI
Drouin, Robert Dr		Université Laval
Duley, Walter W. Dr		York University
Dupont, Gilles	1966-1970	NRC, Ottawa – programme PAIT
Erickson, W. H. Dr	1966-1974	Directeur, Mines Branch, EMR, Ottawa
Faubert, Denis	1991-2005	Directeur principal, Institut de recherche d'Hydro-Québec
Fleming, D. Dr		RMC, Kingston
Fournier, M. Dr		Communications Research Centre, Ottawa
Friend, W.		Space Research Corporation, ATS Aerospace Inc. Président, Ballistech
Gallagher, G. Dr		Université du Québec, Chicoutimi
Girard, Claire	1980-1986	Directrice, Centre d'informatique, Université Laval
Grek, Boris Dr		Princeton University
Grenier, Pierre		Professeur, Université Laval ; Doyen, Faculté des Sciences et Génie
Halpin, John	1984-1986	St-Lawrence College
Hampson, John Dr		CRAM, Université Laval
Holland, Jack		Digital Equipment Corp., Florida
Houde, Jean		
Hurtubise, Roland	1968-1971	ENAP, Québec
Jacques, Pierre	1981-1983	SOMAPRO, Québec
Johnson, Derwin Dr		Communications Research Centre, Ottawa

Johnstone, R.		Arthur D. Little, Boston
Jones, John Dr	1966-1972	Memorial University
Kaminski, David Dr	1987-1989	Professeur d'université
Lacasse, Guy	1970-1974	Imperial Tobacco
Lachambre, Jean-Louis Dr	1967-1977	IREQ, Varennes
Laflamme, Albert K		Directeur général, Gentec (1974-1979) Retour au CRDV en 1979
Lafrance, W. Roch	1961-1969	Hydro-Québec
Lamarre, D.	1983-1985	Bomem
Lamb, John		Digital Equipment Corp.
LaRochelle, Sophie	1992-1996	Centre d'Optique, Photonique et Laser, Université Laval
Larsen, Raymond		Stanford Linear Accelerator
Larue, Paul	1974-1978	CRIQ, Agent de recherches
Lavigne, Pierre Dr	1973-1979	Directeur scientifique, Institut National d'Optique
Lemay, André Dr	1954-1976	PDG, INRS
Lowe, Robert Dr		Université Western Ontario
Maiden, Colin Dr		Vice-Chancellor, University of Auckland, New Zealand
Maillette, Josée	1984-1991	RMC, Kingston
Maine, Frank Dr		Fiberglass, Député Libéral Wellington
Marquis, Hughes Dr		Institut de Génie des Matériaux
Martel, Jacques	1982-1992	CSST
McMahon, Harold Dr		Georgia Tech, University of Atlanta
Mercier, Denis	1983-1986	R. B. C. Dominion
Merner, J.		California
Meunier, Jules		Ingénieur, Bell Northern Research
Michon, Robert		DMR
Ngo Phong, Linh	1989-2002	Agence spatiale canadienne
Noël, Léonard	1970-1974	CAE
Paris, A.		BC Institute of Technology
Pelletier, Pierre	1980-1987	SNC/CAL Montréal
Perreault, Guy Dr	1965-1981	IRSST
Perron, Pierre Dr		Président, CNRC
Picard, Jean-Paul Dr		Picatinny Arsenal, Dover, New Jersey
Picard, Laurent Dr		Président, Radio-Canada ; Doyen, Faculté d'Administration à l'Université McGill
Poulin, Marc	1982-1986	Oerlikon Canada, Bromont

