



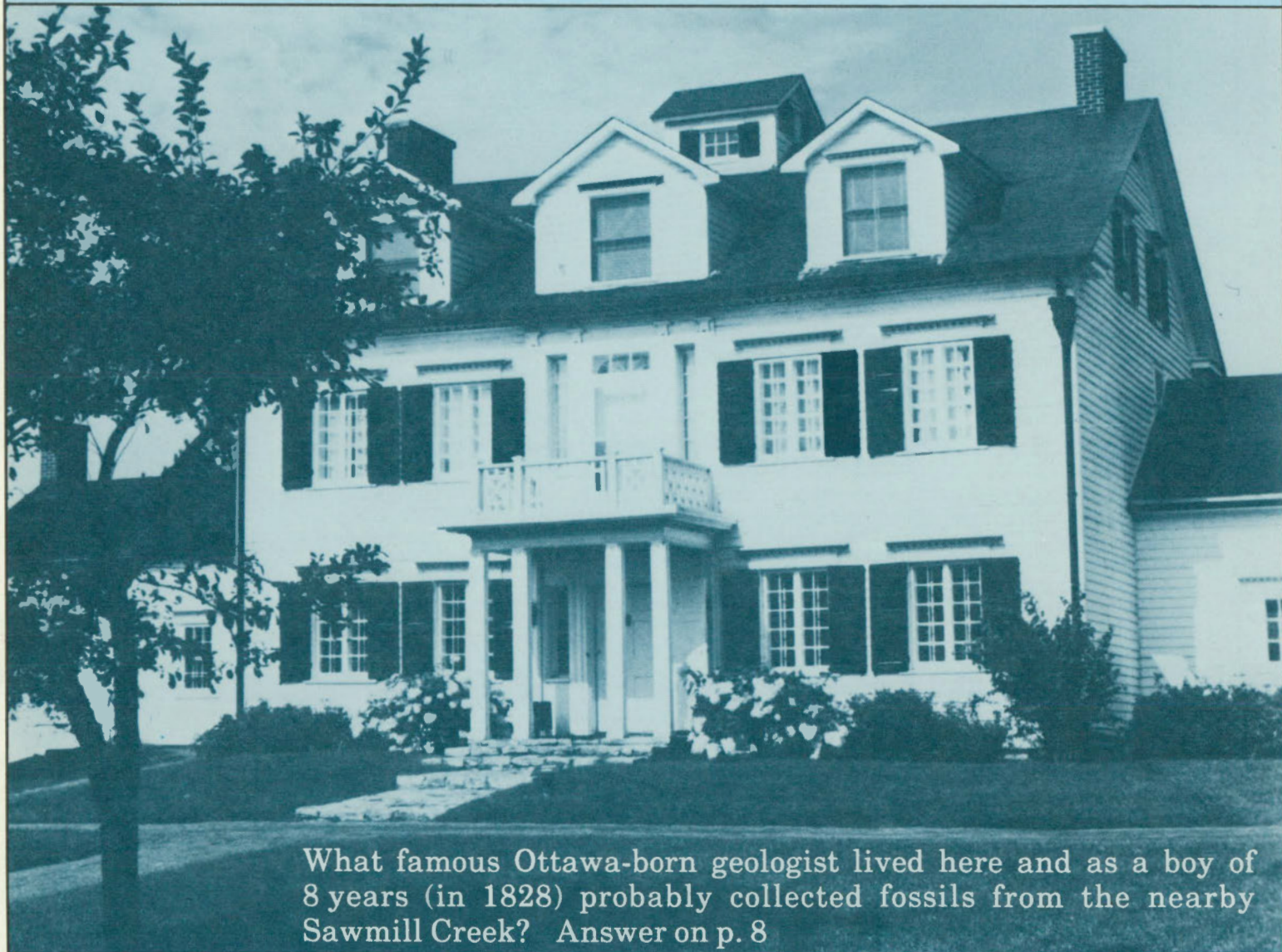
an informal branch newsletter

GEOGRAM

MC82.8
G341
OCCS

April, 1988, no. 27

**Pictured below is
the oldest home in Ottawa,
built in 1828**



What famous Ottawa-born geologist lived here and as a boy of 8 years (in 1828) probably collected fossils from the nearby Sawmill Creek? Answer on p. 8

Canada



Energy, Mines and
Resources Canada

Énergie, Mines et
Ressources Canada

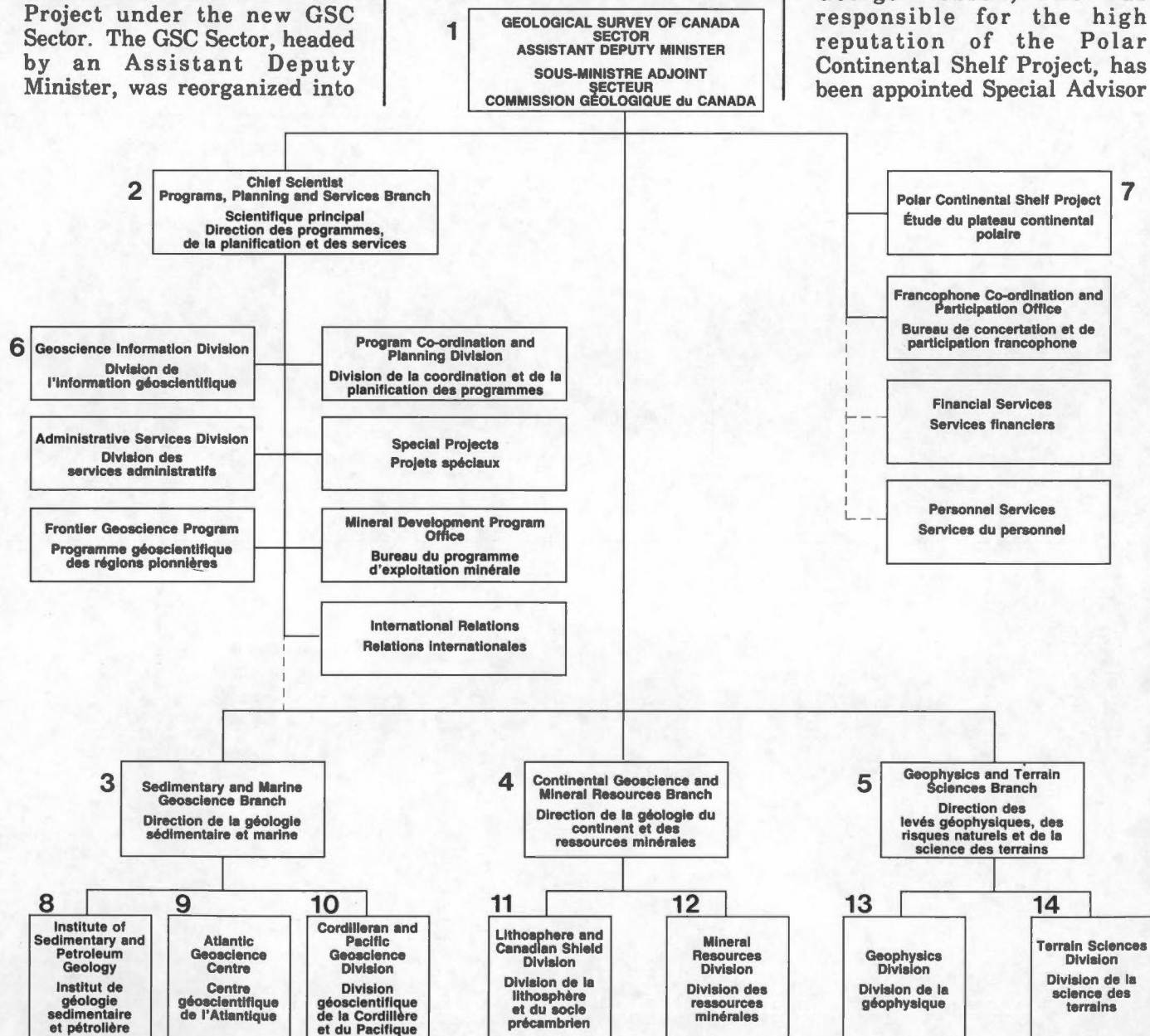
The Geological Survey of Canada Sector

In April 1987 Arthur Kroeger, the Deputy Minister of Energy, Mines and Resources, announced major organization changes in the Minerals and Earth Sciences Program of the Department. The Geological Survey of Canada, which was formerly a Branch of the Department, was elevated to the Sector level, and incorporated the Polar Continental Shelf Project under the new GSC Sector. The GSC Sector, headed by an Assistant Deputy Minister, was reorganized into

4 Branches, each headed by a Director General, as shown in the accompanying organizational chart. At present, the GSC and senior management are as follows.

The GSC Sector is headed by Assistant Deputy Minister Ray Price who has four Director Generals reporting to him.

Robin Riddihough, the Acting Chief Scientist and Director General of the Programs, Planning and Services Branch, is responsible for several divisions that include the Geoscience Information Division, headed by Director Bob Blackadar. The Polar Continental Shelf Project under Acting Director Pierre Lapointe. George Hobson, who was responsible for the high reputation of the Polar Continental Shelf Project, has been appointed Special Advisor



to the ADM. The Chief Scientist's Branch also runs the Federal-Provincial Mineral Development Agreements and the Frontier Geoscience Program.

The Sedimentary and Marine Geoscience Branch is headed by Director General Chris Barnes who came to the GSC from Memorial University of Newfoundland. This Branch encompasses three of the GSC's existing regional divisions: the Institute of Sedimentary and Petroleum Geology (Calgary, Alberta), headed by Walter Nassichuk; the Atlantic Geoscience Centre (Dartmouth, Nova Scotia), headed by Mike Keen; and the Cordilleran and

Pacific Geoscience Division (Vancouver and Patricia Bay, B.C.), headed by Dirk Tempelman-Kluit.

Chris Findlay is the Director General of the Continental Geoscience and Mineral Resources Branch which includes the Lithosphere and Canadian Shield Division,

headed by John McGlynn, and the Mineral Resources Division.

The fourth Branch, the Geophysics and Terrain Sciences Branch, with John Scott as Director General, consists of the Geophysics Division, under Mike Berry, and the Terrain Sciences Division, under Denis St-Onge.

1



Ray Price

2



Robin Riddihough

3



Chris Barnes

4



Chris Findlay

5



John Scott

6



Bob Blackadar

7



Pierre Lapointe

8



Walter Nassichuk

9



Mike Keen

10



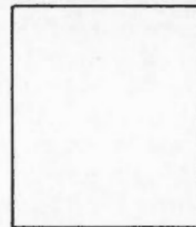
Dirk Tempelman-Kluit

11



John McGlynn

12



No official announcement

13



Mike Berry

14



Denis St-Onge

W.W. HUTCHISON

William Watt Hutchison, President of the International Union of Geological Sciences (IUGS) and Assistant Deputy Minister for the Geological Survey of Canada died in the Ottawa General Hospital on Friday 3 July 1987, a victim of cancer. Dr. Hutchison was in his 53rd year.

