IAVCEI *News* 2000 No: 1

INTERNATIONAL ASSOCIATION OF VOLCANOLOGY AND CHEMISTRY OF THE EARTH'S INTERIOR

POLITICS AND SCIENCE

The new Executive Committee has had to confront a difficult issue in the first months of its existence in relation to the interface between politics and science. The IAVCEI has had calls from some members for cancellation of the General Assembly and to make public statements related to political issues. This is not the place to deal with the specific issues raised by the recent events in Indonesia, but it is worthwhile considering some matters of principle, which led the Executive Committee to conclude that it was not right to introduce political rationales into IAVCEI activities, policies and actions. There have also been vociferous calls to criticise disaster national preparation plans for volcanic emergencies publically in the last few years.

IAVCEI is an international association of scientists with the clear objective of promoting advances in volcanological science and the humanitarian objective of applying science to the mitigation of volcanic hazards and protection of populations in volcanic crises. IAVCEI does not exclude scientists from particular countries from its membership. There are no political, national or other non-scientific criteria for membership. It is also not in IAVCEI's constitution to develop policies or make statements on political matters unrelated to the central scientific and humanitarian reasons for the Association's existence. IAVCEI has not made statements on Kosovo or Rwanda for example. The membership would not expect the Association to make such statements. The Executive Committee unanimously view that IAVCEI has no business in becoming involved in politics or other matters unrelated to its central objectives.

There are also practical reasons why IAVCEI, as a matter of principle, should avoid involvement in politics. IAVCEI has clear humanitarian aims and volcanic crises can happen in countries with governments of every conceivable political hue, some perhaps with poor human rights records or who have acted

Continued on page 5

MESSAGE FROM THE PRESIDENT AND SECRETARY-GENERAL

We are using the President's message of this issue to publicize ten good reasons for joining IAVCEI. Please share this information with colleagues who are not yet members.

We are very keen to have a membership drive for IAVCEI and ask for your help. We have the very encouraging news that IAVCEI membership has increased from 456 in 1998 to 656 in 1999. However, the numbers of interested volcanologists worldwide must be thousands so we feel that we can swell the numbers yet again to everyone's benefit. If each member recruits one new member we will go a long way toward our goal. Many thanks for your help on behalf of IAVCEI.

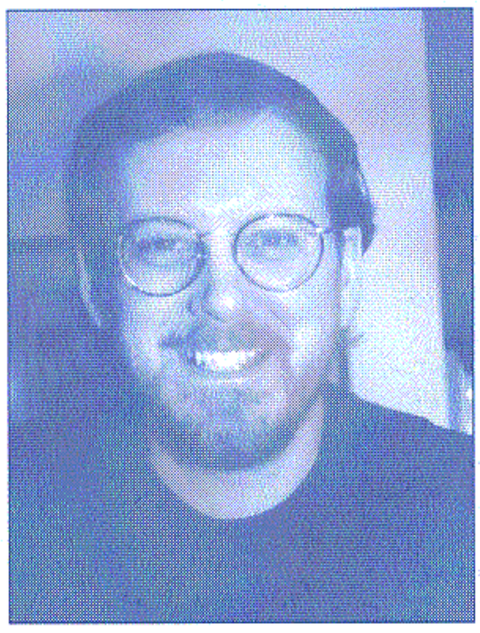
Steve Sparks, President and Steve McNutt, Secretary-General

Ten Good Reasons to join IAVCEI

Steve Sparks

1. IAVCEI's principal aims are to support volcanology as a science and promote its humanitarian applications. A large membership gives IAVCEI credibility as representative of volcanology on the international stage. By joining you are contributing to having a strong, active, robust and representative organisation for volcanology. Collectively all members benefit.

2. IAVCEI is part of the International Union of Geodesy and Geophysics (IUGG) and has chosen to have individual membership so that the community has a sense of ownership. Membership provides IAVCEI and volcanology with a voice in international science. IAVCEI is entirely democratic and so the membership plays a key role in voting in the executive committee and officers who represent IAVCEI internationally.



Steve McNutt

3. Meetings are the major way that IAVCEI promulgates science. Members get concessionary registration fees. It typically takes attendance at only one IAVCEI meeting to earn back membership fees. IAVCEI General Assemblies, held every three to four years, are highly successful and international. They usually attract several hundred participants, and are the biggest international meetings in volcanology. IAVCEI also runs other kinds of conferences, workshops and courses. Members can of course contribute to proposing and organising meetings. IAVCEI also contributes to IUGG General Assemblies every four years.

4. IAVCEI distributes a newsletter three times per year which keeps the membership informed about IAVCEI activities and the international volcanology scene. IAVCEI also runs a WEB site, which is another invaluable source of information for the volcanology community.

5. IAVCEI runs Commissions on most of the major areas of volcanology. The Commissions are the grass roots of IAVCEI science and provide the origin of many initiatives and ideas. The Commissions

Continued on page 2

Continued from page 1

MESSAGE FROM THE PRESIDENT & SECRETARY GENERAL

can receive funding from IAVCEI to run meetings, produce newsletters and other support activities. Thus members' fees contribute to Commission's activities and members eventually benefit from these activities and initiatives.

6. IAVCEI recognises the wide range of incomes amongst its members and so has a variable scale of membership fees. This makes it possible for many scientists to join regardless of their particular financial conditions.

7. IAVCEI funds are used to help scientists from developing countries to participate in international science. In particular substantial proportions of IAVCEI funds are spent on support for students and developing world scientists to attend meetings, workshops and training events. As a member you can either benefit from such support or you will be helping altruistically in the objectives of IAVCEI by being a member.

8. IAVCEI is supported by a substantial grant from IUGG. Thus your fees are subsidised substantially and so go further. The share of IUGG funds has some dependence on the number of members and perceived activity of IAVCEI as one of the IUGG associations. Membership thus helps IAVCEI to retain good financial support and helps the member get good value for the membership fee. Note that in many countries fees to professional associations have tax concessions making the IAVCEI fees even less expensive.

9. Members get a preferential low subscription to Bulletin of Volcanology and to Spring Verlag publications in volcanology.

10. IAVCEI produces a professional quality volcano calendar in collaboration with Brown Trout Publishers. This gives high visibility to volcanology, to IAVCEI, and to the members whose photos are used. The calendar lists all VEI>3 eruptions and is thus an educational tool as well.

How to join:

Contact:

Caroline Giddings (the Membership Secretary) at iavcei@interact.net.au who can supply information about membership fees and options. There is a discount for a four year membership fee, and new members are recommended to choose this option. Information can also be found on the IAVCEI web site at: http://www.iavcei.org/

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INTERNATIONAL ASSOCIATION OF VOLCANOLOGY AND CHEMISTRY OF THE EARTH'S INTERIOR COMMISSION ON ARC MAGMATISM

State of the Arc 2000: Processes and Timescales

Between 24 and 28 January 2000, 55 geoscientists from 11 countries met in the Grand Chateau on the flanks of Mount Ruapehu, New Zealand's largest active andesite volcano, to consider the 'State of the Arc 2000'. The theme for the workshop 'Processes and Timescales in the genesis and evolution of arc magmas' was selected to bring together earth scientists with an interest in understanding the workings of arc-type volcanoes, and more specifically, to consider the rates and timescales on which complex magmatic processes interact on these volcanoes. The meeting was convened by Jon Davidson (University of California, Los Angeles, USA); John Gamble (Victoria University of Wellington, NZ); Richard Price (University of Waikato, NZ) and Ian Smith (University of Auckland, NZ) for the IAVCEI subcommission on Arc Magmatism.

The workshop took the form of 6 sessions, built around a 'State of the Arc' keynote address, poster presentations and informal, but in depth, discussion sessions.

