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FEATURE

QUEEN'S UNIVERSITY MINERALOGY FIELD TRIP TO ILÍMAUSSAQ, SOUTH GREENLAND: A TRAVELOGUE

BY JULIAN GRAY¹

During the last two weeks of July 2001, Ron Peterson, professor of mineralogy at Queen's University, led an expedition to the Ilímaussaq and Igaliko alkaline intrusions in the Julianehåb district, South Greenland (fig. 1, p. 8). Team member László Horváth had compiled an astonishing list of 188 minerals reported to occur in the Ilímaussaq intrusion, of which ten or so are found nowhere else on Earth. Twenty-four min-



Expedition members collecting at the Nanna Pegmatite near Narssárssuk, Greenland.

SUMMARY

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Mineralogy Field Trip to Ilímaussaq, South Greenland: A Travelogue

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erals were first described from samples from Ilímaussaq, aenigmatite, arfvedsonite, eudialyte, and tugtupite to name a few. One or two days were planned for collecting in the Narssárssuk area,



Georgia State University geologist Julian Gray hikes on Kringlerne, a plateau 300 m above the Kangerluarsuk Fjord. A ragged, towering, 1200-m ridge of Julianehåb Granite rises in the background.

immediately west of the Igaliko complex. Sixty-three minerals are reported from this area, which is the type locality for 14 species. One of the Vikings' settlements in Greenland was also located in the Julianehåb district. Two weeks in an exotic, historically interesting location with world-class mineralogy and mineralogists: the stage was set for a fantastic trip. We were not disappointed.

The trip was a logistical challenge: just getting to Greenland is complex. Once there, the only means of getting around are by air, sea, and foot. Base camp was moved twice, requiring eight flights on two different aircraft, eight boat rides on four different vessels (plus several shuttles on small rafts each trip). We stayed in three base camps and four hostels. The 15 members of our group

Continued on page 8

This Newsletter constitutes an insert to
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FROM THE NEWSLETTER EDITOR

I hope you will enjoy this Newsletter's offerings: they will take you on a mineral collecting adventure to Greenland, thanks to Julian Gray's wonderful account; to the Rochester Mineralogical Symposium through the eyes of an habitué, Quintin Wight; and to the International Clay Conference held in Argentina last July, courtesy of Jeanne Percival and André Lalonde.

More on Tools

One of the biggest challenges in editing the Newsletter is consistency. How do you write dates? What do you capitalize? What about hyphens? I am afraid I do not have the eagle eye of our Journal editor. And I actually hoped to get a message from one of our members telling me that he had found so many errors in the last Newsletter. This *perle rare* would have been invited immediately to become copy editor. This has not hap-

pened, and my husband Thomas Clark, metallogenist with the Ministry of Natural Resources in Québec, has taken on this task. He always does it cheerfully, even though the editor is not always pleased to see the numerous corrections in her texts, particularly when deadlines are tight.

At last I found a book I can highly recommend to all: *The Canadian Style – A Guide to Writing and Editing* (ISBN 1-55002-276-8), published by Dundurn Press Limited in cooperation with Public Works and Government Services Canada. It provides concise, easy-to-find answers to a host of questions concerning abbreviations, punctuation, numerical expressions, etc., and is thoroughly indexed.

MAC or M.A.C.?

Both have been used in print but I have always wondered what was the correct

usage? I finally found the answer in the book mentioned above. It says "Do not use periods or spacing between the letters of an acronym (a pronounceable word formed from the first letters of a series of other words) or initialism (formed from the initial letters of a series of words and may not be pronounceable as a word)." So the answer is MAC.

Friends of Grenville Field Trip

One highlight of last fall was the annual Friends of the Grenville field trip, held September 28-29 in the Charlevoix area of Québec. The weather was incredible and the scenery breathtaking. People studying anorthosites have all my admiration for their persistence. The excursion was led by Bob Dymek, who produced a detailed and well-illustrated guidebook and cheerfully answered hundreds of questions. I hope to

publish a more detailed account in the next Newsletter.

Changes

Since the fall, I have become Executive Coordinator for MAC. This keeps me quite busy, and I intend to let you know, as time goes by, what my job entails on a day-to-day basis. Editing the Newsletter, however, remains my volunteer commitment to the Association and occupies many evenings and weekends.

In Case you Were Wondering

The band at the top of Newsletter 65 was a color photograph published in a paper on the structure of alacranite (*Can. Mineral.* **38**, p. 812). Guess where the band in this issue comes from?

Pierrette Tremblay

Pierrette Tremblay



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The Mineralogical Association of Canada was incorporated in 1955 to promote and advance the knowledge of mineralogy and the related disciplines of crystallography, petrology, geochemistry, and economic geology.

Any person engaged or interested in the fields of mineralogy, crystallography, petrology, geochemistry, and economic geology can become a member of the Mineralogical Association of Canada. Membership benefits include six issues a year of *The Canadian Mineralogist*, free access to the electronic version of the Journal, a 20% discount on publications of the Association and a discount on the registration fee at our annual meeting held jointly with the Geological Association of Canada.

Membership dues for 2002 are \$90. Membership dues for students and retired individuals are \$30 a year. Dues are in CDN\$ for Canadian memberships and in US\$ for membership outside Canada.

Institutions and corporations may subscribe to *The Canadian Mineralogist* for US\$390 a year (outside Canada) or CDN\$390 (in Canada). Subscription includes site-license access to the electronic version at no additional cost to the institution. Institutions and corporations may also become a sustaining member of the Association for \$610 a year.

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EDITORIAL

PONDERING NOMENCLATURE OF MINERALS: A PLEA FOR CONSISTENCY

BY ROBERT F. MARTIN
EDITOR, THE CANADIAN MINERALOGIST

Our Newsletter editress is keenly interested in seeing me clarify my policy on themes as diverse as the use of hyphens, definition of the sequence of articles in a given issue of *The Canadian Mineralogist*, publication schedules, the impact factor and ways to improve it, and the place of Canadian English. I agree that these issues do cross my mind from time to time, and need to be aired, if only for the benefit of the Journal's next editor(s), so that the transition may seem seamless. But to me, an issue of greater importance to the mineral sciences in their broadest context is that of the nomenclature of minerals, to which I will now turn as a priority item. Just what is my policy on the nomenclature of minerals?

I accept that the Commission on New Minerals and Mineral Names (CNMMN) of the International Mineralogical Association (IMA) is the ultimate authority on all questions of nomenclature of mineral species. In adopting this position, I may be considered an oddball, certainly unlike many other editors of journals in the connected fields of mineralogy and petrology. I may grumble about a CNMMN decision, but I am not allowed to overrule it or disregard it. In my opinion, there has to be a system of nomenclature that all authors (and editors) follow, or else there is going to be a free-for-all.

There is a committee of nomenclature in many other sciences. Although I have no time to gather the necessary facts, I am under the strong impression that in other

sciences, be it biochemistry, where a single system of naming proteins is imperative for all scientists working on the genome project, or entomology, where legions of insects have to be described, a system is applied to avoid imprecisions, scientific double-talk, and disorder. Again, it is only an impression, but I believe that mineralogists and petrologists are among the least concerned about the system of naming the assemblages that they study. Yet, mineralogists and petrologists should consider themselves fortunate, as there are a mere 4,000 or so mineral species. Problems arise regularly, especially with the more common species, those that are considered rock-forming and ore-forming minerals, *i.e.*, a small fraction of the 4,000 known species. A single system of nomenclature, strictly adhered to, is all the more mandatory given the accelerating pace at which new findings are communicated and the increasingly interdisciplinary nature of modern projects.

The editor plays a key role in ensuring that articles published in the journal he or she edits conform fully to the decisions of the CNMMN. Obviously, the editor is a person who is (or should be) fully cognizant of the system of nomenclature endorsed by the CNMMN. Only then can he or she speak with authority. Here lies the first problem, one that seems to be specific to our science. The decisions of the IMA are not easily available to editors so that they can carry out their mandate in an enlightened way. In my opinion, there should be a web-based list of approved names of mineral species, along with the approved spelling of these names. Of course the list should also give superseded and discredited names, which should thus not be used. It

should be easy to ascertain what is legitimate and what is not. But in 2002, that is just not possible without a phone call or an e-mail communication! The list should be widely available and easily consulted, but such an authoritative list does not yet exist for public distribution! No wonder that it's a free-for-all out there!

I have many examples I could mention. I will talk about the simplest example of scientific double-talk, involving periclase, which has an end-member formula MgO and shows solid solution toward wüstite, ideally FeO. Metamorphic petrologists working on crustal rocks are in unison in using the term *periclase* in reporting their results. Everyone realizes that periclase and wüstite exhibit a solid-solution relation. The 50% rule of the CNMMN stipulates that the term "periclase" will cover all compositions that contain mostly magnesium in the octahedrally coordinated sites. Thus $(\text{Mg}_{0.77}\text{Fe}^{2+}_{0.23})\text{O}$ in a high-temperature skarn is called ferroan periclase, the adjectival modifier of the approved name signifying that the periclase departs from its end-member composition toward the Fe^{2+} end-member of the series. What could be more straightforward?