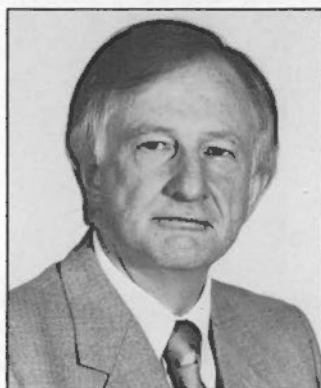
Born in Scotland in 1935, Hutch graduated BSc from Aberdeen University, and received his doctorate in geology from the University of Toronto in 1962. After a brief period in industry, he joined the GSC and began mapping the Coast Range Plutonic Complex of British Columbia. His flair for developing methods of handling and displaying complex data led to his appointment, in 1974, as Head of the Geological Survey's Data Systems Group in Ottawa.

From 1976 to 1980, Dr. Hutchison was seconded from the Department of Energy, Mines and Resources to the International Union of Geological Sciences (IUGS), one of the largest, most active and influential non-governmental international scientific associations in the world. His term as Secretary General was marked by dynamic enterprise and initiative; he expanded the scope of the IUGS scientific program significantly, improved communications in the Union which includes the membership of just under a hundred countries, and started publishing EPISODES, now well-known as the newsmagazine for international geoscience. These activities brought honour to Canada's role in international science, and in 1980, Bill Hutchison received the Bancroft Award from the Royal Society of Canada.

He was promoted on 1 January

1981 to the position of Director General of the Geological Survey of Canada. His appointment as Assistant Deputy Minister of the Earth Science Sector followed in July 1981.

Hutch provided leadership to numerous national and international organizations,



including the Geological Association of Canada (as President), the Association of the Scientific, Engineering and Technological Community of Canada (as Honourary Secretary), the Standing Committee on International Scientific Relations in the Canadian Geoscience Council (as Chairman), the Canadian Geological Foundation (as a Director), the IUGS Committee on Storage, Automatic Processing and Retrieval of Geological Data (as Chairman) and the Committee on Data for Sciences and Technology (CODATA) of the International Council of Scientific Unions (as International Officer). In 1982, he was elected President of CODATA for a term of four years. He also served as Chairman of the IUGS Advisory Board for Research Development from 1982 through 1984.

At the XXVII International Geological Congress held in Moscow, U.S.S.R. during

August, 1984, Dr. Hutchison was elected unanimously as President of IUGS for a five-year term.

At the time of his death Bill Hutchison, in addition to his responsibilities as Assistant Deputy Minister, represented Canada on the Circum-Pacific Council for Energy and Mineral Resources, and on the Executive Committee for the International Ocean Drilling Program; he served as a member of the Advisory Board for the Centre for Earth Resources Research at Memorial University in Newfoundland, and on the Scientific Committee for the Institut national de la recherche scientifique (INRS), Université du Québec; he also chaired the Geoscience Program under the Canada/U.S.S.R. Arctic Science Agreement.

Dr. Hutchison is survived by his wife Brigitte, daughters Céline and Tania, companion Danièle Séguin, sisters Anne Hutchison (in Aberdeen, Scotland) and Margaret Chater (in Aberystwyth, Wales), and nephew Arthur Chater (in London, England). He was predeceased by his brother Arthur G. Hutchison, also a geologist who inspired his professional career.

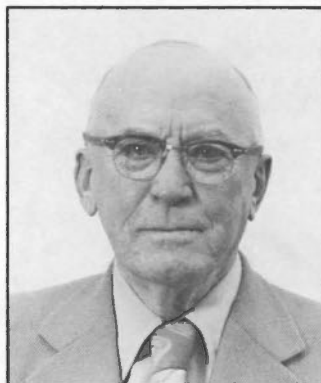
One of Hutch's last wishes was to establish, under IUGS auspices, a memorial fund called the "Hutchison Young Scientist Foundation", to assist the professional development of meritorious young geologists through participation in key IUGS-sponsored meetings and conferences. Contributions to this fund may be addressed, in trust, to Scott and Aylen, Barristers and Solicitors, attention Mr. Laird J. Rasmussen, 170 Laurier West, Ottawa, Ontario, K1P 5V5.

C.H. STOCKWELL

On 26 April 1987, Dr. C.H. Stockwell, internationally known scientist of the Geological Survey of Canada, passed away in hospital in his 90th year. In his long career Dr. Stockwell made major contributions to the geology of Canada in several capacities – expert field geologist, distinguished structural geologist and tectonist, consultant, editor, and pioneer in the application of geochronology to time-scale and crustal studies, particularly in the Canadian Shield.

Clifford Howard Stockwell was born in Estevan, Saskatchewan, and, after his secondary education and service as a pilot in the Royal Flying Corps during World War 1, graduated in geological engineering from the University of British Columbia. While at UBC he began his affiliation with the GSC as a summer assistant. In 1927 he was appointed assistant geologist at the Survey and in 1930 he obtained his doctorate at the University of Wisconsin. Dr. Stockwell's first fieldwork was in the Mayo district of Yukon Territory and was the source of his first publication in 1925. His subsequent field career spanned forty years (including a stretch of 28 consecutive field seasons!), during which he published numerous specialized papers, memoirs and articles on such diverse subjects as an X-ray study of the garnet group, the genesis of lithium deposits and pegmatites, gold deposits and prospects, chromite deposits, the structural control of ore deposits, and basic research in structural geology, in addition to numerous general reports arising from his mapping in some 20 map areas.

During this part of his career, Clifford Stockwell's stature as a first-rank scientist was reflected in two external assignments – the teaching of petrology at McGill University (1947-48) and a special two-year structural study of zinc deposits at Franklin, New Jersey, at the



request of a prominent mining company (1951-52). He subsequently served as Division Chief, Precambrian Division, before being assigned to Special Projects for the duration of his career with the Survey. In this period he edited the 4th edition of the *Geology and Economic Minerals of Canada*, published in 1957, and later, in the period 1962 to 1969, as Chairman of joint committees representing various scientific bodies, he was chiefly responsible for the production of a succession of new tectonic maps of the Canadian Shield; these classified the ages of rocks and their deformation according to his new and evolving Precambrian orogenic time-scale and nomenclature.

From 1961 almost to his death, he devoted his interest and leadership to two related fields: the delineation of structural provinces and subprovinces in

the Canadian Shield, and the evolution of his orogenic time scale for the Precambrian. In connection with the latter, Dr. Stockwell personally carried out a Shield-wide sampling program of appropriate late-orogenic and post-orogenic rocks for isotopic dating, in order to set numerical boundaries for his time units. Work in these fields continued of course long after his official retirement in 1965 and culminated in his final comprehensive publication, "A Time Classification of Precambrian Rocks and Events" (1982) which incorporated a revised time scale, a province by province discussion of the age of most Shield rock-stratigraphic units, an updated subdivision of Shield structural provinces, and an appendix of some 3000 annotated age determinations.

Of his many accomplishments, the one making the most impact, not only in Canada but internationally, was his time scale with its elegant nomenclature; first introduced in 1961, and periodically revised, it provided a sorely-needed framework for current and future description, discussion, and research work in the field of Precambrian geology.

Dr. Stockwell was a recipient of the Barlow Memorial Medal of the Canadian Institute of Mining and Metallurgy, and was also awarded the Willet G. Miller Medal of the Royal Society of Canada. Truly admired and respected by all his associates for both his science and his personality, his passing indeed marks the end of a great career. Dr. Stockwell is survived by two sons and a daughter.

Murray J. Frarey

REIN TIRRUL

Rein Tirrul, who joined the Lithosphere and Canadian Shield Division in 1982, was killed in a highway collision near Ottawa on 19 May 1987 at the age of 34. He is survived by his parents, Hilja and Lembit Tirrul of Elliott Lake, his wife Debbie, and their young daughters Leena and Kaja.

Rein combined exceptional skills in geological mapping, structural analysis, and tectonic synthesis, with field experience in some of the best-exposed orogenic belts of northern Canada and central Asia. Born in Elliott Lake, the uranium mining town in the Huronian fold belt of northern Ontario, Rein graduated in geology from Queen's University in 1976 with highest honours. As an undergraduate, he first worked for the GSC as a field assistant to Fred Campbell in the Kilohigok Basin around Bathurst Inlet, District of Mackenzie. The following year, as an assistant to Paul Hoffman in the Great Bear Magmatic Zone of Wopmay Orogen, he conducted an independent study of the differentiated Rainy Lake Intrusion and its alteration halo, host to one of the major silver deposits of the Great Bear Lake mining district. His resulting BSc thesis demonstrated the breadth of his abilities at an early age: meticulous geological mapping and petrography, quantitative physical modelling of the differentiation process, and draftsmanship in which accuracy and artistry are as one.

After graduation, Rein joined the Toronto-based consulting firm of Watts, Griffis and McOuat Limited to participate in geological mapping of the Sistan suture zone of eastern

Iran. Although hired initially as a junior assistant, Rein became effectively the chief scientist by the end of the 3 year project, which involved 1:50 000 scale mapping of about 35 000 km² of this superbly exposed



and extremely complex orogenic belt. His synthesis of the belt, published in the Geological Society of America Bulletin in 1983, is one of the most impressive papers ever written on Alpine tectonics in Asia. Based almost entirely on original fieldwork, it describes an accretionary prism and flanking forearc basin that record the destruction of an arm of the Neo-Tethys ocean during Cretaceous-Paleocene time, the consequent collision between the bounding Afghan and Lut cratonic blocks, and the ongoing disruption of the belt by strike-slip faulting related to the Neogene collision and indentation of Eurasia by Arabia.

After the Iran project was abruptly terminated by the revolution in Tehran, Rein returned to North America and entered graduate school at the

University of California at Santa Barbara. After the 1979 field season, when he mapped the Archean Anialik greenstone belt in the northern Slave Province, he rejoined Paul Hoffman to undertake a three year structural study of the foreland thrust-fold belt of Wopmay Orogen. There, he documented three contrasting styles of crustal shortening, produced the first constrained cross-sections of a Precambrian thrust-fold belt, and developed what has been described as "the most sophisticated geometrical analysis of a strike-slip fault system" manifesting dominantly irrotational regional strain. In 1984 he returned to the site of his first fieldwork, the Kilohigok Basin, where he documented a previously unrecognized imbricate thrust belt exposed in cross-section, and produced independent evidence for more than 100 km of left-slip on the Bathurst Fault. With John Grotzinger, his fieldwork provided critical support for the hypothesis that the boundary between the Slave and Churchill provinces is a Precambrian collision suture.