Session I *The deep arc: source processes* was chaired by Chris Hawkesworth (Open University/University of Bristol) and began with a keynote by John Ayres (Vanderbilt University) reviewing aspects of experimental petrology relevant to the 'State of the Arc' and focussing particularly on trace element partitioning between fluid - solid and melt - solid. The role of the slab fluid flux and its chemical and physical (melt or supercritical fluid) nature were debated at length. Sophie Alves (University of Paris), Kevin Righter (University of Arizona) and Ian Parkinson (Open University) presented new Os isotope data and reviewed current information in this isotopic system in arcs. Jon Woodhead (University of Melbourne) reviewed Hf

The whole group on the rim of Red Crater, Ngauruhoe Volcano in background; Barbara Hobden, trip leader, with white shirt at front and center. Photograph by John Eichelberger,USA.

isotopes, raising the possibility of Hf mobility in subduction zone fluids. Trevor Green (Macquarie University) reported new partition coefficients for garnet, clinopyroxene, orthopyroxene and rutile under hydrous conditions and Tony Crawford (University of Tasmania) reviewed the thermal state of slabs, the genesis of adakites and the complex situation presently existing along the Hunter Ridge system south of Fiji. Then, led by Roger Powell (University of Melbourne), aspects of the progressive devolatization of the slab and the associated mineral reactions during subduction were considered.

Session II *Time scales of magma formation* was chaired by Mike Dungan (University of Geneva) with a keynote by Simon Turner (OU/University of Bristol). Turner presented a comprehensive review and explored the relations between Th isotopes and subduction zone parameters such as slab dip and rate of subduction. New Ra and Pa isotope results were presented and the relative compatibilities of these short lived isotopes to other incompatible elements were discussed. This session produced much lively debate with contributions from Chris Hawkesworth, Georg Zellmer (Open University), Bruce Charlier (Open University), Rob Hughes (University of Cambridge) and Mark Reagan (University of Iowa) and discussion focused on the meaning and significance of discrepancies between measured eruption ages (by radiocarbon) and measured U-Th isochron ages, as residence times. An unresolved issue is the apparent discrepancy between Ra ages, which seem to indicate extremely short magma processing times between slab and eruption of a few thousand years, versus the much larger U-Th timescales. This may reflect progressive distillation and radioisotope decay from the slab as proposed in the elegant Bourdon and Turner model, or may point to some misplaced assumptions regarding the cause of U-Th-Ra-Ba fractionation. Mike Dungan threw a cautionary note to the geochemists, vociferously supported by Colin Wilson (IGNS, NZ), to pay heed to the basic stratigraphic principles of geology. Drawing on examples from his work on the Tatara - San Pedro Complex of the Andes, and alluding to local work of Barbara Hobden (University of Waikato) and colleagues on Tongariro Volcano and John Gamble (Victoria University) and colleagues on Ruapehu Volcano, Dungan showed the short (days, hours, weeks) and long (years, 10's of years, 1000's of years) term complexity of events in arc volcanoes which derives from the interplay of a plethora of processes. This session concluded with a return to trace element geochemistry and Steve Eggins (Australian National University) addressing the subject of rapid disequilibrium melting or flash melting and the tantalising talisman of primary magmas in arc settings.

Session III *The role of the crust and regional studies* was chaired by Janet Hergt (University of Melbourne) with a keynote by Jenni Barclay (University of East Anglia) who examined the role of hornblende crystallisation in natural and experimental systems and its control on melt physical properties and crystallisation. Jenni showed that there are still advantages to be gained from studying thin sections of the rocks we analyse chemically. Along a similar pathway Petra Bach (University of Hong Kong) described garnet-bearing andesites from northern New Zealand. In a grand tour of active arc systems Shan de Silva (Indiana State University), John Foden and Marlina Elburg (University of Adelaide), Chris Nye (Alaska Volcano Observatory), Gerhard Woerner (University of Gottigen), and Rhiannon George (Open University/University of Bristol) presented various aspects of the geochemistry and petrology of arc rocks from volcanic arcs of the circum Pacific region.

Session IV *Shallow Processes and high level plumbing of arcs* was chaired by Jon Woodhead with a keynote address by John Eichelberger (Alaska Volcano Observatory) who began by reviewing aspects of large volume crustal magmatic systems such as Katmai (1912), and then proceeded to demonstrate the open system nature of these large scale bodies. John challenged many commonly expressed assertions regarding differentiation and zoning in magma bodies, pointing out alternative scenarios of interaction between compositionally distinct magmas just prior to and during eruption. In the ensuing discussion Stu Brown (University of Western Australia), Bruce Charlier (Open University) and Louise Thomas (Open University) quoted case studies from Whakamaru and Oruanui (New Zealand) and Toba (Indonesia) respectively. In the subsequent discussion, similar and interesting stories emerged of triggering events, disequilibrium crystals and measured residence

Jon Davidson models Tongariro Volcano on the Tongariro crossing field trip.

times. With new instrumentation and microanalysis methods, it is now possible to measure residence times in the order of 10 - 100 ka, and moreover, to test the veracity of these measurements independently. This has important implications for models predicting future large volume ignimbrite eruptions in volcanic arcs because it implies that large volumes of magma may sit on a threshold and be tipped into eruption mode by a perturbation such as an injection of a small volume of hot mafic melt.

Nancy van Wagoner (Acadia University) lent a very helpful perspective in discussing ancient arc systems, reminding us that very little of the magma flux at arc actually erupts at the surface, and that the nature of this flux has likely changed over time.

On a smaller scale Jennifer Garrison and Jon Davidson (UCLA) on Cotopaxi, Barbara Hobden on Tongariro and Richard Price and coworkers on Ruapehu, Chang-Hwa Chen (Academia Sinica, Taiwan) on Sakurajima and Jun-Ichi Kimura (Shimane University)

Continued on page 4

Continued from page 3

drew attention to the open system behaviour of typical arc andesite - dacite - rhyolite volcanic systems.

Session V examined *the role of light elements and volatiles in arc systems* and was chaired by Tobias Fischer (University of New Mexico) with a keynote from David Hilton (Scripps) who presented a comprehensive review of He - CO_2 - H_2O systematics in arc magmas. Inevitably discussion during this session converged on the relative contributions of recycled and primordial gas components with Fischer, Gordon Moore (Arizona State, Tempe) and Richard Arculus (Australian National University) contributing to the debate. Bill Leeman (Rice University) explained how boron devolatilization from the subducted crust, as recorded in the volcanic rocks into which the element is ultimately cycled, may be a sensitive indicator of the thermal state of the slab. Gordon Moore reviewed and presented the results of new experimental studies of the partitioning of boron between fluids and a variety of silicate melts. Dima Kamenetsky (aka Mr Olivine) concluded the session with a review of fluid and melt inclusion work.

Session VI served as a summary of the weeks' discussions, reviewing the current *State of the Arc.* The was chaired by Richard Arculus who enticed short personal perspectives and appraisals of 30 years research on arcs from Trevor Green and Ian Nicholls (Monash University) and each gave his impression of the current State of the Arc. This led into discussion on the applicability and use of the term 'calc-alkaline' and the links between arc magmatism and crustal growth. The meeting concluded by suggesting themes to be focussed on at the next SoTA meeting. Amongst these, it became clear that fluxes between the mantle and crust are still poorly constrained. Eventually, it is hoped that the forward approach of experimental studies and modelling will converge with the traditional approach of inverting geochemical and petrological data from arc magmatic systems to produce a self-consistent and general picture.

A source of some disappointment to the organisers was a failure to attract more of the geophysical community to begin to explore ways of integrating geological and petrologic information with geophysical measurements. In this regard Corrine Locke and John Cassidy (University of Auckland) summarised the present state of New Zealand andesite volcanoes and noted that a geophysical thrust should be one of the goals for the next SoTA organisers.

During the workshop conference participants were involved in two 1/2 day excursions on Mt Ruapehu and one full day excursion across the Mt Tongariro massif. Specific aims of the trips were to demonstrate the shallow structure of arc-type volcanoes and the associated complex history of magmatic evolution. In addition, a number of participants banded together and took advantage of the beautiful weather at the conclusion of the workshop to take photographic flights over the volcanoes.