Well, life is not that simple. Why not make it a bit more challenging! Mantle petrologists, on the whole, but not invariably, opt for the unapproved term *magnesiowüstite* for the same material. What does that term mean? Logically, it would seem to me to indicate a sample of magnesian wüstite, *i.e.*, a composition like $(\text{Fe}^{2+}_{0.66}\text{Mg}_{0.34})\text{O}$. In fact, I am willing to bet that in most cases, mantle petrologists do not mean to imply that the composition they are dealing with is iron-dominant, but rather magne-

sium-dominant! Thus in almost all cases, I consider that "magnesiowüstite" is really synonymous with ferroan periclase. So why not use the correct name? Editors and authors should be able to consult an authoritative glossary, in which they could expect to read that "magnesiowüstite" is equivalent to ferroan periclase or, perhaps in a few instances, to magnesian wüstite. Many scientists who pride themselves in reporting high-quality numerical results are quite happy to live with an inconsistent and unapproved system of nomenclature, in which the terms have no strict definition and possibly no definition at all. Parallel systems of nomenclature of this type muddle issues and are just not the sign of a mature science.

I could give you my views on amphibole-group minerals, pyroxene-group minerals, titanite *versus* "sphene", topics that are raised from time to time with me and through the mineralogical "chat" lines. But I had better go back to editing the articles for the forthcoming issue. I promise to come back to these questions, because I do consider them important. It seems clear to me that if things are to change, the CNMMN, editors, and authors have responsibilities. The CNMMN has the responsibility to prepare an authoritative list and to disseminate it, in particular to editors of mineralogical, petrological, and geochemical journals (they can start with those!). Authors could thus be made to show their creativity in ways other than the naming of minerals. Editors and authors have the responsibility to use the list and to conform to it. Perhaps this issue and related ones can be topics for fruitful discussions at the forthcoming meeting of the IMA in September 2002!

ASSOCIATION NEWS BY PIERRETTE TREMBLAY

HIGHLIGHTS OF MAC EXECUTIVE MEETING

The MAC Executive met on October 13 in Saskatoon, SK. In attendance were Brian Fryer, President, Norm Halden, Vice-President, Jim Nicholls, Past-President, Andy McDonald, Secretary, Mati Raudsepp, Treasurer, and Pierrette Tremblay, Executive Coordinator.

Annual Meetings

Traditionally, the fall meeting is held in the city that will welcome the next annual meeting. Preparations for the Saskatoon meeting are coming along nicely under the stewardship of Mel Stauffer. Great news! The St. John's meeting made a surplus of about \$155 000. MAC's share of the profit will be a little over \$25 000.

In 2003, GAC and MAC will meet along with SEG in Vancouver. With Greg Dipple as MAC Chair and John Jambor as Technical Program Chair, we can expect a dynamic program on the mineral sciences. So mark your calendar for May 26-28, 2003.

A lot of time was spent discussing the future orientation and mission of annual meetings. MAC has informed GAC that we are not committing to joint annual meetings beyond 2003 as we are exploring the needs and desires of our members; rather, we are considering meeting jointly on a periodic basis. There is still time to express your reactions to the last editorial of Norm Halden.

Sponsorship

Andy McDonald brought forward the suggestion that MAC could sponsor field trips as a service to its members. Andy will explore the liability question surrounding this

issue and report back at the next Council meeting.

Magazine on the mineral sciences

Strong interest was expressed concerning MSA president Rod Ewing's preliminary proposal for an international magazine on the mineral sciences. MAC wants to be part of it: if we improve the stature of the mineral sciences, all of the mineralogical associations stand to gain.

FROM THE PUBLICATIONS COMMITTEE

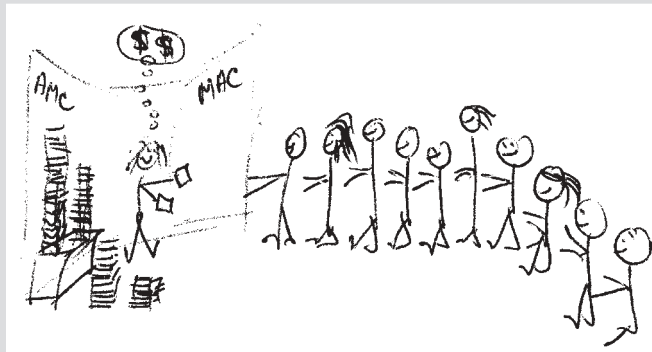
Laser-Ablation-ICPMS

Our latest short-course volume on Laser-ablation-ICPMS is selling very well, and we have already had to print additional copies. Reviews have started to appear in print, and we reproduce below excerpts from reviews by Philip E. Janney, published in *The Geochemical News*, 109, October 2001 and by Bill Davis, published in *Geolog*, winter 2001, p. 28.

"...As an interested bystander to the world of laser ablation-ICPMS, I was very impressed by the depth and scope of the book. The discussions of how sampling variables (e.g., laser wavelength and power, geometry of ablation cell, type and flow-rate of carrier gas) affect ablation efficiency and inter-elemental fractionation, issues vitally important to the accuracy of LA-ICPMS data but often poorly understood, are particularly well explained. All of the articles in the book have abundant schematic drawings, photographs, time-series plots and tables that add greatly to the impact and clarity of the text... This book is an extraordinary value for its modest price and it will prove to be a boon for all current and poten-

GSA BOSTON

In November 2001, MAC had an exhibit booth at the annual GSA meeting, after a lapse in 1999 and 2000. The objectives were of course to exhibit our publications. But MAC's representatives also wanted to visit other publishers and to meet our members. Our editor always finds it stimulating to meet associate editors and authors. We received lots of very positive comments about the *Journal* and our other publications. Many thanks to Peter Burns, Ron Frost and Bob Martin, who all spent time helping at the booth. It is always hard to measure the impact of our presence at such meetings. But an unsolicited comment from Carl Francis sort of summed it all up: "MAC has really increased its stature by being present at GSA and Tucson." This said, we are all set to go to Denver next fall.



The MAC booth was busy at most times, with a constant flow of people dropping by. Many of our members stopped in to see our new publications and say hello.



What do the two Bob's, of Canadian Mineralogist and American Mineralogist fame, have to smile about? Sharing tips, editorial stories? Bob Martin and Bob Dymek at the GSA meeting in Boston.

tial LA-ICPMS users. Moreover, it should be read by anyone wanting to understand the basic theory or the practical complexities of how chemical and isotopic data are collected via this powerful and increasingly widely used technique."

"... The volume is well put together, easy to read and accessible. The sections cov-

ering many of the fundamentals will be of great value to students learning LA-ICP-MS techniques as well as a resource book for the laboratory."

On Impact factors

An article written by Kevin Murphy and published in a recent issue of the *Minera-*

ASSOCIATION NEWS

logical Society Bulletin caused Council to reflect on the impact factor of our Journal. Should we worry about the impact factor? In the end, the answer is yes, as it has become a performance indicator in the review process for grant applications, tenure, etc. You get more brownie points if you publish your research in a high-impact factor journal. Also it is one of the many criteria that librarians take into account in deciding whether or not to keep a journal on their shelves.

We know that *The Canadian Mineralogist* is tops in terms of editorial quality and service to authors, and we attract an international readership and authorship. However, we have become aware that the fact that our journal has been running late has probably been costly with regards to the impact factor. Most publishers maintain a rigorous publishing schedule in order to take full advantage of the way the index is calculated. Our editor is taking steps to bring our publishing schedule in line with that of other journals.

What else will we do to improve the impact factor of our Journal? Our efforts to publish electronically should

help. In the past twelve months, traffic has increased 10-fold on the Can Min web page: we now get between 1000 and 1500 visits a week. We will also investigate the cost of airmailing journals to our overseas subscribers. It takes up to three months for an issue of the Journal to reach Australia by surface mail, for example. Reducing delivery time would increase the time an article is available for citation in other journals.

A subscription campaign to encourage libraries to subscribe to *The Canadian Mineralogist* will become an ongoing part of the Executive Coordinator's job. If the Journal is on the shelf of all libraries, obviously citations are likely to increase. This is where you can help. Librarians have told us that the most important factor in deciding to subscribe to a new journal or renew a lapsed subscription is a member of faculty who insists "we must have this journal". On pages 19 and 20 of this Newsletter, you will find our new ad to promote subscription to Can Min and a subscription form. Please tear out the page and send it to your head librarian along with a note or a letter.



Andrei G. Bulakh,
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St. Petersburg
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and co-editor of
our sister publication
*Zapiski Vserossiiskogo
Mineralogicheskogo
Obshchestva,*
perusing his
second-favorite
mineralogical
journal.

MEMBERS IN THE NEWS

Peter C. Burns

Peter C. Burns was awarded the Mineralogical Society of America Award at the recent MSA annual luncheon, held at the GSA meeting in Boston. Peter graduated from the University of New Brunswick with a BSc (first-class honors) in geology in 1988, from the University of Western Ontario with an MSc in 1990, and from the University of Manitoba with a PhD in 1994. His dissertation, under the direction of Frank Hawthorne, concerned theoretical aspects of the crystal chemistry of Cu^{2+} oxysalt minerals. He was awarded a National Sciences and Engineering Council of Canada Postdoctoral Fellowship, which he used to conduct research in mineral phase transitions at Cambridge University from 1994 to 1995 and in the mineralogy of uranium at the University of New Mexico from 1995 to 1996. He was a Visiting Assistant Professor of geology at the University of Illinois-Urbana from 1996 to 1997. He became an Assistant Professor of geology at the University of Notre Dame in 1997, was promoted to Associate Professor in 1999, and became the Henry Massman Chair in Civil Engineering and Geological Sciences in 2000. He directs the Environmental Mineralogy and Crystal Structures research laboratory, and works with several undergraduate, graduate, and post-doctoral students on various

aspects of low-temperature mineralogy, especially the mineralogy of actinides. He has been awarded the Donath Medal of the Geological Society of America and the Young Scientist Award of the Mineralogical Association of Canada. He is married to Tammy, and they have one son, Kelson.

