

# ASH FALL

**Newsletter of the Volcanology Division  
Geological Association of Canada**

Ashfall #19 - Feb 1988

## CALL FOR NOMINATIONS

Terms for most executive positions of the Volcanology Division of GAC expire in May 1988. Nominations for new executive members are being solicited from the membership. Members are invited to send nominations, which may include themselves, to Jarda Dostal, Chairman - Volcanology Division GAC, Department of Geology, St. Mary's University, Halifax, Nova Scotia B3H 3C3.

Positions available and their terms are:

Chairman	3-year term (1988-1991)
Vice-Chairman	3-year term (1988-1991)
Secretary and ASHFALL editor	3-year term (1988-1991)
Treasurer	3-year term (1988-1991)
Representative to the CNC/IUGG	3-year term (1988-1991)

Nominations will be accepted until April 12, 1988, and the slate of officers and ballots will be sent out before the annual meeting. Voting for the slate of officers will be concluded at the Volcanology Division Annual Business Meeting at St. John's '88. The Meeting will be held on May 24, 1988 at 4.30 PM in St. John's.

## UPDATE ON VOLCANOLOGY DIVISION ACTIVITIES

Plans are progressing well for the Special Session on "Volcanic Regimes in Past and Present Oceanic Environments" to be held at ST. JOHN'S '88. The response to the call for papers was very good, in fact, more papers were received than can be accommodated in two sessions. Therefore, some papers will be displayed in a poster session.

Several theses have been submitted for consideration for the Leopold Gelinus Award. They are currently being evaluated by the Review Committee and a final decision will be made within the next few weeks.

It was unfortunate that the field trip to Italy, originally scheduled for this spring, had to be postponed due to the inadequate response. It is now

more

rescheduled for the spring of 1989, as part of GAC-MAC MONTREAL' 89, thus allowing enough time for the trip to be advertised extensively. It should be an excellent field trip and it would be very surprising if enough people do not sign up for it before the deadline this fall.

Tark Hamilton is in the process of putting together the list of current research on volcanology for the Canadian Geophysical Bulletin, for publication later this year. You should have all heard from Tark by now and have sent off your response by the March 4 deadline.

Jarda Dostal, Chairman

### TREASURER'S REPORT

#### Financial Statement for 1987

Balance Forward from 1986 1691.30

#### INCOME

Membership dues (\$2 member)	428.00
Sale of Trans-Mexican Guidebook	531.00
Bank Interest (Jan-Dec 1987)	78.18
	<u>1037.18</u>

#### EXPENDITURES

Production of 3 issues of ASHFALL	618.07 <sup>1</sup>
Gelinas Volcanology Thesis Award	100.00 <sup>2</sup>
	<u>718.07</u>

Balance at the end of 1987 2010.41

<sup>1</sup> Costs include printing, postage, and mailing lists from GAC. Postage accounts for over 50% of the costs.

<sup>2</sup> The 1987<sup>6</sup> Leopold Gelinas Award was presented to Dr. Graham T. Nixon, University of British Columbia.

Glen W. Johns  
Treasurer  
Volcanology Division - GAC

### VOLCANOLOGY DIVISION ITALIAN FIELD TRIP

In conjunction with the May 14-17 GAC-MAC Annual Meeting in Montreal the Volcanology Division of GAC is planning a two-week field trip to the classic volcanic localities of southern Italy and Sicily for the spring of 1989. The planned itinerary includes:

- a day at Pozzuoli visiting Solfatara and the Phlegrean Fields
- a day on Mount Vesuvius
- a day at Herculaneum and Pompeii
- a day visiting Aci Castello and Palagonia
- a day and a half on Mount Etna
- a day touring Vulcano
- a day touring Lipari
- two days and a half on Stromboli
- half a day in Rome

Dr. R. Romano of the International Vulcanological Institute (Catania) is expected to lead the Etna excursions; leaders for the other excursions are not yet known, but are expected to include Italian geologists who have worked in the Naples area and in the Aeolian Islands.

The itinerary involves 14 nights in Italy. Those participants wishing to do so can extend their stay at their own expense. The formal field trip starts and ends in Rome. It is expected that separate and more culturally oriented itinerary will be provided for accompanying members if there is sufficient interest.

Subject to inflation, the expected maximum cost, which will cover all transportation in Italy, taxes, tips, entrance fees (e.g. to Pompeii), double room occupancy, continental breakfasts, and dinners for 3 nights (in Lipari), is roughly \$2200 CDN. This would be for a group of less than 20 people. A larger group could result in substantially lower costs. The APEX fare for Toronto-Rome return is currently \$850-900, excluding airport taxes, and, providing that the participants travel one way as a group, this fare could be discounted slightly. This price could also be improved considerably if there was a seat sale as there commonly is.

There are two suggested schedules for the field trip:

- leaving Montreal on Saturday, April 29 with return from Rome (optional) on Sunday, May 14, or,
- leaving Montreal on Wednesday, May 17 with return from Rome (optional) on Thursday, June 1.

Whether or not the field trip takes place will depend on the level of interest. Because some of the places included in the itinerary have limited hotel capacities, reservations will have to be confirmed by an early date and secured by a deposit. Thus, **IT IS ESSENTIAL** that the organizers know of participants' interests by mid-September and that those attending be prepared to commit themselves by providing a deposit to secure their space by October 1. Therefore, all those interested should complete the following questionnaire and send it, or telephone, or both, L.C. Coleman, Department of Geological Sciences, University of Saskatchewan, Saskatoon, Sask. S7N 0W0 Phone: (0) (306) 966-5740 as soon as possible.

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I will definitely \_\_\_\_\_, probably, \_\_\_\_\_, possibly, \_\_\_\_\_ subscribe to the Italian Volcanological Field Trip if it leaves Canada on April 29 \_\_\_\_\_, on May 17 \_\_\_\_\_, on either date \_\_\_\_\_. I will be alone \_\_\_\_\_, accompanied by (please give number) \_\_\_\_\_ persons.

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## SHOULD CANADA CONTINUE SUPPORTING THE OCEAN DRILLING PROGRAM?

Canada and five other countries each now contribute about U.S. \$2-1/2 million annually to the \$35 million international Ocean Drilling Program, with the U.S. making up the balance. Canada's first commitment expires soon and the committee listed below has been formed to advise the Federal Government on whether or not Canada should embark on a new commitment. If you wish to make your views on this matter known to this committee please direct them, preferably in writing, to a committee member before April 15, 1988. Thank you.