The organisers thank all the participants for their efforts in making the workshop a success and especially the session chairs and those presenting keynote addresses for ensuring a provocative and stimulating program. The convenors were assisted ably by Roger Briggs, Barbara Hobden and Cathy Shaw (University of Waikato, NZ) and Bob Stewart (Massey University, NZ) and graduate students Jane Atkinson and Julia Shaw (VUW), Deborah Bowyer and Craig Cook (UW), Jennifer Garrison (UCLA) and Kate Wright (UA). The organisers wish to acknowledge sponsorship from: IAVCEI; Royal Society of New Zealand; Royal Society (London); University of Auckland; University of California, Los Angeles; University of Waikato and Victoria University of Wellington. Thanks also to Ngati Tuwharetoa, the New Zealand Department of Conservation and the staff of the Grand Chateau, Ruapehu, for logistic support and assistance prior to and throughout the meeting.

Photographs are available on the SoTA web site: http://center.ess.ucla.edu/SOTA2000.html

John Gamble

Jon Davidson
John Gamble
Richard Price
Ian Smith
} (Convenors)

UNESCO: Opportunities for co-operation

The Division of Earth Sciences at UNESCO has many common interests with IAVCEI. As President I visited the Earth Science Division at UNESCO in Paris on 7th February to establish a better understanding of how UNESCO functions and to explore areas of possible collaboration. The Earth Science Division struck me as very enthusisatic under the Directorship of Wolfgang Eder. It soon became clear in discussions that there were many areas where there could be co-operation and initiatives between IAVCEI and UNESCO. The main areas of current support for volcanology by UNESCO are focussed on support of training course, particularly in Latin-America. In the recent past they have also supported the making of the two IAVCEI videos on hazards and risks and the Directory of World Volcano Observatories.

UNESCO earth science division has wide interests and mandate; training and upgrading of the scientific skills and knowledge of geology within the developing world; education of scientists and the public about geological hazards and geology; general promotion of earth sciences; and conservation issues related to world heritage sights. One of there main ways of supporting geological sciences is through the International Geological Correlation Programme, which notably has no projects at the moment related to volcanology. The IGCP thus provides a substantial opportunity for IAVCEI Commissions, as the programme provides up to $10,000 per year for periods typically of about 5 years.

I established the following as possible areas of co-operation and common interests with UNESCO by IAVCEI:

(i) UNESCO saw the need for training courses, which particularly focussed on the needs of developing world scientists. Courses which integrated together basic science, monitoring methods, hazard assessment methods and risk analysis would be examples.

(ii) The UNESCO support for the two IAVCEI videos has clearly been a great success and has arguably already contributed to saving a great many lives. Further initiatives in production of videos, with versions in different languages, and other forms of information for improving public understanding of volcanic hazards and risks can be envisaged.

(iii) Suitable applications from IAVCEI Commissions to the IGCP would be very welcome. IGCP funds usually help support workshops with a strong international participation. This might help maintain vigorous

programmes of activity amongst the Commissions and I encourage Commission leaders to investigate the IGCP as a source of funds and activities. Proposals, which place emphasis on the participation of scientists from the developing world with upgrading the skills and knowledge base, would be particularly welcome.Those interested in IGCP should make contact with Margarete Patzak (m.patzak@unesco.org) for more information.

(iv) UNESCO has a programme called GARS (Geological Applications of Remote Sensing). They already have part of this programme on volcanoes and their future emphasis will be on helping the remote sensing approach to gain wider acceptance within the earth science community. Participation in the GARS programme also guarantees free images.

(v) UNESCO has a new initiative called GEOPARKS which is to help to seed initiatives to develop areas for public education in the earth sciences. Discussions suggest that volcanoes could be excellent GEOPARKS and so this might well be an initiative of interest to IAVCEI and its members.

(vi) In general UNESCO will be interested in other initiatives that help fulfil its mandate, such as book publications, directories, and databases.

(vii) UNESCO can provide advice to governments or organisations if requested. For example in the event of a major volcanic crisis UNESCO can provide teams of expertise drawn from the international community. IAVCEI can of course provide advice to UNESCO in the event that such teams are requested. UNESCO also provide teams to make analyses of disasters after they have happened so that lessons can be learnt. This might be another area of co-operation with IAVCEI.

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IAVCEI ACTIVITIES IN 1999
prepared for IUGG report to ICSU

IAVCEI completed a fourth year of individual membership with a paidmembership of 552 members for 1999, the highest total to date. The top eleven countries in terms of memberships were the USA (178), Japan (69), Italy (57), Australia (44), the UK (43), Germany (37), New Zealand (27), Russia (23), Romania (22), France (21), andMexico (16).

Approximately 200 IAVCEI members attended the IUGG meeting in Birmingham in July. Fully 85 percent of the IAVCEI scientific sessions were multi-disciplinary sessions co-sponsored with other associations. The number of attendees was lower than for typical association meetings, but the co-sponsored sessions allowed scientists from other disciplines to interact with volcanologists.

A new slate of officers was elected in the spring of 1999 and assumed their duties in July 1999 at the Birmingham IUGG meeting.

The new officers are:

President	Steve Sparks (UK)
Vice-President	Joerg Keller (Germany)
Vice-President	Tadahide Ui (Japan)
Secretary-General	Steve McNutt (USA)
Members	Toshitsugu Fujii (Japan)
	Bruce Houghton (NZ)
	Jocelyn McPhie (Australia)
	Hugo Moreno (Chile)
	Raden Sukhar (Indonesia)

In addition, the past president moved to a new role and a Deputy Sec.-Gen. was appointed:

Past President	Grant Heiken (USA)
Deputy Sec.-Gen.	Jim Gardner (USA)

As of this writing IAVCEI has 14 active commissions. Three commissions had changes in leadership in 1999. All commissions are currently under review, a process to be formalized in July 2000 at the Bali meeting.

Preparation for the upcoming Bali meeting provided the first crisis for the new executive committee when political unrest and violence in nearby East Timor occurred in the early fall of 1999. Dozens of letters were received, some calling for moving the conference, some for outright cancellation, and many in support of the local Indonesian organizing committee. After careful consideration a decision was reached by the IAVCEI Executive Committee to proceed with the meeting. All letters received were answered individually, and a statement by the Executive Committee was added to the IAVCEI web page http://www.iavcei.org

A new editor was appointed for IAVCEI's Bulletin of Volcanology. Tim Druitt (France) assumed duties in September 1999. He is in the process of selecting several new Associate Editors. Additional goals include shortening the time of the review process and assuring production of the journal on a more regular schedule.

IAVCEI sold several educational products in 1999. Two videos on 1) understanding volcanic hazards and 2) reducing volcanic risk were produced professionally under contract with IAVCEI. Over 80 videos were sold in 1999. Also, a volcano calendar was produced by IAVCEI members and was printed and marketed by a professional calendar company. Over 3,800 calendars were sold and an additional 800 were distributed by IAVCEI to various scientific, educational, and governmental organizations. IAVCEI received a small royalty payment ($137 US) for the calendars.

1999 was a busy and productive year for IAVCEI.

Steve McNutt
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POLITICS AND SCIENCE
Continued from Page 1

in ways that some members of IAVCEI may deplore or disagree with. Volcanic crises will have to be dealt with by the local scientists and foreign scientists, many of whom will be members of IAVCEI. Politically based actions or publically critical statements by IAVCEI might place scientific teams and individuals in difficult situations and conceivably prevent the best scientific work and advice being utilised. There is a clear parallel with other humanitarian non-governmental organisations like the Red Cross, who have a policy of principle, confirmed by the Humanitarian Law Section of the Red Cross in London, not to make public political statements or gestures. If the Red Cross were

Continued on Page 7

LACDE

(Local Authorities Confronting Disasters and Emergencies)

4th International Conference to take place between 27-30th August 2000 in Reykjavic, Iceland.

If you would like to receive more information, you can contact the local conference organiser, Mr Petur Aoalsteinsson, at e-mail addrsss: petura@landsbjorg.is with the full names of those interested and the full mailing address, tel/fax numbers.

We would be delighted if you were to join us for this important event and look forward to the pleasure of meeting and greeting you in Reyjkavic.

