

Secretary-Treasurer's Report: May 1987 — May 1988

R. Frank Blackwood

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Introduction

The Geological Association of Canada took several important steps in 1987-88 to increase its service to members and to maximize the efficiency of its operations. These included the successful debut of our field-conference series, and the moving of our publications-distribution centre from Toronto to GAC Headquarters in St. John's.

Deliberations on these and other matters were carried out at joint meetings of Executive and Council, held since the Annual Meeting in Saskatoon, Saskatchewan, 1987, at St. John's (November, '87), Montreal (February, '88) and St. John's (May, '88). The Executive Committee also met separately in Edmonton (September, 1987) and Toronto (December, 1987). The Toronto meeting was largely a budget-planning exercise for 1988, preparing a proposal for Council's consideration at the Montreal meeting in February, 1988.

Membership Statistics

The following is a breakdown of membership categories within the Geological Association of Canada and a comparison of numbers for the last three years. This year's figures were valid to April 30, 1988.

Membership Category	April 1986	April 1987	April 1988
Honourary Fellows	4	3	2
Life Fellows	5	3	3
Retired Fellows	74	182	164
Fellows	1890	1847	1848
Associates	515	503	496
Student Associates	267	252	201
Undergraduate Associates	N/A	N/A	2
Corporate Members	60	46	51
	2815	2836	2767

The geographic distribution of members is given below:

Canada	2514	2526	2466
Newfoundland	74	76	71
Nova Scotia	108	102	89
New Brunswick	59	52	53
Prince Edward Island	1	1	1
Quebec	261	263	259
Ontario	1013	1029	1023
Manitoba	57	52	53
Saskatchewan	77	82	74
Alberta	330	306	289
British Columbia	501	531	524
NWT and Yukon	33	32	30
United States	183	187	186
Australia/New Zealand	31	30	31
South/Central America	11	11	11
Africa and Asia	19	20	20
Europe	57	62	53

Members elected since April, 1987 are as follows:

Fellows:	P.J. Burns	J.R. Forbes	G.A. Jenner
P. Archer	M.J. Burson	F.H. Fowler	B.D. Jones
R.W. Arnold	R.S. Cameron	J.K. Greenberg	S.A. Khan
C.Q. Barrie	J. Chapman	H.C. Grond	B.R. King
J.F. Basinger	R.E. Chisholm	P.B. Grunenberg	R.W. Kipling
A.C. Bath	R.E. Cook	M.R. Hailstone	V.M. Kuran
D.A. Bending	L.L. Dandy	J. Hansen	B. Landry
B.R. Berger	R.C. Day	M.A. Hepp	K.A. Laskowski
B.A. Blackwell	M.E.R. Delpierre	A.L. Holloway	P.D. Leriche
R.A. Boyce	R.J.A. Dutka	H. Hugon	J. Letendre
A.B. Brooks	R.A. Fensome	I. Huma	L. Lewczuk

L.J. Lindinger	M.W. Kociumbas
H.C. Lockwood	M.R. Kolebaba
J.M. Logan	L.K. Kreis
G.W. Lowey	B. Lapointe
G.B. Margeson	A.C. Larocque
H.B. Mattsson	B.W. Larson
H.M. Meixner	D.C. Laudrum
R.D. Middaugh	G.F. Lawrence
D. Mittra	K.E. Leigh
M.J. Mloszewski	M.W. Liskowich
J.C. Moncur	K. Macdonald
E. Mutis-Duplat	P.J. Maheux
J.W. Newsome	M.P. Mallamo
J.L. Oliver	F. Marcantonio
P. Omenetto	D.M. Melville
S.G. Pemberton	T.A. Middleton
R.S. Rhodes II	J. Morin
M.R. Sanford	B.W. Mountain
S.R. Sangameshwar	K.O. Mutterback
J. Schmidt	B.H. Newton
B.H. Scott Smith	E.L. Nicholls
D.A. Sketchley	M.A. O'Donnell
J.P. Smith	C. Patenaude
A.A. Snelling	P.W. Patey
R. Strobl	M. Paventi
K.J. Taylor	G.P. Petite
P.A. Tyler	J. Pianosi
K.A. van Wiechen	G.W. Potts
S.J. Visser	W.G. Powell
W.J. Vreeken	L. Raymond
X.L. Vu	C.D. Relf
G.L. Wesa	S.P. Robinson
L.P. Yuan	S.L. Rodrigues

Associates:

D.E. Abbott	T.T. Sami
M. Argyle	T.M. Sandberg
S.B. Beneteau	J.S. Scoates
A.E. Bizon	M.P. Segall
W. Bleeker	R. Spark
A.M. Bolduc	R. Tanguay
H.M. Buck	A.C. Tessier
B.I. Cameron	M.D. Trudzik
R.W. Campbell	P.H. Tyedmers
M.J. Carlin	J.A.M. Van Gool
P. Caron	M.J. Van Kranendonk
R. Charbonneau	L.P. White
T.C. Chin	M.E. Wilks
A.G. Chong	D.A. Zoldy

Transfer from Associate to Fellow

K.W. Christian	D.G. Bailey
K.A. Connors	R.W. Bennett
C.A. Cowan	I. Cadieux
A. De Vernal	D. Chan
J.A. Doyle	S. Denton
L.M. Dube	L.A. Dick
M.W. Dudar	J.H. Fraser
K.J. Etmsanski	V.A. French
F.D. Ford	S.J. Friday
S.A. Gareau	R.E. Goad
J.S. Gebert	R.R. Helgason
S. Graber	D. Jiricka
G.P. Grambo	H.J. Keyser
D.J. Harrison	J.E. King
P.K. Holmes	J.C. Lukosius-Sanders
K.A. Hudson	D.E. McBride
H.M. Jol	D.R. Melling
R.J. Keller	I.W. Moffat
J.W.F. Ketchum	
L. Keyte	

J.H. Morris
D.F. Penner
R.H. Sutcliffe
L.A. Tihor
E.D.D. Titley
S.L. Topham
R.I. Valliant

The following members resigned from the Association since April, 1987:

Regular Members:

