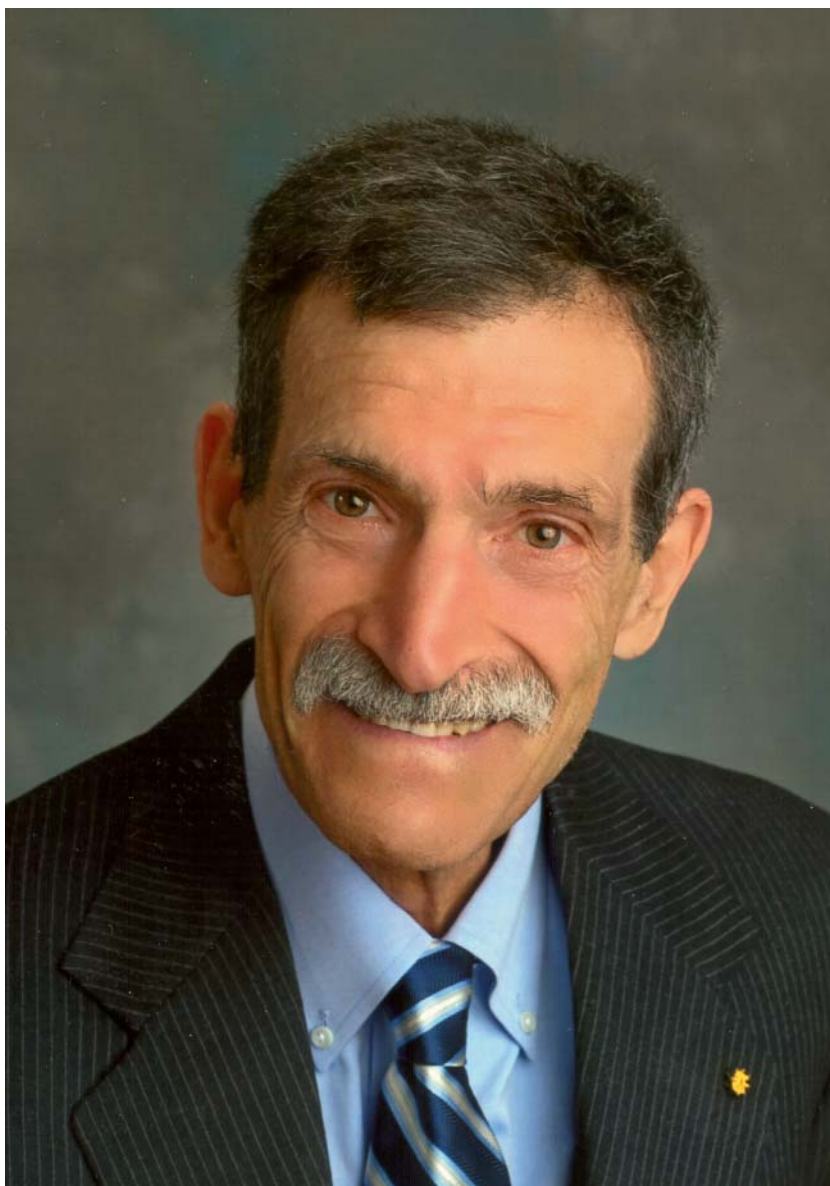


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**A TRIBUTE TO EDWARD STURGIS GREW**  
On the occasion of his 70th birthday



Research Professor Edward S. Grew from the University of Maine has been well known to professional mineralogists and geologists for several decades. In his prolific career he has contributed to several disciplines within the geological sciences: as editor of the huge volumes on boron and beryllium in *Reviews in Mineralogy and Geochemistry*, volumes 33 (1996) and 50 (2002), respectively; as chair of the nomenclature committee for the sapphirine and surinamite groups (2008); as chair of the subcommittee for the nomenclature of the garnet supergroup (2013); his contributions to the granulite facies and the boron and beryllium mineralogy and petrology of Antarctica; his extensive involvement in the crystal chemistry of the kornepine-prismatine series with Mark Cooper and Frank Hawthorne at the University of Manitoba (2009); and, most recently, his collaboration with Robert M. Hazen of the Carnegie Institution on the mineral evolution of beryllium and boron.