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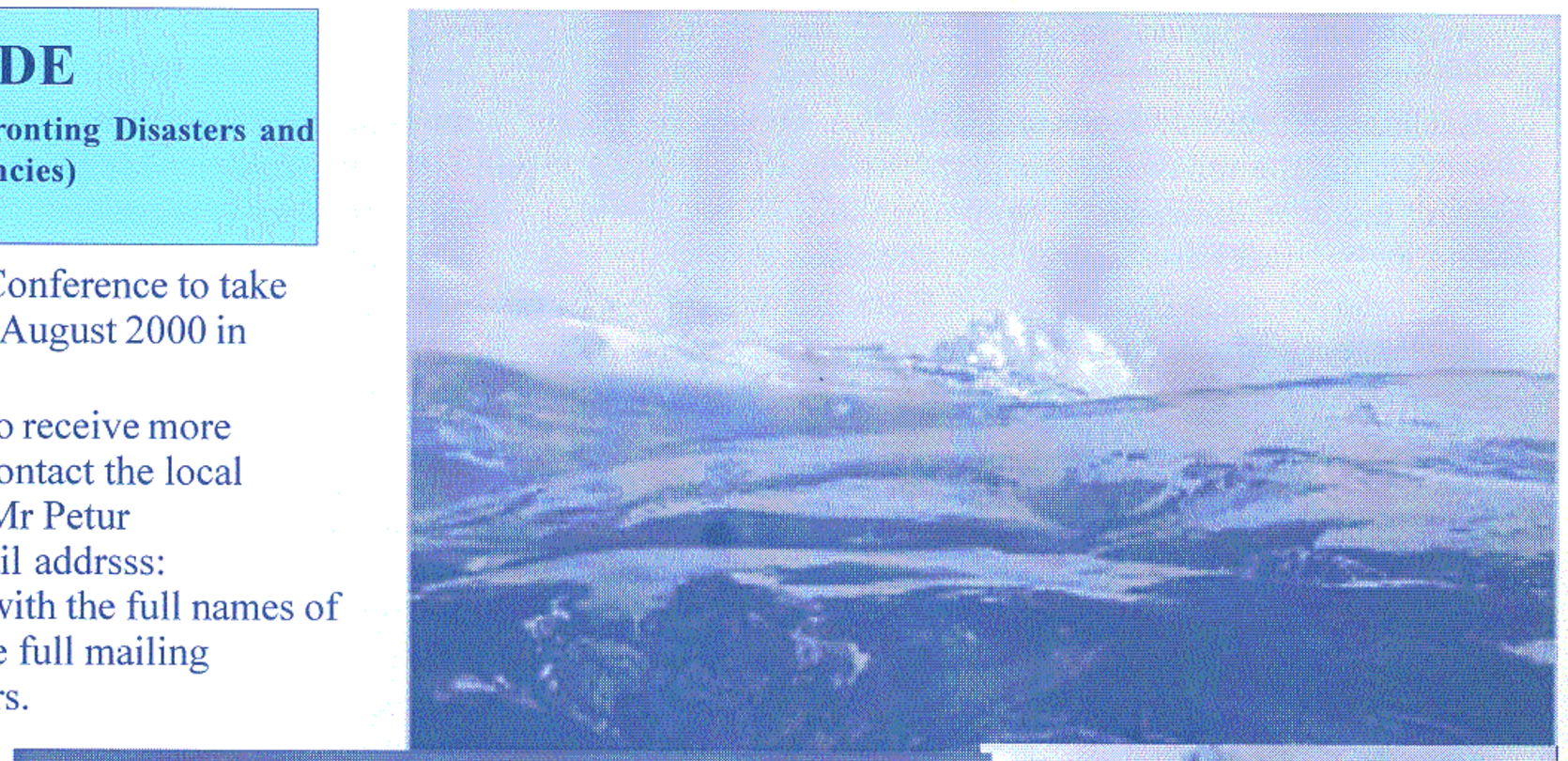
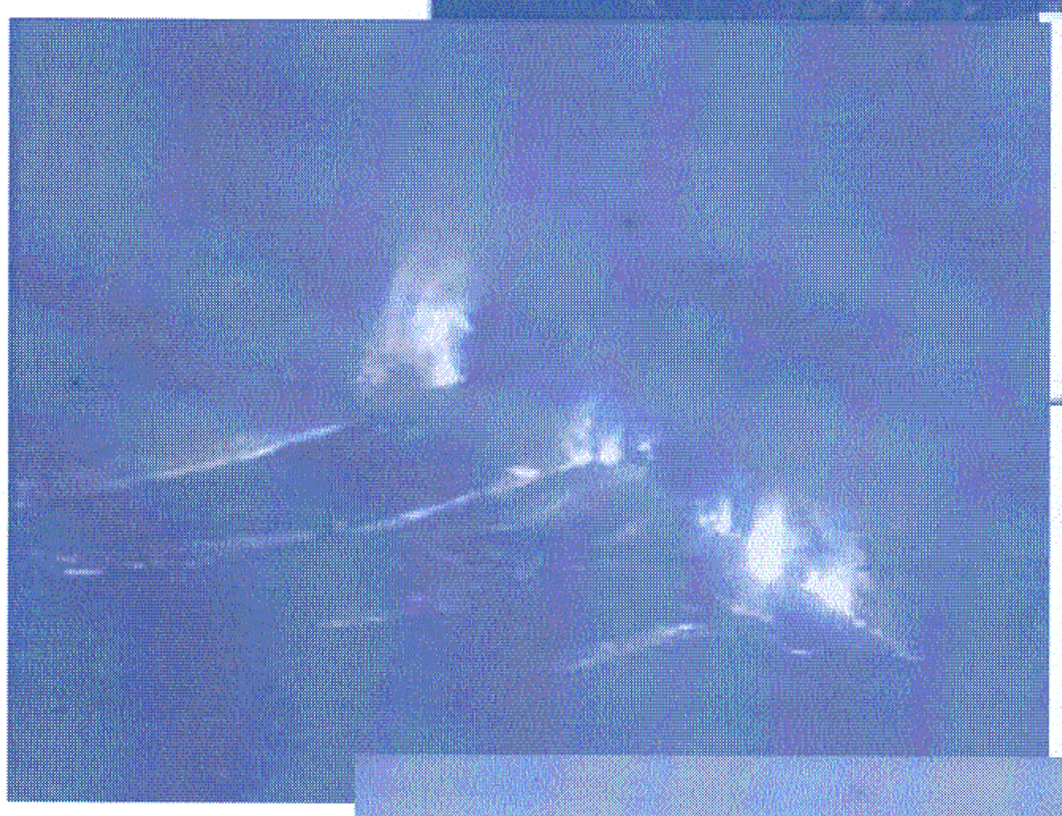
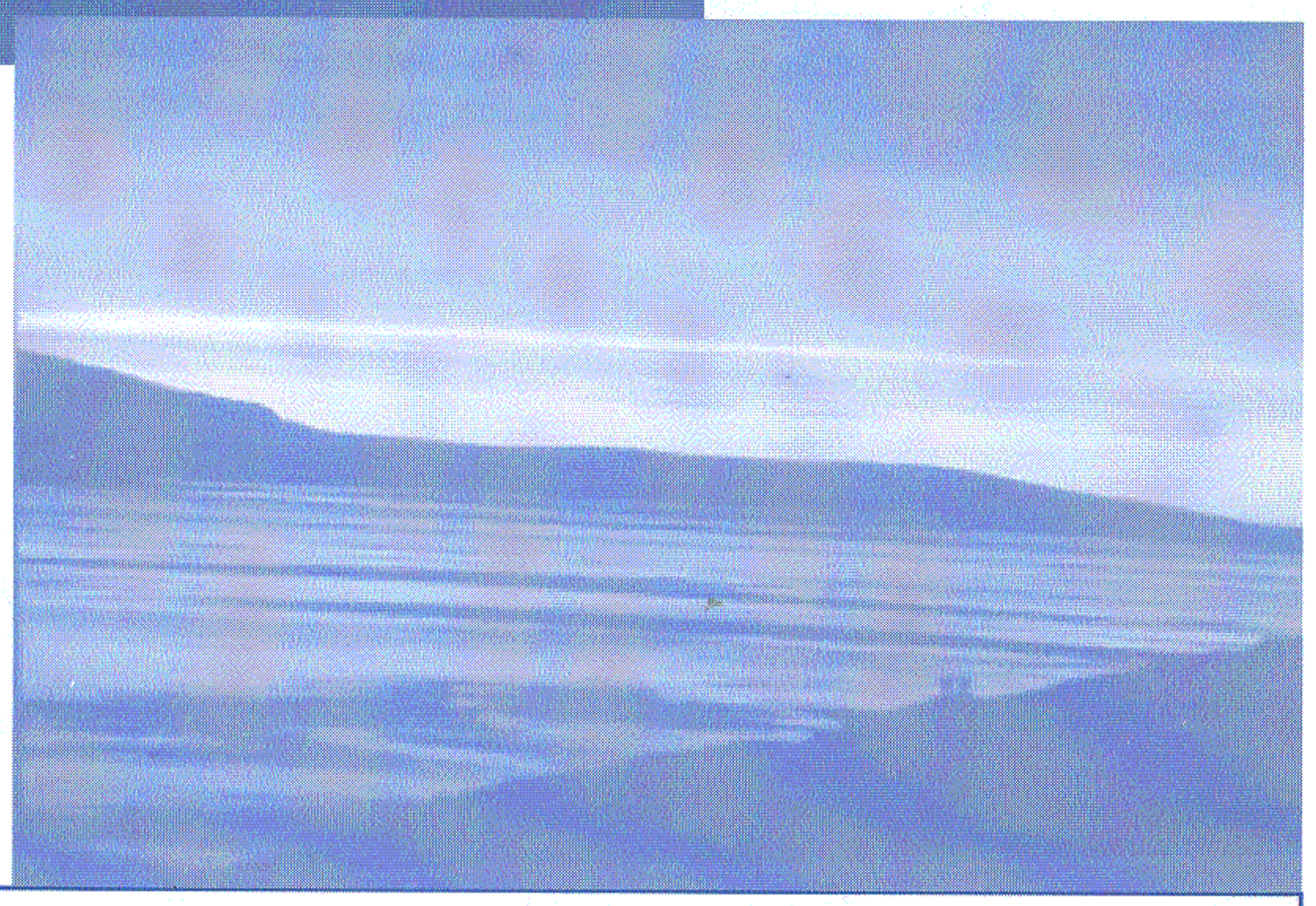
Akureyri photographed on a summer night.