Mark D. Hannington

Mark D. Hannington became editor of *Economic Geology* in January 2002. Mark, a Geological Survey of Canada employee, is the first government employee to serve as editor in the 96 years the journal has been published. He is also the first editor to be located outside the United States and also the youngest to be appointed to this post. He will be the fifth editor of *Economic Geology*, following in the footsteps of John D. Irving, Alan M. Bateman, Brian J. Skinner, and Marco T. Einaudi.

Mark graduated from Queen's University, then received MSc (1986) and PhD (1989) degrees from the University of Toronto. He joined the Geological Survey of Canada as a post-doctoral fellow in 1989, and was hired as a research scientist in 1991. His work has been focused on volcanogenic massive sulfide deposits in Canada. Mark's work includes studies of both ancient deposits and active hydrothermal systems on the seafloor.

Adapted from Economic geology, 96, p. 683.

OBITUARY JOE NAGEL

On December 5, 2001, Joe Nagel was tragically killed in a motor vehicle accident. Joe was well known in the mineral collecting world. His expertise in database management was sought by many museums worldwide. For many years, he was curator of the M.Y. Williams museum at the University of British Columbia. He had over twenty years of experience in the museum field, and at the time of his death, he

ran Kostos, a consulting firm, and held Associate positions at the Provincial Museum of Alberta, the Royal Ontario Museum, and the Langley Centennial Museum. His consulting clients ranged across the not-for-profit spectrum and included both large and small institutions. He successfully helped to guide many organizations and individuals into the information world. Tributes to Joe can be read at www.joenagel.com

PEOPLE BEHIND MINERAL NAMES

HANS BRADACZEK

Many minerals are named after people. Pick up any issue of *The Canadian Mineralogist* and you will encounter interesting descriptions of new mineral species, with just a line or two about the person who is being placed in the limelight and the chain of events that led to this singular honor. As a case in point, consider the new species *bradaczekite*. Filatov *et al.* (2001) gave this name to an alluring new mineral, $\text{NaCu}_4(\text{AsO}_4)_3$, discovered in a high-temperature fumarole on the volcano Tolbachik, Kamchatka Peninsula, Russia (*Can. Mineral.* 39, 1115). They wrote: "The mineral is named in honor of Hans Bradaczek, crystallographer at the Free University of Berlin". I was itching to know more, as I had not come across this scientist's name before. Just who is Hans Bradaczek? A specialist in copper-bearing oxysalts perhaps? Someone I can ask to referee a future paper by Peter Burns? A structural crystallographer who specializes in compounds of arsenic? Or possibly someone who is involved in some way with industrial gas-transfer mechanisms so spectacularly displayed in Nature at Tolbachik?

Hans Bradaczek was born in 1930 (not 1940, as reported in the article). After a master's degree, he received his PhD in physics from the Free University of Berlin (FUB) in 1966. He was one of the last students to work with Nobel Prize winner Max von Laue. He began to work at the Max Planck Institute in 1960. In 1970, he joined the FUB as professor, and from 1973 to 1980, he served as head of



Ludmila Verbitskaya, rector of St. Petersburg State University, introducing Professor Hans Bradaczek on the occasion of the ceremony awarding him a Doctorate honoris causa (photo courtesy of S.K. Filatov).

the Institute of Crystallography. Beginning in 1982, he became Chief Scientist at the Institute.

Professor Hans Bradaczek developed a theory of X-ray scattering by crystals. On this basis, he invented a series of instruments for industry, in particular, an instrument designed for the rapid and automatic orientation of slices of quartz for the oscillator industry. He patented so-called delta crystals, which possess variations in unit-cell parameters and are used to focus X-rays in diffractometers and other instruments utilizing X radiation. His textbook *Mathematik für Naturwissenschaftler* [Mathematics for Natural Scientists] has been used by generations of students. In his career, he published more than 300 scientific articles and supervised dozens of post-graduate students.

Around 1970, and to the surprise of many in view of the Cold War at the time, an agreement was signed between the University of St.

Petersburg (then Leningrad) and the Freie Universität in what was then West Berlin. Recall that Russians and Germans were sworn enemies, German troops having destroyed Leningrad almost completely during the Second World War. The young Professor Bradaczek was somehow put in charge of coordinating activities between the two universities. He never expected that anything would come of that bureaucratic agreement, in view of all that had happened before!

To his surprise, Dr. Bradaczek was welcomed cordially on his inaugural visit. Thanks to his initiative, he was able to send the crystallography group in the Faculty of Geology at St. Petersburg their first computer software needed to solve a crystal structure in 1975. He secured funding to enable Russian scientists to visit the Berlin group, and thus fostered scientific and cultural exchanges in an era when these activities were definitely not common and presum-

ably much frowned upon. This collaboration between the crystallography groups in Berlin and St. Petersburg continued with the direct involvement of Dr. Bradaczek until 1995. During that year, he gave the St. Petersburg group a subscription to the Inorganic Crystal Structure Database, a vitally important source of information. In 1997, he created an endowment to support the research activities of two young Russian scientists annually. He thus contributed materially in many ways to ensure the future high calibre of the crystallography group at St. Petersburg.

In recognition of his efforts, Hans Bradaczek was elected a foreign member of the Russian Academy of Natural Sciences in 1993, and in 1996, he was awarded its Kapitsa gold medal. In 2000, Dr. Bradaczek was awarded an honorary doctorate by the St. Petersburg State University (see photo).

Hans Bradaczek, of *bradaczekite* fame, is clearly a person who made a major difference in the lives of many scientists working under very difficult conditions over the last thirty years. One can now clearly understand the reasons that motivated Dr. Stanislav Filatov and his colleagues at St. Petersburg State University to show their gratitude by naming that newly discovered Russian mineral *bradaczekite*. How very appropriate!

Prepared by Robert F. Martin, on the basis of material contributed by Drs. Bradaczek and Filatov.

The Mineralogical Society of America

announces the 2003

GRANT FOR RESEARCH IN CRYSTALLOGRAPHY

*From the Edward H. Kraus Crystallographic Research Fund with contributions from MSA membership and friends
and the 2003*

MSA GRANT FOR STUDENT RESEARCH IN MINERALOGY AND PETROLOGY

from an endowment created by contributions from the MSA membership

The Grant for Research in Crystallography is a US\$5000 grant. There are no restrictions on how the grant funds may be spent, as long as they are used in support of research. The only restrictions on eligibility for the grant are that the applicant must have reached his or her 25th birthday but not yet have reached his or her 36th birthday on the date the grant is given, and that the person is not a MSA Counselor.

MSA Grants for Student Research in Mineralogy and Petrology comprise two US\$5000 grants. Students, including graduate and undergraduate students, are encouraged to apply. There are no restrictions on how the grant funds may be spent, as long as they are used in support of research.



Selection will be based on the qualifications of the applicant, the quality, innovativeness, and scientific significance of the research, and the likelihood of success of the project. Grants will be made in January 2003. There are no restrictions on how the grant funds may be spent, as long as they are used in support of research. Application instructions and forms for the grants may be obtained from the MSA home page, <http://www.minsocam.org> or Dr. J. Alex Speer, MSA Business Office, 1015 Eighteenth St NW Ste 601, Washington, DC 20036-5212, USA (ph: 202-775-4344, fax: 202-775-0018, e-mail: j_a_speer@minsocam.org). Completed applications must be received by June 1, 2002.

New Publications

from the Mineralogical Society of America and the Geochemical Society Reviews in *Mineralogy and Geochemistry* (RiMG) series:

- Volume 43: **Stable Isotope Geochemistry** edited by J.W. Valley and D. Cole, Eds 662 pp. How isotope ratios in minerals, rocks and fluids provide evidence for understanding a wide range of natural phenomena including: paleoclimate, marine sedimentation, geomicrobiology, biogeochemical cycles, thermal history, hydrothermal/metamorphic fluid flow, and igneous petrogenesis. Emphasis on O, C, H, and S isotopes. ISBN 0-939950-55-3. US\$32.00
- Volume 44: **Nanoparticles in the Environment and Technology** edited by J.F. Banfield and A. Navrotsky. 350 pp. Concepts of size-dependent properties, processes, behavior, and implications of phenomena associated with nanoparticles for materials science and earth and environmental science applications. Aimed largely at the geoscience community, but it is also accessible to materials scientists and chemists interested in environmental problems. ISBN 0-939950-56-1. US\$ 28.00
- Volume 45 **Natural Zeolites: occurrence, properties, application** edited by D. Bish and D. Ming., 662 pp. The mineralogy, occurrence and uses of naturally occurring zeolites. ISBN 0-939950-57-X. US\$32.00

More information about these publications is available on the MSA website at www.minsocam.org or from the MSA Business Office, 1015 Eighteenth Street NW Ste 601, Washington, DC 20036-5212, USA. ph: 202-775-4344 fax: 202-775-0018 e-mail: business@minsocam.org. You may also order these publications online.



Short Courses



*Mineralogical Society of America
The Geochemical Society*

Short Course: APPLICATIONS OF SYNCHROTRON RADIATION IN LOW-TEMPERATURE GEOCHEMISTRY AND ENVIRONMENTAL SCIENCE. October 26-27, 2002 - preceding the 2002 GSA Denver Meeting, Boulder, CO. Convenors: Paul Fenter, Mark L. Rivers, Neil C. Sturchio, Stephen Sutton. Sponsor: The Geochemical Society.