J.G. Babineau
J.M. Bird
L.J. Cabri
N.R. Campling
R.F.B. De Caen
R.S. Dean
H.C. Earnshaw
D.M. Fletcher
J.C. Foweraker
F. Gentile
A.K. Goodacre
D.G. Harder
G.D. Hobson
T. Hoffmann
R.A. Knutson
C.C. Langille
M.V. Leroux
R. Li
A.A. Lyle
S.L. Masson
A. Matulich
R.W. May
K. Mineham
H.A. Quinn
W.G. Robinson
J.V. Ross
P. Sandomirsky
M.J. Solski
D.A. Van Everdingen
G.S. Willson
P.J.E. Woods

Corporate Members:

Nerco Minerals Ltd.
SOQUIP

The Council of the Geological Association of Canada notes with regret the passing of the following members:

E. Bronlund
G.H. Crowl
W.H. Gross
W.E. Hale
W.W. Hutchison
P. Misch
M.M. Ritchie
J.P. Nowlan
J.S. Stevenson
C.H. Stockwell

Medals and Awards

The GAC awarded four prestigious medals at its annual luncheon held on Monday, May 23, during the St. John's '88 Annual Meeting. The highest award of the Association, the Logan Medal, was awarded to Hank Williams; the Past President's Medal to Ron Clowes; the J. Willis Ambrose Medal to John Fyles; and the Duncan R. Derry Medal (selected by the Mineral Deposits Division) to Eric Swanson. The citations read at the medal presentations are given below.

Logan Medal

All of us working geologists know the importance to our science of geological maps. It is recognized even by perceptive non-geologists: John Ziman, a physicist, in his book *Reliable Knowledge*, states that "a great part of what is known to the science of geology is precisely what is found to be on a map ... and the processes of real interest to geologists can scarcely be grasped except in mappable form".

Harold Williams' work epitomizes this statement. He has made major contributions in several fields of geology and geophysics, but all of them stemmed originally from his own careful field observations and mapping. His insights based on long field experience have made possible his widely acclaimed compilations of the geology of the Appalachian/Caledonian mountain system. His outstanding ability to integrate the results of regional mapping into a compelling tectonic synthesis is perhaps, in turn, best exemplified by his elegant Tectonic-Lithofacies Map of the Appalachians — a map that is probably now as well known as any map of any mountain system in the world.

In 1964, twenty-four years ago, Harold Williams published his now classic paper on the geological symmetry in the rocks of his native Newfoundland. That paper and his later map of the island of Newfoundland, published in 1967, were two of the keystones in the recognition and development of the concept of an opening and closing proto-Atlantic (Iapetus) ocean. They were also accurate indicators of the course of his career over the next two decades: it was marked by a dedication to field mapping (he possibly has more published regional geological maps to his credit than anyone else of his generation), and the continual formulation of daring new concepts, particularly in tectonics and orogenesis. Francis Pettijohn, another great field geologist, is credited with the remark that "There is nothing more sobering than an outcrop". Hank Williams' work suggests that he finds outcrops more exhilarating (perhaps even on occasion, inhibiting) than sobering: those barren rocks have inspired his fertile imagination to bring forward a succession of stimulating and fruitful hypotheses, whose power and originality were soon recognized around the world. The international acclaim that his early work here

in Newfoundland achieved, made possible field excursions and lecture tours in many other parts of the Appalachian/Caledonian system. When Harold Williams writes about and produces maps of this system, he does it from the unique vantage point of one who has studied it, in company with the local experts, from Alabama to Norway.

Harold Williams' stratigraphic studies of the shelf-slope-deep ocean transition in the Appalachians have made him an international authority on the history of passive continental margins, both here and elsewhere. His 1975 paper on the Taconic Klippe of Western Newfoundland (and earlier work with his student W.R. Smyth) further established him as an expert on the obduction process, and has served as a guide to the recognition of transported ophiolites in many other regions. His interest in igneous rocks has included not only ophiolites but also sheeted dyke complexes at Paleozoic spreading centres, the volcanic rocks of ancient island-arc systems, and the volcanic and intrusive rocks related to continental rifting.

His breadth of geological interest led to the first realistic zonal division of the Canadian Appalachians, first proposed in 1972. As his experience of the whole Appalachians grew, the original zones were modified and extended throughout the Appalachians and into the Caledonides of Europe, and these concepts were compressed into, and beautifully expressed by, the series of geological and geophysical maps produced in the late 1970s and early 80s. He was the obvious choice as leader of the DNAG/Geology of Canada series on the Appalachian Orogen, and this massive work, which is now nearing completion, will surely stand as a monument to both the man and the mountain belt for many years to come.

No appreciation of Hank Williams should fail to mention some of his personal as well as scientific characteristics: his generous readiness to share his thoughts with students and colleagues from all over the world, his lucid, informal and witty lectures, delivered in his inimitable Newfoundland brogue, and his skill at the fiddle. — It is a great pleasure to me personally to present to Harold Williams the Logan Medal of the Geological Association of Canada.

(G.V. Middleton, adapted from an original by E.R.W. Neale)

Past President's Medal

"The Past President's Medal of the Geological Association of Canada is awarded to a geoscientist whose recent work in research, development or applications is judged to constitute an outstanding accomplishment in the field". This year we honour a man who embodies both the spirit and the specifics of the criteria for the Past President's Medal — Dr. Ronald Martin Clowes of the University of British Columbia.

Ron was born and grew up in Calgary. His

training in physics and geology was undertaken in part at the University of Calgary and dominantly at the University of Alberta in Edmonton. In 1970 he took up his present position on the faculty of the Department of Geophysics and Astronomy at UBC. His abiding research preoccupation has been in the area of seismic transect studies — including involvement as co-organizer of the original 1980 Vancouver Island Seismic Project, as principal investigator of the RECOPE geophysical reconnaissance survey of the Caribbean continental margin off Costa Rica, and later as advisor to the US Trans-Alaska Lithosphere Investigation.

The basis for our honouring Ron Clowes today, however, is his pivotal role in the conduct of LITHOPROBE Phase 1, on the west coast of Canada. He was instrumental in drawing together the remarkable group of outstanding earth scientists that worked on the project. He co-ordinated all logistical aspects of the survey itself, and oversaw the mammoth subsequent task of processing and interpreting the voluminous amounts of seismic data. He ensured that project results were disseminated quickly, clearly and widely, in such respected journals as *Nature*, the *Journal of Geophysical Research*, and the *Canadian Journal of Earth Sciences*. All of this was accomplished on schedule, within budget, and in the context of those extraordinary pressures that somehow we collectively bring to bear on high-profile geoscientific megaprojects of this type. We all looked to Ron Clowes for leadership in this important project, and he did not fail us.