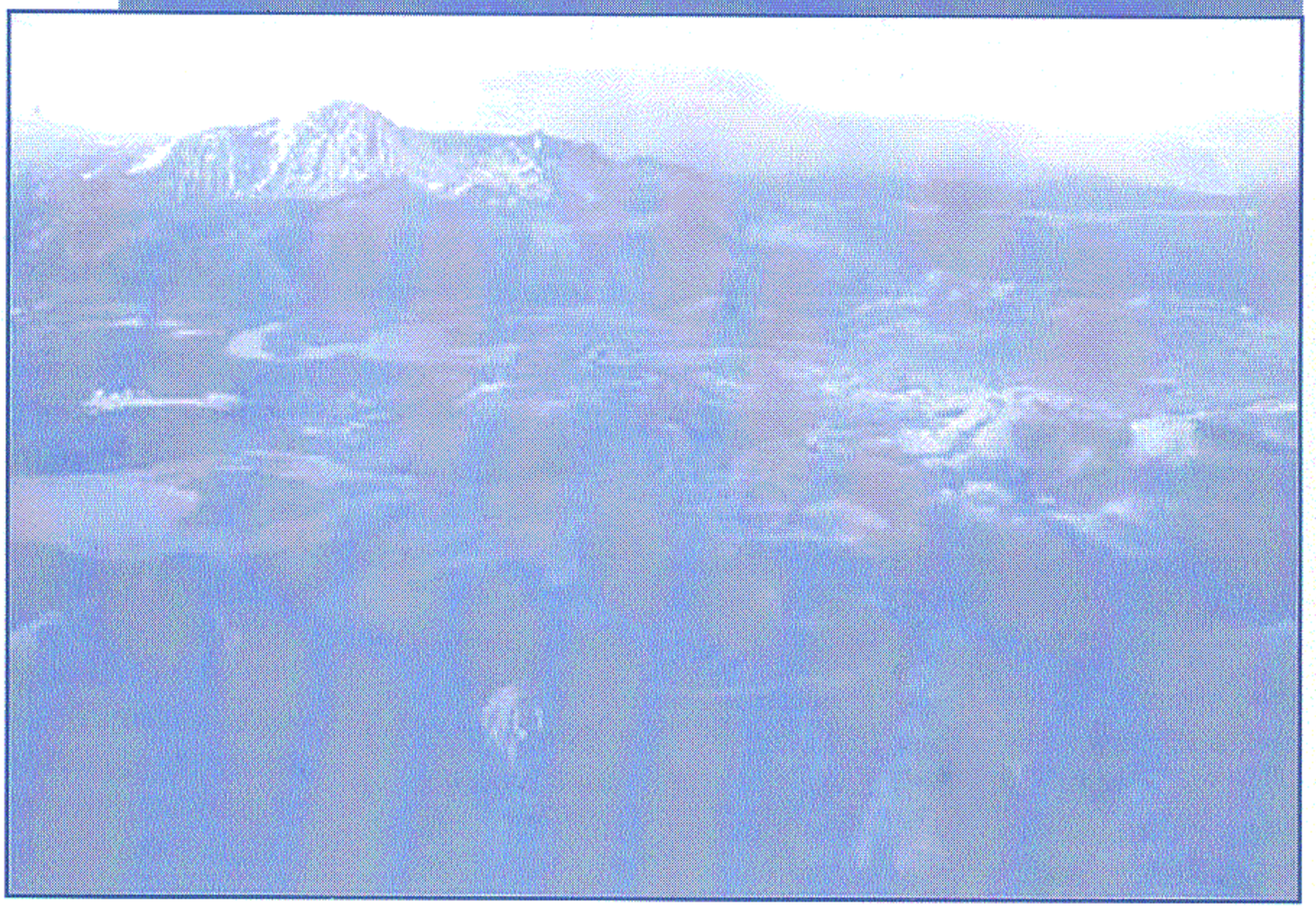
The Sveinstindur mountain peak (1090m) in the Skaftártunga region in southeast Iceland. From this vantage point, looking northeast, one can see over Langisjór lake and Fagrafjall mountain to the vast whiteness of Vatnajökull glacier. Turning a few degrees in a clockwise direction one can see the green and beautiful but terrifying Lakagígar craters. Between Sveinstindur and Lakagígar, the Skaftá river scores the land for as far as the eye can see as it flows south to the glittering black Atlantic Ocean. And if you follow the sea west there stretches before you the Mýrdalsjökull and Torfajökull glaciers and the entire southern highlands.





Hekla in eruption, day, and night, February 2000. Directly above, an example of a typical strombolian eruption found in Iceland.





Have you renewed your IAVCEI membership for 2000?

IAVCEI Secretariat, PO Box 185, Campbell, ACT 2612, Australia Phone/Fax: +61 2 6248 7407 Email: iavcei@interact.net.au

Continued from Page 5

POLITICS AND SCIENCE

to indulge in criticising publically the many unsavoury and difficult regimes in the countries in which the Red Cross operates, then the organisation could find it impossible to meet their humanitarian goal of helping people in adversity. Another practical reason for avoiding politics is that there may be few, if any, circumstances where a uniform opinion could be obtained across the entire IAVCEI membership. A political stance might please one sector, but enrage another sector, leading to splits in the international community, based on issues outside our common interests in volcano science and its humanitarian applications. Such splits could only weaken IAVCEI by losing members, raising differences between nationalities unrelated to science, and inhibiting the international collaborations that are a hallmark of the Association.