Prémont, Léonard	1964-1975	Firme de consultants à Montréal
Régnière, Jean-Paul		Ingénieur-Conseil Demers (1966-1969) Retour au CRDV en 1969
Rheault, Fernand Dr	1964-1974	Directeur, INRS-Énergie (Varenes), Agence Spatiale Canadienne
Rioux, Robert	1967-1970	Xerox Data Systems
Roberts, Alex	1960-1985	Directeur R&D, IVI
Robichaud, Louis		Université Laval
Robinson, Alexander Dr	1966-1971	University of Alberta
Roy, Dominic	1989-1995	CGI
Roy, Pierre	1970	Directeur R&D, CRIQ
Slingerland, Frank		Université Laval NAE/NRC
Snelling, Dave Dr		NRC
St-Pierre, Claude Dr		Université Laval
Sterling, Tom		Consultant (président de sa firme)
Surtees, Walter		National Bureau of Standards, USA (décédé)
Tardif, Léo	1958-1977	Président, SNC, Produits de la Défense
Vail, Garry	1970-1975	Président, ABB Bomem, Québec
Vaillancourt, Raymond		Université Laval (décédé)
Vanier, J. Dr		NRC
Vincent, Charles Dr		Institut Franco-Allemand de St-Louis
Voyer, R	1983	CRIQ, Agent de recherches
Voyzelle, Benoît	1980-1988	EMR, Ottawa
Waldron. Howard Dr		Cornell Aeronautical Laboratories, Buffalo
Wall, Robert W. Dr		University of Manitoba
Williams, R.		RCA, Texas

Autres employés:

Dionne, Omer		Directeur de l'Enseignement Technique et Professionnel, Polyvalente de Neufchâtel
Featherstone, John		Vice-Président, Tectronix
Grenier, Carol		INO
Guay, Armand		Président D. G., Grues A. Guay
Guay, Adrien		Ministère de l'Éducation
Hallé, Jean-Baptiste		IVI
Lessard, Jean-Marie		Bomem
Ouzilleau, Gaston		Coordonnateur des Services Techniques, Centre Louis-Hébert
Picard, Roland		Université Laval

Taillon, Charles		IVI
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4) Notes concernant les scientifiques recrutés au Royaume-Uni

During the War, with the creation of the Inspection Board of the United Kingdom and Canada and of its laboratories, and of the Experimental Explosives Establishment, several military officers and scientists from the U.K. were posted to Canada to serve in these establishments.

Later on after the war, many other British scientists came to CARDE from armament establishments or directly from universities. It should be remembered that, in those years, very few people in Canada had experience in the fields of explosives, propellants, rockets and armaments. Also, British subjects did not require a work permit to work in Canada, and it was not required to be a Canadian citizen to work for the Federal Government. It is only much later, in February 1977 when a new Citizenship Act became into force that, I believe, it became compulsory to be a Canadian citizen to work for the Canadian Government, and recruitment from the United Kingdom decreased considerably.

An effort was made to identify these people and most of them are listed in the Table below with the following information when available: degrees, establishment they came from and Wing they were in at CARDE for those who came after 1945. For some of them (in bold characters), more complete biographical notes have been assembled and are given at the end of the list.

MILITARY OFFICERS AND SCIENTISTS FROM THE UNITED KINGDOM AT VALCARTIER

Barnes, Leslie W. C.		Proof and Experimental Establishment, Woolwich
Bulleid, D.	B. A., M. A. (Cambridge)	
Caddy, John (Major)		
Cassie, G. E.	B. Sc. (Glasgow) A. R.T.C. (Glasgow)	Atomic Weapons Research Establishment
Chard, J. E.	B. Sc. (London)	Naval Dockyards D Wing
Cheers, B.	B. A. (Cambridge)	Aeroballistic Wing
Clark, H. K.	H. N. C. (U.K.)	D Wing
Costello, E. de L.	B. Sc. (London)	RARDE C Wing
Courtenay, T. H.	A. M. I. E. E. (Britain)	
Crombie, D. S.	Dipl. Elect. Eng. (Heriott - Watt College)	
Dickinson, M. A.	M. A. (Oxford)	Rocket Propulsion Establishment, Westcott C Wing