In 1985, Rein accompanied Paul Hoffman and Marc St-Onge on a British-led geological-mountaineering expedition to the Karakorum Himalaya, an excursion he described in the April 1986 GEOGRAM. Despite the arduous and dangerous glacial conditions, and the debilitating effects of high altitude, limited diet and infested drinking water, Rein returned to northern Pakistan in 1986 for another ten weeks of field study. Working strictly on foot, mostly alone, and for much of the time between 4000 and 6000 m above sea level, he

managed to map much of the important Shigar-to-Hushe segment of the poorly-known Shyok suture, the northern branch of the Indus suture zone. The suture separates the Cretaceous Ladakh island arc from the Lhasa block of southern Tibet, but its tectonic polarity and age relative to the better known southern branch of the Indus suture zone are subjects of debate. Rein's mapping and subsequent geochronological work carried out in Ottawa by Randy Parrish provide the best constraints available on the nature and

timing of the arc-continent collision. The Himalayan work allowed Rein to make first-hand comparisons between Precambrian and relatively recent suture zones.

In Ottawa, Rein was an acknowledged leader among the group of dynamic young structural geologists cultivated by the Lithosphere and Canadian Shield Division. His ability to visualize complex three-dimensional structures and their kinematic evolution, and the depth and rigour of his mechanical analyses were traits

eagerly sought out by all those desirous of having the flaws of their ideas discovered prior to publication. Most of all, his maps and cross-sections were a continuing source of inspiration for the manner in which they portrayed geological structures objectively while enhancing their beauty and clarifying their process of formation. Imposing in physique, modest in demeanour, Rein Tirrul will always evoke feelings in those who knew him of awe, affection, and yearning.

Paul F. Hoffman

S.H. RICHARD

On 3 October 1987, Serge Henry Richard, of the Terrain Sciences Division of the Geological Survey of Canada, died suddenly during a geological excursion in the Ottawa area. More than a research scientist, we have lost a friend.

Henry first obtained his licence ès lettres in geography at Laval University in 1954. From 1954 to 1957, he continued his studies at the physical geography laboratory of the University of Paris, under the direction of Prof. Pierre Birot. During his university years, Henry always had a summer job related to his studies: as early as 1950, he worked as a field assistant with the Quebec Department of Mines on the team of H.W. McGerrigle, and in 1951 on the team of H.C. Cooke. In 1954, he received his first field introduction to Quaternary geology while assisting Eric Henderson, and later Owen Hughes of the GSC. In 1952, and again from 1955 to 1957, he undertook various tasks related to preparation of the Atlas of Canada, under the authority of the former

Geographical Branch of the Department of Mines and Technical Surveys.

Henry began his professional career in 1957, at the Geographical Branch. From 1957 to 1959, he worked with R.J. Gajda, studying problems related to postglacial isostatic uplift. His work served, among other things, for preparation of Farrand and Gajda's article "Isobases on the Wisconsin marine limit in Canada", which is now a classic. In 1959, he undertook his first mapping of

surficial formations: until 1964, he worked in Saskatchewan, particularly in the Wynyard area. He used his research on that area for his master's thesis, which he successfully defended at Laval University in 1964. In 1966, he began work with the Geological Survey of Canada. His first task was to study the northern regions of Manitoba through aerial photographs (Operation Winisk). From 1967 to 1970, he continued mapping surficial deposits in western Canada, this time in Alberta. In



1970, the Survey gave him responsibility for large-scale systematic mapping of the Ottawa area, a task he was still working on at the time of his death. During those years, he mapped in detail the region extending from Arnprior in the west to Montreal Island in the east, and from the St. Lawrence in the south to Ste. Agathe in the north. Henry knew this region thoroughly, and his broad experience was drawn upon not only by his colleagues at the GSC and in various universities, but also by municipal planners and consultants, all of whom acknowledge the high quality and great utility of the many

very fine maps he made. Henry also published numerous reports on the Ottawa Valley region, especially in "Current Research", just as he contributed to several guide-books on the Ottawa area - in particular the one prepared for the congress of the International Union for Quaternary Research (INQUA), held in Ottawa in August 1987. Researchers from more than forty countries were able to note and appreciate the quality of his contribution.

Two days before his death, I met with Henry, a dear friend and colleague, to discuss his research and his projects. As

usual, he was smiling and enthusiastic. He had planned a whole series of studies, and I sensed, as always, his thirst for knowledge and understanding. After all those years he was still as excited as ever about his research, and on the very day of his death he was enjoying lively discussions with his colleagues.

In years to come, the maps he made will help preserve his memory in the minds of all those who consult them. And we shall also retain a lively memory of his warmth, his smile, his great availability - the memory of a friend.

Jean-Serge Vincent

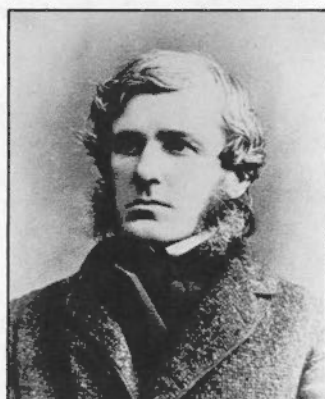
COVER

Answer

Elkanah Billings (lawyer-editor of the Ottawa Citizen-author-scientist) who had a distinguished career with the Geological Survey of Canada (1856-1876) and was Canada's first paleontologist.

The house ("Park Hill") served as a home for five generations of the pioneer Billings family and was once the focal point of a 1000 acre farm, that stretched along the southeast bank of Rideau River. Some construction features of the house are unusual, for example the cupola on the roof, which housed a large bell used to daily summon a dozen workers from the fields for meals. The house is now located on 8 acres of spacious lawns and woodlands and is known as the Billings Estate Museum, which is owned and operated by the City of Ottawa as a heritage showplace.

Elkanah Billings was a tremendously productive scientist: his bibliography contains 190 items. He was so well known as an author, in his



day and generation, that he often signed his manuscripts simply "E.B.". He was a master in the description of fossil organic remains and of recent natural history objects. He contributed greatly to W.E. Logan's monumental work Geology of Canada (1863) by supplying drawings of 543 characteristic fossils, plus correlations of strata and several appendices. Oil paintings of Elkanah Billings now hang in Logan Hall, Ottawa, and at the Physical Sciences and Engineering Library, McGill University. These portraits were

commissioned by the Ottawa Naturalists Club, as their first order of business after incorporation, due to the high esteem they held for E.B.

Recently, a group of researchers from The Billings Estate visited GSC headquarters to gather information about E.B. as an outstanding 2nd-generation member of Ottawa's pioneer family. Abundant background information and rare-book library sources were obtained from Bob Blackadar, Murry Copeland and Bud Cumming. These will be used to develop an impressive display based on the scientific achievements of Elkanah Billings.

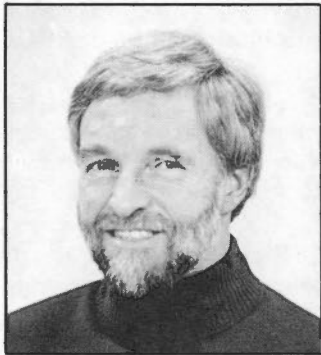
The Billings Estate is hard to find. It seems to be hidden away, like The Grange is in Toronto. But, in Ottawa, look for posted signs when travelling east along Riverside Drive (east of Billings Bridge Shopping Plaza, Billings Bridge and outcrops of Billings shale). The Estate has a full calendar of interesting, special events every weekend during summer months.

STAFF NEWS

CORDILLERAN AND PACIFIC GEOSCIENCE DIVISION

During the past three years, the Cordilleran and Pacific Geoscience Division has been fortunate to have attracted new talent to strengthen the group:

David Chapman. In David's recruitment to the Pacific Geoscience Centre, we have repatriated him not only to



D. Chapman

Canada from his former teaching position at the University of Utah, but to Vancouver Island where he grew up. He is contributing to geophysical studies related to the Canadian Cordilleran tectonic framework from the point of view of thermal modelling of the continental lithosphere, isostasy and the Pacific Margin's sedimentary basins.

Carol Evenchick. Carol came to us after finishing her Ph.D. at Queen's University at Kingston, Ontario. Her thesis on "Stratigraphy, Structure and Metamorphism and their Tectonic Implications in the

Sifton and Deserters Ranges, Cassiar and Northern Rocky Mountains, Northern British Columbia" won the 1985 "Best Thesis Award" of the Structural Geology and Tectonics Division



C. Evenchick

of the Geological Association of Canada. Carol is a NSERC Visiting Postdoctoral Fellow with the Division and is working on the structural geology of Jurassic and Cretaceous rocks in the northern Bowser Basin.

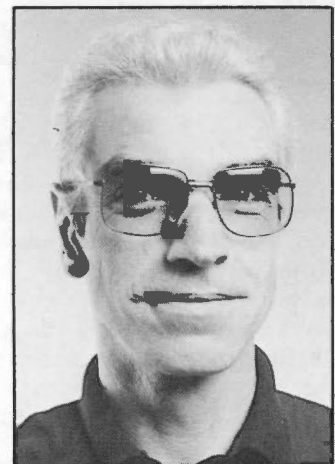
Louise Fox. After being with the Division for several years as a term employee, Louise joined us full-time in 1986. She



L. Fox

cheerfully distributes the mail throughout the office and sees that the replies are mailed promptly! Louise is also our Central Registry clerk; she has reorganized the Registry and conscientiously keeps the files up-to-date. She is also a "Jill-of-many-trades" and provides support service for the administrative and research staff.

L.W. (Skip) Rines. "Skip" provides the voice of experience for our new employees, having spent a career in the armed



L.W. Rines

forces and worked in the Department of Indian and Northern Affairs before joining us. Skip handles shipping, purchasing and inventory control and has created an accessible basement area from the chaos which confronted him on his arrival!

Kristin Rohr. "Sound" Kristin out on the seismic structure of the ocean's crust! Kristin combines academic training at M.I.T. and Woods Hole with



K. Rohr

industry experience with Atlantic Richfield. She brings her expertise in marine seismic reflection and refraction techniques to bear on tectonics and hydrothermal circulation along Canada's Pacific Margin.

Bev Vanlier. The "veteran" of our cadre of new employees, Bev became a full time employee in 1987, again after several years as term worker. Bev cares about words. She has processed millions of them, helping the research staff fashion Departmental and outside scientific publications. Her care in the manuscript preparation has rescued more than one of us "absent-minded professors"!



B. Vanlier

GEOSCIENCE INFORMATION DIVISION

Madeleine Middleton became Head of the GSC Publication Distribution and Branch Revenue Office in Ottawa in April 1987. Madeleine came to the GSC from the former



M. Middleton

Surveys and Mapping Branch of EMR. She replaces Laurier Touchette who retired in December 1986 after 34 years with the GSC.