Are there then any circumstances where IAVCEI might become involved in poitics? There most certainly are. One could imagine, for example, IAVCEI members being persecuted or imprisoned by a government for failing to predict an eruption which led to loss of life. In such circumstances it might be appropriate for IAVCEI to petition the government on behalf of its members, drawing attention to the difficulties of prediction and perhaps pointing out that expectations were unreasonable. I am sure that readers will think of other possibilities.

This is not to deny that politics does not have a big impact on our science and its applications in specific circumstances. Almost every volcanic crisis involves the interface of scientists with politicians and government. This interface is a legitimate matter of discussion and debate within IAVCEI. Understanding and improving communication and collaboration with politicians in the management of volcanic crises is central to the effective applications of our science. Perceptions of scientists by politicians are also important and thus IAVCEI members and the Organisation need to display integrity and responsibility in actions. Volcanologists therefore cannot divorce themselves from politics.

What is certain is that any venture into political arenas must be done with clear objectives, in a responsible manner, and in the context of international character and scientific humanitarian aims of the Association.

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BOOK REVIEW OF ENCYCLOPEDIA OF VOLCANOES

by

Stephen Blake

All members of IAVCEI will know what the first entry in the index of every volcanology text is. But how many of those indexes end with 'zoochorous'? The Encyclopedia of Volcanoes covers just about everything one could wish to know about volcanoes and at 1,359 pages of text no other single book can hope to compete with the mass of volcanological information it contains (all 3.5 kg of it). Written by 112 expert authors, the Encyclopedia of Volcanoes will be the reference work for a long time.

The Encyclopedia contains 82 chapters (of 10 to 20 pages in length) arranged in 9 thematic parts, and an appendix listing all 550 historically active volcanoes and their dates of eruption. Each thematic part (Origin and transport of magmas (204 pages), Eruption (30 pages), Effusive volcanism (135 pages), Explosive volcanism (273 pages), Extraterrestrial volcanism (103 pages), Volcanic interactions (109 pages), Volcanic hazards (176 pages), Eruption response and mitigation (145 pages), and Economic benefits and cultural aspects of volcanism (116 pages)) could be a textbook in itself and is prefaced by a short overview written by one of the editors. Each chapter starts with a glossary of terms, with definitions slanted toward the particular chapter topic. Consequently, this encyclopedia contains five definitions of basalt (plus two more for basaltic magma) and four definitions of both caldera and pyroclastic surge. This lack of definitive definitions of volcanological terms and a few poorly reproduced black and white images are the encyclopedia's only weaknesses. The Section introductions, chapter glossaries, references to related chapters and further reading given at the end of each chapter, and a lengthy index make it easy to find information at whatever level the reader wishes.

Continued on page 8

JOINT REVIEW OF VULCAN'S FURY (A. Scarth) & MELTING THE EARTH (H. Sigurdsson)

by

Dr. Hazel Rymer

Famous historical eruptions have captured the public imagination. Hollywood films use dramatic special effects to glamorise volcanology and to some extent educate audiences. The historic eruptions of Vesuvius (destroying Pompeii and Herculaneum in AD79) and Krakatoa (killing more than 36,000 in 1883) are well known to us through books and films, but many ancient civilisations also had stories and myths relating to volcanoes and volcanic events. There are lessons that can be learnt from past major eruptions and their effects on the local population or on civilisation in general; the interdependence of the global economy with most nations of the world now means that a major eruption can have significant global economic consequences.

Two recent books address the issues of the human response to volcanism in contrasting ways. There is overlap in the material dealt with in these books - after all, there are only a finite number of well documented historical eruptions to write about, but both these books fall into the 'must have' category for the professional volcanologist, keen amateur and interested lay person alike. Both books are meant for a wide audience, but neither could fairly be described as a coffee table book. Both books contain a massive amount of details and facts and both are well illustrated. They are similar in size and price, but the books are refreshingly different.

Alwyn Scarth is a Yorkshireman who trained as a geographer and lectured at the University of Dundee in geography. He has had a life long fascination with volcanoes and his previous publications range from the varied landforms that volcanoes create to the volcanic

Continued on page 8

Blake continued from page 7

This is one of its many strengths.The Encyclopedia covers standard text book facts to current research topics such as magma fragmentation, physical properties of magmas, and extra-terrestrial volcanism. Moreover, it is strong on the connections to sociological aspects of our subject, with chapters on hazard mitigation and the management of volcanic crises. Likewise, the many important interactions between volcanoes and the hydrosphere, biosphere and atmosphere receive much more detailed consideration than in 'geological' volcanology texts. Undergraduate geology students, professional volcanologists, planetologists, and historians of science will find the Encyclopedia has something for them. With so much material on display, the encyclopedia is a browser's delight and members of sub-disciplines will find their interests being pulled towards new undreamt of areas of volcanology as they flick through the pages. It's difficult to stop reading it.

The editor-in-chief, Haraldur Sigurdsson, and his team of associate editors (Bruce Houghton, Steve McNutt, Hazel Rymer and John Stix) must be praised for assembling such a monumental work. A richer source of authoritative volcanological information, from Bunsen to Brosnan, and from aa to zoochorous, cannot be found. All science libraries should have a copy.

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Here's how to order!

NEW BOOK

'Encyclopedia of Volcanoes' was published in October 1999 by Academic Press. With 1417 pages and a great spread of authors and articles, it looks like an excellent general reference tool. "The most important book of the century" according to Chuck Wood. Base price is US$99.99.

http://www.amazon.com/exec/obidos
http://shop.barnesandnoble.com/booksearch/
http://search.borders.com

Rymer continued from page 7

features in Homer's Odyssey. Haraldur Sigurdsson is an Icelander by birth and so has a natural affinity for volcanoes, and much of his professional life has involved lecturing in geosciences at US universities. His research is wide ranging and his writing prolific. He was editor-in-chief of the monumental work Encyclopaedia of Volcanoes, published by Academic Press (2000) which has been heralded as "a veritable Who's Who of modern volcanology" and "..the most important volcano book of the century".

Alwyn Scarth has chosen 15 volcanoes and famous eruptions and has documented them in considerable detail. However, this is anything but a dry academic read. Using original eye-witness source material (those in Latin, Italian, Spanish and French he has translated himself), he has brought the eruptions to life in a gripping and heart-rending manner. Touching 'human interest' stories coupled with clear and precise details make this a compelling read. The book is beautifully illustrated with colour photographs and black & white line drawings. The book seeks to illustrate how, over the millennia that people have been interacting with volcanoes, the reactions of fear, fascination, religious fervour, awe, enterprise and courage have remained essentially unchanged despite recent technological advances. Although our ability to recognise and act on the warning signs that a volcano is about to erupt have improved, there have been only a few successful attempts at diverting slow moving lava flows and still no possibility of actually preventing a volcanic eruption.

Haraldur Sigurdsson addresses the question of how our ideas and understanding of volcanic processes have varied historically. The science of volcanology is surprisingly young. Well into the 19th century, the Neptunists were still arguing strongly for precipitation of all rock formations from a universal ocean. Plutonists argued on the other hand that internal heat was the driving force for mountain uplift, folding and deformation, using volcanoes, basalts and granites as evidence for melting of rocks within the Earth at high temperatures. Both camps tried to reconcile their scientific findings with bible passages documenting the Creation. Only with the acceptance of the theory of plate tectonics in the second half of the last century (1960s onwards) could volcanoes and their products be understood in their global context. The problem is that there are many different types of volcanoes and the characteristic eruptions also vary widely from devastating explosions, to lava flows, to quiet gas discharges. Although it seems obvious to us now, it has not always been clear that these were manifestations of similar sub-surface processes. Geophysical techniques for monitoring volcanic processes have similarly only been available for the last few decades. The book is generously illustrated with black & white photographs and line drawings, many from the author's extensive volcanic art collection. The aim of this book is to chart the way in which ideas have evolved and there is a considerable amount of fascinating detail provided. Ideas move in and out of favour and rival groups support opposing theories at different times. It is therefore not possible to write the book either in either a strongly chronological manner or by following a single concept from initial conception to universal acceptance or rejection. This makes the book slightly less of an easy read than Scarth's contribution, but no less of an academic achievement and source of fascinating insight and comment on the history of our science.