### Chairman

Dr. E.R.W. (Ward) Neale  
5108 Carney Road, N.W.  
Calgary, Alberta T2L 1G2

### Members

Mr. J.M. (John) Hamilton  
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Mr. D.W. (Dave) Organ  
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## Seamount serendipity in the South Pacific

Last week, good fortune erupted under a U.S. oceanographer when the underwater volcano he was studying began to spew out molten rock and gas — a right-time-right-place occurrence that will help reveal the sources of different types of volcanism and may aid scientists in understanding how volcanic islands rise out of the ocean.

"This represents a significant scientific discovery," says Michael Garcia, a volcanologist from the Hawaii Institute of Geophysics in Oahu. "We've never witnessed one of these hotspot-type volcanoes erupting."

The volcano that erupted was the MacDonald seamount, located in French Polynesia, 700 miles west of Pitcairn Island. From the ocean floor, 5 kilometers below the surface, the seamount rises to a summit that is only 40 meters deep.

Harmon Craig, the oceanographer who observed the eruption, was serving as the chief scientist aboard the research vessel *Melville* and had visited the MacDonald seamount in order to retrieve water and rock samples from the volcano.

When the *Melville* arrived at the seamount, Craig and the crew observed "large patches of greenish-brown water," indicating recent activity. Then, as they started to perform some experiments, the seamount erupted. "Large gas and steam bubbles burst at the surface with chocolate-colored water and, best of all, steaming lava balls too hot to hold in bare hands," Craig said in a report radioed to his home base at the Scripps Institution of Oceanography in La Jolla, Calif.

The bubbles made "horrendous clangs and clamors" as they burst under the hull of the *Melville*. During the eruption, the ship's depth recorder and another instrument broke down. No injuries or other malfunctions were reported.

The MacDonald seamount is at the end of a 2,000-kilometer-long chain of islands and seamounts. Scientists believe these features have sprouted up one at a time over tens of millions of years as the Pacific plate has slowly passed over a so-called hotspot, where magma, or molten rock, from the deep interior of the earth is thought to rise toward the surface.

Hawaiian geophysicists discovered the seamount in 1967 when some underwater microphones picked up sounds emanating from a usually quiet part of the South Pacific. They speculated that the sounds came from the underwater eruptions of a previously unidentified seamount, which researchers visited two years later.

After last week's eruption, Craig was able to take samples of the new material, which is a glassy basalt filled with bubbles of trapped volcanic gas. In the past, Craig has examined the trapped gas in order to learn more about the source of the erupting magma. The new rocks are

expected to yield better samples of the volcanic gas than older rocks, which can partially degas after years in the ocean.

Magma from hotspots differs from the magma that forms the oceanic crust when it pours out of mid-ocean spreading centers. Scientists think hotspot material rises from deeper in the mantle and is therefore less "processed" than the spreading-center magma, which is thought to be remelted many times. By measuring the relative abundances of two helium isotopes in the volcanic gas, scientists can determine whether a vol-

canic sample has melted repeatedly.

"For people who are interested in the gas composition of magmas, and in particular those associated with hotspots, this would be a wonderful opportunity to look at what's coming out of the mantle of the earth," says Robert Duncan, an oceanographer at Oregon State University in Corvallis.

The chance observation will also help scientists understand the evolution of seamounts, which often become islands. Says Garcia, "Being there for an eruption gives us some understanding of how submarine eruptions occur. We've never witnessed one in [such] deep water."

— R. Monastersky

Reprinted from **Science News**, October 24, 1987, volume 132, p. 262.

### YELLOWKNIFE VOLCANIC BELT FIELD TRIP GUIDE - NOW AVAILABLE

In conjunction with the GAC Field Conference in Yellowknife in September 1987, the Yellowknife Geo-Workshop Committee and the Mineral Deposits Division of GAC have produced a 209-page volume titled "Field Guide to the Yellowknife Mining District". The guide includes trips within Yellowknife, as well as in nearby areas such as the Clan Lake Volcanic Complex. The volume can be ordered from Geological Association of Canada Publications, Department of Earth Sciences, Memorial University of Newfoundland, St. John's, Newfoundland, A1B 3X5. Phone (709) 737-7660. Cost is \$30.00 plus \$3.00 postage and handling.

### TRANS-MEXICAN VOLCANIC BELT FIELD GUIDE

We sold 62 copies of this guide in 1987, which is remarkable considering the limited advertising that has been done for this publication. Walter Gibbins should be pleased that his hard work and efforts are paying off, and the Volcanology Division extends all our thanks to him. If you do not already have a copy, an order form is attached for your convenience.

### WHERE ARE YOU??

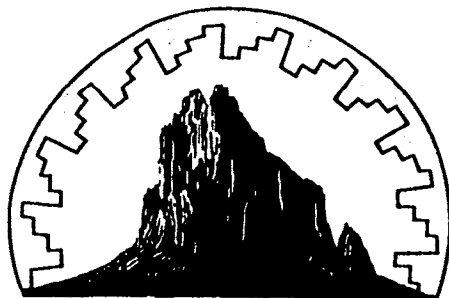
The following members did not receive Ashfall #18 (Sept 87) because they changed their addresses. Please contact the secretary so that you can receive Ashfall #18 and future issues. If you know these individuals, pass the message on.

I.P. Coster (F5095)      D.A. Perkins (F4034)      D. Thorkelson (A4827)

### SECOND CIRCULAR - IAVCEI MEETING, SANTA FE' 89

An abbreviated version of the second circular for the International Volcanological Congress to be held in Santa Fe in 1989 is attached on pages 7 to 11. For complete details, see EOS, volume 69, Feb. 9, 1988, p. 80-85.

Contributions to Ash Fall should be sent to (the):  
Secretary, Volcanology Division  
Geological Association of Canada  
M. Easton  
c/o Ontario Geological Survey  
77 Grenville Street  
Toronto, Ontario M7A 1W4



I A V C E I

S a n t a F e 1 9 8 9

## GENERAL ASSEMBLY

## CONTINENTAL MAGMATISM

International Association of  
Volcanology and Chemistry  
of the Earth's Interior

Santa Fe, New Mexico USA  
June 25-July 1, 1989

## SECOND CIRCULAR AND CALL FOR PAPERS

### Sponsors

U.S. Geological Survey  
Institute for the Study of Earth and Man,  
Southern Methodist University  
Los Alamos National Laboratory  
U.S. Department of Energy  
New Mexico Bureau of  
Mines and Mineral Resources  
Sandia National Laboratories  
Institute for Geophysics and Planetary Physics,  
University of California  
National Science Foundation  
American Geophysical Union  
University of New Mexico

### Organizing Committee

Chairman:  
Michael Dungan, Dallas  
Secretary:  
W. Scott Baldrige, Los Alamos  
Program:  
Peter Lipinan, Denver  
Field Excursions:  
Wolfgang Elston, Albuquerque  
Publications:  
Charles Schapin, Socorro  
Local Arrangements:  
Grant Heiken, Los Alamos  
Local Arrangements:  
Kenneth Wohletz, Los Alamos  
Secretary-General IAVCEI:  
Hans-Ulrich Schmincke, Bochum

## GENERAL INFORMATION

### VENUE

The 1989 General Assembly will be held at the Sweeney Convention Center, near the historic Plaza of Santa Fe, New Mexico. Santa Fe is the political capital of New Mexico, and the cultural capital of the southwestern United States. It is located at 2100 m (7000 ft), within the foothills of the Sangre de Cristo Mountains and on the margin of the Rio Grande rift, near Cenozoic volcanic fields in New Mexico, Colorado, and Arizona. The rich cultural and architectural heritage of New Mexico and Santa Fe is a blend of Pueblo Indian, Hispanic, and Anglo influences. Today Santa Fe is a major artistic center that is virtually unique in North America.

