Bulletin of the Mineralogical Society of Southern California

Volume 80 Number 6 June 2009

The 855th Meeting of the Mineralogical Society of Southern California

Field Collecting in the Grenville Providence of Ontario, Canada.

By

Paul Adams

Friday, June 12, 2009 at 7:30 p.m.

Geology Department, E-Building, Room 220
Pasadena City College
1570 E. Colorado Blvd., Pasadena

Featuring:

--Eruptions of Mount Redoubt in Alaska
--Paleobotanist Walton Wright
--Why study mineralogy
--Some titbits about asbestos

June Program

Date and Time: June 12,2009 07:30 p.m.
Topic: Field Collecting at Grenville Providence Ontario Canada
Guest Speaker: Paul Adams

The Grenville province forms part of the Canadian Shield and is primarily exposed in SE Ontario and Quebec although other exposures also occur in the Adirondack mountains of upstate New York. The province contains a wide variety of rock types that were produced during a mountain building episode (Grenville orogeny) 1.0 to 1.4 billion years ago. This was most likely the result of two continental plates colliding (think of the Himalaya one billion years from now).

The town of Bancroft, Ontario was the site of a uranium exploration boom in the 1950's and there are many abandoned mines and prospects in the area. The town named itself the "Mineral Collecting Capital of Canada" and was the destination for many mineral collecting trips. One of the most interesting mineral formations in the province are numerous calcite vein dikes. Unlike most calcite veins which are deposited by water, these vein dikes are thought to be formed from molten calcite. The high temperatures and pressures of formation coupled with the large time scales resulted in large crystals of the host rock minerals lining the calcite veins and as "floaters" within the veins. Examples include 11' hornblende crystals, 400 lb apatite crystals, 80 lb titanite crystals, 4' biotite crystals and 1' twinned zircon crystals.

The composition of the host rock greatly influences the mineral crystals that line the veins. For example, veins in nepheline syenite will be lined with large nepheline crystals, those in granite will be lined with microcline, those in hornblende gneiss by hornblende, etc. Commonly accessory

minerals that are found in only small quantities in the host rock often will reach large sizes in the vein dikes (apatite, titanite, and zircon). This talk will high light the experiences from 10-15 collecting trips to the Bancroft area from about 1990 to 2004.

Mr. Adams has MS and BS degrees in geology from USC and SUNY Albany, respectively. He first collected in the Bancroft area in 1969.

Minutes of the May 8, 2009 Meeting

The 854th meeting of The Mineralogical Society of Southern California was held on Friday, May 8, 2009, at Pasadena City College, Pasadena, CA. President Geoffrey Caplette brought the meeting to order at 7:45 p.m. Jo Anna Ritchey then introduced the speaker of the evening, Megan Shadrick, who gave a presentation entitled: "Lasers in Geology: Destructive and Non-Destructive Testing of Rocks and Minerals."

Ms. Shadrick, a senior studying physics and geology at California State University, San Bernardino, participated in high power fiber laser research at the Gas Technology Institute of Des Plaines, Illinois, during two summer internships in 2004 and 2005. Her background also includes employment for six years as a firefighter, and five years as a paramedic.

She began her talk by defining the term "Laser" (light amplification by stimulated emission of radiation), and discussing the differences between destructive and non-destructive testing. Non-destructive testing (amount of power less than one watt) employs the use of different laser methods to determine the various characteristics of a rock or mineral. As examples, flaws can be found through the use of surface fine point scanning, crystal characteristics can be determined by laser spectroscopy, and chemical properties can be identified through chromatography. Destructive testing involves cutting, ablation or powder spectroscopy.

Ms. Shadrick's high power fiber laser research was conducted to show proof of concept for drilling and other operations, and included work on methane hydrates, acoustic tomography and concrete cutting applications. Her experiences and misadventures at the Gas Technology Institute, as well as her discussion of the capabilities of the Institute's research fiber laser (the largest of its kind in the United States) were informative. Also interesting were Ms. Shadrick's descriptions of her two patented inventions, related to her work at the Institute.

The presentation was recorded by Herman Ruvalcaba.

There was no new business. The door prize was won by Chris Fromm.

President Caplette brought the meeting to a close at 9:20 p.m.