We tend to take the present-day understanding of our subject for granted. These two books provide insight into the thought processes and actions of past generations (from the ancient Greeks to the late twentieth century) of people involved with volcanoes which are informative, fascinating and sobering to the modern professional volcanologist and anyone interested in volcanoes and the history of science and humanity.

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IAVCEI COMMISSION NEWS

PHYSICAL AND CHEMICAL PROPERTIES OF EARTH MATERIALS

Below is the structure and membership of the IASPEI/IAVCEI Joint commission on physical and chemical properties of earth materials. The membership of the committee will fluctuate in the next months as new priorities are emphasised within the workings of the committee. Members will be promptly informed of those changes as well as any address changes.

- Chair: D.B. Dingwell (Germany)
- Vice-Chair: S. Franck (Germany)
- Secretary: S.L. Webb (Australia)
- Past Chairs: S. Mackwell (Germany), W. McDonough (USA)

Members:

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Dr. P. Burnley
Dr. E.M. Chesnokov
Dr. A. Chopelas
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D.B. Dingwell (Germany)

REMOTE SENSING

The IAVCEI Remote Sensing Commission has a new Leader (Dave Rothery, who succeeds Pete Mouginis-Mark) and Secretary (T. Kaneko, who succeeds the late Peter Francis). Their contact details are given below. The Commission's aims are to promote the use of field, airborne, and spaceborne remote-sensing techniques for the analysis of volcanic eruptions and the mitigation of volcanic hazards.

Anyone wishing to join an email list to receive news of Commission activities is invited to email the Secretary. News items may also be found at the Commission's website http://www.iavcei.org/remote.htm. There will be a workshop on use of satellite based volcano monitoring tools run on behalf of the Commission by Andy Harris immediately following the General Assembly in Bali in July (see 2nd circular page 12 or http://www.vsi.dpe.go.id/iavcei).

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EXPLOSIVE VOLCANISM

Past 4 years activities:

A) Semi-annual newsletter containing articles on current research topics, book reviews, reviews of CEV-sponsored workshops and symposia, descriptions of current research at different institutions, meeting announcements, publication announcements, and membership listing. Distributed as paper copy and posted on CEV homepage. Homepage is updated regularly. Last newsletter was sent out in December, 1999.

B) CEV Workshops. Short course on explosive volcanism (Puerto Vallarta general assembly, January 1997. Led to publication of book titled: From Magma to Tephra, Modelling Physical Processes of Explosive Volcanic Eruptions, edited by A. Freundt and M. Rosi.

C) Field workshop on deeply eroded calderas in the United Kingdom, led by Peter Kokelaar and Mike Branney, with 25 participants (July 1999). Seed money provided by CEV to help defray pre-excursion expenses to leaders. This workshop included three days in each of three different regions. In Wales, discussion touched upon caldera-substrate relationships, magma genesis, resurgence or lack thereof, and criteria for determining subaerial vs. subaqueous deposition and welding of tuffs, while studying a very high- grade ignimbrite, the Pitts Head Tuff, emplaced upon 'sloppy' wet sediments. In

Continued on page 10

Continued from page 9

addition, an examination of the Bedded Pyroclastic Formation, a dominantly basaltic and sedimentary package between two thick rhyolitic tuffs on the northeast flank of Snowdon Peak enabled a reconstruction of the alternating resurgent uplift and rift-related subsidence, the waxing and waning of volcanism, and the shifting sources of sediment. In the English Lake District, the group studied syneruptive faulting and draped and ponded ignimbrite. Evidence for multiple episodes of movement, with reversals of offset, along some of the intracaldera faults was dramatic. In Scotland, the Glencoe Caldera was re-interpreted as a persistent, complex NW-SE master graben with several cross-grabens, three tuff cones, five thick ignimbrites, numerous breccias, and a thick sequence of andesite sills with magnificent peperitic margins. Further studies in Scotland included peperite textural variations and the proximal (tuff-cone) facies of the King's Tuff.

D) Field workshop on explosive volcanism of Kos and surrounding Aegean Islands, led by Sharon Allen, with 16 participants (July 1999). Seed money provided by CEV to help defray pre-excursion expenses to leaders. This field workshop focused mainly on the physical volcanology of the Kos Plateau Tuff (KPT), a voluminous (>60 km3 DRE), ignimbrite-forming eruption that was emplaced as a consequence of late Quaternary paroxysmal explosive activity that was sourced in the area between Kos and Nisyros in the eastern Aegean Sea. Specific topics covered in the workshop included:

- Source of the KPT
- Effect of external water on the eruption, transport and deposition of the
- Sedimentological features of the KPT pyroclastic deposits and their relationships to eruption conditions
- Lateral facies variations within the KPT co-ignimbrite lithic breccias
- Fragmentation
- Petrogenesis of large silicic magma bodies in the upper crust
- Behavior of pyroclastic flows in distal areas (>30 km from inferred source)

Two evening discussion sessions focused 1) on pyroclastic density currents, with particular emphasis on flowage over water and highly turbulent flows , and 2) on fragmentation processes, fragmentation depth and origin of lithic fragments

E) Symposia. Several symposia at 1987 Puerto Vallarta and 1998 Cape Town General Assemblies, at 1999 IUGG General Assembly, and 1998 Cities on Volcanoes conference. Some of these symposia were co-convened with other IAVCEI commissions, when appropriate.

Planned Activities Next Four Years:

A) Continue with Newsletter and web page publication.

B) Continue to solicit ideas for workshops and to support those that move forward through publicity and limited financial aid to leaders.

C) Continued leadership of symposia at major conferences, focusing on interdisciplinary research topics.

D) Form and obtain funding for a Numerical Modeling Working Group.

Organization:

CEV is a grassroots organization that depends heavily on the ideas and committments of the members. The two co-leaders, Michael Ort and Greg Valentine, see their job mainly as communication facilitators and to help initiate collaborative work in areas of importance to the science of explosive volcanology. The semi-annual Newsletter and web page are major mechanisms for communication. We have tried to emphasize the informal communication of new and/or controversial research topics, and have worked to provide a forum by which different research groups can 'advertise' their current work and future interests through the Newsletter/web page. The purpose of the latter is two-fold: (1) to try to reduce unnecessary duplication of research between different groups, and, most importantly, (2) to promote collaborations between groups that might occur simply by being more aware of what each other is doing. We also work to announce all relevant conferences and books that are related to explosive volcanism, in order to ensure that the entire community is a ware of and can participate in relevant events. We note that the Newsletter has benefited greatly from the able assistance of Paula Geisik, who handle s the formatting and distribution, and also has worked with authors of articles.

Other important forms of communication are field workshops, symposia, and short courses. For these we rely heavily on the initiative and enthusiasm of members who initiate and lead the activities. We provide publicity, limited financial assistance to the leaders, and other support that we may be able to provide. The most recent two field workshops were outstanding successes and will be written up in our forthcoming Newsletter. These workshops provide both an opportunity for scientists to discuss particular deposits in detail with others and commonly lead to other collaborations between workers, of ten in quite different areas. CEV has sponsored or co-sponsored a number of symposia at conferences over the past four years covering all processes from magma fragmentation to deposition. Symposia co-sponsored with other commissions allow our members to share ideas with scientists who approach the same problem from another perspective. A major success in the way of short courses was led by previous leaders Armin Freundt and Mauro Rosi in 1997, which resulted in an important book that covers most theoretical aspects of explosive eruptions.

We think that CEV activities over the past four years (and even going back t o its origins in the early 1980s) have been quite successful. The future will depend on the continued interest of the members and on the commitment of the next set of leaders.

Commission on Explosive Volcanism Co-leaders:

Note - Ort's and Valentine's terms as CEV leaders will expire at the end of 2000. We are soliciting nominations for new leaders.