### SCIENTIFIC SYMPOSIA, FIELD EXCURSIONS, AND ASSEMBLY THEME

The western United States offers many opportunities to examine a wide variety of volcanic and plutonic rocks in classic field areas. We have arranged for 16 extended, limited-attendance field excursions for working specialists (pre- and post-Assembly), and two Working Group workshops, that will visit diverse areas throughout the U.S. Cordillera. A volume of field guides, including all the excursions, will be distributed to all participants. The excursions are intended to be a major facet of the scientific program and should

serve to highlight numerous aspects of the General Assembly theme - Continental Magmatism. The excursions will examine volcanism associated with a modern convergent setting (Cascades), late-Cenozoic basaltic to silicic extension-related volcanism of the Basin-Range and Rio Grande rift provinces, mid-Cenozoic calcalkaline magmatism and associated calderas, Mesozoic granitic batholiths, and anorogenic alkaline magmatism. Where possible, symposia topics will emphasize the types of volcanic rocks and processes featured by the field excursions. Special attention will be given to applying observations of modern eruptions to studies concerned with the prehistoric volcanic record. The excursions will highlight work in progress or recently published studies. We encourage all attendees to participate in one or more field excursions.

Societal implications of volcanism, such as hazard mitigation and monitoring of active volcanoes, the climatic impact of large eruptions, geothermal energy, and metallogenesis, have always been important concerns of IAVCEI and will be the topics of several symposia. Observations and physical modeling of volcanic processes will also receive appropriate attention.

### SCHEDULE

Participants should arrive by vehicle or at the airport in Albuquerque, New Mexico, which is one hour's drive from Santa Fe. Persons planning to attend the entire General Assembly are requested to arrive in Albuquerque or Santa Fe before late afternoon on 25 June. On-site registration will take place at the College of Santa Fe (1400-2000 HRS.) on 25 June. The General Assembly Welcoming Party (1830-2100 HRS.) and Official Welcome (2000 HRS.) will also be held at the College on 25 June (Greer Garson Theater). The General Assembly will convene for full programs of scientific symposia (poster and discussion sessions) on 26, 27, 29, and 30 June, and for one half day on 1 July. The General Assembly will adjourn at noon on 1 July, leaving time for late afternoon departures from the Albuquerque airport. In addition to the Welcoming Party there will be cocktail parties (cash bar) at the Sweeney Convention Center on 26 and 27 June (1730-1900 HRS.) in conjunction with extended poster sessions (1330-1900 HRS.). IAVCEI Working Group meetings will be held at the College of Santa Fe on 26 June (2000-2230 HRS.). Members of the Working Groups will be

contacted about details in 1989. An Evening of Volcanic Eruption Movies has been scheduled for the College of Santa Fe (Greer Garson Theater - 2000-2230 HRS.). Contact Grant Heiken (MS D-462), Los Alamos National Laboratory, if you wish to present a film or video: include the title, description of content, length, and projection needs. The Fiesta en la Calle will be held on the street in front of the Convention Center of the evening of 29 June (1730-2000 HRS.). The Fiesta includes beer, margaritas, a buffet dinner of New Mexican food, and musical entertainment. The Thorarinsson Award will be presented at Sweeney on 29 June (1700-1800 HRS.). The Banquet on 30 June (1930-2230 HRS.) will be held at the Convention Center immediately following a Wine Tasting (1800-1930 HRS.) that will feature New Mexico vintages. One-day field excursions to the Jemez Mountains-Valles caldera, the Taos Plateau volcanic field, White Rock Canyon, and the Picuris Mountains will be offered on 28 June, along with a range of alternative activities. Details of the field excursions and Working Group workshops, the General Assembly, registration fees and other costs, accommodations, scientific program, travel arrangements, and other aspects of the Assembly are included below.

### CORRESPONDENCE

General Assembly forms (Registration, Accommodations, Field Excursions, Optional Activities, and Abstract) are not included with this version of the Second Circular. They may be obtained on request from the Los Alamos Protocol Office at the address given below.

All official correspondence, including returned registration forms (except the Accommodations Form), fees, abstracts, and any inquiries should be sent by airmail to: IAVCEI/1989, Protocol Office, Los Alamos National Laboratory, Mail Stop P-366, Los Alamos, New Mexico 87545 U.S.A. Note that in several instances we have asked respondents to add an extra code word to the address (e.g., attn. FINANCIAL AID) to assist the staff in directing correspondence to the appropriate member of the committee. For further assistance, please contact Jan Hull,

Meeting Coordinator (505-667-6574), in the Los Alamos Protocol Office.

### THIRD CIRCULAR

There will *not* be a Third Circular as previously announced in the First Circular. Registrants will receive confirmations of arrangements specified on the forms, and information concerning final organizational details, especially with regard to field excursions and the scientific program. Please retain the Second Circular up to the General Assembly for use as a handbook, as little of it will be reprinted in subsequent publications. Registrants will receive by mail a copy of the Abstract Volume. The Scientific Program will be distributed in Santa Fe as part of the registration packet.

### OFFICIAL INVITATIONS

If required, an official personal letter of invitation to attend the General Assembly can be sent to participants on written request to the Organizing Committee. This invitation does NOT imply any financial obligation on the part of the Organizing Committee.

### SCIENTIFIC PROGRAM

The IAVCEI General Assembly in Santa Fe will focus on continental magmatism, especially products of plate convergence and intraplate igneous activity. We especially hope to bring observations on modern volcanic eruptions into juxtaposition with studies of older more deeply eroded magmatic systems. We also solicit contributions that develop generalizations about volcanic processes based on multiple scientific disciplines, and studies that make comparisons between major volcanic provinces. Societal applications -- hazard evaluations, eruption forecasting, resource appraisals -- are a major reason for many volcanological studies, and should be highlighted where possible. The scientific sessions will be organized into broad themes, along the lines listed below; contributions on these topics are especially encouraged. In addition, general sessions will be devoted to timely topics that do not fit concisely into these themes; accordingly, we welcome abstracts on topics not specifically identified in the proposed symposia.