Short Course: PHOSPHATES: GEOCHEMICAL, ISOTOPIC, AND MATERIALS IMPORTANCE. October 26-27, 2002, - preceding the 2002 GSA Denver Meeting, Golden, CO. Convenors: *John M. Hughes, Matthew Kohn, and John Rakovan.* Sponsor: The Mineralogical Society of America.

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and our two guides had 446 kg of personal gear; in addition there were tents, kitchen equipment, and food for two weeks. All of this was moved 12 times without incident, or lost or damaged baggage. Several hundred kilograms of rocks and mineral samples were shipped home by air cargo.

Getting There

Bob Gault, a member of our group, graciously hosted a reception at the Canadian Museum of Nature in Ottawa on the eve of our departure. At the museum, we poured over maps and mineral samples, getting acquainted with what we were to find, and further planning where to go once in Greenland. The next day, we flew to Iqaluit on Baffin Island, and then to

Kangerlussuaq and Nuuk, Greenland. After an overnight stop in Nuuk, we flew to Narsarsuaq. Narsarsuaq is not to be confused with Narssârssuk, which is not to be confused with Narsaq, all of which we visited on this trip. We boarded ship number one and headed south, then west down Tunugdliarfik Fjord toward Camp One. Excitement was building.

For several hours, we stood on the deck enjoying the fabulous, glacier-carved scenery. There were 300 - 700 m of exposure on either side of the fjord. Some wildflowers were blooming, but in general vegetation was sparse: no trees, only moss, grasses, and small shrubs. The area consists mostly of Proterozoic granite, overlain by intercalated sandstone and basaltic lava and intruded by basaltic dikes. Ten major

alkaline complexes ranging from 1.32 to 1.12 Ga intrude the granite, sandstone, and lavas. These intrusions exhibit igneous layering and were formed by multiple intrusive events. They are classified as alkaline to peralkaline and may be over- or undersaturated in silica. Only the Ilímaussaqa intrusion, outcropping on both sides of Tunugdliarfik Fjord, has both over- and undersaturated phases, which is one reason why it is so interesting.

Near Narsaq, where we stopped for fresh food, layering was evident on the Agpat plateau. I remember seeing a beaming Roger Mitchell with video camera rolling. Here was a man who has spent his life studying this class of igneous rocks and was now viewing the namesake of agpaite rocks for the first time. To the north was Tugtup

agtakörfia, type locality of tugtupite; to the south, Tupperssuatsiaq, type locality of tupperssuatsiaite. Years of reading mineralogical literature and history were becoming tangible.

Camp One at Kangerluarsuk Fjord.

After the food stop, we continued cruising down Tunugdliarfik Fjord, then up Kangerluarsuk Fjord. Camp One was to be at the end of this fjord. An hour before landfall, the layered kakortokites (nepheline syenites) rising 300 m above the south side of the fjord were visible. This was one of the most striking geological sights we were to see. The alternating bands of black (aegerine and arfvedsonite-rich), white (feldspar and nepheline-rich), and red (eudialyte and nepheline-rich) kakortokites were

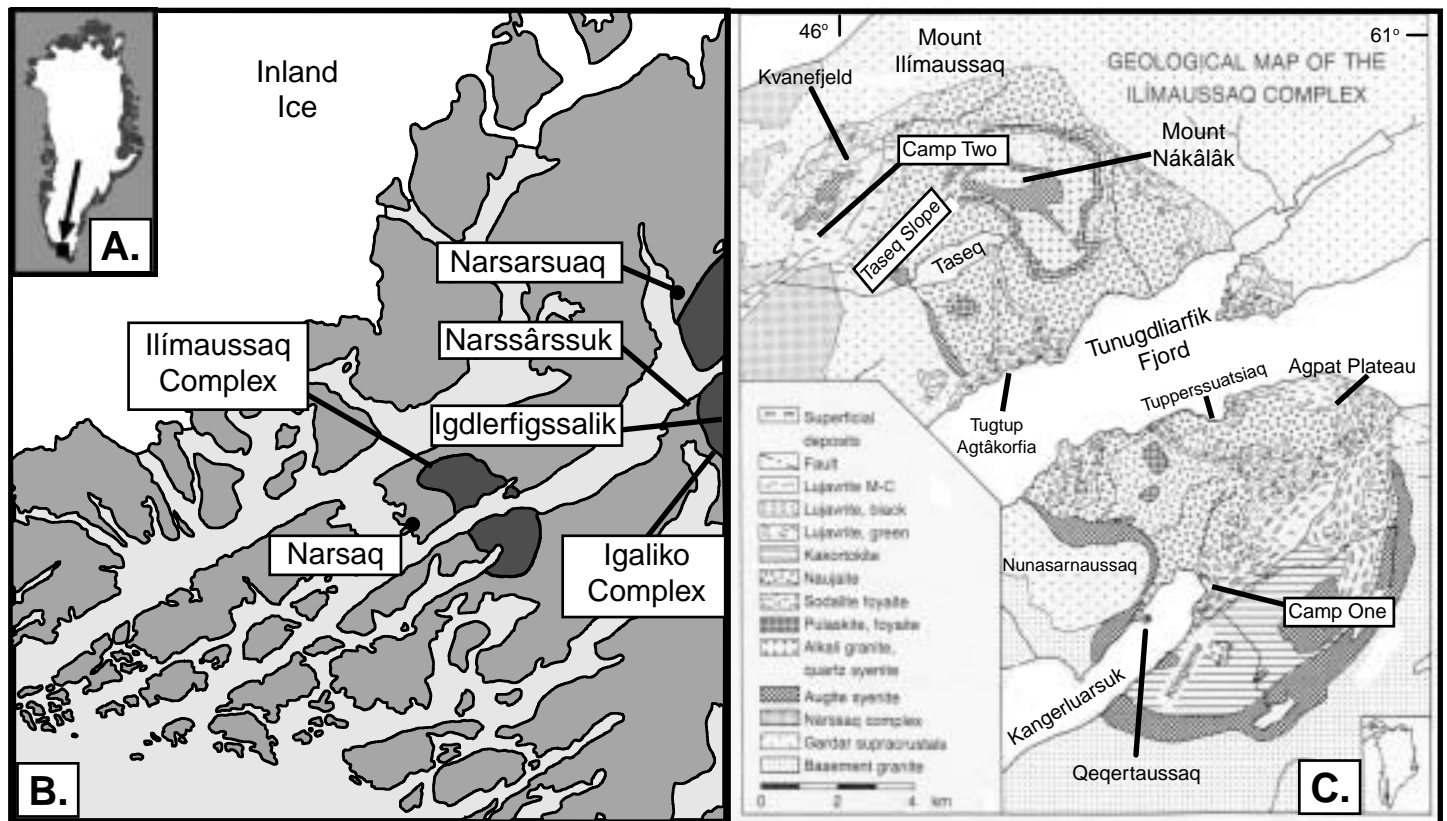


FIGURE 1 – Maps showing the areas visited by the Queen's University expedition. A. Map of Greenland indicating the Narsaq area. B. The region around Narsaq showing the outline of the Ilímaussaqa and Igaliko intrusive complexes and areas visited by the group. C. Geologic map of the Ilímaussaqa intrusive complex showing the location of Camp One and Camp Two (after Ferguson, 1964).

visible at a distance of several kilometers. Numerous publications describing layered intrusions depict this very outcrop (outcrop seems like a misnomer for a 300-m cliff.) Further south, a ragged, 1200-m ridge of Julianehåb Granite towered over kakortokites. An equally amazing spectacle was visible to the north. That scene was Nuna-sarnaussaq, a 765-m peak of alternating sandstone and diabase. To the west from our camp, we looked down a beautiful glacial valley and the Kangerluarsuk Fjord.

It had been a long day. We quickly set up camp, and our guides, Jay and Lori, whipped up a wonderful hot meal. At this point, the mosquitoes found us. Greenland mosquitoes have fur and are about a half-kilo each (modest exaggeration). They were there by the thousands, but mercifully did not bite much. They also added much-needed protein to the morning oatmeal. We quickly adopted a healthy attitude towards these "winged friends" and went on collecting. A few members had smuggled in scotch and port, which made things much more civilized. One participant had brought a fishing rod and we caught arctic char, which made for a wonderful appetizer on several occasions. Our meals were also enhanced by fresh mussels from the fjord.

During the planning of the trip, Ron had been in contact with Ole V. Petersen of the Geological Museum of the University of Copenhagen. Ole has collaborated with several of our team and we knew he would be leading two trips that would overlap with ours. While hiking to the top of the kakortokite stacks, we encountered Ole leading a group of Austrians. It was a brief meeting, but we were able to glean more specifics regarding mineral occurrences.



Group photo at the Nuuk airport. Team members are, from left to right: Roger Mitchell, Valerie Dennison, Julian Gray, Jennifer Anderson, Ron Peterson, Bob Gault, Mary Peterson, Ted Johnson, Elsa and Lázló Horváth, Vimala Sethy, Ian Swainson, Lori Beaudoin, Louie Spritzer, Jay Tisi, Ed Grew, and Andy McDonald.

A few kilometers southwest of our first camp was a tantalizing feature: a small island called Qeqertaussaq, the type locality for eudialyte. Henning Sørensen studied this island as part of his dissertation, and an eudialyte pegmatite from the island is depicted in the literature (Danø & Sørensen, 1959, page 21, figure 2). The black and white photo did not prepare us for the real life spectacle of this outcrop. Eudialyte is a red zirconium silicate, and the geologists who discovered the mineral mistook it for garnet. The pegmatite vein had a half-meter basal layer of claret-red massive eudialyte. Nearby was a polyolithionite vein approximately one meter thick. Danish geologists have justifiably asked that this island be a "no hammers" outcrop so that it can be preserved for study.