Ellington, D.	B. Sc., M. Phil. (London), ARCSc	Aeroballistic Wing
Flinn, John		ICI, Ardeer C Wing
Fry, C. R.	B. Sc., M. Sc. (Birmingham)	E Wing
Green, J. J.	B. Sc. (London)	Chief Supt., CARDE
Hampson, J.	B. Sc. (Sheffield)	G. Wing
Higgins, J.	B. Sc. (Glasgow)	G Wing
Hill, J.	B. Sc., M. Sc. (Manchester)	F Wing
Jackson, Frank	B. Sc., Ph. D. (Wales) D Wing	I.C.I. Rocket Division, Summerfield Research Station C Wing
Jones, J. M.	B. Sc., Ph. D. (Wales)	D Wing
Jones, H.	N. C. Mech. Eng. (Birkenhead Tech. School) O. M. C. (Holt Tech. College)	F Wing
Jones, W. H.	H. N. C. (UK)	D Wing
Keighley, J.		
Laidler, K. J.	Ph. D. (Princeton) D. Sc (Oxford)	
Lang, E. J. S.	P. Eng. M. E. I. C.	Armament Research and Development Establishment D Wing
Leech, C. M.	B. Sc. (Imperial College, London)	Aerophysics Wing
Little, D.	B. Sc. (Durham)	Signals Research and Development Establishment Elect. Wing
Littler, W. B.		Research Dept, Woolwich C Wing
Lock, R. F. (Major)		
Lovecy, A. L.	Ph. D. (London) F. C. S., F. S. C. I.	Research Dept, Woolwich
Lovelock, M. H.	H. N. C. (UK.)	D Wing
Maiden, Colin	(see also biography in previous section)	Aerophysics Wing
McKim, W.		
Morgan, K. W.	B. Sc. Manchester	D Wing
Odgers, Lloyd		Rocket Propulsion Establishment, Westcott C Wing
Pennie, A. M.	B. Sc., ARTC (Glasgow)	MCIC, Research Dept, Woolwich C Wing
Poole, M. J.		Research Dept, Woolwich
Pullan, George T.	B. A., M. A., Ph. D. (Cambridge)	National Physical Laboratories, Teddington

		G Wing
Rawcliffe, H. S.	B. Eng. (Liverpool)	Aerophysics Wing
Roney, Pierre	B. Sc., M. Sc. (Battersea) (see also biography in previous section)	G Wing
Simpson, R. D.	O. N. C. (Glasgow)	D Wing
Skenelbery Norman (Colonel)		
Snelling, D. R.	B. Sc., Ph. D. (Birmingham)	E Wing
Strange, A. L.	B. A., M. A. (Cantab)	Vickers Armstrong
Waldock, D. A. G.	B. Sc. (London) MEIC, MIEE, S. M. I. R. E., ptsc (Military College of Science) (see also biography in first chapter)	C. D., Canadian Army
Ward, F. D.	B. Sc. (London)	D Wing
Welsby, J. R.	A. M. I. Mech. E.	D Wing
Wilkinson, R. F.	B. Sc. (London) B. Pharm (London)	Explosives Research and Development Establishment, Waltham Abbey C Wing
Wilson, C. J.	B. A., M. A. (Cantab)	D Wing and G Wing
Witchell, J. B.	H. N. C. A. M. I. Mech. E.	D Wing

BIOGRAPHICAL NOTES

Leslie W.C. Barnes served for 25 years in Canada's Department of National Defence, much of it as Director of Proof and Ballistics. Born in England, Mr. Barnes attended Cambridge University, graduating with first-class honours. He joined the British civil service just before the Second World War and began work in the field of ballistics. A wartime posting brought him to Canada, where he served as Ballistics Officer of the Artillery Proof and Development Establishment at Valcartier, Quebec. On his return to London, he joined the staff of the Ordnance Board, but immigrated to Canada in 1951.

Dave Bulleid. Born at Nottingham in 1918, Dave went to public school at Exeter College. He went up to Cambridge University (Gonville & Caius College) in 1936 and graduated with a B. Sc. in engineering. He started a three-year apprenticeship with British Thomson Houston at Rugby, but volunteered to join the Army (REME) when war broke out. He was sent to North Africa in October 1942 and subsequently participated in the Salerno landings and the assault on Monte Cassino. With the Italian campaign completed, he got back to England for a leave and a three-year-delayed wedding. He was discharged from the Army with the rank of Major and then completed his apprenticeship to work for De Havilland. However, he decided to emigrate and joined CARDE in 1954 to work on the Velvet Glove missile.

Major (later Colonel) John Caddy. The commanding officer of the Artillery Proof Establishment, known as the Proof Officer, was Major (later Colonel) John Caddy; his second-in-command was Captain (later Major) Edward Thompson. Australian-born, Caddy was a regular officer in the Royal Artillery, and had been trained at Sandhurst and at the Royal Military College at Woolwich.