On 24 March, 1988 a farewell luncheon, attended by over 60 colleagues, was held at the Nepean Sportsplex, Ottawa, in honour of **Bob Daugherty** who



retired from the Cartography Section of GSC after 37 years of service. Bob joined the Survey in August 1951 and devoted his career to providing high quality maps and illustrations for the scientific staff. Bob will be missed by many people, and we wish him many happy years of retirement as he pedals his way around Ottawa on the bicycle that was presented to him on his retirement.

Don Ransom and **Ted Callahan** have joined Cartography Units B and C respectively as term cartographers, both coming from Kenting Earth Sciences. Also new to B Unit as a turn employee is **Graham Carmichael** recently of AECL.

Early in 1987 **Ian Coulthart** was the successful candidate for the vacant Sub-unit Supervisor position in C Unit.

Jill Baldock joined the Photomechanical Unit early in 1987, coming from the Surveys and Mapping Branch.

Victor Dohar recently joined B Unit, filling a vacant cartographer position. Victor graduated in spring 1987 from the Cartographic Technologist program at Sir Sandford Fleming College.

Patsy Melbourne joined the Publication Production Unit in January 1988. Patsy was formerly with the Canadian Hydrographic Service in Halifax working on bathymetric charts. Skills learned there will no doubt help her navigate the sometimes turbulent waters of publication production. Patsy replaces **Susan Fowler** who resigned in 1987 to pursue other interests.



Guy Letang retired from the Publication Distribution Office in June 1987. Guy had been with the Survey since 1954 and is now devoting his energies to improving his golf. He is shown (on left) accepting a 35 years service award from Bob Blackadar. Good luck Guy we will be watching to see if you can straighten out that slice!

INSTITUTE OF SEDIMENTOLOGY AND PETROLEUM GEOLOGY

Upper Paleozoic biostratigrapher, **Benoît Beauchamp**, recently began work at ISPG as a Research Scientist. Benoît studied surveying and geology at Laval University and graduated with a Masters in geology at the University of Montreal in 1985. Moving to Calgary in 1983, he studied carbonate sedimentology and received a Ph.D. from the



B. Beauchamp

University of Calgary in 1987. His thesis dealt with analysis of Upper Paleozoic facies in the Canyon Fiord, Belcher Channel and Nansen formations of southwestern Ellesmere Island.

As a stratigrapher and sedimentologist in the Regional Geology Subdivision headed by Don Cook, it will be Benoît's task to understand Upper Paleozoic facies relationships, reconstruct the Carboniferous-Permian history of the Arctic Islands, and contribute to the assessment of hydrocarbon potential in the Arctic.

In April 1986, **Alan Jessop**, former head (1962 to 1986) of the Geothermal Program, Earth Physics Branch, began research on the geothermics of sedimentary basins, and has worked out of his ISPG office since September 1987.

After receiving physics and mining engineering degrees from the University of Nottingham, England, Jessop came to Canada in 1960 as a postdoctoral fellow (geophysics) at the University of Western Ontario. From 1962 to 1966, he participated in and led geothermal research related to the Upper Mantle Project of EMR.

Palynologist **James White** joined the Micropaleontology Section about a year ago to study the Tertiary and Mesozoic palynology of the western continental margin and Beaufort Sea. Prior to working at the Institute, he investigated the late Quaternary palynology of the Lower Bow Valley near Banff for Parks Canada. Having obtained a doctorate from Simon Fraser University in 1982, he brings to his study of palynology a background in archeology as well as geology.

Peter Errman transferred from the Prince George office of the Department of Indian and

Northern Affairs in April 1987 to replace Cliff Jeremy as superintendant of building and engineering services.

A year ago, **Colleen Boyle** began working in the Cartography Unit of ISPG.

Since April 1987, **Roxanne Roebroek** has been the Head Librarian at ISPG. For 4½ years she was a librarian in the Esso Resources Library Information Centre, and spent 2 years as a corporate librarian at Alberta Energy Corporation and 2 years as a Social Sciences librarian at the University of Calgary. She earned a BSc in zoology and ecology at the University of Alberta before undertaking a Masters of Library Science



R. Roebroek

degree at that university. Since 1980, when she came to Calgary, Roxanne has been active in the Calgary special libraries association, CASLIS, serving as a past president and vice president of that organization and, since 1986, has taught library science evening courses at the Southern Alberta Institute of Technology.

Tasneen Fazel, formerly of Menenco Consultants Limited, became ISPG switchboard operator and receptionist in September 1987, replacing Sandra Young, who went to Ontario.

Gidéon Smith, a curation clerk for several years at ISPG, left in October 1987.

A retirement lunch for Willy Norris was held in Calgary in September 1987. ISPG Director Walter Nassichuk mentioned some of the highlights of Norris career. From 1941 to 1945, during WW2, Willy was an air navigator based in the UK and participated in bombing raids as far east as Berlin in two- and four-engined aircraft such as the Wellington and Halifax.

He completed an honours BSc in 1950, and a Masters in 1951, both at the University of Alberta, and proceeded to complete a doctorate at the University of Toronto in 1955 with a thesis on the genus *Atrypa*. As a student he was also interested in microfossils, and at that time few textbooks on the subject had been written!

In spring 1955 Norris joined the GSC in Ottawa as a Precambrian geologist, recruited by Yves Fortier to join Operation Franklin, a pioneer helicopter-supported reconnaissance mapping project in the High Arctic Islands. During the early 1950s he spent several summers mapping Phanerozoic geology in northern Yukon and adjacent District of Mackenzie.

In 1956 Willy began to study the Devonian of northern Alberta. He was on Operation Mackenzie in 1957 and headed Operation Winisk in 1967. In 1969 he became Head of the Paleozoic Geology Section of ISPG, and continued to investigate the Devonian biostratigraphy of vast regions of Western Canada.

Walter Nassichuk noted that summer 1970 was a disaster for Norris' field party which included Don Norris, and which had set up a base camp at the southern end of the Richardson Mountains in northern Yukon. One day when both scientists were out traversing, their office tent burned down with their air photos, manuscript maps and field notes.

In 1972 Norris became head of the Macropaleontology Section of the ISPG Paleontology Subdivision.

Willy has been a member of many scientific and professional societies, and in 1982 he received the Alberta Achievement Award for his contributions to the geology of that province. He continues to work part-time at ISPG and can look back on an exciting career spent exploring a vast and beautiful country.

LITHOSPHERE AND CANADIAN SHIELD DIVISION

Jean L. Roy, retired from the Paleomagnetic Section in April, 1987. He was born in Thetford Mines and studied physics at the University of Montreal. Immediately prior to joining the permanent staff of the Dominion Observatory (later to become the Earth Physics Branch) in 1952, Jean spent a year in the High Arctic as officer-in-charge of the Geophysical Observatory at Mould Bay on Prince Patrick Island. Jean was a pioneer in paleomagnetic studies of sediments and was responsible for the construction, in 1957, of the first truly sensitive magnetometer in Canada, an instrument that remained the workhorse in the analysis of magnetically weak rocks for a decade. Among the first to recognize the complex nature of magnetization in rocks, Jean continued to develop instrumental techniques and applications at the Blackburn Road laboratory, focussing in particular on Carboniferous redbeds, Huronian rocks and the Nipissing diabase.

Jim Mortensen, formerly a post-doctoral fellow in the Geochronology Laboratory (GEOGRAM 26), has joined the permanent staff as a Research Scientist.

Two other recent additions to the permanent Research Scientist ranks are Tony Peterson and David Boerner.

Tony was born in Lethbridge and raised in Calgary. He received his BSc from the University of Calgary and, in 1987, his PhD from Johns Hopkins University, Baltimore. His doctoral work, supervised by Bruce Marsh, concerned the petrogenesis of nephelinite-carbonatite magma in the East African Rift and included a detailed study of Shombole



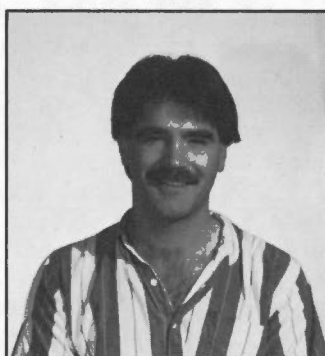
Willy and his wife Joyce



T. Peterson

volcano on the Kenya-Tanzania border. At the Survey, Tony will be studying the origin and emplacement dynamics of the volcanic rocks of the Proterozoic Dubawnt Group and the Mackenzie diabase dykes in the Baker Lake area.

David has joined the Lithosphere Geophysics Section at Observatory Crescent. Born in Toronto, he was brought up in Thunder Bay and Calgary. After receiving a BSc in chemistry from the University

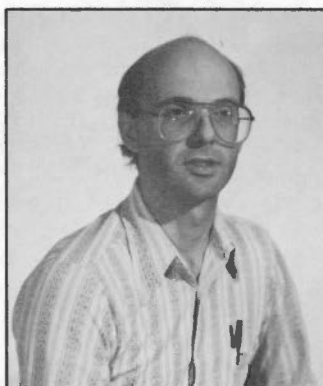


D. Boerner

of Waterloo, he attended the University of Toronto, where he obtained his MSc and, in 1987, his PhD in geophysics. His doctoral dissertation dealt with the interpretation of

electromagnetic data collected in the Paleozoic sedimentary basin of southern Ontario and at the GSC he is continuing his work in electromagnetic exploration mainly under the Lithoprobe project.

Frank Dudas (pronounced Doodash) has taken up a post-doctoral fellowship in the Geochronology Laboratory. He was born in Germany of Hungarian parents but came to the USA at an early age and was raised in Anaconda, Montana. After studying geology at Montana State University, he spent 5 years with Kennecott



F. Dudas

Corporation in Lexington, Massachusetts, working on stable isotopes and fluid inclusions of porphyry copper deposits. He then returned to academia at Pennsylvania State University and did research on, firstly, the Japanese Kuroko ores and associated volcanics, and subsequently, the geochemistry of alkaline rocks of central Montana, for which he is about to receive a PhD. At the Survey, Frank will work on the Sm-Nd isotopic geochemistry of Slave Province granites, the mafic rocks of the Coppermine River lavas, Mackenzie dykes and Muskox intrusion, and the

Sudbury Dykes at the Grenville Front. For the record, Frank has a further connection with Canadian geology in that his wife, Rigel Lustwerk, is currently completing a PhD on the geochemistry of the Redstone stratiform copper deposit in the Mackenzie Mountains, N.W.T.

In January, 1987, **Geneviève Allen** transferred from the Minister's office to the LCSO Booth Street office as administrative clerk. In April 1987, **Gwen Mason** (née Parry) became LCSO secretary at Observatory Crescent.

Thomas Frisch

MINERAL RESOURCES DIVISION

Financial and personnel matters in MRD have been in the capable hands of **Bonnie Rankin** since January 1987, when she became the Division Administrative Officer. This followed the departure of **Ray Gaudreau** to Human Resources Sector as Executive Assistant to the ADM. Ray was the first Administrative Officer for the Economic Geology Division and



B. Rankin

as an avid hockey player, he helped greatly in stickhandling through reorganizations that created the Economic Geology and Mineralogy Division and,

subsequently, the present MRD. **Bonnie** brought to the Division more than 12 years experience in Surveys and Mapping Branch and quickly demonstrated that she is equally adept in handling either financial or human resources.

