

Bulletin of the Mineralogical Society of Southern California

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February 2005

The 804th Meeting of The Mineralogical Society
of Southern California

"Ancient and Modern Ideas about Volcanoes"

by Dr. Robert Stull

Friday, February 18, 2005, at 7:30 p.m.
Geology Department, E-Building, Room 220
Pasadena City College
1570 E. Colorado Blvd., Pasadena

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A Look at Volcanoes for February Meeting

Dr. Robert Stull of the California State University, Los Angeles, will speak on "Ancient and Modern Ideas about Volcanoes" at the February meeting. Please note that this month's meeting is on February 18, the third Friday of the month at 7:30.

Volcanoes have always fascinated people and they have played important roles in history, culture, religion, and economic geology. Scientists are still trying to understand them, and the evolution of ideas about how volcanoes work and why they are here is an interesting and important aspect of earth science.

Bob Stull has a well-deserved reputation as an excellent speaker. He received his Ph.D. in geology from the University of Washington and has been a Professor of Geology at CalState LA for many years. Although officially retired, he is currently teaching a course in volcanology and has up to date insights to share. He has mapped in and published papers on volcanic areas around the world including New Zealand, Indonesia, the Caribbean, and the Mediterranean. His interests in geological hazards, natural resources, and birds are also likely to be evident in his talk.

MSSC members are encouraged to bring recently acquired (purchased or self collected) mineral specimens to the meeting for an informal "show and tell" period after the talk. For those who are returning from Tucson, there is no excuse not to bring something!

Minutes of the January Annual Banquet and Meeting

The 803rd meeting of the Mineralogical Society of Southern California was held on January 22nd 2005 at the Oak Tree Room in Arcadia. At 5:30 pm the meeting began with a pleasant social hour for the members. Dinner commenced at 6:30 pm, and following dinner was the evening's speaker, Si Frazier. Si Frazier gave an enlightening talk on pseudomorphs including insights into their history as well as some unconventional views on the subject and some fine pictures of pseudomorph specimens.

Next on the meeting's agenda was the installation of the 2005 officers by Walter Margerum. The 2005 officers are as follows, Bill Besse as President, James Kusely as Vice President, Ilia Lyles as Secretary and Walter Margerum as Treasurer. The directors for 2005 also include Steve Knox, Jim Imai, Dave Smith and Rock Currier.

After the installation. President Bill Besse thanked past President Jo Anna Ritchey and introduced long time member Ron Thacker. Ron Thacker was then made a Life Member to the society for all his dedication and hard work over the years. Show Chair Justin Butt then presented the awards from the show. This year's H. Stanton Hill Trophy was won by Susan Weaver, while Joe and Susan Kilbaso won the Gus Meister Trophy and Hyman Savinar Trophy was won by Bill Moller.

The meeting came to a close at 8:44 pm.

Respectfully submitted by Ilia Lyles, Secretary

Minutes of the January Board Meeting

The January board meeting was called to order by President Bill Besse at 1:33 pm on Sunday, January 23rd in the home of Janet Gordon. Those present at the meeting included Bill Besse, Janet Gordon, Bob Griffis, Ken Raabe, Charlie Freed, Jo Anna Ritchey, Jim Imai, Justin Butt, Ilia Lyles and Walter Margerum.

First on the agenda for the meeting was a discussion regarding the 2004 MSSC show. Show Chair, Justin Butt gave a brief report regarding the show as well the budget for this year's show and announced the 2005 dates of October 15th and 16th. There were also thoughts regarding the exhibits in the show and increasing the amount of demonstrators as well as better defining the significance of each of the awards presented at the show in more detail.

Treasurer Walter Margerum then went over the net worth report as well as the proposed annual budget. A motion was proposed to accept the budget as corrected and it was passed unanimously.

There was a call by Janet Gordon to help with speakers in the upcoming year and many suggestions were made by the members. There was a proposal by Ken Raabe to bring rock and mineral specimens to each of the meetings to increase the interest in the meetings, as well as a suggestion by Bill Besse to have the business conducted at the end of the meetings rather than at the beginning out of respect for the speakers.

The meeting came to a close at 2:45 pm.