After four successful collecting days at Kangerluarsuk, it was time to move camp. But we were treated to one last glorious spectacle of nature before we left Camp One. Until this point, the weather had been overcast, with a few mild rain showers. The sky cleared, and as the sun drifted behind the peaks to the north, the ragged ridge south of camp was bathed in an orange alpenglow.

Camp Two

For the cruise back to Narsaq, we shuttled gear to a beautiful blue and yellow vessel called the Kisaq. On board was a group of Danish naturalists led by Erik Jensen, head of the Geological Museum in Copenhagen. From Narsaq, departure point for Camp Two, equipment was portaged by means of the city garbage trailer. The local tourism board shuttled us the ten or so kilometers in passenger vans, so we fared much better than our gear. Camp Two was near a creek with many small waterfalls in a broad alpine valley between Kvanefjeld and the Taseq Slope. To the east was Mount Ilímaussaq, a 1390-m peak. The sky was a glorious clear blue and the temperature mild. The excellent weather was holding, but that was to change in a few days.

In the 1950s, an exploratory adit was excavated to test the feasibility of uranium mining at Kvanefjeld. An access road wound its way up the side of Kvanefjeld to the mine entrance. Rock removed from the mine was methodically placed in rows in a flat area a few hundred meters west of our camp. These rows were in order of removal and served the same purpose for us as drill core.

Years ago, one of the rows was shipped to Denmark for a uranium extraction trial run. In a national referendum held in 1985, Greenlanders voted to ban uranium mining, and all exploration at Kvanefjeld ceased (Ole V. Petersen, personal communication, 2001). A steel door bars the entrance to the mine but we found villiaumite (NaF), a deep red, cubic mineral, in the remaining tailings.

Tugtupite, a sodium aluminum beryllium silicate, is one of the best-known minerals from Kvanefjeld. It is pinkish-red, and fluoresces brilliant red in shortwave UV light. Because it retains a high luster when polished, tugtupite is used as a semi-precious gemstone. Residents of Narsaq go to the plateau above the Kvanefjeld mine and collect tugtupite to sell to tourists and mineral collectors. Despite the strain of breaking camp, moving, and setting up camp again, Connecticut mineral collector Ted Johnson and I hiked up to the mine after dinner. We were modestly rewarded with a few small pieces of tugtupite.

One of our main objectives at Camp Two was to examine the minerals at the top of the Taseq Slope. Ole Petersen had reported an ussingite vein part way up the slope. We found the vein, which was approximately a meter across and colorless to pale pink. Despite being an atypical occurrence of ussingite, it was nonetheless spectacular because of its size. Nearby were outcrops of sodalite-bearing syenites. The sodalite was the hackmanite variety exhibiting tenebrescence. Hackmanite is pinkish-violet when freshly broken, but the color fades to colorless or pale yellow when exposed to sunlight. We were more amazed later when we studied the specimens at home. Hackmanite from this



Participants shuttling equipment in Kangerluarsuk Fjord. Nunarsar-nausaaq (765 m) is the mountain on the left. Note the sharp contact with the gray, layered, agpaitic nepheline syenites of the Ilímausaaq intrusion to the right. (Compare this photo with the frontispiece of Sørensen, 1974).

location fluoresces brilliant orange in shortwave UV light. The fluorescence is so strong that it is visible with the room lights on. Exposing the samples to UV light for a minute or two changes their color to deep purple, which fades in bright light .

Taseq means lake. At the top of the Taseq Slope is a lake that is called Taseq. Not Taseq Lake, just Taseq. Within a few minutes of reaching the top of the Taseq Slope, Ron found a boulder of aegerine and feldspar with numerous promising crystal cavities. The boulder yielded a single needle of green tundrite for Ron, but little else. Back at camp, we set up a little mineralogy laboratory.

One empty food barrel served as a stool and another as a microscope stand. Ron had brought along a stereo microscope, and someone else had a battery-operated UV lamp.

The second full day in the Kvanefjeld area was part sightseeing and part mineral collecting. We had learned of a location where numerous beryllium minerals occurred near the summit of Mount Nákâlâq (Nakkaalaaq) , a 1334-m peak south of Mount Ilímausaaq. Light-element mineralogy specialist, Ed Grew, was particularly intrigued at the possibility of seeing the beryllium minerals. I went part way, but the 1000 meters of relief proved too much for me. Several of

our group made the summit, finding beautiful views, but not even a hint of beryllium minerals. From the spot where I turned back, I could see the ridges above our first camp at Kangerluarsuk. To the west were alternating ridges and fjords extending to the open sea in Davis Strait. An even more amazing sight was visible to the north, where we could see the inland ice extending to the horizon.

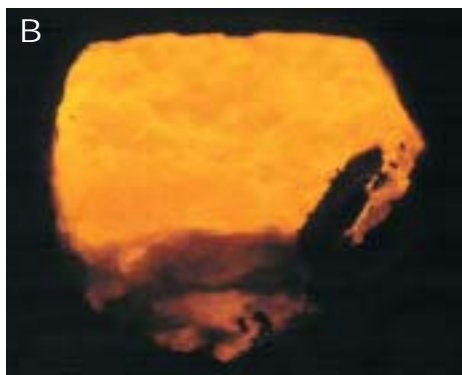
Everyone was exhausted after returning to camp. The weather began to change from beautiful and sunny to overcast and breezy. The wind intensified through the evening. Ole Petersen arrived in camp early the next morning with his second geology tour. Their driver from the tourism board also brought news that we were experiencing a local weather phenomenon called a föhn. A föhn is a strong, dry, warm wind resulting from high pressure to the east and low pressure to the west of Greenland. We were told to expect high winds for several hours and to cinch down tent cords and pound in tent stakes. Traveler's information on a hiking map had this to say about föhns: "Only very few tents can stand the pressure of a föhn storm; therefore we recommend that you dismantle the tent and seek shelter

behind big and heavy rocks." Because the föhn wind pushes moisture off the coast, once the wind ceased, we could expect the clouds and rain to move back onto land.

We hiked and collected as best we could in this föhn storm. Some of our group actually made it to the ridge on the west of Kvanefjeld and reported unbelievably fierce winds. It was nearly impossible to walk into the wind. I had to turn my back to the wind to breathe. After lunch the rains came but the wind continued. The wind-blown rain stung like sleet pellets. I returned to camp to find chaos. Ron's tent had collapsed and everyone was struggling to break camp. We huddled in the kitchen tent and went out in small teams to move gear and dismantle the emptied tents. The tourism board sent vehicles to move us to a hostel in Narsaaq. After eight days in the field, we had a roof, chairs, heat, and plumbing. Our hopes of camping and collecting at Narssârssuk were fading.

No more primitive camping

Our ship arrived the next day and we moved to Narsarsuaq. A group vote had an interesting outcome – no one wanted any more



Tenebrescence in sodalite (variety hackmanite) from the Ilímausaaq alkaline intrusion, South Greenland. A. Sodalite in white light (the black mineral on the right is steenstrupine). B. Same specimen viewed with longwave UV light. Colors are similar in shortwave UV. C. Same specimen viewed in white light after being exposed to ultraviolet light for several minutes. In bright light, this purple color will fade to the original yellowish-green .



Ron Peterson examines his finds at a makeshift mineralogy lab at Camp Two. Mount Ilímaussaq is visible in the background.

primitive camping. We camped behind the hostel in Narsarsuaq, but we had full use of facilities inside, not a bad arrangement.

The föhn had changed more than our ephemeral attitude towards camping. The storm had dislodged thousands of icebergs from the upper reaches of the fjords. An hour into the cruise to Narsarsuaq, the waterway became ice-choked. Our ship slowed to a crawl so that the captain could ease the ship through the maze of ice. Occasionally a distant iceberg would split and roll. The whole scene was astonishing.

The next day was our last day of collecting, and we boarded Puttut, our fourth vessel, for the trip to Narssárssuk. It was another beautiful ship, a wooden-hulled craft with a single mast. After an hour of picking our way through icebergs, we landed west of Narssárssuk. We climbed a steep, 300-m cliff to reach gently rolling terrain. The gray water in the fjord was barely distinguishable from the overcast sky. Occasionally the mist would part, and from the top of the plateau we could see the icebergs below. The Qörqup

glacier, the source of the icebergs, was also visible periodically. To the east, Igdlérfigssalik, a 1752-m massif, loomed somewhere in the clouds. Little vegetation grew on the gray ground where we walked. The entire landscape was unearthly.

Our objectives here were the Narssárssuk and Nanna pegmatites. Ole Petersen, among others, has collected from the Narssárssuk Pegmatite since the late 1960s. At the end of each collecting season, excavations were backfilled, so the likelihood of finding fresh material was low. I was content pawing through the tailings to find aegerine, which occurred both as stout blocky green or black crystals and as thin black needles. We fared better at the Nanna Pegmatite where we found astrophyllite, catapleite, aegerine, and nafertisite. Nafertisite was only recently reported from this location (Petersen *et al.*, 1999). The Nanna Pegmatite has also produced a new mineral, micheelsenite. We were fortunate to have on our trip Andy McDonald and Bob Gault, two of the authors who described this new mineral (McDonald *et al.*, 2001). Les and Elsa Horváth found putative micheelsenite. All of us found exotic minerals both here and at Ilímaussaq, which will keep the X-ray diffraction machines and microprobes humming for many months to come.