### SYMPOSIA THEMES

**I. Introductory session: Magmatism in the North American Cordillera:** Organized by P.W. Lipman and the IAVCEI Program Committee.

Several invited overviews to provide a framework for the General Assembly and associated field trips.

**II. Continental-arc volcanism:** Organized by W. Hildreth, F. Frey, and W. Rose. Emphasis will be on: comparisons of different volcanic arcs; arc volcanism along the length of the Western Hemisphere (contributions from Central and South America are especially solicited); similarities and contrasts with intra-oceanic volcanic arcs. Topics will include:

- \* Large silicic arc systems: sources of magmas, depth of storage, evolution of magma chambers during volcanism

- \* Role of lower crustal composition and structure
- \* Roots of arc volcanoes and subvolcanic intrusions
- \* Precambrian arc magmatism, and comparisons with present-day processes
- \* Reconstructing compositional gradients in crustal magma chambers from their eruptive products and from plutons
- \* Detailed studies of key areas: Aleutians, Cascades, Central America, Andes

**III. Volcanism associated with crustal extension:** Organized by G. Mahood, W. Leeman, E. Padovani. Included will be such topics as:

- \* Continental rift and flood basalt volcanism; relation to climate and Ir distribution
- \* Intraplate alkaline volcanism; diatremes and kimberlites
- \* Correlation of magma types and volumes with extensional style and tectonic setting: geodynamics of lithospheric extension
- \* Effects of potassium metasomatism versus primary potassic magmatism
- \* Nature of the lower continental crust, as revealed by xenoliths; magma-crust interactions; geophysical data
- \* Composition of subcontinental versus suboceanic mantle

**IV. Geothermal energy and metallogenesis in relation to Cordilleran magmatism:** Organized by P. Muffler.

- \* Geothermal systems: modern versus fossil systems
- \* Volcanogenic ore deposits: relations between epithermal veins, porphyry deposits, and disseminated precious metal systems
- \* Results of scientific drilling in volcanoes
- \* Progress in dating geothermal systems and magmas
- \* Implications/applications of physical volcanology for mineral exploration

**V. Active volcanism and volcano hazards:** Organized by D. Swanson.

Sessions will include:

- \* Reports on major recent volcanic eruptions
- \* Geophysical evidence for magmatic processes and structures
- \* Monitoring procedures (seismic, deformation, gases, etc.)
- \* Hazard-appraisal methodologies
- \* International efforts at hazard mitigation
- \* Communicating volcano hazard-awareness to citizens and civil authorities
- \* Volcanic mudflow and flood hazards
- \* Precursors and resulting predictions, especially for large and potentially explosive eruptions

**VI. Volcanic and magmatic processes:** Organized by S. Self and H. Sigurdsson.

Sessions will include such topics as:

- \* Rise and differentiation of magmas
- \* Interpretation of arc volcanism from sedimentary sequences
- \* Role of volatiles in magma genesis, rise, and evolution
- \* Eruption dynamics, especially for large-volume volcanism
- \* Explosive versus fluidal eruptions, especially emplacement of large-volume lava-like rocks
- \* Large-volume ignimbrites
- \* "Wet" versus "dry" explosive volcanism
- \* Volcanism and climate

**VII. General session:** Organized by the IAVCEI Program Committee.

This session will provide a forum for timely topics that do not fit into the more focused themes of the General Assembly, including Precambrian volcanism, oceanic volcanism, etc.

Poster presentations associated with the general sessions will include detailed studies of areas that are being visited by field excursions, to provide background for participants and those who may not be able to attend all the trips they would like.

### MEETING FORMAT AND PHILOSOPHY

As recent meetings on volcanologic topics have grown larger and more crowded, traditional reliance on oral presentations has led to increasing numbers of talks being crowded into

smaller time intervals, in larger rooms, with the result that serious and productive discussion is inhibited or impossible.

The IAVCEI General Assembly in Santa Fe will feature a more flexible forum designed to promote communication and discussion. The program sessions (morning and afternoon) will emphasize presentation of data in centrally located poster sessions, accompanied by discussion sessions in which a limited number of selected oral presentations will be interspersed with extended time for discussion by participants. Evenings will be available for Working Group sessions, film and video presentations, organized IAVCEI social functions, and informal gatherings.

All abstracts, posters, and oral discussions must be presented in English. Video or film presentations in poster or discussion sessions are encouraged, and can be arranged by advance request; *indicate special needs on the abstract submittal form.*

### POSTER SESSIONS

Poster presentations will be the focus of the Santa Fe General Assembly. They will occupy an attractive space centrally located in the Convention Center. The poster hall is a spacious two-story-high area, in which each presentation will have available a 1.5 by 2.5 m (4 by 8 ft) display area. All discussion sessions (see below) will be in smaller rooms around the periphery of the poster hall. The poster format is especially effective for displaying geologic and geophysical maps, tabular chemical data, and experimental results. In-depth discussions commonly result from well-prepared posters.

Authors can make poster presentations more informative and provocative by keeping text brief, type size large, and figures relatively simple, large, and self-explanatory. The nature of the work, conclusions, etc. should be evident to the viewer within a few minutes. A large-type title with bold print (3-5 cm height) at the top of the poster display will help viewers locate the displays. Posters will also be grouped by topic and clearly identified by number, both in the program and in the display area, to facilitate easy location for viewers. Authors are encouraged to be present at specified times, indicated in a corner of the display, to discuss their work with viewers.



## DISCUSSION SESSIONS

Discussion sessions will accompany poster presentations on related topics. Several discussion sessions will be held concurrently in rooms adjacent to the central poster hall. Each discussion session will include about 6 selected in-depth oral presentations (probably mostly 15-20 minutes in length), separated by extended discussion periods. A prolonged coffee break (30-40 min) will be scheduled during each discussion session, to facilitate further informal exchanges and also to facilitate visits to concurrent poster sessions.

Chairmen of the discussion sessions will have special responsibilities for moderating the discussions and leading them in thought-provoking directions. Most oral presentations will be selected by the Program Committee from submitted abstracts; a few may be by prior invitation. Oral presentations will be selected and speakers notified by the Scientific Program Committee no later than April 1, 1989. Invitations for oral presentations will be extended only to the senior author of multi-authored abstracts. If the senior author cannot attend the meeting, the presentation should be for poster display.

Each discussion meeting room will have two projectors for standard 35 mm slides (5 x 5 cm transparencies), two screens, and an overhead projector. Unscheduled opportunities should exist in most sessions to discuss a relevant topic briefly, based on a single slide or viewgraph illustration; interested participants should contact the convenor prior to start of the discussion session.