My correspondence with Ed dates back to spring 1989, when he was working on kornepine, but we first met at the 33rd International Geological Congress in Oslo in 2008. After the Congress in Oslo we had a chance to get better acquainted when he invited me to join him on an excursion to a remote locality for rare borosilicate minerals at Almgotheii in Rogaland County in southern Norway, at that time the only comparable locality to Ed's borosilicate locality in Antarctica. That was a great experience for me, although we had some hard days up and down the hills, six hours every day. I was impressed by Ed's condition, and even more when I realized that he was getting up very early in the mornings to watch birds at Lundevannet, close to our hotel at Moi!

### *Education and Research*



*Alden Carpenter teaching Ed mineralogy at the former Camp Monadnock boys' camp near Jaffrey, New Hampshire in the 1950s. Ed is standing second from the left.*

Edward S. Grew was born in Boston on May 29th, 1944, but grew up in nearby Andover, Massachusetts, where his father (Dr. James H. Grew) taught French at

the Phillips Academy for 37 years, retiring as the Chairman of the Modern Languages Division in 1972. His parents said that Ed became interested in minerals as early as age four or five. He collected his first significant mineral specimen, a beryl crystal from a glacial till near Andover, when he was only about 10 years old. While growing up, he collected in eastern Massachusetts, and his family also drove him to known mineral localities elsewhere in New England. He continued collecting minerals as a hobby while at college at Dartmouth.

Ed's Andover career began long before he matriculated in 1958, since his father had been on the faculty since 1935. Faculty sons could attend Andover, which was lucky for him, because he may not have been admitted otherwise. Ed attended summer school prior to his junior year to get up to speed, especially in his weakest subject, English.



*Ed and Priscilla at the University of Melbourne where Ed had his Fulbright Fellowship in 1978.*

Class work consumed most of Ed's time and energy at Andover; he was never strong in extra-curricular activities, but he did find opportunity to indulge his hobby as a mineral collector. Construction of Interstate 93 and access roads exposed veins containing several minerals not previously reported in eastern Massachusetts. Ed's discoveries in the road



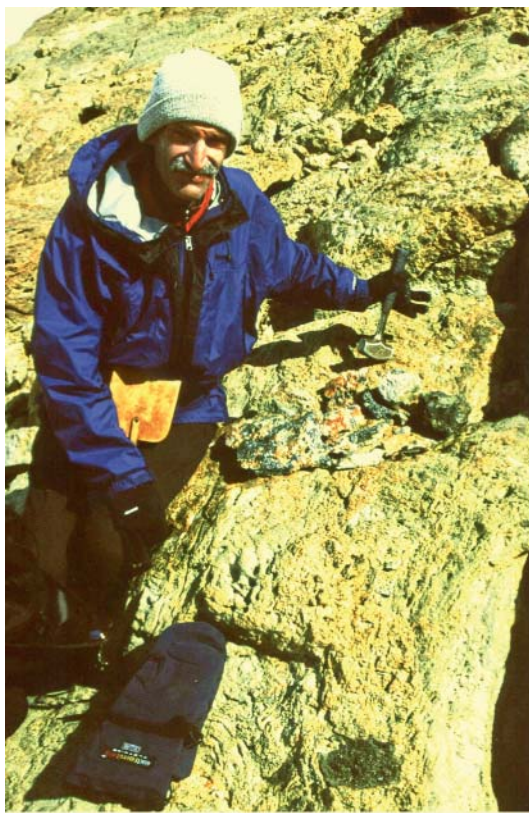
*Photo of Ed with his tent on the Australian Antarctic Expedition January 1978 in Enderby Land.*

cuts led to his first scientific writing: two brief reports published in 1960 and 1962 in the popular collector's magazine *Rocks and Minerals*. So his mineral hobby at Andover became Ed's profession, and he has discovered or collaborated in discovering 17 mineral species that are new to science.

Ed received a B.A. degree from Dartmouth College in 1965, and a Ph.D. degree from Harvard University in 1971 for his dissertation "Geology of Pennsylvanian and Pre-Pennsylvanian rocks of the Worcester area, Massachusetts".

Ed started learning Russian while at Dartmouth, and lived with a Russian family for language practice while he was working on his doctorate at Harvard University. Ed subsequently served in post-doctoral positions at the U.S. Geological Survey, the University of Wisconsin, and the University of California at Los Angeles. When a post-doctoral opportunity arose to go as a U.S. Exchange Scientist on the 1972 Soviet Antarctic Expedition, Ed undertook his first field work in Antarctica. The exchange was for a continuous period of 16 months, including two summers and a winter-over at the Soviet Molodezhnaya station. During the expedition, the Soviet scientists took Ed to many important mineralogical and geological localities in Antarctica.