Respectfully submitted, Pat Caplette, Secretary

Mark your calendar.
August 22, 2009
You are invited to join
The Fallbrook Gem and Mineral Society
Potluck and Mineral Sale.
More information will be posted on August issue bulletin.

The Recent Eruptions of Mount Redoubt

MSSC member, Richard Horstmeyer would like to share some pictures of the recent eruptions of Alaska's Mount Redoubt that he found on the internet. The website address is www.boston.com/bigpicture/2009/04/alaskas_mount_redoubt.html--. There are more than twenty pictures in the site. For those who do not have internet access, below are just two of these pictures and their captions from the website.

An eruption of Mt. Redoubt seen at sunset from the cockpit of a DC-6 flying over Cook Inlet near Anchorage, Alaska on March 31, 2009. Photograph kindly provided by Bryan Mulder – pilot and photographer. (© Bryan Mulder)

Photograph of Redoubt's March 27th eruption cloud, as seen from near Homer, Alaska. Photograph courtesy of Dennis Anderson. (Dennis Anderson/Alaska Volcano Observatory)

Paleobotanist Walton Wright

by Pat Caplette

Walt Wright has a degree of Bachelor of Science from California State University at Fullerton, and a degree of Master of Science from the University of California at Riverside. He has worked as an educator at U.C. Riverside, a naturalist, geologist, botanist, senior ecologist, biologist, and paleobotanist, as well as a consultant doing management and restoration plans, and evaluating impacts to the environment. However, Walt is best known as the paleobotanist who has identified more petrified wood and fossil plants than anyone else in the world.

Editor's note: during the April meeting, Patricia Caplette mentioned that both she and Geoffrey Caplette drove a long distance to attend a club meeting just to listen to paleobotanist Walt Wright's lecture on petrified wood. Not many MSSC members know Mr. Wright and his expertise. So here is an article by Patricia Caplette on Mr. Wright.

Do you know any expert in less known earth science related fields? Please share your knowledge with your fellow Society members in the bulletin.

Not nearly enough research has been undertaken in the field of paleobotany, and many types of fossil wood and plants have not been sufficiently or properly identified. Although a few books, such as William D. Tidwell's "Common Fossil Plants of Western North America," are helpful, the investigation of fossil wood and plants is often daunting as information is limited and must be gleaned from many sources.

Walt has made valuable, original contributions to the field of paleobotany, and has organized descriptions, data and information, which

he readily shares. He has conducted petrified wood identification seminars for the past 15 years, and lectures at CFMS shows and local rock clubs, among other forums. He has also identified specimens for colleges and museums, as well as for individual collectors.

His presentations include not only discussions of the chemistry and conditions involved in the fossilization of wood, and the development of such groups such as ferns, fern allies and seed plants, but also of formations in which the fossil plants occur and the ecological conditions under which they might have grown. The discussion of plate tectonics, the identification of fossils by considering their respective locations in the configuration of the land masses at the time, and the geologic time scale, with events of plant life during each epoch, are also covered in the seminars.

Walt is an avid field collector, and his collection and locality tips are very much appreciated. It would be a much more difficult undertaking to study paleobotany without Walt's guidance.

Why Study Mineralogy?

By Tomas Feininger
Professeur Département de géologie Université Laval Québec (Québec) May 2009

Reprint from the MSA-Talk@lists with permission from the author.

In recent decades, mineralogy has evolved considerably. This is due in part to the development of new instrumentation of enormous precision, and to the vastly greater powers of computation now available. It is also due to the expansion of the subject; mineralogy now spills over into the realm of societal issues, and in particular, environmental studies. Here mineralogists have let down their guard, allowing their expertise to become undervalued and too often

overshadowed by the pronouncements of lawyers, politicians, and administrators.

I open the undergraduate mineralogy course that I now teach wearing an elegant white vest with red and black trim (see the photo on page 11). I'll return to the significance of this garment shortly. My two-hour lecture commences with the usual introductory materials: What is mineralogy? How does it relate to the other Earth sciences? and so on. Next I pass directly to the core of my lecture: Why study mineralogy? To let the cat out of the bag right off, in my view a central purpose is to offer guidance to lawyers, politicians, and administrators who widely display remarkable ignorance of matters mineralogical. This advice allows me to launch into the asbestos controversy, a topic as bizarre and irrational as the Y2K catastrophe that threatened civilization a decade ago. Remember that one?