## ABSTRACTS

All abstracts (original, plus 2 copies) must reach the Organizing Committee by 15 February, 1989. Only registrants to the General Assembly may submit abstracts. Each registrant may submit only one abstract as senior author. All submitted abstracts will be considered for poster presentation; contributors who also wish to be considered for oral presentations in the discussion sessions should so indicate on the abstract form. The Organizing Committee reserves the right to refuse any abstract on the advice of the Scientific Program Committee. All abstracts must be in English.

## REGISTRATION

### PRE-REGISTRATION FOR THE GENERAL ASSEMBLY

The Sweeney Convention Center facilities are ideal for an assembly of the size estimated on the basis of responses to the First Circular (600-800 attendees). However, the capacity of the Convention Center necessitates a limit of 800 on the number of participants.

All persons intending to participate in the General Assembly must pre-register. The last day for registration at the regular rate is 15 February, 1989. After 15 February, registration fees for the General Assembly will increase by about 20%. Prepaid fees are refundable (see forms), less a \$20 handling fee if notification of cancellation is received before 15 February, 1989. Fees will be refunded at the rate of 50% for cancellations received between 15 February and 15 April, but thereafter will not be returned unless the request is accompanied by demonstration of special circumstances (e.g., medical certificate). All payments by non-U.S. participants must be sent by bank draft or money order, in U.S. dollars, drawn on a United States bank and made payable to: IAVCEI/1989. Person checks will be accepted if drawn on a U.S. bank.

The regular (\$210/\$250 after 15 Feb. 1989) and student (\$155/\$185 after 15 Feb. 1989) registration fees for General Assembly participants covers the following: copies of the Scientific Program and Abstract Volume, a copy of the Field Excursions Guidebook, morning and afternoon coffee breaks, the Fiesta en la Calle (29 June) and Banquet (30 June), shuttle-bus service during the General Assembly, and admission to social functions. These fees do not include accommodations, travel to and from the Albuquerque airport (except when this travel is part of the itinerary of a field excursion), intra-Assembly field excursions, or other auxiliary activities (e.g., accompanying person's program tours or Barbecue Dinner). Certification of student status is required. The registration fee for accompanying persons (\$90/\$100 after 15 Feb. 1989) covers all social functions including the Fiesta en la Calle and Banquet, plus the option of registering for any of the scheduled accompanying persons activities. The single-day registration fee is \$75 (\$90 after 15 Feb. 1989) but only covers admission to the scientific sessions and copies of the Abstract Volume and Scientific Program. Tickets to the Fiesta en la Calle, Banquet, and intra-Assembly field excursions, or other publications, may be purchased separately in Santa Fe.

### ON-SITE REGISTRATION

General Assembly participants must register in Santa Fe, even if fees have been fully prepaid. Registrants will receive ID badges which will be required for admittance to poster and discussion sessions, a copy of the Scientific Program and Field Guides, and tickets for the Banquet, Fiesta en la Calle, and other activities. The primary registration periods will be on 25 June (1400-1930 HRS., College of Santa Fe, Greer Garson Theater) and 26 June (0700-1200 HRS., Lobby of Sweeney Convention Center). Attendees arriving

late to the General Assembly will be able to register during 0800-1130 HRS. or 1330-1600 HRS. on 27, 29, and 30 June at the General Assembly information booth in the Convention Center lobby.

The General Assembly Welcoming Party will be held at the College of Santa Fe on 25 June at 1830 HRS. in conjunction with registration. The Official Welcome will be delivered in the Greer Garson Theater (College of Santa Fe) during the Welcoming Party. The shuttle service will operate along Cerrillos Road between the Convention Center and the College of Santa Fe on the afternoon of 25 June to facilitate registration and attendance at the Welcoming Party.

### ACCOMMODATIONS

Registration for accommodations and activities of the General Assembly will be conducted jointly by the Protocol Office of the Los Alamos National Laboratory and the Sweeney Convention Center, Santa Fe. The accompanying Accommodations Form lists all options with costs. The listed rates are slightly discounted. A map of Santa Fe with locations of reserved accommodations is also included (back cover). All registrants are requested to arrange for accommodations through the General Assembly service, and to rank the five commercial options in decreasing order of preference, particularly if the reservations are not placed early. Your cooperation will be appreciated. Accommodations Forms must be returned directly to: Santa Fe Convention and Visitors Bureau/Housing, P.O. Box 909, Santa Fe, New Mexico 87504, U.S.A.

A range of housing options has been reserved for General Assembly attendees (see map and Accommodations Form). These include low-cost dormitory rooms at the College of Santa Fe (266 beds - primarily double occupancy), motels located between the College and the city center, and a more costly hotel situated within walking distance of the Plaza and Convention Center. A shuttle bus service (free) will operate at peak hours between the College of Santa Fe and the Convention Center during 26 June - 1 July. A detailed schedule will be distributed to registrants at the General Assembly. Space at the High Mesa Inn and Motel 6 has been reserved for attendees seeking relatively low-cost housing, who also can provide their own transportation during the General Assembly. The General Assembly shuttle service will not serve these two motels. A deposit, equivalent to one night's rent, is required to reserve all commercial accommodations, except at the College of Santa Fe. First preference for rooms at the College of Santa Fe will be given to non-U.S. residents and to U.S. graduate students, until the General Assembly registration deadline on 15 February, 1989. Reservations at the College require full payment of \$96.00 (includes breakfast). This fee is refundable before 15 February, 1989, and becomes nonrefundable after 15 February. Individuals who specify the College as their first accommodation priority, may request transfer their \$96.00 deposit to regular commercial lodging should space not be available at the College.

## INTRA-ASSEMBLY FIELD EXCURSIONS - 28 JUNE

### 19I: JEMEZ MOUNTAINS, VALLES CALDERA, AND BANDELIER TUFF

Leaders: R.A. Bailey, R.L. Smith, and others  
Itinerary: San Diego Canyon - Bandelier Tuff and post-caldera Battleship Rock Tuff. Valles caldera - overview of caldera and resurgent dome, intracaldera lavas (Banco Bonito Rhyolite, South Mountain Rhyolite) and tuffs (El Cajete airfall and ignimbrites), hot springs and geothermal resources. Pajarito Plateau-Pajarito fault, Upper and Lower Members of the Bandelier Tuff, lavas and sedimentary rocks of the pre-Bandelier Santa Fe Group. Volcanologic aspects of caldera-related eruptions, petrologic evolution of the Bandelier magmatic system, and caldera resurgence will be emphasized.

Price: US \$55 (no maximum)

Box Lunch and Barbecue Dinner included in price.

Roadside stops with no strenuous hikes.