Respectfully submitted by Ilia Lyles, Secretary

Mineral Notes from Italy: Visiting Nicolaus Steno and Mineral Museums in Florence

By Janet Gordon

This third and last report of our adventures as participants in the 32nd International Geological Congress focuses on happenings in Florence, Italy. Almost everyone who has studied introductory geology or mineralogy has been exposed to the name Nicolaus Steno (nee Niels Stensen or Steensen). Every geology student knows him as the founding father of stratigraphy because he formulated three fundamental principles relating to the formation of sedimentary rocks. These are the principles of original horizontality, superposition, and lateral continuity. I taught my mineralogy students that Steno measured the interfacial angles on numerous quartz crystals and inferred that these angles were the same from crystal to crystal and were independent of crystal size or shape. These observations paved the way for the later formulation the "law of constancy of interfacial angles," and they were an important step on the path to recognizing that exterior shape of mineral crystals is an expression of internal order. I had always wondered about this man. He is often described briefly in textbooks as a founding father of geology and mineralogy who left science for a career in the Catholic church. So when we were invited to a special reception honoring Steno in the Church of San Lorenzo, which houses his remains along with those of the Medici family, we showed up on time.

The plaza in front of the church had been cordoned off by the local police to fend off the typical Florence tourists for this special occasion. Those of us with the

proper credentials were first ushered into the interior courtyard of the church where we waited for the dignitaries to appear. These included geological congress officials, local politicians, a historian, a cardinal, a pretty young woman in a short skirt, and others that I never figured out. The ceremony began under a large plaque high up on the courtyard wall. The plaque had been placed there in 1881 by the 2nd International Geological Congress, which had been held in nearby Bologna. The geologists of that time felt that Steno's importance as a scientist deserved more recognition and the plaque commemorated his accomplishments.

Then we were ushered into the church for the unveiling of a new plaque. But first there were the speeches, and we began to learn a lot more about Steno. The proceedings were conducted in Italian and then translated to English with varying degrees of success. So facts about Steno presented herein were checked against and slightly amplified with biographical information provided by the Royal Danish Embassy in Washington, D. C.

Our historian explained that Neils Steensen was born in Copenhagen, Denmark in 1638. (I noted the large number of Danes seated in the pews around us in San Lorenzo.) Although not from a wealthy family, there were the means for Steensen to have a good education. It started at an exclusive grammar school that emphasized languages and mathematics. The curriculum was probably easy for someone who, besides Danish, mastered German, Dutch, French, Italian, Latin, Greek, Hebrew, and Arabic. Later at Copenhagen University he was exposed to all the emerging natural science of the day. His notebook from this period indicates that he read Galileo, Copernicus, and he knew Kepler's paper on hexagonal snow, among others related to crystals.

In 1659, he left Denmark to travel in Europe and expand his scientific knowledge, eventually entering the university at Leyden in 1660. There he made a name for himself in the field of anatomy, making many discoveries and writing extensively on the subject.

After some reversals in his personal life and a short return to Denmark, Steensen arrived in Italy in 1666. He was soon under the patronage of Ferdinand II, the Grand Duke of Tuscany, a relatively enlightened member of the Medici family who was known for supporting art and science. Steenson was granted a monthly stipend and appointed anatomist at Florence's hospital Santa Maria Nuova. At Ferdinand's command, the head of a giant shark caught by some French fishermen was sent to Steensen. Among other important observations, he recognized that the shark's teeth were essentially the same as those preserved in local rocks. This led him to the correct interpretation of fossils and launched an interest in paleontology, geology, and crystallography. His previously mentioned work in these fields was published in 1669 as *De solido intro solidum naturaliter contento dissertationis prodromus* (Provisional dissertation on solid bodies naturally embedded in other solids). Was this the beginning of a new focus in his brilliant scientific career?

No, it was now time for the cardinal's speech. In 1667, Steensen abandoned his Lutheran roots and became a Catholic who devoted the remainder of his life

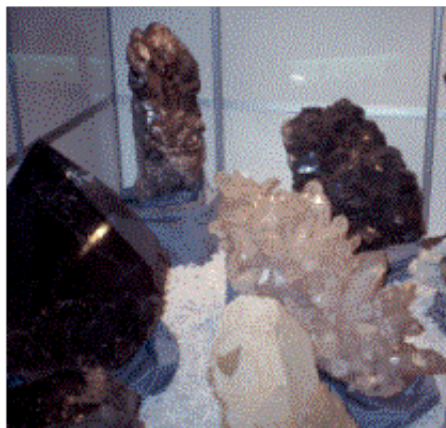
primarily to the church. This was hardly a bolt out of the blue. Throughout his career as a scholar, he had discussed a broad spectrum of religious ideas with many of the famous thinkers of the day. In Florence he was exposed to several devout Catholics who made service to those in need a way of life. This had great appeal to him, and he pursued it with the same vigor he had applied to his scientific researches. The cardinal outlined the career of a pious and devout man who sacrificed all for the poor and became a bishop to the missions of northern Germany where he was loved by both Catholics and Lutherans. He died in Germany, possibly from complications related to kidney stones, at the age of 48.