If a good deal of the success of LITHOPROBE Phase 1 is attributable to Ron's administrative acumen, there must be at least equal measure of tribute to his personal scientific impact on the project. Throughout, he maintained extensive scientific involvement of the highest possible calibre. With his project colleagues, he co-authored over twenty refereed articles on LITHOPROBE methods and results. These papers provide startling new insights into the development of active continental margins, through recognition of the process of continental underplating along the west coast of Vancouver Island. Documentation of this form of continental accretion is now fundamental to our understanding of the evolution of the Canadian Cordillera. In addition, these studies permitted Ron and his colleagues to "see through" the underthrust slivers and map the top of the subducting Juan de Fuca plate. LITHOPROBE Phase 1 has spawned, and continues to spawn, exciting new insights not only into the tectonic development of the west coast of Canada and western North America, but also into the fundamental nature of plate tectonic processes themselves.

Of the geoscientific breakthroughs that have fired the fascination of geoscientists across Canada and around the world in

recent years, few if any, have rivalled LITHOPROBE Phase 1. It is the privilege of this Association to recognize today the importance of the body of science that emerged from LITHOPROBE Phase 1, and to honour Ron Clowes as a Canadian scientist of outstanding stature. Ladies and gentlemen, the 1988 winner of the GAC Past President's Medal — Ron Clowes.

(Grant Mossop, adapted from an original by Al Sinclair)

Ambrose Medal

John Gladstone Fyles was born in 1923 in Vancouver. He entered geological engineering at UBC, and graduated in 1946 with an outstanding scholastic record. The summer of 1944 marked his first association with the Geological Survey of Canada, when he worked with C.S. Lord in the McConnell Creek area of north-central B.C.

Although clearly destined for a career in Cordilleran bedrock geology, he was stricken by tuberculosis in 1947. He recovered and returned to geology, but was advised by his doctors to avoid the rigours of mountain geology. Therefore, after completing his Master's thesis at UBC in 1950, he decided to focus on Quaternary geology. He joined the GSC and began research on the Quaternary of eastern Vancouver Island, receiving his Doctorate degree from Ohio State University in 1956 for this work. He next turned to the Arctic Islands where he pioneered use of oversized tires on Piper Supercub aircraft for landing on unprepared terrain. This technique greatly facilitated reconnaissance studies.

Dr. Fyles' vigorous initiative, broad knowledge and natural scientific leadership led to his appointment as Head of the Pleistocene Section in 1964 and Chief of the Quaternary Research and Geomorphology Division in 1967. During this period he revitalized the Survey's Pleistocene program and broadened its contributions to many aspects of the Canadian economy. For example, following oil and gas discoveries in the northern Yukon he foresaw the possibility of pipeline requirements and brought attention to this prospect in the development of Divisional programs. Dr. Fyles showed a flair for recognizing the potential of his scientists and for encouraging what he called "thought leaders" or scientific innovators.

Dr. Fyles was seconded to the Department of Indian and Northern Development from 1973-79 and participated in the Mackenzie Valley Pipeline Inquiry. Among other duties he acted as scientific advisor to the Commissioner, Mr. Justice Berger, on the socio-economic, environmental and engineering aspects of the proposed pipeline. Mr. Justice Berger regarded Dr. Fyles' contribution as invaluable. He has described him as "exemplifying all that is best in Canada's public service". He was described as "relentless, demanding but supportive of his team"

by Ian Scott, Counsel for the Inquiry, who also noted that "the work of the Inquiry would have been considerably more arduous without him".

On his return to the Geological Survey of Canada, Dr. Fyles became Chief Geologist and Deputy Director General. It is to his credit that under his stewardship the overall scientific program of the Survey was strengthened while ensuring a conscientious response to national issues. During his tenure as Chief Geologist, he contributed significantly to strengthening the co-operation between the National and Provincial surveys. He has gained widespread recognition, respect, and admiration from his Provincial counterparts, and from the mining industry for his energy, thoughtfulness, and his ability to design and forge co-operative and innovative geoscience programs. These programs include the Mineral Development Agreements, which are now making enormous contributions to our understanding of the geology and resource potential of Canada's land mass, and are a testament to John Fyles' foresight.

Over the years John Fyles' colleagues have recognized his unusual intelligence and described him as unselfish, tactful, dedicated, conscientious and considerate. He is unanimously regarded as a true gentleman. Throughout his career, he consistently promoted scientific excellence, and he encouraged young scientists with conviction and integrity.

Canada has been fortunate to have had John Fyles as its Chief Geologist. Now at the end of a brilliant career of research, management and administration, he richly deserves the Association's award for sustained distinguished service to the earth sciences in Canada. — Ladies and gentlemen, the 1988 J. Willis Ambrose Medal winner — John Gladstone Fyles.

(John Hamilton, adapted from an original by Ron Smyth and Mr. Justice Thomas R. Berger)

Duncan R. Derry Medal

It is a pleasure to announce that the Mineral Deposits Division of GAC has selected Mr. E.A. Swanson as the recipient of the 1988 Duncan R. Derry Medal.

The Duncan R. Derry Award is the premier award presented by the MDD. Candidates nominated for this award must be outstanding economic geologists and have made major contributions to economic geology in Canada over their careers. In addition, they must be recognized for their skill and stature as economic geologists, which implies the application of geology to finding ore, disseminating that information to the geologic community, and inspiring future geologists. While firstly a scientist, Duncan R. Derry focussed on the bottom line.

Eric Swanson embodies these attributes. Eric was born at Fort William, Ontario, in

1915. He entered geology at the University of Saskatchewan, graduating with a B.Sc. degree in geology in 1937. Subsequent to his graduation, he worked at Gordon Lake, N.W.T., Snow Lake, Manitoba, and later carried out geophysical surveys in the Timmins and Kirkland Lake areas. Eric rode the railway into Buchans in 1938 and eventually joined ASARCO as a geologist in 1942. In 1951, he became chief geologist, a position he held to his retirement in 1983. Over those years he contributed to our profession in many ways.