Greg Valentine and Michael Ort

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CHEMISTRY OF VOLCANIC GASES

CCVG Newsletter no. 14 was distributed in July 1999, and provides the summary relevant information about recent and future activities of the Commission. As better indicated by the contents of the same Newsletter the main points are:

1) A paper will appear very soon in a special issue of Journal of Volcanology and Geothermal Research (Giggenbach issue), dealing with the evaluation of the results of joint investigations of gases collected on occasion of recent Workshops;

2) A symposium on 'Volcanic Gases' is scheduled during the IAVCEI General Assembly Bali 2000, and will be convened by the leader of the Commission and Sri Sumarti from the Volcanological Survey of Indonesia;

3) The Seventh Field Workshop will be held at Satsuma-Iwojima, Kyushu, Japan in mid october 2000; the necessary details will be given through Newsletter no.15, expected in spring 2000.

Moreover, the Commission agreed to join the cross-commission IAVCEI project for an interactive database of volcanic unrest.

Past, present, and future (A letter from the CCVG Leader)

Looking back at the first issue of the Newsletter, which appeared in 1988, we can realize that in spite of objective difficulties a significant activity can be reported for the Commission on the Chemistry of Volcanic Gases during the last decade. Besides individual participations to programs of scientific investigation and contributions to international meetings, 13 issues of Newsletter have been distributed, and 3 Field Workshops have been organized (Vulcano 1991, Java 1994, Hawaii 1997). Colleagues from the 'gas family' participated in the general assembly of IUGG 99; for 2000, a special session on volcanic gases is considered for the IAVCEI meeting 'Exploring Volcanoes' in Bali (Indonesia), and the Seventh Field Workshop to be held in Japan is under preparation.

The question about the future, however, still exists substantially in the same form as put ahead ten years ago: the Commission should only be regarded as an additional Academy for the scientific investigation on different gaseous species released in volcanic areas, or should it also promote careful application of scientific knowledge on volcanic gases to any attempt of forecasting eruptive activity?

I personally feel that the evidence provided also by recent volcanic catastrophes force us to the second possibility, and that we can substantially agree with the suggestions arisen in the early times of the Commission: "Seismicity and ground deformations appear as the best indicators of approaching activity when lava flows are the expected phenomena; when some kind of explosive event is more probable, then the investigation on the chemistry of fumarolic gases seems to provide the first evidence of changes in progress. The experiences so far available, however, are not many, and their substantial increase is the best result we can obtain in the near future."

Marino Martini

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VOLCANOGENIC SEDIMENTATION

CVS continues to be active.The most recent newsletter was sent out in October 1999, and another is intended within the next two months. Feature articles are expected discussing Precambrian volcaniclastic sediments and, hopefully, also a contribution from one of the recent crossover researchers that have come from 'normal" sedimentology research to examine volcaniclastic deposits from a fresh perspective.

To review previous newsletters, visit the recently relocated web site (www.otago.ac.nz./geology/cvs.htm). I am still in the process of bringing up to date all of the sections, and in particular the 'current abstracts' are not current at all at the moment. The delay reflects difficulties in getting the page set up at Rhodes University following a change in leadership at the Cape Town meeting. Ian Skilling has now departed Rhodes for a new position in Mississippi.

At the Bali meeting Ian and I are convening a session on Surtseyan volcanism, intending to also focus on how to extract volcanological information from subaqueous deposits that have been through an aqueous 'sedimentary' transport interval.

In August of this year, there is a meeting on Maar volcanoes and their sedimentary deposits in Duan (see CVS website for more information). Also in August is a workshop on ice-volcano interaction which we have brought to the attention of the CVS readership.

At the Cape Town meeting an additional CVS workshop was arranged by Cathy Busby (UC Santa Barbara), but it has been indefinitely postponed.

A jokulhlaup excursion to Iceland from the Birmingham IUGG meeting was sponsored by CVS. It is reported to have been excellent, though it did not attract a large number of participants (probably becauseof the expense). See the CVS newsletter for details.

Nancy Riggs and I are in the final stages of bringing together a publication directed to CVS interests on lacustrine volcaniclastic sedimentation (an Int'l Assoc Sedimentologists Special Publication); it should appear before the end of the year.

Ian Skilling, Jocelyn McPhie and I are also editing a JVGR special publication on peperites, formed by mingling of magma with unconsolidated sediments. It arises from a CVS sponsored symposium at Cape Town, and involves numerous CVS members as contributors. We will suggest to JVGR that CVS be linked with the volume (a 'sponsor'?)

For the future we plan to explore a possible relationship between the commission and the International Association of Sedimentologists. For sediments of volcanic origin there is a strong shared focus between that organization and the CVS members of IAVCEI, and some sort of formal or informal links could help expand cross-pollination between the groups. There are for instance sessions and symposia at some IAS meetings that would be of considerable interest to CVS members, and certainly IAVCEI meetings commonly have one or more sessions with strong sedimentological components.

James White

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Continued on page 12

IAVCEI Web Page: www.iavcei.org
IAVCEI General Assembly, Bali, Indonesia JULY 18-22, 2000

LARGE-VOLUME BASALTIC PROVINCES

The most up-to-date information concerns the Penrose Conference on 'Volcanic Rifted Margins' to be held at Royal Holloway in March with excursions to the Deccan and the British Tertiary.

VOLCANIC RIFTED MARGINS (March 27th-30th)

Many rifted volcanic margins (<200 Ma.) are in close proximity to mantle plumes but the causal relationship between plumes and rifting remains highly controversial. Do plumes drive continental break-up or are they channeled into areas of thinned lithosphere? Are plumes required to generate flood volcanism ? The relative timing of surface uplift, extension and magmatism has been predicted by theoretical plume models, but their validity hinges on actual field examples. The North Atlantic and Red Sea volcanic margins appear to have evolved in a similar way with minimal uplift and much of the flood magmatism pre-dating break-up extension. Why does this differ from theoretical models? This conference will bring together scientists working on theoretical, field and geophysical aspects of rifts. Field and laboratory-based scientists will be invited to the conference with areas of expertise as diverse as : landscape evolution and geomorphology, the chronology and geochemistry of continental volcanism, lithospheric extension, mantle and crustal geophysics, thermochronology and theoretical modeling of rift settings.

MAIN TOPICS

Keynote-led discussion sessions linked to poster presentations will be the main mode of communication. Keynote speakers will present background information and leaders of discussion sessions will be selected from among the participants. Suggested topics for presentation and discussion include:

- the extent and amount of uplift and subsidence both in theory and observation
- temporal and spatial relationships between extension, magmatism, uplift and exhumation
- modification of crust and upper mantle structure during the evolution of volcanic margins
- use of volcanic products to understand rift geodynamics
- the style of, and mechanisms for, lithospheric thinning
- syn- and post-rift exhumation, sediment budgets and basin formation
- the thermal history of volcanic rifted margins using dating and modeling techniques
- Other topics will be considered for presentation provided they are relevant to the evolution of volcanic rifted margins.

Invited keynote speakers :
P. Fitzgerald (University of Arizona, USA),
W.S. Holbrook (University of Wyoming, USA),
C.J. Hawkesworth (Open University, UK),
N. Kusznir (University of Liverpool)
H. C. Larsen (Danish Lithosphere Centre, Denmark),
M. Summerfield (University of Edinburgh, Scotland),
N. White (University of Cambridge, UK)
R. White (University of Cambridge, UK)

FIELD EXCURSIONS

Two field excursions will illustrate aspects of the evolution of large igneous provinces (LIP) and volcanic rifted margins : a 7/8 day pre-meeting excursion (March 19-26) to the Deccan LIP and a 4/5 day post-meeting excursion to the North Atlantic LIP, Scotland (March 31 -April 5). For those participating in the Deccan field excursion the Penrose Conference will begin in Bombay and the field group will return to London for the discussion sessions. For those participating in the North Atlantic LIP excursion, the group will go to Scotland from Royal Holloway immediately after the discussion sessions. Preliminary costs for India : $600 (excludes air fare) and for Scotland $600 (includes London-Inverness air-fare).

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