T.H. Courtenay. Born in London, England. War Service from 1939-46 as a REME radar technician. Anti-aircraft fire control at gun sites and workshops in England and Scotland. Posted to Radar Research Establishment, MOSE, Malvern, Worcs. Demobilized in 1946. Employed at General Electric (UK) Research Laboratories, Wembley in 1946-47 and from 1947-1954 at RRE Malvern. Work on the design of mortar locator, microwave radar for tracking aircraft and for gun muzzle velocity measurements etc. Joined NRE, Halifax in 1954 and transferred to CARDE in 1957 to work on the design and construction of the electronic package for the upper atmosphere research rocket. Employed at CARDE in the Electronics Division until 1977.

Doug Crombie. Born in India where his father was serving in the British Army. However, he was brought up in Scotland where he graduated in 1949 with a degree in Electrical Engineering from Heriott-Watt University (Edinburgh). He worked for about two years at the General Electric Company Research Laboratories in Wembley and Stanmore and then spent a year at the I.C.I. Rocket Motor Station, Kidderminster (Summerfield). He moved to Canada and worked for the Canadian Westinghouse Company in Hamilton for four years, including a stretch of eighteen months attached to CARDE for work on the Velvet Glove missile. In 1957 he joined the Headquarters staff of DRB and, ten years later, was posted to CARDE, where he was on staff for the following three years.

Derek Ellington. Born in 1931 in Clitheroe, Lancashire, he attended the Imperial College of Science and Technology in London, where he studied physics and aeronautics, obtaining his B. Sc. in 1954. For the next four years he worked on beam-riding air-to-air missiles at the Weapons Division of Fairey Aviation, coming to Canada in 1958 to work on guided weapon design for Canadair. In February 1960 he moved to Computing Devices of Canada and worked for them on assignment to CARDE until he joined the DRB staff in 1964.

John W.E. Flinn. Born in Glasgow, Scotland, 1928. Graduated with a B. Sc. at the University of Glasgow. Education Officer, Royal Air Force 1950 to 1952. Special Propulsion Section, I.C.I. Nobel Division, Ardeer, Scotland 1952 to 1954 where he worked on the development of pressed charges for rocket sustainer motors. Joined CARDE in 1954 to work in the "C Wing" pilot plant on the development of solid propellant rockets. Returned to teaching in the UK in 1960 and retired in 1982 as Head of the Department of Further Education Teacher Training, University of Huddersfield.

Dr. John Joseph Green. M. B. E., B. Sc., A. R. C. S., D. I. C., Ph. D., C. Eng., F. R. Ae. S., F. A. I. A. A., Hon. F. C. A. S. I. Born in 1905 at Portsmouth, England. London University, B. Sc. (Physics). National Research Council 1930-1943. RCAF Test &

Development Establishment 1943-45. DRB 1945-63. Chief Supt., Canadian Armament Research and Development Establishment 1959-53. (For a complete biography, see Canadian Who's Who 1982, p. 423).

Frank Jackson. Born near Manchester, England in 1926. RAF 1945-48. University of Manchester 1948-52: B. Sc. (1st class honours) and M. Sc. in Applied Mathematics. AVRO UK 1952-54. IMI Summerfield Research Station 1954-58. Joined CARDE in 1958.

Keith J. Laidler was born in Liverpool, England, in 1916 and was educated at Trinity College, Oxford. His graduate work was done at Princeton, and he obtained his Ph. D. degree in 1940; he then joined the Canadian Army and was posted to NRC; and was later awarded a D. Sc. degree by Oxford. He was posted from NRC to the Artillery Proof Establishment at Valcartier. After leaving Valcartier, he taught for a period in the U.S., and in 1955 he became a professor of chemistry at the University of Ottawa.

Major General R.F. (later Sir Robert) Lock. Early in 1940, a United Kingdom Technical Mission had been established in Ottawa, under the command of Major General R.F. Lock. Following the fall of France and the anticipated massive increase in Canadian war production, it was agreed by the British and Canadian governments that a joint inspection body should be created. The Order in Council establishing the Joint Inspection Board of the United Kingdom and Canada was promulgated in Ottawa on the 26th of October 1940. General Lock was appointed Chairman of the Board and Inspector General. A Canadian officer, Colonel (later Major General) G. B. Howard was appointed as his Deputy.