First, he has found ore using geology. At the time he joined ASARCO, mining was in progress at the Oriental and Lucky Strike orebodies. Eric was part of the team that discovered the Rothermere orebody in 1947 and the MacLean orebody in 1950. After Eric became chief geologist, there was the discovery of the Oriental No.2 orebody in 1953, and the MacLean Extension orebody in 1978. In addition, he oversaw an exploration effort covering 8,000 square miles of Newfoundland, which led to the discovery of several mineralized bodies that, because of grade, size, or location, were not economic.

Second, Eric has encouraged many young geologists and, in particular, many graduate students, to examine the geology of Buchans carefully, and to investigate its problems and to report their findings publicly. He gave free access to company records and mine workings, and must have provided continual inspiration to geologists such as Geoff Thurlow and Dave Strong to continue their work.

In addition, Eric has, after using his hard-won knowledge to find ore, disseminated that information to the geologic community at large via publication. In 1962, he received the CIMM Barlow Memorial Award as co-author of the paper *Geology of the Buchans Orebodies*. The GAC Special Paper 22 on the Buchans orebodies is not only a tribute to the geology of this remarkable mining camp, but is also a testament to Eric Swanson's foresight to ensure that a complete compilation of data remained as known deposits neared depletion. More recently, in 1987, he participated in the Geological Survey of Canada's publication of new work at Buchans demonstrating that there is never "the last" word.

Finally, Eric has enriched Newfoundland and specifically the Town of Buchans through the CIMM and the Buchans Social and Athletic Club, and at one point was chairman for the Hall of Fame Committee of the Newfoundland Hockey Association. He was also a member of the Buchans Library Board. In recognition of his outstanding service to the community, Eric was selected Buchans "Citizen of the Year" in 1979.

For these reasons, it is with a great deal of pleasure that I present the Duncan R. Derry Medal to Mr. Eric Swanson — economic geologist and ore finder.

(J.M. Morganti)

Headquarters Activities

Headquarters continues to be ably managed by Associate Secretary-Treasurer Maureen Penney. Assisting her, and largely responsible for membership-related functions, is Assistant Secretary-Treasurer Karen Johnston. Much of the business administration of the Association is handled through Headquarters, and over the past year this included processing membership applications for the consideration of the Membership Review Committee, preparing for the annual audit, administering the proxy vote, preparing financial statements, handling subscriptions for GAC publications, preparing the minutes of all Council and Executive meetings, and preparing and mailing the Dues Notices. Apart from the regular tasks, and in preparation for the publications move to Headquarters, a computer program was developed to handle publications sales (including invoicing, accounts receivable, inventory and consignment orders). Also, the Dues Notice was reformatted to reduce computer and printing time, and a downsizing of the mailing envelope reduced postage costs. And, of course, the competent, friendly co-operation of Headquarters staff has been a boon to me in my first year as Secretary.

Headquarters-related Initiatives

Publications-distribution centre moved to St. John's

A decision was taken by Council early in 1987 to move GAC's publications-distribution centre from Toronto to St. John's. Previously, all publications had been handled by Toronto-based Business and Economic Services Limited, who had served GAC faithfully for many years. The move to St. John's, however, would mean a substantial reduction in costs to GAC, paying back move-related expenses in a year or so. It also meant improved efficiency in the overall management of publications, including, of course, the consolidation of most of GAC's administration activities out of Headquarters at St. John's.

The actual move took place in July, 1987. Some 35,000 books were packed at B & E's warehouse in Toronto, under the supervision of Monica Easton, and shipped by tractor-trailer to St. John's. Arrangements were co-ordinated at the St. John's end by GAC's newly hired publications officer, Rita Patterson, with help from the rest of Headquarters staff. Within days of arrival, all volumes were safely ensconced in the new book-storage facility (euphemism for renovated garage), a complete inventory taken, all back orders filled, and invoicing brought up-to-date. The Association certainly has been well served by the unstinting efforts of staff members in making the publications move such a smooth success.

Publications Officer hired

Part of the decision to move GAC's publications-distribution centre from Toronto to St. John's also included the hiring of a full-time person whose primary responsibilities would be maintaining inventory control and administering sales and distribution of GAC publications. Candidates for the position were interviewed shortly after the Saskatoon Annual Meeting, and Rita Patterson was hired. She did an exemplary job of making the transition from Toronto to St. John's a painless one, and quickly established an efficient routine of handling publications-related matters out of Headquarters. However, Rita finally succumbed to the lure of Canada's west coast and is currently employed by a mining company in Vancouver. We wish her well. Meanwhile, GAC has been quite fortunate in finding a very able replacement for Rita in the person of Yvonne (Bonnie) Snow, and we welcome her to Headquarters.

Advertising Manager contracted

Coincident with the publications move, and following a decision by Council not to hire a full-time Executive Director, it was decided to secure the services of an Advertising Manager on a part-time basis. This would ensure that the advertising initiatives taken by Tony Berger (in his part-time role as GAC's Executive Director) did not languish, and that new publications would be speedily and professionally promoted. Consequently, a half-time contract between GAC and Bill Collins of St. John's was signed on June 1, 1987.

For this report period, the Advertising Manager has updated and reprinted GAC's publications-list brochure; refurbished GAC's display unit with new hardware and posters; co-ordinated GAC's presence at geoscience or geoscience-related meetings, e.g., GSA, PDA, IUGS (at these meetings GAC publications are advertised and sold, and the *raison d'être* of the Association promoted with a view to increasing membership); placed ads announcing GAC's latest Special Papers in appropriate journals and confirmed exchange advertising with other geoscientific organizations; worked with the Membership Drive Committee in producing materials that encourage students and professionals to join GAC.

Other Initiatives

Undergraduate Membership Category

In an attempt to further encourage undergraduates to join GAC, Council approved a motion in February, 1987, to institute an Undergraduate Membership category. This category would charge a modest fee of \$18.00; members would be entitled to the usual membership privileges and receive all publications except the *Canadian Journal of Earth Sciences*. This initiative is being actively promoted by the Membership Drive Committee.