So what were Steensen's remains doing in Florence? The cardinal explained. While in Germany, Steensen had continued his friendship with the Medici family and was hoping to return to Florence some day. By then Cosimo Medici was the Grand Duke, and he arranged to have Steensen's body shipped to Florence. This took some deception on Cosimo's part, because sailors of the day would not take a corpse aboard ship. Consequently, Steensen's coffin was fitted with an outer box and labeled "books." When it arrived in Florence, it was placed in the crypt beneath the San Lorenzo church and remained there in obscurity for a couple of centuries.

But the cardinal's story didn't end there. By placing the plaque in the San Lorenzo courtyard in 1881, the thousand or so geological congress members gave serious momentum to efforts to have Neils Steensen's scientific accomplishments recognized. Renewed interest in his life led to moves to have him canonized. In support of this effort a small chapel in San Lorenzo was made available and renamed Capella Stenoniana in 1953. His remains were removed from the crypt and placed in a 4th century Christian sarcophagus loaned by the Natural History Museum for use in the chapel. The cardinal explained that Steensen was canonized by Pope John Paul II in 1988, and then spoke at length about how Steensen's life demonstrated that there is no conflict between science and religion. The audience sat through this politely, some wondering what Galileo would have thought.

At last the cardinal invited us all over to the chapel for the unveiling of the new plaque. After the proper prayers and blessings, the young woman in the short skirt stepped up and removed the covering from the new plaque describing Steensen's contributions to geology. The Danes applauded proudly. So what really happened to his scientific career after his conversion to Catholicism in 1667? Did he renounce it as some geology texts have implied? The biographical information from the Danish embassy is most helpful with this. Steensen was clearly a strong, independent thinker who would be unlikely to change or renounce his ideas to suit anyone else. And the historical facts are that after his conversion, he was called to Denmark and served as Royal Anatomist for several years. Then in 1674 he returned to Florence to educate the 12-year-old Medici heir who became Ferdinand III. During this time members of the scientific community urged him to expand his scientific studies. He was not uninterested in doing this, but service to his church was a higher priority, and it consumed his later years entirely. His contributions to geology were all made in a short time span of less than three years, but they were

significant enough for hundreds of international geologists to pay him tribute that day. I wondered if any anatomists ever stopped by to pay their respects.



Super-sized specimens greet visitors entering the University of Florence's Mineral Museum. Paul Gordon photo.

In between other conference activities, we headed to the magnificent museums of Florence. After paying homage to Michelangelo's David, who was gleaming from his 500th anniversary bath, we wandered down the street to the museums in the geology department of the University of Florence. The Museum of Geology and Paleontology was advertised in our conference materials, and was open for extended hours. This is a great place if you are into Pleistocene mammal fossils, but one of our maps showed a Mineral Museum, too. After considerable inquiry, we found it and were lucky enough to arrive when it was open.

The first thing one sees in the museum is a case of very large topaz, orthoclase, and quartz specimens accompanied by an equally grand beryl display. The museum contains many very fine specimens from around the world and from Italy in particular. It has a traditional section of minerals arranged in systematically according to chemical composition complete with text and diagrams to educate the public. There is also a section in which each province of Italy is represented with information about important ore deposits and examples of minerals from them. Beautiful samples of covellite and azurite from Sardinia, large pieces of Sicilian sulfur, and tourmalines from Elba grace this section. Integrated within the museum are treasures from the Medicis' mineral collections, which included boulders of lepidolite and rubellite from Elba, beautifully carved goblets and jasper and jade, and a collection of cut stones.

The Mineral Museum of the University of Florence must be one of the best-kept secrets in town, although it is reputed to contain more than 45,000 specimens and has many fine and historic cabinet-sized pieces. Our attempt to go back for a second visit to take more pictures was foiled by the museum's limited visiting hours. It's apparently open only on weekday mornings.