### 20I: TAOS PLATEAU VOLCANIC FIELD

Leaders: R.A. Thompson and N. McMillan  
Itinerary: Late Cenozoic tectonics of Rio Grande rift exemplified by the Embudo fault zone and southern San Luis Valley, Rio Grande Gorge and Pliocene Servilleta Basalt lavas, hybrid andesite lavas of the Red River volcano, and early Miocene volcanic rocks of the Questa caldera associated with the inception of rifting. Volcanic petrology and the interplay between volcanism, rift structures, and sedimentation in a subsiding rift basin will be emphasized.

Price: US \$42 (maximum 80 participants)

Box Lunch and Prime Rib Dinner in Taos included.

Roadside stops with no strenuous hikes.

### 21I: MAAR VOLCANOES OF THE CERROS DEL RIO, NORTHERN NEW MEXICO

Leaders: R.V. Fisher, G. Heiken, and K. Wohletz  
Itinerary: Guided float trip southward from Otowi Bridge into White Rock Canyon, with numerous stops. Basaltic volcanism of the ancestral Rio Grande formed maar volcanoes along the river's course. These tuff rings, lava flows from more distant cinder cones, and distal tuffs from the Valles caldera are well exposed along the present-day Rio Grande in White Rock Canyon (located between Santa Fe and Los Alamos, New Mexico). This one day field trip combines the white-water excitement of rafting with a traditional field excursion.

Price: US \$100 (maximum 40 participants)

Box Lunch and Barbecue Dinner included. Moderately strenuous hiking.

### 22I: PEGMATITES, METAMORPHISM, AND MANGANESE MINERALIZATION IN PROTEROZOIC ROCKS OF NEW MEXICO

Leader: J.A. Grambling

Itinerary: This trip will focus on three spectacular features in the Proterozoic metamorphic belt of New Mexico. We will begin by visiting the famous, high-lithium Harding Pegmatite; follow with a 3-4 hour hike across coarsely porphyroblastic metasediments that locally show coexisting kyanite, andalusite and sillimanite; and conclude with examination of Mn-rich rocks (initially altered volcanics) that contain a host of unusual minerals including piemontite, viridine (Mn-andalusite) and Mn-muscovite. If time allows, we will also visit exposures of the Embudo fault at Pilar, New Mexico, which has moved vertically nearly 2 km in the last 4 m.y..

Price: US \$25 (maximum 40 participants)

Box Lunch provided. Barbecue optional.

Moderately strenuous hiking above 3000 m.

## CALENDAR OF CRITICAL DATES

**JANUARY, 1988** Publication of Second Circular. Participants are encouraged to reserve space on extended field excursions as soon as possible. This includes those who will be requesting a grant from the Financial Aid Committee to defray travel expenses.

**15 OCTOBER, 1988** Deadline for financial aid applications.

**15 FEBRUARY, 1989** Official registration deadline for receipt of:

1. Reduced rate General Assembly registration fee.
  2. Reduced rate accompanying person's fee.
  3. Balance of full payment for field excursions.
  4. Cancellations of room reservations at the College of Santa Fe.
  5. Cancellations of General Assembly registration and field excursion reservations with full refund minus US \$20.
6. Abstracts to be considered for presentation in poster or discussion sessions and for inclusion in the General Assembly Abstract Volume.
- \* Registrants may continue to select, and register for, field excursions at the published rates. However, it is advisable to contact the Protocol Office by phone after 1 March, 1989, to inquire about availability of space before sending funds.

**1 MARCH, 1989** Program Committee meeting to select abstracts for oral and poster sessions, and to formulate the Scientific Program. All persons who have submitted abstracts prior to the 15 February deadline will be contacted in March concerning the scheduling of their presentation and the Symposium in which it will be included. The Abstract Volume will be printed in March.

**1 APRIL, 1989** Abstract Volume shipped to registrants along with other materials and information.

**15 APRIL, 1989** Cancellations received in Los Alamos before this date will be accorded 50% refunds of all previously paid registration fees (except College of Santa Fe). No refunds after this date except under special circumstances.

**15-19 JUNE, 1989** Begin pre-Assembly extended field excursions.

**25 JUNE, 1989** Pre-Assembly field excursions end in Santa Fe. On-site registration at the College of Santa Fe from 1400-1930 HRS. Welcoming Party 1830-2100 HRS.

Official Welcome 2000 HRS.

**26 JUNE, 1989** Begin Scientific Program of General Assembly at 0830 HRS. Sweeney Convention Center. See General Assembly schedule for remaining details (page 6).

**1 JULY, 1989** Noon. General Assembly adjourns. Post-Assembly field excursions depart Santa Fe in early afternoon.

## PRE- AND POST-ASSEMBLY FIELD EXCURSIONS

Field excursions will emphasize recent work on the principal Cenozoic volcanic fields of the western United States. They are designed for specialists in various aspects of volcanology and igneous petrology; attendance is limited and it is unlikely that space can be provided for accompanying persons. Of the 16 excursions and two workshops listed below, those designated A will be held prior to the IAVCEI General Assembly in Santa Fe; those designated B will be held afterwards. Note that the excursions have been renumbered since publication of the First Circular. All pre-Assembly excursions are timed so that participants will arrive in Santa Fe no later than 25 June, 1989, 1600 hrs. Post-Assembly excursions will leave Santa Fe on 1 July, 1989, about 1330 hrs. and will terminate in time to permit participants of the 28th International Geological Congress in Washington, D.C., to attend opening ceremonies in the late afternoon of 9 July. Some pre-Assembly excursions require air travel from their termination points to Albuquerque, New Mexico (the major airport nearest to Santa Fe); some post-Assembly excursions require air travel from Albuquerque to their departure points. At a later date, excursion leaders will notify participants of airline schedules and recommended flights. However, participants are responsible for purchasing tickets; *the cost of air travel is not included in the cost of excursions.* Attention is directed to the information on travel elsewhere in this Circular. For meals not included in the registration fee, participants should allow an additional \$2 to \$6 for each breakfast and \$8 to \$16 for each evening meal.

*The scientific excursions cover a great variety of terrain and climate, ranging from deserts at low elevations in parts of the Basin and Range province to alpine tundra on the highest mountains. In general, climates are temperate and rain is likely in northern California, Oregon, and Washington. Inland, days are likely to be warm to hot, with cool nights; humidity tends to be low, but thunderstorms are possible. The excursions are designed for participants of normal physical fitness. Most excursions include 1-2 km hikes in gentle terrain. Elevations above 2,000 m, temperatures above 35°C (95°F) and strenuous climbs are indicated in descriptions of individual excursions. All participants will require boots, a broad-rimmed hat, sunscreen lotion, light clothing, and warm and waterproof outerwear. In arid areas (especially excursions 5A, 7A, and 9A), two 1-litre water bottles are necessary. A water bottle is essential even in areas where water is abundant; mountain streams may be infested with parasites such as giardia. Long trousers are strongly recommended in inland areas because of thorny vegetation and the probability of sunburn.*

Excursions 10WA and 11WA are workshops, and attendance is limited to members and corresponding members of IAVCEI Working Groups on Mitigation of Volcanic Disasters (Excursion 10AW) and Explosive Volcanism (Excursion 11AW). Scientists not affiliated with these working groups, who wish to visit Mount St. Helens, the Jemez volcanic field, or the San Juan volcanic field, may register for Excursions 2A, 17B, or 16B, respectively.