New Insurance Plan

As an enticement to join GAC, the Chairman of the Membership Drive Committee, Grant Mossop, endeavoured to negotiate improved rates and coverage for GAC members under the existing term-life insurance offered by North American Life. This resulted in a recommendation to Council that GAC endorse a new plan underwritten by American Life Insurance Company (ALICO) Canada Limited, which offered a better deal to members. Council approved the endorsement in February, 1988, and the details of the new plan will be included in Volume 15, Number 2, of *Geoscience Canada*. Members insured under the old plan may continue with their existing policies if they so desire.

Scientific Meetings

Saskatoon '87

The joint GAC-MAC Annual Meeting for 1987 was held at the University of Saskatchewan, Saskatoon, under the general chairmanship of Walter Kupsch. It was the culmination of several years of planning by a dedicated Local Organizing Committee, and was both a scientific and financial success. Dr. Kupsch and his group of GAC-MAC volunteers are to be commended for a job well done.

Yellowknife Field Conference

Several years ago, GAC resolved to inaugurate a series of field conferences in geologically important parts of Canada that normally would not be the venue for an Annual Meeting. Yellowknife was chosen as the site of the first conference, and Bill Padgham was selected as General Chairman.

After months of planning and preparation, a milestone was achieved in the late summer of 1987 when a very successful meeting was brought off by the Yellowknife Local Organizing Committee (all of the Geology Division, Indian and Northern Affairs Canada). Approximately 180 geoscientists attended and participated in 11 pre-meeting field trips and 9 post-meeting trips, as well as two days of stimulating technical sessions — all on the Slave Province and its mineral deposits. The field trips used the newly published *Field Guide — Yellowknife Mining District*, which was a joint effort between GAC's Mineral Deposits Division and the Yellowknife Geoworkshop Committee. Without a doubt, GAC's first-ever field conference is another success story, and, it is hoped, the model for many future field meetings.

Financial Report

1987 Audit

The audited financial statement of the Association for 1987 was prepared by Doane Raymond and sent to all Fellows in March, 1988. The following is a summary of income and expenditures from the auditors' report.

The Association realized a total income of \$273,242 in 1987. This mainly came from members fees, corporate membership, scientific meetings and interest on investments.

Expenditures for 1987 were \$231,279 in the category of Members Services. These include salaries and benefits to Headquarters staff; insurance, telephone and postage costs; subscriptions to *Canadian Journal of Earth Sciences*; computer charges; and the audit.

Publications are broken out separately by the auditors, and represented a net value of \$10,986 to the Association in 1987. This is based on Costs of \$188,822, which include printing, distribution, postage and storage, and Recoveries of \$199,898, which include sale of publications, sale of advertising and grants, for an excess of Recoveries over Cost of \$10,986.

These figures indicate an excess of income over expenditures of \$52,949, i.e.,

Income	\$273,242
Expenditures	231,279
	41,963
Publications (Net)	10,986
Excess	\$ 52,949

The 1987 Budget projected a Deficit of \$29,250, but, as indicated above, the Association realized an Excess of \$52,949. A number of factors explain this discrepancy, not the least of which is the difficulty of predicting "spot-on" all the amounts in the myriad entries of the Association's budget.

The largest difference between budgeted and actual amounts was for scientific meetings. For Saskatoon '87 a \$5,000 return was budgeted based on previous meetings in similar parts of Canada — the Saskatoon GAC-MAC meeting actually returned to GAC approximately \$30,000. No surplus was budgeted for the Field Conference at Yellowknife — it was an untried venture and potentially a risky financial one. However, happily, the Yellowknife '87 meeting returned approximately \$18,000.

Other factors that influenced 1987 finances were the publication postponement of a Special Paper and a Reprint Series due to editing delays beyond the control of the Association, and economies introduced at Headquarters.

1988 Budget

A breakeven budget of \$491,000 was approved by Council at the February, 1988, Council Meeting in Montreal. The following is a statement of its main items:

Income	
Members Income	\$252,000
Publication Sales	175,900
Publication Grants	63,200
Total Income	\$491,100

Expenditures

Members Services	\$235,100
Publication Production	223,700
Publication Distribution	32,300
Total Expenses	\$491,100

The 1988 budget was also based on a modest increase in membership fees (for most categories) of approximately 4.5 percent, approved by Council in November, 1987. This resulted, for example, in an increase to Fellows of \$3, from \$67 to \$70. It is my feeling that the Association should plan on inflation-adjusting increases on a regular basis, rather than see our real income from that source erode over several years, and then assess a double-digit percentage increase to try and recoup.

Committees

GAC works on the committee system, each with its own "Terms of Reference" regarding important specific functions within the Association. There are sixteen committees altogether, each with its own chairperson. Three of these committees are for the purpose of selecting GAC medal winners: the Logan, Ambrose and Past President's medal committees. The chairpeople of three other committees, Publications, Program and Finance, sit with the officers of the Association on the Executive Committee (chaired by the President).

The *Publications Committee* was chaired by Godfrey Nowlan during 1987. At the end of the year, however, after several years of dedicated (inspired even!) service, Godfrey resigned as Chairman. The Association owes a lasting debt of gratitude to Dr. Nowlan for the professional way he had guided GAC publications since May, 1985. The new Chairman of the Publications Committee, fortunately for GAC, is Bob Baragar of the Geological Survey of Canada.

The Publications Committee has overall responsibility for all of GAC's publications, including the eminently popular *Geoscience Canada*, which is published quarterly under Editor Andrew Miall and Managing Editor Monica Gaiswinkler Easton. GAC's celebrated newsletter, *GEOLOG*, edited by Michael Easton and Monica Gaiswinkler Easton, continues to inform and entertain subscribers.

Two Special Papers were published during the report period:

Special Paper #33 — *Saline Water and Gases in Crystalline Rocks*; edited by P. Fritz and S.K. Frape.

Special Paper #34 — *Mafic Dyke Swarms*; edited by H.C. Halls and W.F. Fahrigh.