For openers I point out that asbestos does not exist, at least not to a mineralogist. Asbestos is a not a mineral, it is a commercial term for a variety of unrelated minerals with an *asbestiform* habit (i.e. in fibres with a certain degree of flexibility). This allows me to introduce the nature of polymorphism (i.e. antigorite, chrysotile) to my students. Next comes white *vs*. blue or brown asbestos: the amphiboles. This presents the opportunity to bring up the concept of mineral groups and to discuss the distinctiveness of individual members, one from another. Then I dive into the bio-geo-medical literature (a wonderful occasion to demonstrate to my students the importance of journal articles). Here one can read about the stark contrast in toxicity between asbestiform minerals of the serpentine group (chiefly chrysotile) and the amphibole group (chiefly riebeckite and amosite). Further along, the student can learn that chrysotile is rather harmless. It is re-sorbed quickly by human tissue leading to no build up of lung burden. Dust from brake shoes and pads contains no chrysotile; the intense and concentrated heat at contact upon braking reduces the mineral to a brown amorphous substance.

My two-hour introductory lecture next moves on to talc. To set the scene I disperse a small cloud of the mineral at the front of the classroom from a can of "baby powder." It is an opportunity to point out that talc is indeed a mineral, and is unusual in that it allows little ionic substitution and thus deviates but ever so slightly from its ideal formula. This is a handy point to elaborate on the definition of a mineral. Also, I here mention that talc is a phyllosilicate and is thus related to mineral groups (a concept brought up just a bit earlier) such as the micas, clays, serpentines, chlorites, and so on. Anyway, below is a meticulous translation of a short article that appeared in August, 2008, in one of Québec's most prestigious newspapers:

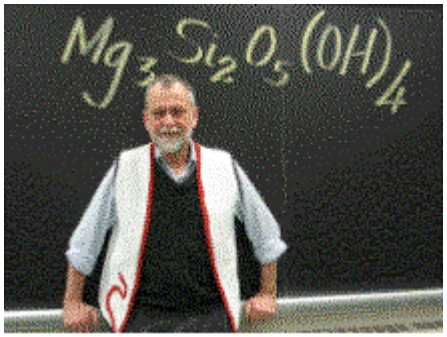
"Beware of talc. A group of doctors, scientists and consumer-defense organizations yesterday demanded that American health authorities immediately ban cosmetic products with talc because of the carcinogenic nature of the mineral as revealed by several scientific studies. According to the Cancer Prevention Coalition (an arm of the American Association of Public Health), 'talc poses a deadly risk of ovarian cancer in women', the incidence of which has risen 30% since 1975. With more than 15,000 deaths each year attributed to it, talc must be removed from drugstore shelves, according to the coatlition which, in passing, deplores that for years the Food and Drug Administration has refused to require that warning labels be affixed to the packaging of these cosmetics."

My students were told to keep this article in mind. On their midterm exam it re- appeared and I asked them to analyze it (1) from the viewpoint of its logic, and (2) as a mineralogist. Quite frankly, if by the end of their undergraduate years our students are unable to assess such mineralogical nonsense and explain clearly to lawyers, politicians, administrators as well as the public at large why such pronouncements in the media are claptrap, we have failed as teachers of mineralogy.

At the age of 19 I worked in the asbestos industry, in a shop shaping and fitting blocks of asbestos to friction bands and clutches for bulldozers, locomotives, and steam shovels. It was really dirty work. The dust from my job, the grinding the edges of the asbestos blocks flush after riveting them to their bands and discs, was so dense that one could not see from one side of the shop to the other, a distance of about 10 or 15 meters. We wore no masks. It was, in fact, the suffocating dust (and not the mere presence of chrysotile) throughout the asbestos industry in the 1950s and 1960s, in mines, mills, and product shops that was the cause of widespread lung disease. The same held for flour mills, cotton-carding shops, coal mines, and other dusty industrial venues where lung disease was no less rampant than in the asbestos industry.