Sir Colin James Maiden. Born in Auckland on 5 May 1933. Educated Auckland University College 1951-1955, ME1955; Oxford University 1956-1958 - Dr. Phil 1957. Awarded Rhodes Scholarship 1955. Joined CARDE in 1958. Senior Executive General Motors Corporation USA 1961-1970. Vice-Chancellor, University of Auckland (New Zealand).

A. M. Pennie. Born in Banff, Scotland, June 16, 1916, Archie Munro Pennie graduated in Applied Chemistry from Glasgow University and the Royal Technical College in Glasgow in 1938. Following post-graduate work at Glasgow University, he carried out research on explosives and propellants for the Ministry of Supply with the research department at Woolwich Arsenal. When Mr. Pennie joined the RAF in 1942, he was trained as a pilot under the British Commonwealth Air Training Plan in Western Canada, where he remained for a period as an instructor before proceeding overseas to serve with the Fighter Command of the RAF until his de-mobilization. He then returned to his prewar employment at Woolwich, but in 1948, he left Britain for an appointment with the Defence Research Board's Canadian Armament Research and Development Establishment at Valcartier, where he was employed in the fields of explosives and propellants. In 1950, he was named Superintendent of the Chemistry Wing. After acting as Secretary of the Defence Research Board in 1953, he was appointed Superintendent, Defence Research Northern Laboratory, Fort Churchill, Manitoba in 1954. He attended

the National Defence College in Kingston Ontario in 1956 and was appointed Chief Superintendent, Suffield Experimental Station, Medicine Hat, Alberta in 1957 where he remained till 1964 when he assumed the position of Deputy Chairman Defence Research Board. In 1974, he retired from the Public Service and engaged in consulting work. Archie Pennie has a wide range of interests including authorship of a history of nitro-glycerine, specialized study and the publication of papers on the exploration of northern Canada, and articles of local interest.

Dr. Harold J. Poole. The first Superintendent of EEE was Dr. Harold J. Poole who had been at the Woolwich Laboratories in England and had much experience in armaments research with the British Ministry of Supply.

Dr. George Pullan. Born in 1929 at Tadcaster, Yorkshire. Graduated in Physics at the University of Cambridge (St. John's College) in 1949. Did research on low-temperature physics at the Royal Society Mond Laboratory, Cambridge and was awarded a Ph. D. in 1952. NRC post-doctorate Fellow at University of Toronto 1952 to 1955. Scientific Officer at the National Physical Laboratory, Teddington, England, August 54 to December 55. Returned to Canada in January 1956 as DSSO in CARDE "G" Wing.

Dr. Pierre Roney. Born in Gloucester, England on 17 November 1931. Graduated with a B. Sc. (Honours) at the Battersea College of Technology, London University in 1954. Completed an M. Sc. in Metal Physics in 1960. Courses in Optics and Quantum Mechanics at Chelsea College in 1958-1959. Military Service in the British Forces from 1954 to 1956. Joined the Guided Weapon Division, Elliott Bros. Ltd., Borehamwood, Hertshire in March 1956 and De Havilland Aircraft of Canada in June 1958. Was taken on strength at CARDE on 11 May 1960. Was granted Educational Leave without pay and awarded a Defence Research Board Scholarship under the provisions of the National Defence Act to complete a D. Sc. in Theoretical Physics which he obtained in 1972 at the Université Libre de Bruxelles with Summa Cum Laude. From 1972 to 1994, was engaged at DREV in research on passive telemetry and on a new theory of atmospheric spectral lines.

Colonel (later Brigadier) Norman Skentelbery was appointed Chief Proof Officer, and brought to Canada a small group of officers, including Leslie Barnes, from the Proof and Experimental Establishment at Woolwich.

Lionel Strange. Born in Wolverhampton. Graduated with a B. A. and M. A. from Cambridge University (Jesus College). Spent the war in the Army as a Major in Coastal Artillery. After the war, joined the Research Department of Vickers-Armstrong at Newcastle-on-Tyne working on the automatic control of naval guns. Decided to immigrate to Canada and joined DRB in 1951.

Chris Wilson. Born in 1929. Grew up in Buckinghamshire. Studied electrical engineering at Cambridge University (Magdalene College) from 1949, graduating with a R. A. in 1952. Continued research at Cambridge but married and moved to Canada (CARDE) in January 1956 before his Ph. D. thesis was completed.