There are four Special Papers currently in preparation and/or production:

1. *Quaternary Evolution of the Champlain Sea Basin*
2. *Sediment-hosted Stratiform Copper Deposits*

3. *Evolution of the Western Interior Foreland Basin*

4. *Trans-Hudson Orogen*

Ore Deposit Models, Number 3 of GAC's Geoscience Canada Reprint Series, was published and released at the Annual Meeting in St. John's. It was edited by R.G. Roberts and P.A. Sheahan. Number 4 in the series, *Diagenesis*, is currently in production.

Short Course Notes 5, *Applications of Micro-computers in Geology*, is currently being reviewed and updated for possible publication during 1988.

Two issues of the GAC - CSPG-sponsored *Palaeontographica Canadiana* were published during the report period. Number 4, entitled *Taxonomy and Biostratigraphy of Schizaealean Spores from the Jurassic - Cretaceous Boundary Beds of the Aklavik Range, District of MacKenzie*, was authored by R.A. Fensome. Number 5, entitled *Early Ordovician (Arenig) Graptolites of the Cow Head Group, Western Newfoundland, Canada*, was written by S.H. Williams and R.K. Stevens.

Finally, the Publications Committee, through its Chairman, liaises with the editorial board of the *Canadian Journal of Earth Sciences*. This is an important communications link between the Association and the journal that all members (except the undergraduate category) receive through their membership in the GAC.

The **Program Committee**, chaired by Euan Nisbet for most of the year, is responsible for GAC's technical program, including maintaining the vital contact between the national body and the Annual Meeting Local Organizing Committees. For 1987-88, the committee was involved with the Yellowknife Field Conference, the St. John's '88 Annual Meeting, GAC short courses in St. John's, and short-course planning for Montreal '89 and Vancouver '90. Under Euan's leadership, the Committee has produced guidelines for implementing GAC short courses, and has sought out and encouraged potential short-course co-ordinators for future Annual Meetings. It is hoped that these initiatives will allow GAC to play a larger role in providing topical short courses to its membership.

A significant innovation in the technical-program area was the instituting of GAC research conferences. This concept was endorsed by Council at the February, 1988, meeting in Montreal. At the May Council meeting in St. John's, approval was given to a proposal by J.D. Aitken for the first such research conference, entitled "Late Proterozoic Rifting, Glaciation and Eustasy". The Program Committee provided invaluable advice to Council in this regard, and also drew up a comprehensive set of guidelines for running research conferences, guidelines that will ensure every possible chance for scientific and organizational success in this

very important new GAC venture. Finally, Council voted in May, 1988, to officially name the conferences "GAC NUNA Research Conferences". (The word NUNA is Inuktitut for "earth", and it was proposed by Godfrey Nowlan.)

The Program Committee is also in close contact with the Local Organizing Committees (LOCs) for future GAC/MAC Annual Meetings. These are the committees for Montreal '89, Vancouver '90, Toronto '91, Wolfville '92 and Edmonton '93. To ensure the best co-operation and planning for these meetings, the GAC Program Committee (which includes LOC Chairpersons) had joint meetings with its MAC counterpart in November, 1987, and May, 1988. Finally, Council voted at its February, 1988, meeting to include the Chairperson of the Program Committee on the Executive Committee, to facilitate communications in the important area of scientific programs.

Euan Nisbet resigned as Chairman early in 1988; Emlyn Koster of the Tyrrell Museum of Palaeontology was appointed as the new Chairman.

The **Finance Committee** is chaired by Gordon West. Throughout the year it advises Executive and Council on all financial matters and co-ordinates the budgeting process.

The reporting style of internal financial statements has been improved over the past year by recommendations from the Finance Committee. Chairman West also felt the need for a re-evaluation of GAC's investment portfolio in 1987, and requested the Associate Secretary-Treasurer, Maureen Penney, to provide Executive with an analysis of our investment strategy over the past three years. The Committee will use this information in formulating sound investment advice for the Association. Throughout the year, the Chairman has emphasized the need for GAC to gradually increase its overall surplus (members' equity), thereby lessening the blow of any major financial losses.

The **Howard Street Robinson Fund Committee**, chaired by Hugh Squair, manages the H.S. Robinson trust fund, screens requests for support from the fund proceeds, and, through the fund, supports the H.S. Robinson Lecturer. Dr. Roger Wallis was the Robinson Lecturer for 1987-88. He visited 12 venues in seven provinces and gave a total of 18 lectures on economic geology.

The Committee received four applications for funding in 1987, and recommended two for Council's approval: two GAC Special Papers were granted seed-money support. The fund received no donations, but interest on bonds and securities to April 30, 1988, totalled \$4,367.08.

The **Education Committee** is chaired by Jean-Claude Dionne. As usual, the committee wrote congratulatory letters to student prize winners (complimentary membership in GAC plus a Special Paper of their choice)

selected by earth-science departments across Canada. The main thrust of the Committee during 1987-88 has been a survey of Education Departments to determine the earth-science component of high-school curricula across Canada. The results will help GAC plan its education-oriented activities.

The **Membership Drive Committee** was chaired by GAC Past-President Grant Mossop during 1987-88. It conducted a major membership-drive campaign in the spring of 1988; hundreds of promotional packages were sent out to non-GAC geologists. As part of this campaign, the Committee negotiated a new group term-life insurance plan for members. The new Chairperson of the Membership Drive Committee is Janet King of the Geological Survey of Canada.

The **Membership Review Committee** was chaired by David Piper during 1987-88. It is responsible for assessing all membership applications, ensuring that all new members in every category meet GAC's membership standards. Approximately 200 applications were reviewed this past year, and 183 were approved for membership. The new Chairman of the Committee is Norman Halden of the University of Manitoba.

The **Planning Committee** was chaired by E.R.W. Neale during 1987-88. Its mandate is to consider the long-term progress of GAC and make recommendations to Council that will help the Association to grow steadily as a vibrant geoscience society. To develop a "profile" of GAC members, the Committee recommended that a questionnaire be distributed with the 1988 Dues Notice. This was done with the help of Headquarters staff; the results were processed at Headquarters and will be summarized by John Hamilton in GEOLOG. Chairman Neale also spent some time arranging a conference for the Royal Society of Canada on the topic of public awareness of science activities - a subject that certainly has ramifications for GAC in general and the Public Information Committee (whose Chairman participated in the Conference/Workshop) in particular. The new Chairman of the Planning Committee is Past President Gerry Middleton.