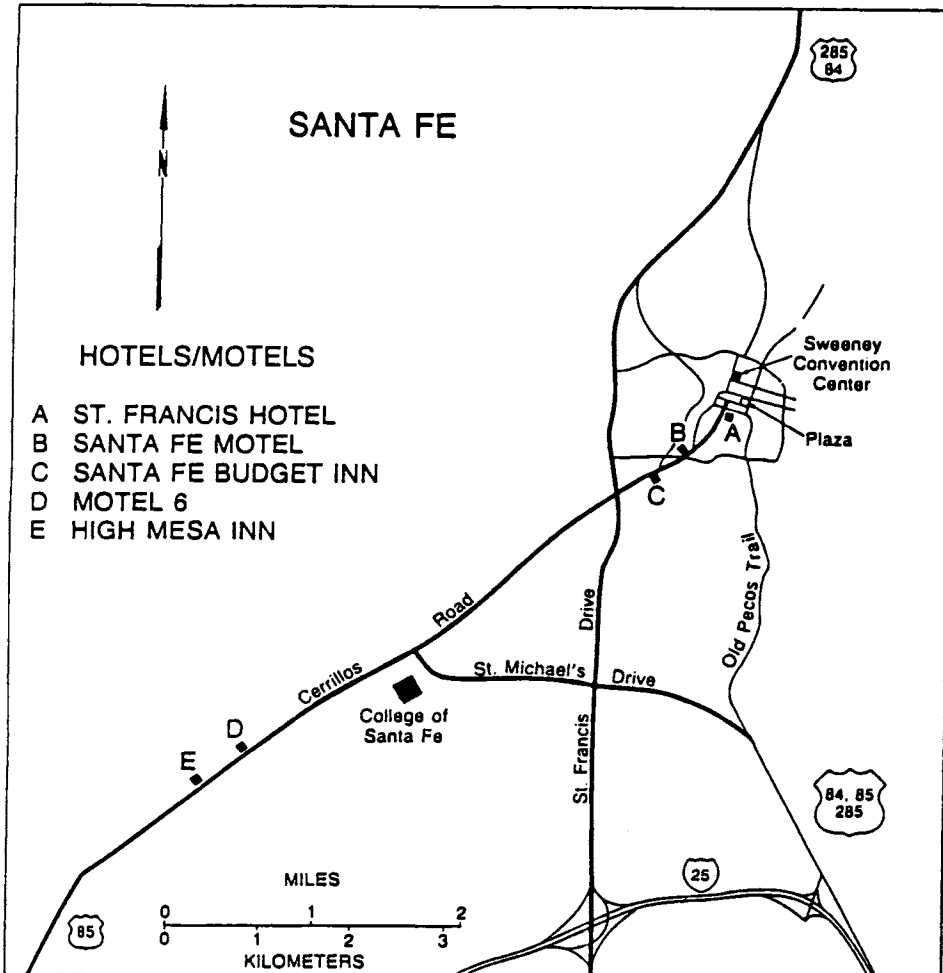
Several months before the IAVCEI General Assembly, excursion leaders will notify participants of exact times and places of assembly and termination, airlines and flight numbers (if required), special equipment, special precautions, and other information. All participants will be required to sign a waiver of liability against, and indemnity in favor of, IAVCEI, the organizers of the General Assembly, the excursion leaders, and drivers of vehicles.

The 28th International Geologic Congress (IGC) is scheduled to meet in Washington, D.C. on 9-19 July, 1989. Many of the IGC field excursions will be of interest to volcanologists and igneous petrologists. Several IAVCEI scientific excursions will be repeated with slightly different emphasis by IGC, as follows:

- 1A repeated as IGC Excursion T-106
- 12B repeated as IGC Excursion T-312
- 14B repeated as IGC Excursion T-337
- 16B repeated as IGC Excursion T-320

IGC Excursion T-346 replaces IAVCEI Excursion 9A/B (Montana high-K alkalic province), announced in the IAVCEI First Circular.

Information:  
 Dr. Michael A. Dungan  
 Department of Geological Sciences  
 Southern Methodist University  
 Dallas, Texas 75275  
 (214) 692-2752



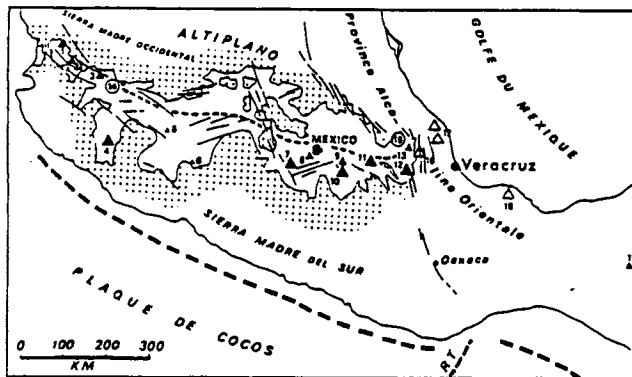


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JANUARY 1986

1986, 108p.

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**MINUTES - Volcanology Division Business Meeting  
25 May 1987, Saskatoon, Saskatchewan**

The meeting was called to order by the Chairman, Jaroslav Dostal at 1635 hrs. who acknowledged quorum based on 16 members and a number of proxies.

The minutes from the previous meeting in Ottawa (published in Ashfall, #16, Feb 1987) were read and approved. Baragar/Moore/unanimous. In business arising from the minutes, it was noted that a report on the proposed Italy Field Trip was on the meeting agenda. It was also noted that the increase in Volcanology Division dues from \$2.00 to \$4.00 approved at the business meeting in Ottawa in 1986 was not implemented in 1987 because of communication problems with headquarters, and that the increase would take place in 1988. In other business arising from the minutes, Michael Easton noted that the Hawaii Guidebook from Victoria 1983 had been considerably revised and published in January 1987 by private means, as no financial support had been forthcoming from established institutions. The agenda for the meeting (published Ashfall, #17, April 1987) was then read, and approved with one modification; the Report on Field Trips was moved up to follow the Chairman's Report.