Several of us spent our last hours at Narssárssuk hiking near the base of Igdlérfigssalik. Elsa Horváth found some zircon in float beneath a pegmatite outcrop. Within a short while, everyone had several euhedral zircon crystals from 1 to 4 cm across. We tentatively named the location the Elsa pegmatite.



Ted Johnson (left) and Ed Grew on the bow of the ship in Tunugdliarfik Fjord (Erik's Fjord), which became choked with ice dislodged during a föhn.

With tremendous misgivings, we returned to our landing spot to wait for Puttut, which would carry us back to Narsarsuaq, where we would begin the two-day trip back to Ottawa. One of the hundreds of icebergs in the fjord split with a thunderous explosion that echoed off the mountains. The unstable halves rolled slowly, first one way then another, taking a full five minutes before coming to rest. A few minutes later, the red hull of Puttut came into view.

On all counts, this was a fabulous collecting trip and a great, once-in-a-lifetime adventure. It was well worth the effort to get there, and I would certainly recommend that anyone who has the opportunity to go to South Greenland do so. I cannot imagine a more beautiful place for a mineralogy field trip. Many thanks to Ron Peterson and his staff at Queen's University; to Lori and Jay, our wonderful guides from Black Feather outfitters; to Ole Petersen for selflessly sharing locality information with us; and to all the participants for making this a most memorable and safe trip.

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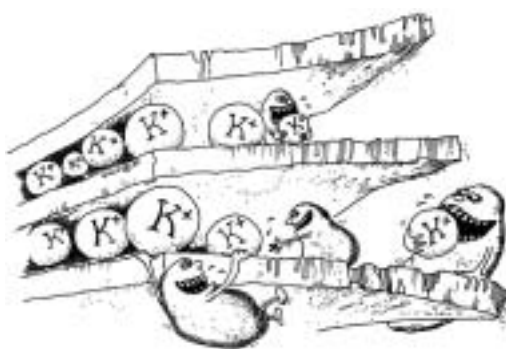
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Julian C. Gray is a PhD student and graduate teaching assistant at Georgia State University in Atlanta, Georgia. His primary research interest is the determination of Cl/Br in fluid inclusions using a synchrotron-sourced X-ray fluorescence microprobe. Many more photographs of the trip can be viewed on the author's website at <http://www.student.gsu.edu/~jgray1/>

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CONFERENCE REPORTS

THE ROCHESTER MINERALOGICAL SYMPOSIUM

BY QUINTIN WIGHT
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The 28th Rochester Mineralogical Symposium (RMS) took place in the Radisson Airport Hotel in Rochester, New York, on April 19-22, 2001. Originally the brain child of collector Bill Pinch and now looked after by Drs. Steve and Helen Chamberlain and a group of volunteers, the Rochester Mineralogical Symposium may be regarded as a cross between mini versions of the Tucson extravaganza and the quadrennial meetings of the International Mineralogical Association (IMA). In common with both, it offers an opportunity for professionals in the field of mineralogy to meet and mingle with a selection of the most knowledgeable amateur enthusiasts.

Registration is about 300 each year. While the bulk of those attending come from the northeastern U.S.A. and Canada, there are attendees from as far as New Orleans and Vancouver. Dr. Fred Pough, still as sharp as they come at 95, finds his way up from Reno, Nevada, and most central and eastern museums and universities are represented.

Dealers occupy one floor of the hotel. A small room adjacent to the ballroom holds special displays; since 2000, another one has been set up for use by micromounters. The micromount facility has positions for nineteen microscopes (brought by participants). The dealers and micromounting room remain closed during lecture periods.

Each symposium begins on Thursday with registration and a catered dinner, followed by an evening lecture. The Thursday lecture for 2001 was *Thirty Years of Collecting and Exhibiting Colorado Minerals: Recollections of a Museum Curator* by Dr. Jack A. Murphy, Curator of Geology at the Denver Museum of Natural History. After the lecture, the dealers open their rooms and the micromounters proceed to their microscopes. On the dealers' floor, there is a small hospitality room, but the rest of the accommodation is assigned to dealers in the manner of Tucson. Symposium participants wander the hall, visit rooms, buy, and network with friends.

Friday morning, the micromounters' room is open from 08:00 until the first of the two featured lectures at 09:00. It is interesting that a large number of professional mineralogists, curators, and academics ask to borrow a microscope. The micromount room is proving its worth to many people who do not class themselves as micromounters. The first lecture, *A Touch of Colorado* by Roy A. Smith, Director of Technology for Ametek in Wallingford, CT, was followed by *Mines and Minerals of the San Juan Mountains, Southwestern Colorado*, by Tom Rosemeyer, author and mine geologist.

Friday afternoon features a half-hour poster session, followed by a four-hour technical session composed of 15-minute presentations. The technical session is moderated by Dr. Carl Francis, Curator of Minerals at Harvard University. A second period for

the posters follows the technical session. A feature begun in 2000 by Dr. J. A. Mandarino, Curator Emeritus of the Royal Ontario Museum, is the presentation of a cheque to the student judged to have given the best presentation during the technical session. The award, now known as the Mandarino Student Award, was originally a single presentation. In 2001, however, funds donated by "The New Hampshire Group" (Bob Whitmore and Don Dallaire) enabled two awards. The first (\$50) went to graduate student James N. Nizamoff for *Phosphate mineralogy of NYF-type granitic pegmatites*. The second (\$25) was awarded to undergraduate Stephanie N. Brightwell for *Lead in amazonite feldspar from worldwide localities and its relationship to color*. Friday's catered dinner was followed by an evening lecture on *Cavity Minerals from the Deccan Volcanic Province, India* by Berthold Ottens, a ceramic engineer and consultant to industry in Germany.

Saturday at the RMS begins with a special breakfast meeting of the Friends of Mineralogy. The morning is then allotted to a special session, *What's New in Minerals and Localities*. The format has varied over time, but has always followed an alphabetical hierarchy of countries and the latest mineral discoveries in each. This year, the format was changed to include three separate parts. In part one, mineral photographer Jeff Scovil ran through the alphabetical listing, illustrating each new find with his fabulous slides. Part two was turned over to col-

lector Bill Pinch for a discussion of some wire silver specimens, and part three was opened to the floor.

An interesting feature of the Saturday lunch in 2001 was the assembly of Symposium participants who had been honored by having a mineral named for them. There were eighteen people representing sixteen minerals (two minerals had been named for couples). At two o'clock, the group reassembled to hear Casey Jones, owner of Geoprime Minerals, present *The Minerals of the Flambeau Mine*. He was followed by dealer Dudley Blauwet speaking on *Travels in Asia*. Dudley Blauwet has been travelling for many years to the hinterlands of Pakistan to deal with gem pegmatite miners. His lecture was an object lesson on why ordinary folk should not try that.

Shortly after five, items for the traditional silent auction are laid out on tables by the hotel pool. There is plenty of material available, from old collecting bags to prime mineral specimens and books. The formal banquet, which begins at seven, is held in the ballroom used for the RMS lecture series and doubles or triples the usual attendance at the evening dinners. It also involves a great deal more wine—for a very good reason. Positioned at the front of the room are large showcases holding items to be offered at the voice auction following the banquet. One needs to be prepared for the voice auction.

For a number of years, the voice auction has begun with the offering of a scrumptious chocolate cake donated

CONFERENCE REPORTS



Standing, left to right: George Gebhard (gebhardite), Christel Gebhard (christelite), Robert Gault (gaultite), László Horváth (horváthite), Scott Ericit (ercitiite), Frank Hawthorne (hawthorneite), William Pinch (pinchite), Joseph Mandarino (mandarinoite), Robert Whitmore (whitmoreite), Gilles Haineault (haineaultite). Sitting, left to right: Peter Tarassoff (petarasite), Charles and Marcelle Weber (charmarite), Frederick Pough (poughite), Quintin Wight (quintinite), William Henderson (willhendersonite). Present at Rochester, but missing from photograph: Elsa Horváth (horváthite) and William (Skip) Simmons (simmonsite). Photo courtesy of Willow Wight.

by Bill Pinch. In 2000, it sold for \$700 (US). This year, a number of the more eccentric participants present at the 2000 auction were occupied elsewhere, so it sold for a mere \$500. Many strange things have been sold at this auction over the years. They have ranged from Peter Embrey's tie to the hubcaps from Bill Pinch's car. The *pièce de résistance* at the 2001 event was a portrait of Dr. Fred Pough painted by Frank Chambers. Another item, the sale of Dr. Al Falster (University of New Orleans) for unspecified purposes, raised more eyebrows than cash. Bidding for Dr. Falster closed at \$11, presumably establishing the current commercial value of mineralogists in North America.

On Sunday, there are two lectures, after which the Symposium closes at lunchtime.

In 2001, the first lecture, *Gem Tourmaline*, was given by Dr. William (Skip) Simmons of the University of New Orleans. The second, *Volcanic History of the Western United States: Catastrophic Eruptions and Mineral Treasures*, was by Dr. Karen L. Webber, also from the University of New Orleans.

The importance of the RMS lies not in the number of people it attracts, but in the dedication of those people. What brings a large chunk of the faculty plus a clutch of students all the way from New Orleans? Students came from Queen's, Ottawa, and other universities as well. Scratch any participant at the Symposium and you'll uncover someone who has made a mark in mineralogy in one aspect or another. The Rochester Mineralogical Symposium has thrived for

twenty-eight years because the gathering of these people generates its own value. It is a landmark event in the annals of mineralogy.

For more information on the next RMS, contact Dr. Helen H. Chamberlain, PO Box 85, Manlius, NY 13104-0085.

CANADIAN STAMPS ON DIAMOND?