Rosemary MacKenzie, administrative clerk, arrived on 1 April 1987, also via Surveys and Mapping.

Marilyn Redden, recently secretary of Mineral Resources and predecessor divisions, resigned after 12 years of dedicated and conscientious service to pursue her academic career leading toward full-time social work, a long-standing interest. Her talents in running the division will be sorely missed. However, the division was fortunate to find a well-qualified and personable replacement. **Diane Bouchard**, a Kapuskasing native, who



D. Bouchard

brings previous experience in GSC, the former Earth Physics Branch, and most recently in the Programs, Planning and Services Branch to her new duties.

Willy Dyck, research scientist in Exploration Geochemistry, has retired after 28 years of extraordinary achievement. During his tenure at the GSC, Willy established and built much of the radiocarbon laboratory in use today. His pioneering work in radon



R. MacKenzie

exploration geochemistry has been recognized globally, as a major tool for the mineral industry. Recent studies incorporating helium detection, and research in the radioelement field have been ingenious and productive. Willy and his wife have taken a 3 year posting to Haiti with the Mennonite Church, to work on a reforestation program.

Mr. Yuan Ding, from Wuhan College of Geology, PRC, after a year as Visiting Chinese Research Scholar with the Geomath Section, MRD, has left to pursue his PhD studies at Syracuse University.

Dogan Paktunc, a post-doctorate fellow who has been working on ultramafic rocks of eastern Canada, has received a term appointment with the Mineralogy and Chemistry Subdivision.

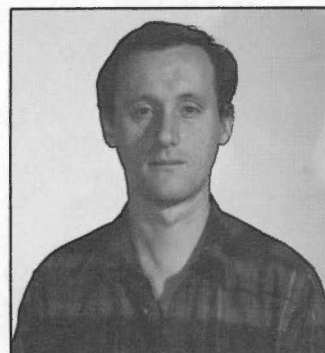
In February 1987, **Barbara Elliott**, joined the Borehole Geophysics Section and **Laurel Schock** was appointed to a permanent position with the Section, following several term extensions.

Sandra Thompson, of the SEM Laboratory, resigned in March 1987 to pursue a career in the investment business. **Isobel Girard** and **Kirn Dhaliwal** were appointed to term positions in the Mineralogy and Chemistry Subdivision. **Gerry**

Gagnon and **Allan McRae** have permanent appointments with the Sample Preparation Laboratory.

In July 1987, **Alexandre Desbarats** joined the Mathematical Applications in Geology Section as a research scientist.

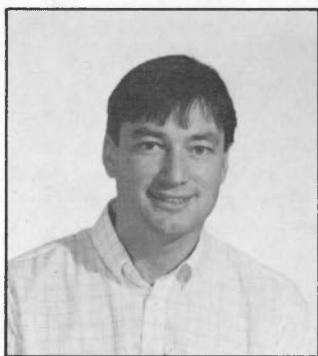
Alec holds BEng (1980) and MASc (1982) degrees from the École Polytechnique, Montreal. Recently, he obtained a PhD in geostatistics in the Department of Applied Earth Sciences, Stanford University.



A. Desbarats

One of the objectives of the Mathematical Applications in Geology Section, which is part of the Geochemistry Subdivision, is to provide statistical consulting services to other Geological Survey projects. In this respect, Alec will be available to provide support in the areas of stochastic hydrology, geostatistical resource evaluation and spatial computer simulation experiments. GSC staff are invited to contact Alec or Fritz Agterberg regarding possibilities for geostatistical consulting or joint projects within the general area of statistical applications in the Earth Sciences.

Danny F. Wright joined the Exploration Geochemistry Regional Surveys group as a



D. Wright

Physical Scientist under the Mineral Resource Agreement program. He will assist with processing geochemical data for Open File releases, and will work with the Geomathematics group, applying a geographic information system to a data integration project, for the Nova Scotia MDA.

Danny recently obtained his Masters degree at University of Ottawa, and received his BSc in geology at McMaster. He worked for several years in the mineral industry and with Ontario Geological Survey. Don Sangster will be particularly pleased to have a fellow canoe builder in MRD to swap design and production information, to help overcome those "rough spots".

Roxane Banville joined Exploration Geochemistry in October 1987, and is responsible for database management of geochemical data. She was born in Dayton, Ohio, has lived in



R. Banville

various locations in N. America and Europe, and recently settled in Ottawa where she obtained a BSc in geology from University of Ottawa. Her honours thesis, supervised by C.E. Dunn, Exploration Geochemistry Sub-division, dealt with gold biogeochemistry. Roxane worked at the GSC during summers, while at university, and is a staunch participant of the GSC volley ball games.

TERRAIN SCIENCES DIVISION

Jean-Serge Vincent has been appointed Chief of the Quaternary Geology Sub-division. He has been with Terrain Sciences since 1973. During this time, he has reported on the surficial geology and stratigraphy of the western Arctic Archipelago, western Quebec, and eastern James Bay region. He is past president of AQQUA, chief editor of *Géographie Physique et Quaternaire*, and had a key role in the organization of INQUA '87.

Ram J. Dubey (DSc., C. CHEM, MRSC, CPhys, M Inst. P, MCIC.) has recently joined Terrain Sciences as a research scientist in the Glaciological Section. Ram received his doctorate from Laval University in structural inorganic chemistry and organometallic synthesis. His past experience includes Practitioner at Landes Untersuchung Anstalt (Fehling's Research Institute) in West Germany, and Researcher at the Royal Institution of Great Britain, Davy-Faraday Research Laboratory, working under the supervision of Sir Lawrence Bragg (Nobel Laureat) and Dr. C.W. Bunn in protein crystallography and molecular structure. While Director of the National Research Institute of Niger, a



R. Dubey

program for international development sponsored by CIDA, Ram established a chemical laboratory for soils, plants and mineral analysis. Most recently he was an assistant professor at the Department of Chemistry, University of Maiduguri, Nigeria, teaching crystallography and instrumental methods of analyses. His research in the Glaciology Section will involve ion, chromatograph, SEM, X-ray diffraction, and mineralogical studies of ice cores from arctic islands.

Lisa Maillé has joined Terrain Sciences as a technician in the Radiocarbon Laboratory. Lisa received a BSc in biochemistry from Concordia University in 1979, and for the past 8 years has worked for the pharmaceutical firm of Smith, Klein and French.



L. Maillé

Jennifer Whalroth joined Terrain Sciences as a lab assistant in the Sedimentology Lab. She transferred from the Geochronology Lab of the Lithosphere and Canadian Shield Division. Jennifer has a BSc in geography and her experience includes work for Bonner & Clegg and 6 field seasons in NWT.

Michel Lamothe, who had been working on the New Brunswick MDA project, left to assume a teaching position at Université du Québec à Montreal where he will undertake research on thermoluminescence dating among other Quaternary projects.

David A. Fisher, who had been a member of the Glaciology Section, Quaternary Environments Subdivision, left to assume a teaching and research position at University of Copenhagen.

Darlene L. Smith, who had been working in the diatom lab of the Paleoecology Section, Quaternary Environments Subdivision, left to take a job with the Department of Fisheries and Oceans.

Archibald MacS. Stalker of Terrain Sciences Division retired on 12 June 1987 after 37 years with the Geological Survey of Canada. Initially sent to the field in Alberta to report on ground water conditions, his interest in Pleistocene stratigraphy led him to turn his attention to glacial geology. For the remainder of his career with the Survey Archie concentrated on groundwater and surficial geology studies in western Canada. Archie is well known for his study of the Foothills Erratic Train and for his collection of fossils that span 2 million years of glacial history.

In 1986 he received an honorary degree from the Department of Geography, University of Lethbridge, in recognition of his work in the area. Archie is presently teaching a field methods course at that university.

Nelson Gadd of Terrain Sciences Division retired on 31 October 1987 after 39 years with the Geological Survey of Canada. Following one season mapping Precambrian geology, he changed to Pleistocene geology in winter 1948-49, taking advantage of an offer of one year leave with pay for a person in the second year of graduate studies if the person would study Pleistocene geology. After a field training

program in ground water and surficial geology studies in Ontario, under the direction of Roy Dean, Nelson began fieldwork in the St. Lawrence Valley in 1950. This started as a groundwater project but quickly turned into a thesis project on Pleistocene geology. With the exception of a 3 year project in New Brunswick, he has concentrated on groundwater and surficial geology studies in the St. Lawrence Valley and Eastern Ontario. Among his achievements, Nelson is credited with having mapped and put into appropriate stratigraphic perspective the St. Pierre Interstadial deposits of the St. Lawrence Lowlands. Nelson is also known for his research on the Champlain Sea.



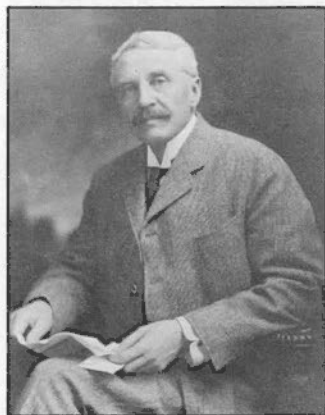
John Scott presents a set of bookends cut from glacial erratics to Dr. Nelson Gadd on the occasion of his retirement.

OF GENERAL INTEREST

HISTORY OF FEDERAL GEOSCIENCE IN VICTORIA

Federal presence in geoscience in Victoria began at the end of the last century. In 1897 the Canadian Meteorological Service in Toronto purchased two newly-developed Milne horizontal seismographs in response to a British proposal for the development of a global seismograph network. Early in the autumn of 1898 the Director of Canada's Meteorological Service arrived from Toronto and installed one of the new instruments in the basement of Victoria's Customs House.

Although responsibility for the new equipment officially fell under the jurisdiction of Victoria Meteorologist Edmund Baynes Reed, it was Francis Napier Denison, Reed's newly-appointed assistant, who took over its maintenance and operation. Monitoring appears to have begun almost immediately; in one of his



Francis Napier Denison (Victoria's first seismologist) installed Victoria's first seismograph in 1898. He studied Victoria-area earthquakes for over 40 years. (Photo courtesy of Victoria City Archives. No. 98108-33)



The Victoria Customs House, home of Victoria's first seismograph, circa 1898. The building still stands on the corner of Wharf and Broughton Streets. (Photo courtesy of British Columbia Provincial Archives. No. 71626)

articles Denison states that the instrument was in "daily use continuously since 1 January 1899" but his handwritten logbooks indicate the seismograph was in operation as early as September 1898.