Anyone with the least interest in minerals as art materials should also stop by the Museum of Durable Stones (as it is sometimes translated). This exposition apparently presents everything one would want to know about the art of making inlaid table tops, vessels, and "paintings" from colorful minerals for those who can read Italian. But non-linguists can not fail to enjoy the examples of this art that are on display, the partially completed pieces that give hints about the construction techniques used, the tools of yesteryear, and the wall cabinet containing slices of minerals from around the world used in making these beautiful objects.



Large morganites and other beryl varieties on display. Paul Gordon photo

This commentary would not be complete without recommending the Museum of the History of Science to those with a scientific interest beyond minerals. While there it is not hard to imagine Galileo coming in to use some of his instruments, and docents are on hand to give commentaries in a number of languages.



Center of table top made of mineral pieces set into reddish porphyritic rhyolite. Design is about 0.7 m across. Janet Gordon photo.



Slices of a wide variety of durable minerals used by Florentine artists. Janet Gordon photo.

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Contact: Bill Besse (wbesse@altrionet.com, 626.359.4488) or Walt Margerum (wmargerum@earthlink.net, 310.324.1976).



'Tis a Puzzlement

by Walt Margerum

While looking for specimens to put in our self-collected case at the recent MSSC Show I came across several garnet specimens I collected in the Tungsten Hills near Bishop. One reason I didn't include them was I did not know what to call them. All I knew was they were most probably grossular $\text{Ca}_3\text{Al}_2(\text{SiO}_4)_3$, or andradite $\text{Ca}_3\text{Fe}_2^{3+}(\text{SiO}_4)_3$, but spessartine $\text{Mn}_3^{2+}\text{Al}_2(\text{SiO}_4)_3$, and almandine $\text{Fe}_3^{2+}\text{Al}_2(\text{SiO}_4)_3$ have been reported from the area. Gaines et. al. in "Dana's New Mineralogy" state that **andradite** forms series with grossular and schlorlomite, and sometimes in solid solution with almandine; that **grossular** forms series with andradite and with uvarovite, but also solid solution occurs with other garnets; that **spessartine** and **almandine** also form a complete series. They give $\text{A}_3\text{B}_2(\text{TO}_4)_3$ as the general formula for garnet. Where **A** = Ca, Fe, Mg, Mn, Y, and Na; **B** = Al, Fe, Cr, V, Ti, Zr, Si; and **T** = Si, but occasionally Fe, Al, Ti, P or OH. It should be noted that Anthony et. al. in the "Handbook of Mineralogy" give a slightly different version of both the series and the formulas.

Bateman gives the following analysis of what he calls *common garnets* from the Bishop Tungsten area: $\text{SiO}_2=38.4\%$, $\text{CaO}=32.4\%$, $\text{Fe}_2\text{O}_3=8.5\%$, $\text{Al}_2\text{O}_3=16.4\%$, and $\text{MnO}=4.3\%$. This would give a formula of $(\text{Ca, Mn})_3(\text{Al, Fe})_2(\text{SiO}_4)_3$ which would make them in dog terms, mutts.

This got me to thinking about how some minerals are named, and how much the names reflect reality. It appears that the present policy of the International Mineralogical Association (IMA) is to name minerals that occur as a series for the idealized end members. In the case of the andradite-grossular series the percentage Al vs Fe determines what to call the mineral with 50% being the dividing point. Bateman's *common garnets* would then be called grossular, which has the idealized formula $\text{Ca}_3\text{Al}_2(\text{SiO}_4)_3$. The analyses shows that this is not correct, but by the IMA's methodology that's what it is. So as I titled this article 'tis a puzzlement.

References

Anthony, John W., Bideaux, Richard A., Bladh, Kenneth W., Nichols, Monte C., (1995); "Handbook of Mineralogy, Volume II, Silica, Silicates"; Mineral Data Publishing, p.p. 904

Bateman, Paul C., (1965); "Geology and Tungsten Mineralization of the Bishop District California"; United States Geological Survey Professional Paper 470, p. 132

Gaines, Richard V., Skinner, H. Catherine W., Foord, Eugene E., Mason, Brian, Rosenzweig, Abraham, (1997); "Dana's New Mineralogy, The System of Mineralogy of James Dwight Dana and Edward Salisbury Dana, Eighth Edition"; John Wiley and Sons., p.p. 1037-1052.