The International Kimberlite Conference will be held in Victoria, BC, in the summer of 2003. A group of committed people is encouraging Canada Post to issue a set of stamps about Canadian diamond discoveries, diamond mining and diamond cutting. Readers of the Newsletter who support this idea should write to:

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CONFERENCE NEWS

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BY JEANNE B. PERCIVAL¹
AND ANDRÉ E. LALONDE²

The 12th International Clay Conference was held in Bahía Blanca, Argentina from July 22 to 28, 2001. This quadrennial conference was organized under the auspices of the Association Internationale pour l'Etude des Argiles (AIPEA) and included the participation of the International Society of Soil Science (Commission VII). About 200 participants from 32 countries braved the Argentine winter to descend on this university town, located about 650 km south of Buenos Aires. The conference venue, the Palihue Building on the satellite campus of the Universidad Nacional del Sur, was ideal for discussions on the latest research on all aspects of clay science.

The theme of the conference was *2001: A Clay Odyssey*. During the opening ceremony in the main building of the university (downtown), we were treated to a rendition of the movie musical theme with suitable highlights from the Conference. We listened to speeches by the chair of the organizing committee (Eduardo Domínguez), the out-going president of AIPEA (Elen Roaldset), the mayor of Bahía Blanca, and the vice-president of the University. Dr. Haydn Murray, from Indiana University, was granted an honorary doctorate for his contribution to clay and geological research and collaborations with the local department of geology through many years.

The technical sessions were divided into six symposia, six general sessions and a special symposium (3rd International Symposium on Acti-



Fig 1: Eduardo Domínguez (12th ICC Chair) and Elen Roaldset (Out-going President AIPEA) presiding at the banquet held in Club Argentina.

ated Clays). Both oral and poster presentations were made. The symposia were highly focused and usually took up a half day; however, they were complemented by one or more general sessions. All presentations were given over the 5-day period with Wednesday as the traditional break (General Assembly and local field trip). A few highlights from each of the sessions are given below. For a detailed list of presentations, see www.12icc.uns.edu.ar.

Symposia

In *Teaching Clay Mineralogy*, the keynote talk given by Darrell Schulze (Purdue University) emphasized the importance of making clay science relevant to today's students. Other talks looked at topics such as how clay scientists can help in the public school system or the use of multimedia in the clay mineral laboratory. After a keynote address on clay-mineral-based geothermometry in geothermal systems by Colin Harvey of Indiana University, several topics were covered in the *Clays in Hydrothermal Deposits* symposium, including ore-related alteration and geothermal systems. Talks in

Clays in Ceramics included the compositional requirements for ceramic tiles, firing behaviour, plasticity of brick clays, and ball clays in tile production. Diagenetic traps for natural gas, comparative diagenetic studies, and shale characterizations were important aspects discussed in the *Clays in Petroleum Exploration and Production* symposium. The *Clay Resources in the Mercosur* symposium was particularly relevant to many of the South American delegates as it focused on the clay resources of the Mercosur, a common trading market composed of Argentina, Bolivia, Brazil, Chile, Paraguay, and Uruguay, which was founded in 1991.

The *Clay Barriers and Waste Management* symposium focused mainly on the use of clays in liners and covers as barriers to movement of hazardous waste. In the keynote presentation, Kurt Czurda (Karlsruhe University) described the new technical regulations for waste classification and liner systems in the European Union. Granites are currently out of favour in discussions on nuclear waste disposal, while clay rock is preferred. For industrial waste,

two barriers are recommended, a kaolinite one to reduce infiltration and a Na-bentonite layer to promote retardation. However, problems are evident in the bentonite layer due to cracking and swelling. Other talks examined chemical and hydrothermal reactivity of clays, sorption properties, and sorption of organic contaminants and heavy metals.

In the *3rd International Symposium on Activated Clays*, papers examined chemical and physical treatments to modify the properties of clays and thus to improve their characteristics and behaviour for a variety of industrial applications. Synthesis and characterization of pillared clays (PILCs) have been topical since the late 70s and this was reflected in papers presented. These new materials are useful in catalysis and adsorption processes. Other applications of activated clays discussed included use in purification and decolorization of vegetable oils, in animal feeds, and in waste recycling.

General Sessions

Papers in *Clays in Geology* examined clays found in the Precambrian to the Quaternary. Of special importance were the producing kaolinite deposits in South America. Papers focused on descriptions of deposits and origin of clay minerals, diagenesis, paleoenvironmental analysis, dating methods, and engineering problems. Many of the talks provided detailed information on the local and regional geology of South America. In the *Clay Minerals and the Environment* session,

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K1A 0E8

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Ontario, K1N 6N5

CONFERENCE NEWS



Fig. 2: Visiting outcrops of residual kaolin deposits in Chubut Province of Patagonia.

the focus was on sorption behaviour and characteristics, mineral-solution reactions and mineral-organic reactions. Paleoenvironmental analysis related to archeological sites and raw materials in ancient pottery were also featured. The *Soil Mineralogy* presentations were on diverse topics such as development of soil in loess deposits and granite bedrock, micromorphology, and various analytical methods including atomic force microscopy, micro-X-ray diffraction, and sequential extraction techniques. One ambitious study illustrated how a clay map of New Zealand was developed using data contained in their national soils database and land resource inventory. The session on **Methods** covered the classical applications of studying clays using XRD and SEM/TEM. However, FT-IR, NMR, cathodoluminescence, and Raman microscopy were well represented.

The unique properties of clay minerals promote their use as adsorbents, catalysts, and ion exchangers in a variety of applications from waste disposal to high-tech industries. The *Crystal Chemistry, Structure and Synthesis* session provided current information on a large variety of

applications including organo-pillared clays, hydrothermal synthesis, and experimental weathering. Studies on layer charge, crystal structure, particle thickness, and electron and optical properties were also illustrated. Although XRD is the method of choice for many of the analyses, EXAFS and FTIR were also featured.

Clays and clay minerals are ubiquitous and are important in geology, construction, engineering, process industries, and environmental protection. They are commonly used in the paper, rubber, plastics, and ceramic industries, to name a few. They are excellent as anticaking agents and adsorbents. In the *Clays in Industry* session, many of these facets were examined, including characterization of clays suitable for the paper or ceramic industry (i.e., kaolinite), beneficiation methods to improve quality of various clays, and problematic aspects such as the presence of iron, which makes kaolinite unsuitable for the paper industry.

Overall, the quality of presentations was very good, with digital projection being the medium of choice. The poster sessions were set up so that authors were present at prescribed times, but these

times conflicted with talks in other sessions or symposia. However, this facilitated ease of viewing for delegates as the poster room was small. By far, kaolinite was the most featured clay mineral owing to its importance in many different applications.

Field Excursions

Two pre-conference field trips examined Precambrian saprolitized basement rocks in the northern area and kaolin deposits in Patagonia, to the south. One of us (AEL) participated in the latter. This field excursion was complicated by a very unexpected fall of over 20 cm of snow in the desert, the first snowfall there in over 14 years! Despite closed roads and the declaration of a state of emergency in much of Patagonia, Claudio Iglesias, the trip organizer, with the help of Eduardo Dominguez, did a remarkable job getting the participants to numerous exposures of residual and sedimentary kaolin deposits in Chubut Province (Fig. 2). The trip included a visit to the museum of vertebrate paleontology in Trelew, whale sight-seeing, and a tour of the Aluar aluminum refinery in Puerto Madryn.

Three post-conference excursions were organized to the Sierras Septentrionales, Extra-Andean Patagonia, and the lateritic-tropical soils in Misiones Province. JBP participated in the first excursion to see Precambrian-Paleozoic clay deposits in the Tandilia mountain system NW of Bahía Blanca. The kaolinite and pyrophyllite deposits occur as interbeds in quartzite, which appears as massive outcrops atop the hills. These hilltops are separated by long, sweeping, lush valleys, which host the famous Argentinian range cattle. The clay deposits were worked for



Fig. 3: Quartzite beds on top of clay pillars remaining after kaolinite mining. Height of tunnel about 1 m.

the brick and tile industries. In some cases, horizontal underground mining was possible (Fig. 3), but generally the deposits were quarried.

Social Program

The organizers presented a varied Argentine-flavoured program. We were treated to a tango dancing demonstration at the banquet by Ana Benozzi and her tango group, and a typical Asado at a Sociedad ranch (a ranch where cattle are auctioned and sold), during the mid-week break. The highlight of the entertainment was the Tango Show at the opera where we experienced and felt the sensual aspects of Argentine music; we now appreciate why the tango is so popular.

Proceedings

Over 70 manuscripts were received at the meeting and are now in the review process. Look for the Proceedings to be available in 18+ months, as an Elsevier special publication.

Next ICC

The 13th International Clay Conference will be organized by the *Japan Clay Science Society* and will be held in Tokyo in 2005.

Authors' Note: Copies (hard copy or CD-ROM version) of the 11th ICC Proceedings from the 1997 conference held in Ottawa are available from JBP. Cost is \$150 CDN for an individual.

OUTSIDE NEWS

SUSTAINABLE MINING IN THE 21ST CENTURY: A WORKSHOP FOR GEOSCIENTISTS

This workshop will be held in association with and immediately following the CIM Annual Conference and Exhibition Vancouver, on May 2 and 3, 2002, at the Fletcher Challenge Theatre, SFU at Harbour Centre, 515 West Hastings Street, Vancouver, BC.