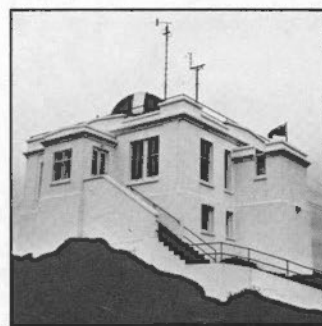
An 1884 Meteorology graduate of Upper Canada College, Denison had served as Assistant Observer with the Dominion Observatory in Toronto intermittently for over fourteen years, interrupting his term of office to study electrical engineering in Massachusetts. Denison's scientific interests were diverse. He kept a personal scrapbook for over 50 years, saving the newspaper accounts of each earthquake detected at Victoria and any other articles he found to be of particular interest. (Denison's scrapbooks currently reside at the Pacific Geoscience Centre.)

Although not trained as a seismologist Denison designed and built his own seismograph

in 1907 and published articles on the large British Columbia earthquakes of 1918 and 1920. In addition, he conducted extensive research on local earth tilting, which he thought should be related to earthquake activity.

Denison also designed the Gonzales Heights Meteorological Observatory. In 1914 construction was complete and the seismograph transferred to the new facility, where, having assumed the Directorship of the Observatory following Edmund Reed's death that same year, Denison was able to monitor the instrument without disruption of his other duties. Over the following twenty years several instrument additions and replacements were made, keeping the seismograph station abreast of advancing technology.

Denison continued to operate the seismographs until his retirement in 1936 at age seventy. Shortly after Denison retired, a shuffle of government



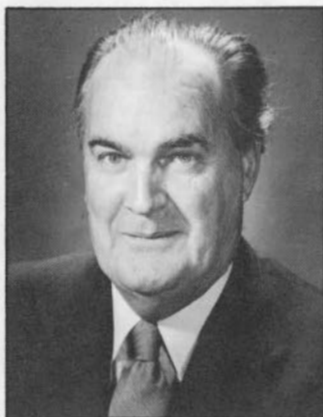
Gonzales Heights Meteorological Observatory, built in 1914. Denison designed the building with living quarters for himself and his wife. A concrete vault in the basement housed the seismographs. (Photo courtesy of Gonzales Heights Meteorological Station)

departments transferred responsibility for Canada's expanding seismograph network from Meteorological Services to the Dominion Observatory of the Department of Mines and Resources. Consequently, in 1939 Victoria's seismograph station made a third move, this time north of Victoria to the Dominion Astrophysical Observatory on Little Saanich Mountain. There the daily duties were adopted by astronomer Kenneth O. Wright, who later became Director of the Astrophysical Observatory.

Early instruments at the Victoria seismograph station were primarily designed to detect distant earthquakes. When a magnitude 7.3 earthquake severely shook Vancouver Island in 1946, the seismographs at Victoria proved inadequate. In 1948 a Benioff vertical seismograph designed for local earthquake recording was installed. It revealed an abundance of small earthquakes in the region. In 1949 Canada's largest earthquake on record, a magnitude 8.1, shook the Queen Charlotte Islands. The



Dominion Astrophysical Observatory, Little Saanich Mountain. Victoria's geoscience facilities moved to the site in 1939. (Photo courtesy of British Columbia Provincial Archives. No. 63133)



William G. Milne, Victoria's first resident geologist, was named Chief Scientist when the Pacific Geoscience Centre was established in 1976.

earthquake and its long sequence of after shocks were well recorded at Victoria.

Two years later seismologist William G. Milne was transferred to the west coast and set up additional seismograph stations at Port Alberni and Horseshoe Bay, forming a triangular network which could be used to locate the local earthquake activity. Milne's research over the following decade delineated the distribution of earthquakes in Western Canada and led to the development of Canada's first modern seismic zoning map, which was incorporated into the National Building Code in 1970.

For the first half-century federal geoscience in Victoria was confined to seismology. Geomagnetism studies were introduced during the International Geophysical Year (July 1957 - December 1958) when geomagnetist Bernard Caner, with the help of a small group from Ottawa, constructed a magnetic observatory on the Astrophysical Observatory grounds. Among those who assisted him was Ken Whitham, who later became Director

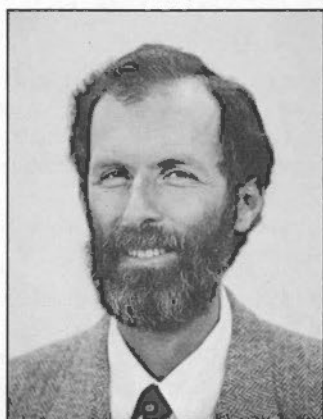
General of the Earth Physics Branch and an Assistant Deputy Minister for the Department of Energy, Mines and Resources.

By 1960 there were five on Victoria's geophysical staff. In 1968 the new Victoria Geophysical Observatory was established within the jurisdiction of the Earth Physics Branch, Department of Energy, Mines and Resources. The Geophysical Observatory was moved to a separate building on the Dominion Astrophysical Observatory site.

Further administrative realignments in 1976 saw the Victoria Geophysical Observatory component of the Earth Physics Branch and the Marine Geology Subdivision of the Geological Survey of Canada's Cordilleran Division incorporated into the Pacific Geoscience Centre (PGC) with Bill Milne named as Chief Scientist. In 1978, this group of scientists moved into its brand new quarters at the Institute of Ocean Sciences of the Department of Fisheries and Oceans at Patricia Bay, 15 kilometres north of Victoria. By that time, the finding of hydrothermal sulphide deposits on spreading ridges had initiated intensive geophysical studies of the Juan de Fuca



The magnetic observatory on Little Saanich Mountain, erected for the International Geophysics Year in 1957.



Roy Hyndman served as Director of Earth Physics Branch at PGC from 1983 to 1986.



Lawrie Law, Head of the Pacific Geoscience Subdivision at PGC.



The Pacific Geoscience Centre Wing at the Patricia Bay Institute of Ocean Sciences complex in Sidney, B.C.

THE STAFF DURING 35 YEARS OF GEOSCIENCE ON THE WEST COAST

DOMINION ASTRO- PHYSICAL OBSERVATORY

Geophysics Group

- 1951 + Bill Milne
- 1954 + Hugh White
- 1957 + Bernard Caner
- 1960 + Don Auld, + Sandra Meilder
- 1962 - S. Meilder + Mike MacDonald
- 1964 - M. MacDonald, + Mike Bone
- 1966 - H. White
- 1967 - M. Bone, + Garry Rogers

VICTORIA GEOPHYSICAL OBSERVATORY

- 1968 + Monica Bonnell
- 1969 + Bruce Fleet
- 1970 - M. Bonnell, + Darlene Chisholm
- 1971 + George McMechan
- 1972 + Lawrie Law, - B. Caner, - B. Fleet, + Hank Bennetts
- 1973 + Mike Gregory
- 1975 + Robin Riddihough
- 1976 + Larry Stephens, + Roy Hyndman, + Tom Bunyan, + Madeleine Styles

PACIFIC GEOSCIENCE CENTRE

- 1977 + Chris Yorath, + M. Bone, + Brian Bornhold
- 1978 + Bruce Cameron, + Susie Cameron, + Ralph Currie
- + Jon DeLaurier, + Herb Dragert, + Ivan Frydecky
- + Don Tiffin, + Dieter Weichert, - M. Styles
- + Anne Porter, - A. Porter, + Liz, Parkinson
- + Lesley Sarracino

- 1979 + Kathy Fyfe, + Trevor Lewis, + John Luternauer
- + Bill Price, + Dave Seemann, + Art Whitford
- L. Parkinson, + Gay Blair, - D. Tiffin
- 1980 + Marjorie Johns, + Patrick McLaren, - G. Blair
- + Sharon Oliver, - S. Oliver, + Claire Denney
- S. Cameron, - L. Stephens
- 1981 + Kathy Kari, + Jack Sweeney, - C. Denney
- + Bob Horner, + Ted Irving, - L. Sarracino
- W. Milne
- 1982 + Wanda Bentkowski, + Trudie Forbes, + Tark Hamilton + Bill Hill, + Gail Jewsbury, - G. McMechan,
- + Wynne Studsrud, + Lorena McDonald, + Earl Davis
- 1983 - K. Kari, + Jane Wynne, - W. Studsrud
- 1984 - T. Bunyan, + Richard Baldwin, + Jerry Horel,
- + Ken McCormick, + Bob MacDonald, + Max Wilde
- 1985 + Margaret Meeres, - H. Bennets, - R. Riddihough,
- L. McDonald, - P. McLaren,
- + Marlaine Brown
- 1986 + Don Bowker, + Kristin Rohr, + David Chapman

Ridge and its environs. The Patricia Bay location, home for the ocean research vessels, was ideal for co-ordinating marine research. In 1983 Roy Hyndman was appointed Director of the Earth Physics Branch component and administrative head at PGC.

In April 1986, the Earth Physics Branch and the Geological Survey of Canada amalgamated. The Pacific Geoscience Centre then became a subdivision of the Cordilleran and Pacific Geoscience Division and in April 1987 Dirk Tempelman-Kluit was appointed divisional Director. Lawrie Law is Head of the Pacific Geoscience Subdivision.

Today the Pacific Geoscience Centre performs a wide range of functions, much like a mini-

GSC. The Centre is responsible for locating and investigating all earthquakes in Western Canada and for co-ordinating investigation of the geological history, resource potential and natural hazards of the Pacific Margin. Multidisciplinary studies conducted jointly with the GSC offices in Vancouver and Ottawa and Calgary's Institute of Sedimentary and Petroleum Geology are currently assessing the petroleum potential of British Columbia's offshore basins and the nature of mineral deposits along the Juan de Fuca Ridge. At the Pacific Geoscience Centre, refining our geoscience knowledge of Canada's west coast is an on-going task.

Garry Rogers and Lynda Hallas

GEOLOGICAL WIVES' ASSOCIATION AWARD

The Geological Wives' Association is pleased to announce that Ingrid Ermanovics, daughter of Ingomar and Carol Ermanovics of Nepean, Ontario, is the recipient of the 1987 Geological Wives Award.

Ingrid is a graduate of J.S. Woodsworth Secondary School, Nepean, and is attending the University of Regina in the Pre-Veterinary Programme.

The \$300 award is based on academic standing, extra-curricular and community activities, interest, general aim and accomplishments.

HOW SWEET IT IS!

Last year Greig Lund changed his research direction from computer data processing to biogeochemical studies. One of his tasks now concerns determining the use of tree sap as a tool for locating mineral deposits. At present sugar maple sap is under investigation. He points out the difficulty experienced by the temptation to consume the samples.