The **Professional Affairs Committee** was chaired by John Gale in 1987-88. The results of an earlier survey of GAC members on the registration and certification of earth scientists in Canada, and the accreditation of Canadian Universities, were collated and published in Volume 16, Part 3 of GEOLOG (Summer, 1987 edition). Further work and assessment of results are planned. The new Chairman of the Professional Affairs Committee is Ron Smyth of the B.C. Geological Survey.

The **Public Information Committee** is chaired by Geoff Norris. He (along with Godfrey Nowlan) represented GAC at the two-day workshop on "Public Awareness of Science" in Ottawa in March. As a result, the

Committee hopes to establish a list of articulate geoscientists across Canada who would be ready and willing to respond to media questions on geological phenomena. The committee also has been investigating the possibility of producing videos as a means of informing the public (students in particular) about our science.

The **Special Projects Committee** was chaired for part of the year by Mary Ann Roberts; unfortunately she found it necessary to resign. No projects were approved for 1987-88, and the Committee will be disbanded for 1988-89.

The **Logan Fund Committee** was established in 1987-88 to manage the Logan Fund, which has completed its transfer of status from an independent foundation (Logan Geological Foundation) to a fund administered by the Canadian Geological Foundation. Donations (mostly returned by members with their memberships dues) to the new fund totalled approximately \$2500. The Committee, under the Chairmanship of President John Hamilton, will commence fund-raising activities during 1988-89.

Divisions

GAC has eight full-fledged Divisions and one (Geophysical Division) whose inauguration is imminent. All Divisions reported to Council on a regular basis throughout the year, and many sent representatives to Council meetings.

Canadian Sedimentological Research Group. The CSRG ran a field trip in the Ottawa region in October, 1987, where approximately 25 members examined outcrops of Quaternary glaciomarine outwash sediments. The second CSRG regional meeting was held at Queen's University, Kingston, in May, 1988. The meeting included three field trips (one to the Potsdam Sandstone, one to examine glacial features and one to Ordovician carbonate rocks) and the presentation of oral papers and poster sessions. The third regional meeting is planned to be held in conjunction with the GAC/MAC Annual Meeting in Montreal, May, 1989.

Environmental Earth Sciences. Since May, 1987, membership in the Division has increased 84 percent to 171 members. Two newsletters were published in the fall and spring, and the Division will sponsor a Special Session at the Montreal '89 Annual Meeting.

Marine Geosciences. Membership has remained steady over the past two years at 60 members. A newsletter was published in the spring of 1988. A newsletter editor has been added to the 1988 executive. MGSD sponsored a Special Session entitled "Marine geology of the continental shelf and slope" at St. John's '88.

Mineral Deposits. Two guidebooks were published in 1987-88. The first coincided with the Yellowknife Field Conference and was entitled *Field Guide - Yellowknife Mining*

District (co-produced with the Yellowknife Geoworkshop Committee). The second was released during the St. John's '88 Annual Meeting and was entitled *The Volcanogenic Sulphide Districts of Central Newfoundland*. The Division instituted a new award, the William Harvey Gross Medal, which was presented by Mrs. Gross at the MDD Annual Luncheon in May, 1988, to Robert Kerrich. The award honours a young scientist for significant contributions to mineral-deposits research, particularly with a Canadian flavour. The Division selected the H.S. Robinson Distinguished Lecturer for 1987-88, and chose Roger H. Wallis, Vice-President of FinNeth Exploration for a lecture series on economic geology.

Paleontology. The annual Canadian Paleontology and Biostratigraphy Seminar was held at the University of Western Ontario, in September, 1987. It will be held in Winnipeg in 1988. The Division produced two newsletters, one in the fall of 1987 and one in the spring of 1988. Membership in the Division has remained relatively constant at approximately 100 members for the past few years. However, a recruitment campaign directed at non-GAC newsletter subscribers, former Division members, and non-GAC paleontologists is expected to generate greater involvement of Canadian paleontologists in the Division and the national body.

Precambrian. Two newsletters were published during the year, one in the fall of 1987 and one in the spring of 1988. Suggestions for a formal name for the newsletter were solicited and it was decided at the Division's annual business meeting in St. John's to name it *Precambrian Times*. The Division sponsored a major international symposium entitled "Middle Proterozoic Crustal Evolution of the North American and Baltic Shields" at the GAC-MAC-CSPG Annual Meeting in St. John's. Papers presented at the symposium also will form the basis of a GAC Special Paper. T.E. Krogh of the Royal Ontario Museum was selected by the Division as the H.S. Robinson Distinguished Lecturer for 1988-89.

Structural Geology and Tectonics. The Division-supported Canadian Tectonics Group met at Lakehead University in Thunder Bay in October, 1987. The next meeting is planned for Banff in October, 1988, where the Best Paper and Best Thesis prizes will be awarded. The Division also sponsored a general session entitled "Appalachian-Caledonian Fault Systems" at the St. John's '88 meeting. Two issues of the newsletter were published, one in June, 1987, and one in March, 1988.

Volcanology. The Division sponsored a special session entitled "Volcanic Regimes in Past and Present Oceanic Environments" at the GAC-MAC-CSPG Annual Meeting in St. John's. The field trip planned for the spring of 1988 to volcanic regions in Italy and Sicily has been postponed until the spring of

1989 when the two-week trip will form part of the Montreal '89 pre-meeting field trips. The Leopold Gélinas Award, presented by the Division for the best M.Sc. or Ph.D. thesis in volcanology, was awarded to Charlie F. Roots at the St. John's '88 meeting. The annual compilation of volcanology research in Canada has been prepared and will be published in the *Canadian Geophysical Bulletin*. Also, three issues of the Division's newsletter, *Ashfall*, were published during the past year.

Geophysics. The Canadian Geophysical Union, which had been a joint Division of GAC and the Canadian Association of Physicists, elected to become an independent society in 1987. GAC Council gave its official sanction to this move by CGU in November. To ensure continued good will and co-operation in the promoting of earth sciences in Canada, a formal "Letter of Understanding" has been agreed to by the Councils of the two societies.