Presented by the NUNA 2001 Committee on Sustainable Mineral Resources Development, as an outcome of the NUNA 2001 conference *Future Directions for Canadian Mineral Deposits and Metallogenic Research*, and co-sponsored by the Canadian Institute of Mining & Metallurgy (Geological Society), the Geological Association of Canada (Mineral Deposits Division), the Canadian Geoscience Council and the Society of Economic Geologists, this two-day workshop will explore the role of geoscientists in the practice of sustainable development in the minerals industry. Invited and volunteered presentations will discuss:

- the concept of sustainability as applied to non-renewable mineral resources;
- sustainable practices in exploration and mining (including exploration for low-impact, high-value mineral deposits);
- the role of geology and mineralogy in improving efficiency in mineral extraction, and environmental stability in mine waste disposal; and

- the concept of total resource utilization, with examples of innovative uses for mined materials.

Following the technical sessions, a plenary session and panel discussion will review and debate possible avenues for the organization of collaborative research among university, industry, and government scientists. Registration is required, but there will be no fee. Discounted hotel rates will be available through Simon Fraser University Harbour Centre.

Call for Papers:

Geoscientists, including geologists, geophysicists, mining and environmental engineers, and mineral processors, are invited to submit half-page abstracts on topics illustrative of the application of scientific research to sustainable development in the minerals industry. Fifteen papers will be selected for presentation at the workshop. Abstracts should be submitted to Jeremy Richards no later than March 15, 2002.

For details of the program and registration (before March 29), contact: Jeremy P. Richards
Chair, NUNA 2001 Committee on Sustainable Mineral Resources Development
Dept. Earth & Atmospheric Sciences
University of Alberta, Edmonton, AB T6G 2E3
Jeremy.Richards@UAlberta.CA
Tel: (780) 492-3430
Fax: (780) 492-2030

NEWS FROM ICDD

2002 Denver X-ray Conference

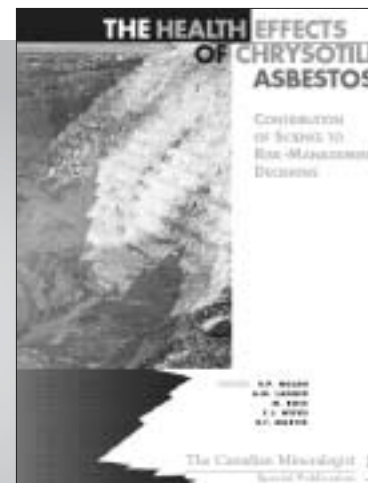
The 51st Annual Denver X-ray Conference will be held July 29 to August 2, 2002, at the Antlers Adam's Mark Hotel, Colorado Springs, Colorado, U.S.A. The conference will include tutorial workshops on Monday and Tuesday, and technical sessions on Wednesday, Thursday and Friday. Exhibits will run Monday through Thursday. The plenary session at the 2002 DXC will be *Applications of X-ray Analysis to Forensic Materials*.

For access to current conference information, please visit www.dxcicdd.com. For information: Denise Flaherty, Conference Coordinator, phone: 610-325-9814, fax: 610-325-9823, e-mail: dxcc@icdd.com.

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CALENDAR

April 14-16, 2002

Global Exploration 2002 – Integrated Methods for Discovery, the Society of Economic Geologists' upcoming meeting will be in Denver, Colorado, U.S.A. More information may be obtained at www.SEG2002.org.

July 22-24, 2002

The eighth biennial Pan-American Conference on Research on Fluid Inclusions (PACROFI VIII) will be held in Halifax, Nova Scotia, July 22-24, 2002. The meeting will be hosted by the Department of Geology, St. Francis Xavier University, and the Nova Scotia Department of Natural Resources. Details are available at the following website www.gov.ns.ca/natr/meb/pacrofi8/index.htm. For more information contact either Alan Anderson (aanderso@stfx.ca) or Dan Kontak (kontakdj@gov.ns.ca).

There will also be a pre-meeting (July 20-21) short course entitled **Fluid Inclusions in Hydrocarbon Systems**. The list of speakers currently includes Bob Burruss (USGS, Reston), Bob Goldstein (U of Kansas), Don Hall (FIT, Tulsa), Gordon Macleod (Shell, Houston). More information about the short course may be obtained at the following web site www.gov.ns.ca/natr/meb/pacrofi8/index.htm

July 22-26, 2002

11th Quadrennial IAGOD Symposium and GEOCONGRESS 2002, Sedimentary, Magmatic and Ore-Forming Responses to Compressional and Extensional Tectonics: A Focus on Africa, Windhoek, Namibia, with field excursions throughout southern Africa. Hosted by the Geological Societies of Namibia, South Africa and Zambia, sponsored by SEG and SGA (contact: Conference Link, P.O.Box 9870, Windhoek, Namibia. Tel.: +264-61-251014, Fax: +264-61-

272032, e-mail: alice@conferencelink.com Web: www.geoconference2002.com

August 11-14, 2002

International Symposium on Vanadium presented at COM2002, the Conference of Metallurgists, in Montréal. For more information, www.metsoc.org or contact Dr. Mehmet F. Taner at mftaner@globalseve.net

August 18-23, 2002

From Stars to Life, the 2002 geochemistry Goldschmidt Conference will be held in Davos, Switzerland. For more information, www.goldschmidt-conference.com or e-mail goldschmidt2002@campublic.co.uk

September 1-6, 2002

Mineralogy for the New Millennium, 18th meeting of the International Mineralogical Association at the Edinburgh International Conference Centre, Edinburgh, Scotland. Visit www.minesoc.org/IMA2002 for programme and details of registration and abstract submission, or e-mail ima2002@ed.ac.uk

September 7-10, 2002

Gemstone Deposits of Colorado and the Rocky Mountain Region, a symposium on the mineralogy, geology, and field occurrences of gemstone deposits in the Rocky Mountain states, will be held on the Colorado School of Mines campus, Golden, Colorado. For further information, contact Peter Modresky at pmodresk@usgs.gov, or Friends of Mineralogy, Colorado Chapter, P.O. Box 5276, Golden, Colorado, 80401-5276.

For a complete listing of meetings of mineralogical interest, see Dr Andrea Koziol's web page at <http://homepages.udayton.edu/~koziol/meetings.html>

The Sudbury Gem and Mineral Show will be held from July 19 to 21.

Friday, July 19, 2002: 5 pm - 9 pm
Saturday, July 20, 2002: 10 am - 6 pm
Sunday, July 21, 2001: 10 am - 5 pm
Carmichael Arena, Bancroft Drive (1 km south of Hwy. 17E),

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For further information:
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Physical modeling of the formation of komatiite-hosted nickel deposits and a review of the thermal erosion paradigm (Rice & Moon, South Africa). *Can. Mineral.* **39**, 491-503.

Fluid transport of sulfur and metals between sulfide melt and basaltic melt (Baker et al., Canada). *Can. Mineral.* **39**, 537-546.

High-temperature stability of laurite and Ru-Os-Ir alloy and their role in PGE fractionation in mafic magmas (Brenan & Andrews, Canada). *Can. Mineral.* **39**, 341-360.

Growth forms and composition of chromian spinel in MORB magmas: diffusion-controlled crystallization of chromian spinel (Roeder et al., Canada & Iceland). *Can. Mineral.* **39**, 397-416.

Silica biomineralization of unicellular microbes under strongly acidic conditions (Asada & Tazaki, Japan). *Can. Mineral.* **39**, 1-16.

Micro-analytical study of the optical properties of rainbow and glass obsidians (Chi Ma et al., USA). *Can. Mineral.* **39**, 57-71.

A bond-valence approach to the structure, chemistry and paragenesis of hydroxy-hydrated oxysalt minerals. Parts I, II and III (Schindler & Hawthorne, Canada). *Can. Mineral.* **39**, 1225-1274.

Evidence for open-system behavior in immiscible Fe-S-O liquids in silicate magmas: implications for contributions of metals and sulfur to ore-forming fluids (Laroque et al., Canada & USA). *Can. Mineral.* **38**, 1233-1249.

Cryogenic Raman spectroscopic studies in the system NaCl-CaCl₂-H₂O and implications for low-temperature phase behavior in aqueous fluid inclusions (Samson & Walker, Canada). *Can. Mineral.* **38**, 35-43.

...AND FROM TIME TO TIME, REVIEW ARTICLES

Ore-mineral textures and the tales they tell (Craig, USA). *Can. Mineral.* **39**, 937-956.

The design and evaluation of nuclear-waste forms: clues from mineralogy (Ewing, USA). *Can. Mineral.* **39**, 697-715.

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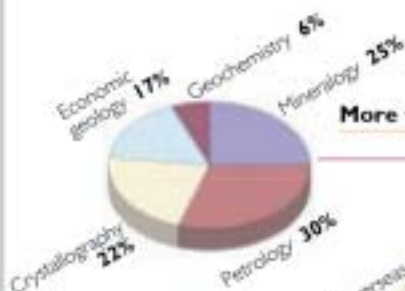
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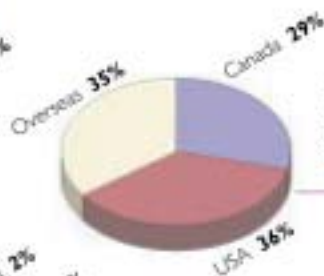
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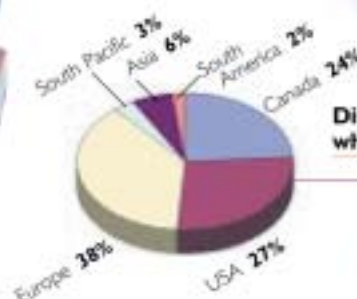
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