NEW PRESIDENT

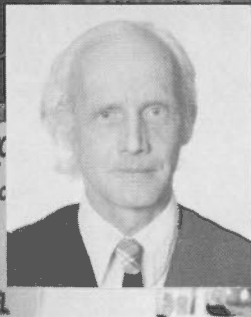
On 1 January 1988, Murray Duke was appointed President of the Mineralogical Association of Canada; he is the first member of the GSC to serve the association in this position since its incorporation in 1955. Murray is the nineteenth President to head the association. On his way to the presidency, Murray served as Secretary for six years (1978-1983) and as 'Prep-Pres' (Vice President, according to the By-Laws) in 1986 and 1987. We wish Murray well as he dons his chain of office!



The crew at PGC, 1986.

THORSTEINSSON, CHRISTIE AND TRETTIN HONOURED BY THE PI

At the annual general meeting of the Professional Institute of the Public Service of Canada, held in Ottawa on 6 November 1987, three ISPG geologists, Ray Thorsteinsson, Bob Christie, and Hans Trettin, were honoured for their outstanding contributions to the geology of the Canadian Arctic. Associate Deputy Minister Pierre Perron presented them with the Institute Gold Medal Award and stated that their work formed much of the foundation upon which our understanding of Arctic geology is based.



Pierre Perron, the Associate Deputy Minister of EMR, presents Bob Christie (centre) and Ray Thorsteinsson (right) with the PI awards.

ANOTHER FLOOD IN THE GSC LIBRARY

"...all the fountains of the great deep burst forth, and the floodgates of the heavens were opened." (Genesis 7:11)

On 13 June 1987 the GSC Library in Ottawa once again weathered a deluge! At 3 a.m. water from a burst pipe on the fifth floor poured onto the main library collection housed on the third floor at 601 Booth Street. A fast response by the commissionaires, who covered critical areas with plastic, prevented more extensive damage, and only 60 linear feet of the collection was seriously damaged.

Floods of varying magnitudes have occurred several times each year during the last 10 years and this was in fact only the third major flood. The library is now cleaned up, but peeling paint, a lingering dampness, and some gaps in the collection indicate what happened. The books were salvaged by being stored in freezers, courtesy of Terrain Sciences Division, and then freeze-dried. Should there be any concern?

Well, books are fragile, and variations in humidity cause considerable damage. The documents housed in Room 350 spend summers in a steamy, almost tropical environment, and winters subjected to the extreme dryness of central heating. This temperature and humidity fluctuation results in attack by mildew and causes brittleness that eventually results in the complete destruction of the books. There is no provision in the GSC budget for the preservation of the collection or for the conversion of the documents into another medium such as microform or optical disc, and consequently, many of our holdings are rapidly approaching extinction. Anyway this action would not be effective unless the collection was housed in a climate controlled environment with protection against future water damage. For many documents this may not be critical as, let's face it, they are easily replaceable or are only of marginal value. However, a large part of our collection is unique to Canada and, in some cases, to North America. When

these books disappear a significant portion of Earth Science literature will no longer be readily available to Canadian geoscientists.

Annette Bourgeois

[The British Geological Survey, which is comparable in size to the GSC, has two main offices, at Keyworth in England and Edinburgh in Scotland, and in July 1987 I visited both. There is a new BGS library at both centres, and material can be stored in a temperature and humidity controlled, fireproof, waterproof, secure environment. As their standards and environment for the storage of archival material are the equivalent of those demanded by the British Museum, the BGS is able to store its own archival documents. Since the GSC library is regarded as a National resource and is Canada's largest earth science library, surely it should be housed in appropriate quarters. Ed.]



In May 1987 Steve Blasco (right) was presented with a Merit Award Certificate by Mike Keen, Director of AGC. Steve also received an award in recognition of his contribution to geological and engineering investigations in the Beaufort Sea.

CIM AWARD TO W.H. POOLE

Bill Poole recently won the Dr. W.J. Wright Award for his outstanding contributions to the geology of New Brunswick. The award was presented by the New Brunswick Branch of the Canadian Institute of Mining and Metallurgy.

In his acceptance speech at CIM luncheon in Bathurst, Bill reminisced about his own



geological mapping in the Miramichi Zone of New Brunswick during the era when Cliff Stockwell, Charlie Smith, Bob Boyle, Ken Dawson, Frank Anderson and Ralph Skinner were also mapping the geology of the Central Mineral Belt. Dr. Wright (1881-1983) was a veteran of WWI, a Yale graduate with field experience in India and Africa, Provincial Geologist, a U.N.B. professor and author of GSC Memoir 129. In 1960, Bill met William Josiah Wright ("a delightful person, then in his 80s") and drove him to a GSC field camp north of Fredericton, where they spent the day seeing the complexities of the geology of the area.

Bill Poole with the W.J. Wright Award.

NEW MINERAL

D.C. Harris of the Mineral Resources Division has joined the select group of geologists who have had a new mineral named after them. DON HARRISITE ($\text{Ni}_9\text{Hg}_3\text{S}_{10}$) is a new find from the Erasmus Mine, Schwarzles mining district, Austria. It occurs in a mercury-rich zone of carbonate-hosted silver and base metal ores. The name was proposed by Prof. W.H. Paar, Institute of Geology, Salzburg University, T.T. Chen, CANMET and A.C. Roberts, GSC, for Don's many outstanding contributions to ore mineralogy.

STRUCTURAL GEOLOGY AWARD

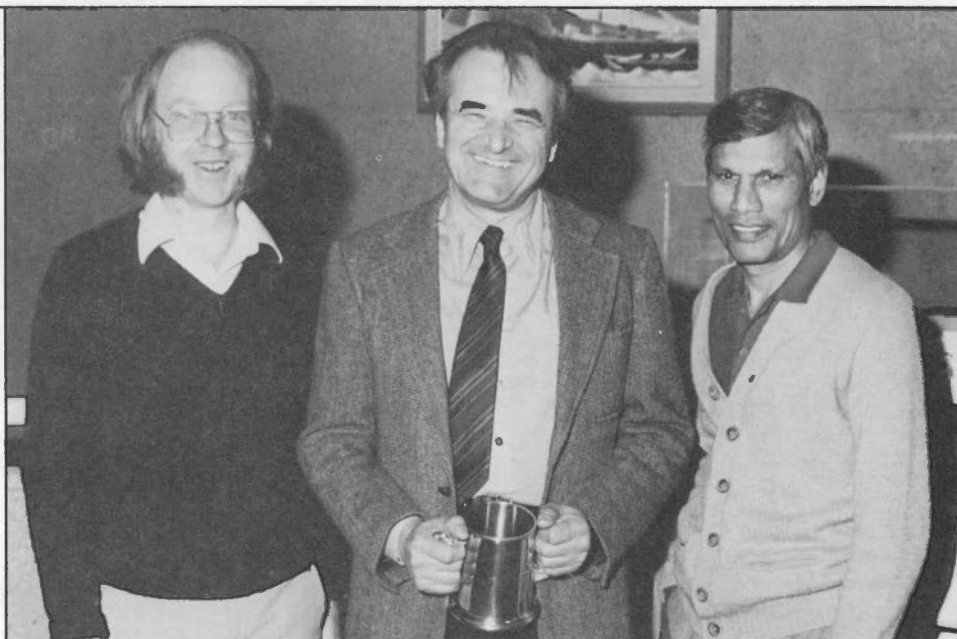
Simon Hanmer of the Lithosphere and Canadian Shield Division received the 1986 Best Paper award from the Structural Geology and Tectonics Division of the Geological Association of Canada for his paper "Asymmetrical pull-aparts and foliation fish as kinematic indicators", published in the *Journal of Structural Geology*, v. 8, p. 111-122.



Lois Killeen left the GSC Ottawa cafeteria on 25th September after working there for 12 years.

OCEAN-GOING "BUG-PERSON"

Gustav (Gus) Vilks, a marine micropaleontologist at the Atlantic Geoscience Centre (Environmental Marine Geology Subdivision) was honoured recently by his co-workers on the occasion of his 25th anniversary as an employee of EMR. Although Gus has worked in many of the world's oceans on problems concerning Quaternary marine geology, his early research on the ecology of benthonic and planktonic foraminifera in very cold places such as the Beaufort Sea, Northwest Passage and the Arctic Archipelago represents an impressive contribution to Canadian marine science.



Gus Vilks firmly gripping his newly acquired two-handled coffee (?) mug, a souvenir of his 25 years of service with the GSC. Gus is "stabilized" on the left by David Piper and on the right by his senior micropaleontology technician Bhan Deonarine.

ISPG FIELD TRIP TO THE CYPRESS HILLS

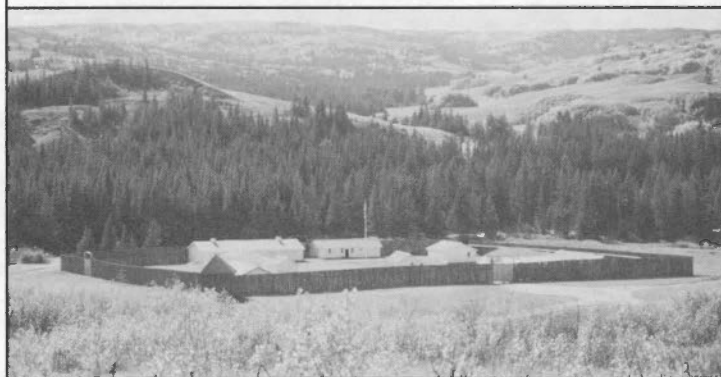
In September 1987, ISPG staff went on a field trip to the 10 000 km² erosional plateau known as the Cypress Hills. This remarkable area in southeastern Alberta and southwestern Saskatchewan contains some of the most elevated surfaces that exist between the Canadian Rockies and Labrador. The rocks exposed are chiefly Cretaceous and Tertiary, and our geological

guide, Rudy Klassen, emphasized the complex history of the region during the Ice Age glaciations. Highlights of the trip included a stop at Fort Walsh, a North West Mounted Police post established in 1875 when the Cypress Hills was populated by about 5000 Indians, and a brief stop at Writing-on-Stone archeological site, south of Milk River, Alberta, where several thousand-years-old petroglyphs are exposed on sandstone cliffs.

Lynn Machan-Gorham



Rudy Klassen describes the glacial history of the Western Plains near the Cypress Hills.