2005 Calendar of Events

Jan. 29-Feb. 12, Arizona Mineral & Fossil Show, Tucson, AZ at InnSuites Hotel, 475 N. Granada Ave.; Ramada Ltd., 665 N. Freeway; Clarion Hotel-Randolph Park, 102 N. Alverton; Smuggler's Inn, 6350 E. Speedway; Mineral & Fossil Marketplace,

Feb. 10-13, The 51st Annual Tucson Gem and Mineral Show, Tucson Convention Center, Arizona.

Feb. 18-27, Indio, San Gorgonio Mineral & Gem Soc., Date Festival - Gem & Mineral Bldg #1, Riverside County Fair & Date Festival, 46-350 Arabia St., Hours: 10:00 am - 10:00 pm, Bert Grisham (951) 849-1674.

March 4 - 13, Imperial, Imperial Valley Gem & Mineral Society, 200 East 2nd. Street, Hours: Mon. - Fri. 4 - 10 PM; Sat. & Sun. 12 - 10 pm, Ms. Trey Handy (760) 352-2273.

March 5-6, Arcadia, Monrovia Rockhounds Inc., The Arboretum of Los Angeles County, 301 N. Baldwin Avenue, Hours: 9 - 5 both days, Jo Anna Ritchey (626) 359-1624,

March 5-6, Ventura, Ventura Gem & Mineral Society, Seaside Park (Ventura Co. Fairgrounds), 10 W. Harbor Blvd., Hours: Sat. 10 - 5; Sun. 10 - 4, Jim Brace-Thompson (805) 659-3577, Email: jbraceth@adelphia.net.

March 12-13, San Marino, Pasadena Lapidary Society, "Magic From The Earth," San Marino Masonic Center, 3130 Huntington Drive, Hours: Sat. 10 - 6; Sun. 10 - 5, Marcia Goetz (626) 914-5030, Email: joenmar1@gte.net.

April 2-3, Torrance, South Bay Lapidary & Mineral Society, "Nature's Treasures," Torrance Recreation Center, 3341 Torrance Blvd., Hours: 10 - 5 both days, Omer Goeden (818) 383-9279, E-mail: sageit@aol.com.

April 9-10, Hacienda Heights, Puente Hills Gem & Mineral Club, Steinmetz County Park Recreation Building, 1545 S. Stimson Avenue, Hours: 10 - 5 both days, Paula Hess (562) 696-2270, E-mail: rp Hess@adelphia.net.

April 9-10, San Diego, San Diego Mineral & Gem Society, Al Bahr Shrine Center, 5440 Kearny Mesa Rd., Hours: Sat. 9:30 - 5; Sun. 10 - 4, Wayne Moorhead (858) 586-1637.

April 23-24, Bakersfield, Kern County Mineral Society, Kern County Fairgrounds, Hours: 10 - 5 both days, Nichelle Sebresos (661) 809-4705.

April 23-24, Lancaster, Antelope Valley Gem & Mineral Club, Antelope Valley Fairgrounds, 2551 West Avenue H, Hours: 9 - 5 both days, Armin Nimmer (661) 945-5769.

April 22-23 Desert Symposium, Theme: Mining History of the Eastern Mojave Desert, Desert Studies Center, Zzyzx, CA, with field trip April 24-26. Dr. William Presch, CSU Fullerton, 714-278-2215, wpresch@fullerton.edu.

Sept. 10-13, The weekend before the Denver Gem and Mineral Show, a mineral symposium on **"Agate and Other Forms of Cryptocrystalline Quartz"** will be held at the Colorado School of Mines campus in Golden, Colorado. The symposium will be, Sept. 10-11, with optional field trips on Sept. 12 and 13. The symposium is cosponsored by the Colorado Chapter of Friends of Mineralogy, the Colorado School of Mines Geology Museum, and the U.S. Geological Survey. It will include two days of talks on the mineralogy, origin, and worldwide occurrence of agate and other forms of cryptocrystalline quartz, a welcoming reception and tour of the Colorado School of Mines Geology Museum; a Saturday evening banquet; and information about self-guided field trips to Colorado mineral localities. Registration will be \$40; Contact Friends of Mineralogy, Colorado Chapter, P.O. Box 5276, Golden CO, 80401-5276, to register or to be put on a mailing list for further information.



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