My focus on these issues began some 20 years ago when my (then) ten-year old daughter came to my office and was intrigued by and picked up a sample of chrysotile with 4-cm long fibres. She asked: "Daddy, this is beautiful, what is it?" When I told her that it was chrysotile "asbestos," she reacted as if faced by a deadly snake. Recoiling, she said something like "Daddy, how can you keep something so dangerous in your office?" Then and there I realized that we, as mineralogists, had a battle on our hands.

Toward the conclusion of my lecture, I point out that much of the media-driven assault against mineralogy is fuelled by the notion of the no-risk society. This is absurd. No such utopia is attainable. Frankly stated, life is a fatal condition contracted at birth and transmitted sexually. Bon voyage!



Let me now return to my white vest. Excluding the thin coloured trim, this garment is made entirely of chrysotile.

At the close of my lecture, I ask my students what they think of my vest. The opinions are invariably favourable. I then request that one of my students (usually a female) come forward to feel the cloth. When I then ask what is the nature of the cloth, no one in the room has an answer. When I reveal that it is chrysotile asbestos, I am met by disbelieving stares of amazement. I go on to recount how this material has saved many lives and that it promotes our security by protecting firemen in their work, that New York's World Trade Center towers would still be standing if the steel structure had been insulated with asbestos (as had been recommended by engineers before construction began), that the Swissair flight that went down in Nova Scotia in 1998 with a terrible loss of life would not have crashed had its wiring been insulated with chrysotile rather than with the artificial product used in its place because of the asbestos ban. In short, I refer to chrysotile as a "Don de Dieu."

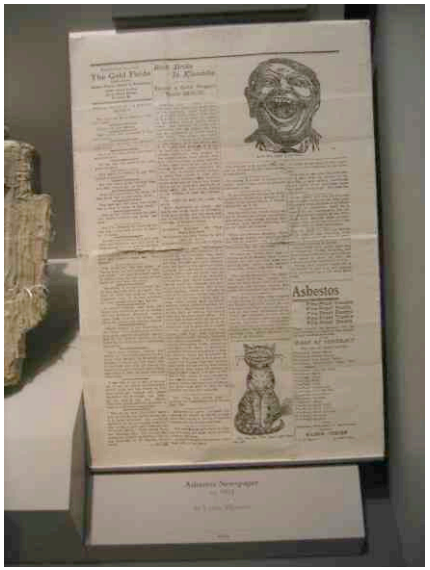
Now, at 73, I have probably taught my last mineralogy class. Enough is enough. Nevertheless, I take this occasion to ask earnestly that those who follow take proactive positions on legal, political and administrative issues where mineralogy has a rôle. There are many and we share a common responsibility.

Some Titbits about Asbestos

By Shou-Lin Lee

- According to U. S. Environmental Protection Agency, the current federal definition of asbestos is the asbestiform varieties of: chrysotile (serpentine); crocidolite (riebeckite); amosite (cummingtonite/grunerite); anthophyllite; tremolite; and actinolite.
- Chrysotile is the most commonly used mineral in all asbestos products.
- Occasionally, some gem and mineral displays would label the asbestiform variety of quartz, commonly known as tiger's-eye, as asbestos.

For those who wonder what asbestos look like, below are pictures of three minerals that are all labeled as asbestos: chrysotile (below left, the two white upright pieces), tremonlite (below right), and riebeckite (lower left). The picture on the lower right is a newspaper ca. 1904, from St. Louise Missouri that was made entirely out of asbestos. The label did not specify the specific mineral. All the specimens and the newspaper are in Smithsonian Natural History Museum.



2009 Calendar of Events

June 5-7 2009, Woodland Hills, Rockatomics Gem & Mineral Society Pierce College Pierce College - Victory & Mason Hours: 10-5 Daily Contact: Gary Levitt, Show Chair (818) 993-3802 Website: www.Rockatomics.org

June 6-7 2009, La Habra, North Orange County Gem & Mineral Society La Habra Community Center 101 W. La Habra Blvd. Hours: 9 - 5 both days Website: nocgms.com

June 13-14 2009, Cayucos, San Luis Obispo Gem & Mineral Club Cayucos Vets Hall 10 Cayucos Drive Hours: 10 - 5 both days Kim Patrick Noyes (805) 610-0603 Email: kimnoyes@gmail.com Website: slogem.org