Fort Walsh, Saskatchewan



Field trip participants Linda Reynolds and Bill Vermette leaving on the archeological preserve at Writing-on-Stone

FALL FIELD TRIP

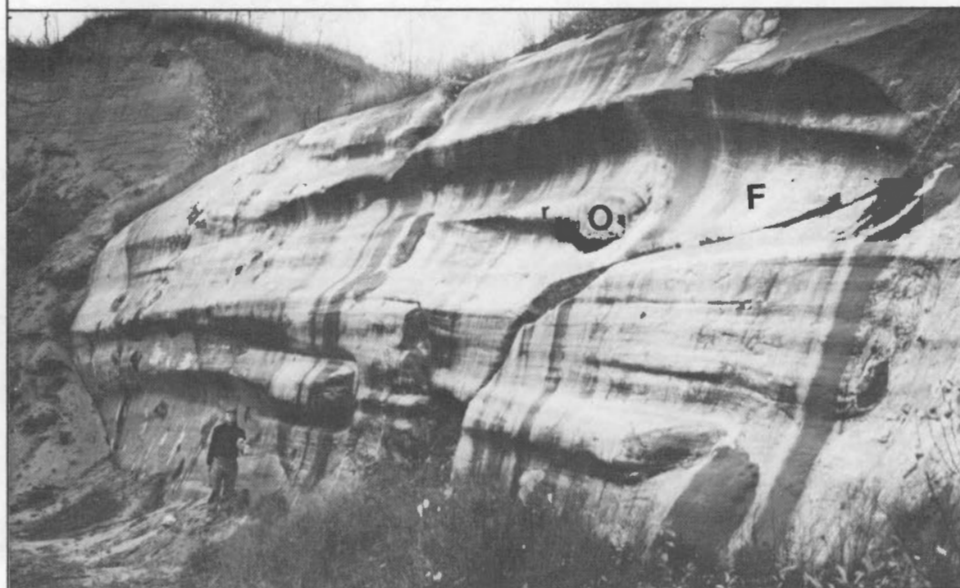
Ottawa GSC and CIM members participated in a bus excursion on 16 October 1987 to see some local geology. The trip began at the outcrop in front of 601 Booth Street. At the nearby 1400 foot basement drill hole, the group was given a demonstration of gamma-ray logging and insights into research on logging techniques, where temperatures may be measured to 1/10 000 of a degree. After a visit to the famous Devil's Hole in Trenton limestone, at the E.B. Eddy plant in Hull, selected core for the entire stratigraphic section of the Ottawa area was examined at Tunney's Pasture.

At Larrimac, within sight of the new Gatineau Satellite Receiving Station, satellite images of the local area, with 30-metre resolution, were distributed to the group. To the north, "brucitic icebergs in red syenite" were noted along the route to the new Wakefield bridge. Near Cantley, erosional surfaces on Grenville marble were closely examined. These amazing surfaces were formed, in part, by jet streams of boulder-charged subglacial meltwater from a waning ice sheet, near the shore of the vanished Champlain Sea. After a brief stop at Gatineau Power Dam the group returned to 601 Booth, having enjoyed the bright sun of one of the last warm autumn days.

Those who aided in planning this trip include: Murray Frarey, Tom Bolton, Bruce Sanford, Nels Gadd, Pat Killeen and Bill Hyatt. GSC guides were Quenton Bristow, Gordon Bernius, Stephen Birk, Richard Herd, Dave Sharpe and Bud Cumming.



Deep below the stairs at 601 Booth, Precambrian Grenville marble and gneiss occur beneath a major unconformity at a depth of 1200 feet (375 m). The sequence of Middle Ordovician to Upper Cambrian beds under the outcropping Cobourg limestone is recorded in the core of the nearby Le Breton borehole. During construction of 601, when the road in front was torn up, a vertical fault was well exposed (now concealed by the sidewalk). The trend of this fault was parallel to the road and down-dropped black shale against grey limestone. This 'Eastview' black shale was extensively exposed, as the roadway was brought to grade.



White marble with boudins and layers of basic rock near Cantley, Quebec, provided an obstacle etched out by a glacial meltwater stream. The direction of meltwater flow can be determined from the erosional markings (obstacle mark (O) is flanked by furrow (F) upstream, and by a streamlined ridge (r) downstream).

XII INQUA CONGRESS, OTTAWA

The 12th Congress of the International Union for Quaternary Research was held in Ottawa from 31 July to 9 August 1987. INQUA Congresses take place once every 4-5 years and the Ottawa Congress was the first such meeting to be hosted by Canada.

The Congress was more than a scientific meeting. There were a number of social events, including an opening reception, a mammoth barbecue, and a banquet, as well as lots of

informal socializing. One of the highlights of the meeting was the open-air barbecue, held on the grounds of the Victoria Memorial Museum (National Museum of Natural Sciences). Nearly 1000 people were treated to buffalo burgers, beer, and the musical entertainment of the band of the Governor General's Foot Guard (only in Canada, you say!). This event coincided with the official opening of a new outdoor exhibit of life-size models of a family of woolly mammoths by the National Museum of Natural Sciences.

J.J. Clague

INQUA participants mingle on lawn of National Museum of Natural Sciences during huge open-air barbecue and official opening of Museum's exhibit of life-sized models of a family of woolly mammoths.



WORKSHOP ON "LATE CENOZOIC PALEOENVIRONMENTS"

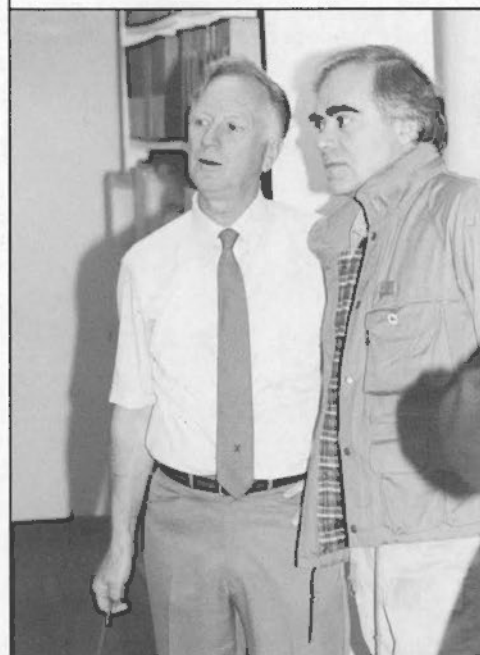


Heiner Josenhans leading the pack

Ruth Jackson and Heiner Josenhans (both AGC) and Wes Blake (TS) were fortunate enough to attend a most stimulating meeting in Norway from 26-30 April 1987. A mountain hotel, Spidsbergseter Fjellstue, some four hours by bus north of Oslo, was completely taken over by the 80-odd participants, who came from Denmark, Federal Republic of Germany, Iceland, Netherlands, Norway, Poland, Sweden, U.K., U.S.A., and U.S.S.R., as well as Canada. The scientific sessions dealt with both lands and seas around the Arctic Basin, and the proceedings, in the form of extended abstracts, will be published in the journal 'Polar Research'.

An unusual feature of the workshop, to which most participants were invited as guests of Norsk Polarinstitutt, was the four hour lunch break to provide sufficient time for skiing. The skiing, in perfect spring weather, was a necessity to survive four hearty meals daily.

MINISTER VISITS VANCOUVER



Minister Marcel Masse visited the Vancouver office of the GSC on 6 June 1987. Here Hugh Gabrielse and Marcel Masse are seen discussing the maps to be included in the Geology of Canada series contribution to the GSA Decade of North American Geology.

DESCENDING NIAGARA FALLS (CONSOLIDATION PRIZE)

The "sculptors club" took part again in the National Capital Region's Winterlude. The amusing replica of a descent of Niagara Falls was made by a group of cartographers from the Geoscience-Information Division, Ottawa, namely: Michel Sigouin, Mario Méthod, Louis Renaud, Peter Corrigan, Ed Bélec, Victor Dohar, and team - captain Mario Hudon.



TRANS-CORDILLERAN FIELDTRIP

Cordilleran and Pacific Geoscience Division's first trans-Cordilleran geology-geophysics fieldtrip from Calgary to Vancouver narrowly missed the beginning of winter over 16-20 November, 1987. Our group of 25 geologists and geophysicists carefully arranged its arrival in Calgary to coincide with the city's first blizzard. We munched our way to our hotel and on to a lunch with Institute of Sedimentary and Petroleum Geology geologists, kindly organized by Randall Stephenson. Walter Nassichuk, Director of the Institute, opened the afternoon tour of the ISPG with a half-hour overview of their programs. Jim Aitken and Don Stott ran expert tours of the building from its stadium-sized core library to "high-tech" mass spectrometry labs. Despite the

lateness of the day, we appreciated the lab technicians volunteering their "after hours" time to outline the techniques and capabilities of the labs, photographic unit and cartography unit.

The fieldtrip provided one of the best opportunities for members from the Division's Vancouver and Sidney offices to meet, get acquainted, and gain an appreciation of each other's work.

R.G. Anderson and L.C. Struik



Margot McMechan explains the Mount Rundle fault in front of Cascade Mountain.

Fieldtrip participants get their feet wet on Coast Mountain mylonites south of Pemberton.



Fieldtrip huddled at viewpoint to Mount Yamnуска and thrust fault juxtaposing Middle Cambrian Eldon Formation and Upper Cretaceous Belly River Formation. Group is (L to R): Chris Yorath, Dieter Weichert, Steve Gordey, Glenn Woodsworth, Dave Seemann, Cathy Hickson, George Spence, Bob Thompson, Jim Monger, Dirk Tempelman-Kluit, Herb Dragert, Carol Evenchick, Mike Orchard, Bert Struik, Wanda Bentkowi, Ted Irving, Jack Sweeney, Kristin Rohr, Jane Wynne, Trevor Lewis, Roger Higgs, Jon DeLaurier, and Arie Gielat (missing: Suzanne Pohler; Bob Anderson, photographer).

Chief Scientist Robin Riddihough (left) is shown presenting Bruce Murphy (GID) with a Suggestion Award. Bruce, who looks after the storage and shipping of GSC maps and reports in Ottawa, received the award for suggesting improvements to the storage and warehousing facilities.



APPOINTMENT OF DR. KEN BABCOCK AS ASSISTANT DEPUTY MINISTER, GEOLOGICAL SURVEY OF CANADA

On May 26, 1988 Dr. P.O. Perron, Associate Deputy Minister announced the appointment of Dr. Ken Babcock to the position of Assistant Deputy Minister, Geological Survey of Canada succeeding Dr. R.A. Price who in September returns to a senior research position in the GSC.

Dr. Babcock has a Bachelor of Science degree in geology from Union College in Schenectady, N.Y. and a Master of Science degree in geology from Syracuse University. He was conferred a Ph.D. degree in geology from the University of California in 1969. Dr. Babcock will commence his new responsibilities, effective September 6, 1988.

Dr. Babcock will be responsible for the formulation and management of Departmental programs of scientific research and development relating to the geological and geophysical investigation of Canada.

Dr. Babcock brings to his new role a broad range of experience in managing large complex multidisciplinary research programs.

Dr. Babcock was Professor of Geology at the University of Alberta from 1969 to 1975. Since 1975, he has been with the Alberta Research Council where he served as Head of the Geological Survey Division which later became the Alberta Geological Survey. In 1980, he became Vice-President of natural resources at the Alberta Research Council with responsibilities for geologic, terrain sciences, atmospheric and civil engineering research. Recently he has worked closely with the energy industry by managing the Alberta Research Council energy research program.

Many thanks to those who
contributed to this issue of
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Material for the next issue of
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