Once CGU became independent, GAC Council thought it necessary to form a new Geophysics Division in order to maintain a strong geophysical component to GAC's program. The inaugural meeting of the new Division was planned to take place at St. John's '88, and a meeting of interested people occurred on May 25. At that meeting a motion was passed, and later endorsed by GAC Council, that a survey be undertaken by an appointed committee to determine the views of GAC geophysicists on the proposed constitution of the new Geophysics Division and other related matters. Meanwhile, no steps will be taken to make the proposed Division "official" until Council receives a full report from the survey committee.

Sections

GAC has five sections and they are very active in their respective regions. They are the Cordilleran, Edmonton, Newfoundland, Pacific, and Winnipeg. Together with the Divisions and Committees, they form the backbone of the national body. The Newfoundland Section, for example, hosted the St. John's '88 GAC-MAC-CSPG Annual Meeting, and the Cordilleran Section will host the 1990 meeting.

Cordilleran. The Section sponsored two very successful, over-subscribed short courses entitled "Platinum Group Elements: Deposits and Prospective Canadian Environments" and "Exploration Geochemistry: Design and Interpretation of Soil Surveys". The Lecture Series offered talks by the following four speakers: J. Veizer (GAC Past President's medallist), A.J. Naldrett, G.V. Middleton (GAC President) and R.H. Wallis (Robinson Distinguished Lecturer). After a hiatus of several years, the Section brought back its Annual Meeting. It was held in conjunction with the BC-Yukon Chamber of Mines on the theme "Exploring the Third Dimension". Two joint luncheons were held

with the Mineral Exploration Group, and also included Section-funded speakers. A new desktop-publishing system has been implemented to produce the Section's newsletter and calendar. Finally, the first annual May Day Picnic, held at Stanley Park, was a great success.

Edmonton. The Section-sponsored luncheon/talk program presented seven seminars during the year, on topics that ranged from gold deposits in Nevada to a presentation by Jan Veizer, GAC's Past President's medallist, on "Systems Perspective of the Earth". The first annual Pub Night was a well-attended evening of food and cheer, and included a talk by Emyln Koster on his travels through China. Finally, for the first time, the Section sponsored its Education Geological Workshop outside of Edmonton. The workshop, which was well attended by Alberta science teachers, was hosted by the Tyrrell Museum in Drumheller, August, 1987.

Newfoundland. Logan Day for September, 1987, was held at the Sunshine Park and featured the usual fun-filled activities. The annual fall field trip examined the fascinating geology of the White Bay area. The 3-day trip was well attended and included 23 Section-sponsored undergraduates and graduates. The annual meeting was held in mid-winter instead of the usual March/April period, so as not to clash with the national meeting in May. It sponsored general technical sessions rather than the usual thematic program, followed by the annual business meeting. The meeting also included the annual Winterfest of fun and frolics held at Bowring Park. At the Dinner and Dance, the Section's scholarship of \$500 (now named the E.R.W. Neale Scholarship) was awarded to Janet Dunphy of Memorial University. Other on-going projects include the *Newfoundland Journal of Geological Education* and the geological highway map. The latter has run into some funding difficulties, but the map committee is actively investigating potential funding avenues. Finally, of course, the Newfoundland

Section has proudly and successfully hosted the GAC-MAC-CSPG Joint Annual Meeting (St. John's '88).

Pacific. A list of speakers (12) and topics (30) was sent to local schools as part of the Section's Speakers Bureau. Work is progressing on the Vancouver Island Geology Guidebook. Three \$100 awards were made to University of Victoria students, Heather Blyth, Anne-Marie Hamilton and Brenda Hartley, to attend the 24th Western University Geological Conference in Winnipeg, January, 1988. Logan Day was an enthusiastic success in September, 1987, as was the annual field trip to southern Vancouver Island in October. A curling bonspiel in January produced a night of fun and pizza. The annual symposium, co-sponsored with CSPG in March, reviewed the sedimentary basins of the Canadian Cordillera. This was followed by a dinner and dance. Throughout the year, a total of eight speakers addressed the Section as part of its very active Speakers Program.

Winnipeg. The Section's graduate-student seminar prize of \$300 was split between Eva Zaleski and Ray Eby, to help defray costs of attending the GAC Annual Meeting; papers were presented by both at St. John's. The printing of the 1988 Western University Geological Conference Guidebook was sponsored by the Section. An active Speakers Program included a lecture by Philip Currie of the Tyrrell Museum, which was attended by 182 people. The Section hopes to build on this success by initiating an annual "Family lecture in the geological sciences". A MAC liaison person, P. Cerny, has been included on the local executive.

Associated Societies

GAC has associated-society status with the following: Atlantic Geoscience Society, Canadian Quaternary Association (CANQUA), Canadian Geophysical Union and the Toronto Geological Discussion Group. These societies commonly inform GAC of

their activities through reports at Council meetings and directed correspondence throughout the year. It should be noted that the AGS is sponsoring the GAC/MAC Annual Meeting to be held in Wolfville, Nova Scotia, in 1992. This, of course, is the first year CGU has been independent of GAC. Our associated status will ensure continued communications in the furtherance of earth science in Canada.

General Comment

GAC is a remarkable organization. Run by volunteer geoscientists and a small, dedicated, hard-working staff, it surely is a model non-profit society, offering high-quality service to its members and geoscience. What makes it work so well? During my association with the national body, I have discovered the answer: Altruism. This is not too strong a word, even at the risk of being labelled maudlin, for I have witnessed time and time again the unselfish contributions of ordinary and extraordinary Canadian geoscientists in furthering the goals of the Association. These people have a genuine interest in advancing geoscience in Canada through the GAC, and commonly labour on specific projects for nothing more than a thank-you from the current Executive. I consider it a privilege as a member of the Executive to work with these geoscientists, and am fortunate as a member of GAC to be served by them. We owe them our heartfelt thanks.

Respectfully submitted,

R. Frank Blackwood
Secretary

St. John's, Newfoundland
May, 1988

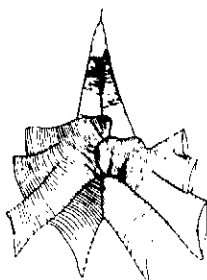
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No. 5

Early Ordovician (Arenig)
graptolites of the
Cow Head Group,
western Newfoundland,
Canada

S. Henry Williams
and
Robert K. Stevens

1988



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