The Chairman summarized the activities of the Division for the previous year; including the successful special session on "Trace Elements and Volcanic Processes" held at Saskatoon'87; the awarding of the 1987 Leopold Gelinus Thesis Award to Graham T. Nixon of the University of British Columbia for his thesis titled "Contributions to the Geology and Petrology of the Trans-Mexican Volcanic Belt"; and the annual compilation of volcanological work in Canada, completed this past year by Ray Goldie, who unfortunately will be stepping down from this post. The Chairman asked for a vote of thanks on behalf of the Division to be conveyed to Ray Goldie for his efforts. The temporary position of Special Councillor on Research would now be eliminated as a consequence. The responsibilities of the compilation in future would thus fall to the Volcanology Division representative to the Canadian National Committee (IUGG). **MOVED** That the Volcanology Division Representative to the Canadian National Committee (IUGG) take on the responsibility for compiling the annual report on volcanological work in Canada for the Canadian Geophysical Bulletin. Baragar/Coleman/unanimous. The Chairman was to inform the current representative, Tark Hamilton, of this action. This concluded the chairman's report.

Les Coleman presented a report on the planned 1988 field trip to Italy. There was considerable discussion with respect to the timing of the trip, costs, and the possibility of linking the trip to the GAC/MAC/CSPG Annual Meeting in St. John's. The latter point was raised in a letter from GAC Vice-President John Hamilton to Les Coleman. The overall feeling of the members present was the request was reasonable as long as it did not interfere with the logistics of the trip. Notice of the trip was to appear in Ashfall and GEOLOG with a tear off strip for members to show their interest in the trip. Because of limited space at some of the trip destinations, hotel reservations would need to be finalized by the end of October 1987.

The treasurer, G.W. Johns gave a report on the financial status of the Division as outlined below.

---

**Financial Statement, April 1987**

Balance 1986..... 1691.30

Income

Membership Dues 1987..... 388.00  
Interest Jan-April 1987..... 17.85  
405.85

Expenditures

Production of Ashfall #16 (Feb 87)<sup>1</sup>..... 379.70

Present Balance (March 31, 1987).....1717.45

Note 1: Cost of Ashfall #16 includes GAC mailing labels, postage and printing costs. Cost of Ashfall #17 (April 87) not included.

Glen W. Johns, Treasurer

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The report was accepted by the members present. Thurston/Chown/unanimous.

The Secretary, Monica Easton, did not give a report because she had to attend the GAC Annual Business Meeting. Future activities of the Division include a special session on "Oceanic Regimes in Past and Present Environments" to be held at St. John's '88. The Session is to cover all aspects of research on volcanic rocks from oceanic environments, both past and present. A number of field trips at the IUGG meeting in Vancouver in August 1987 were to have a volcanic slant, or were organized by Volcanology Division Members.

The following officers were elected at the meeting, based on the list published in Ashfall (April 1987), as amended. Coleman/Baragar/unanimous.

Scott Swinden - St. John's Councillor-East (1987-90)  
Tark Hamilton - Victoria would take on the duties of the Special Councillor on Research for 1987-88 based on an earlier motion.

The meeting adjourned at 1855 hrs. Chown/Johns/unanimous.

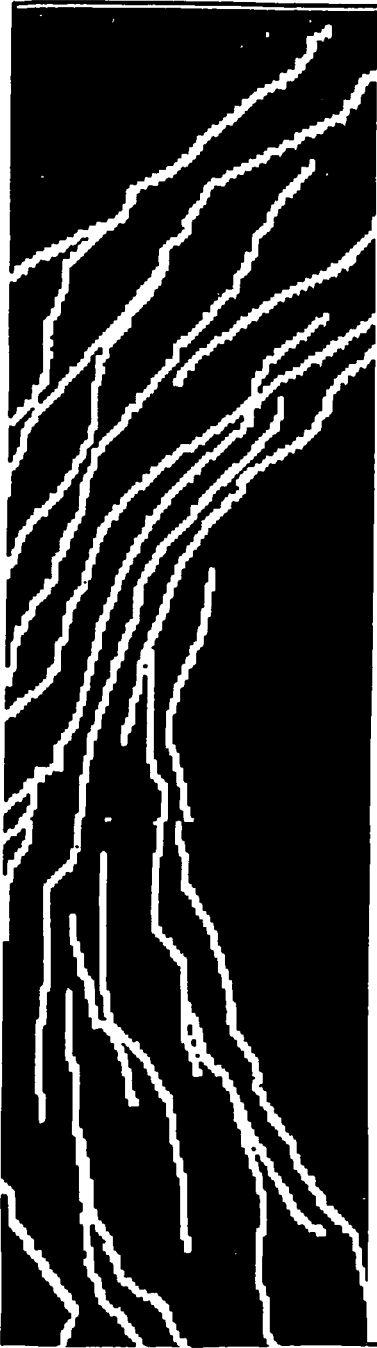
Monica Gaiswinkler Easton  
Secretary, Volcanology Division -GAC

My thanks to G.W. Johns for assisting with the minutes.

## VOLCANOLOGY DIVISION OFFICERS

	TERM
* Jaroslav Dostal (Chairman) Department of Geology St. Mary's University Halifax, Nova Scotia B3H 3C3 (Tel. 902 429-9780)	1986-1988
* Roger Laurent (Vice-Chairman) Dept. de Geologie Universite Laval Ste. Foy, Quebec G1K 7P4 (Tel. 418 656-7479)	1986-1988
* Monica Gaiswinkler Easton (Secretary) 19 Gable Drive Brampton, Ontario L6V 2H2 (Tel. 416 978-6588 --Bus.)	1985-1988
* Glen Johns (Treasurer) Ontario Geological Survey 9th Floor, 77 Grenville Street Toronto, Ontario M5S 1B3 (Tel. 416 965-7046)	1985-1988
B. Neil Church (Past-Chairman) B.C. Ministry of Energy, Mines and Petroleum Resources, Douglas Building Victoria, British Columbia V8V 1X4 (Tel. 604 387-5068)	1986-1988
Walter A. Gibbins (Councillor-West) Geology Office, P.O. Box 1500, D.I.A.N.A. Yellowknife, N.W.T. X1A 2R3 (Tel. 403 920-8216)	1986-1989
Mike Higgins (Councillor-Central) Science de la Terre Universite de Quebec a Chicoutimi 555 Blvd. de L'universite Chicoutimi, Quebec G7H 2B1	1986-1989
Scott Swinden (Councillor-East) Department of Mines and Energy Mineral Development Division Box 4750, St. John's, Newfoundland A1C 5T7	1987-1990
* Tark S. Hamilton (Representative to CNC/IUGG) Pacific Geoscience Centre, Box 6000 Sidney, British Columbia V8L 4B2 (Tel. 604 656-8423)	1985-1988

\* terms expiring



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