Ed's interest in beryllium minerals began with his collecting in New England pegmatites while still in school. As he said, "I was attracted to rare minerals of boron and beryllium." On an Australian Antarctic expedition in 1979–80, Ed studied unique beryllium-bearing pegmatites with surinamite and the new mineral khmaralite formed in the granulite facies. He then applied to go to South India on an Indo-American Fellowship. Before he departed for India, his former thesis professor at Harvard, Prof. J.B. Thompson, Jr., advised him to look for the borosilicate kornerupine in India, and that advice launched Ed's interest in granulite-facies borosilicates. Based on these field experiences, Ed subsequently continued field research on granulite facies rocks in East



*Photo taken on the Australian expedition by Chris Carson in 2003.*

Antarctica, the Aldan Shield in Siberia, and the Grenville Province in the U.S. and Canada, with a focus on the unusual assemblages of high-temperature boron and beryllium minerals.

Due to the abundance of phosphate minerals associated with borosilicates in his field area, Ed also discovered three new phosphate species in the Larsemann Hills, Prydz Bay, Antarctica. One of these, chopinite, was later discovered in a meteorite.

Ed joined the research faculty of the University of Maine in 1984. His distinguished career in mineralogy and metamorphic petrology has included expeditions to India and Tajikistan and nine field seasons in Antarctica with Research and Polar Institutes in the U.S., Japan, India, Australia, and the former Soviet Union. This research was funded by 22 grants, including a research grant from the National Science Foundation to analyze borosilicate minerals for boron isotopes (for which he collaborated with Simon Harley at the University of Edinburgh), and has resulted in a large number of peer-reviewed publications, several edited volumes, and numerous presentations at national and international scientific conferences.

Ultimately, the 2003/2004 season in the Larseman Hills turned out to be Ed's last expedition to Antarctica, because his subsequent three sets of proposals for field work in the Windmill Islands in the 2009/2010, 2010/2011, and 2012/2013 seasons were all declined by the Australian Antarctic Division and the U.S. National Science Foundation. His wife Priscilla's meeting the ship *Aurora Australis* on February 13, 2004 in Hobart, Tasmania was a bittersweet finale to Ed's nine expeditions to Antarctica beginning in 1972, with the first visit to the Larsemanns Hills having been in 1973 on the Soviet Antarctic Expedition.

Luckily, the Larsemann fieldwork and specimens have already yielded eight journal articles, a geological map, and two Masters theses, plus two more papers currently in the works, and at least two more possibilities for future manuscripts.

Ed has also brought significant international recognition to the University of Maine through his discovery of 17 new minerals, and his discoveries continue. There is no doubt that Ed's 30 years at U of M have been tremendously productive, both for Ed and the University.

Ed has been a faithful mentor and educator to both undergraduate and graduate students within the department. He has volunteered to teach courses, contributed to seminars and research group meetings, has provided research funding and served as advisor for a graduate and several undergraduate students, and has served on advisory committees for many Masters and Ph.D. students. He has an encyclopedic memory for mineralogy and is a trusted resource for faculty, students, and visiting scholars in the subjects of mineral chemistry and petrology.

Following the tradition of the late Charles Guidotti, formerly a professor in his department, Ed describes his research as "petrologic mineralogy", because he studies minerals in their petrologic context. Work with light elements requires special techniques, so an integral component of his research is analysis for Li, Be, and B in minerals with the ion microprobe (SIMS). He does these analyses in collaboration with Charles Shearer at the University of New Mexico in Albuquerque.

October 2014 marked 30 years since Ed started his career as a research faculty member at the University of Maine. He is very grateful to the School and the University for enabling him to pursue his research in such a stimulating and collegial setting, in particular with the excellent laboratory facilities. In order to celebrate his career milestones Ed decided to create a new fund to support the educational and research activities of students in the School of Earth and Climate Sciences. He also is helping the School to recruit a new faculty member in igneous and/or metamorphic petrology, geochemistry, and mineralogy. The position is urgently needed to maintain teaching and research strength in these specialties.

It is surprising with Ed's level of professional accomplishment that he finds time for anything else.



*Ed inspecting Roy Kristiansen's mineral collection 2008. Photo: Priscilla Grew.*

Ed is in fact also an avid birdwatcher, amateur botanist and hiker, the editor of his father's memoirs, and in the company of his wife Priscilla, a world traveler. They married in 1975, and although she should have retired by now, she is still the director of the University of Nebraska State Museum, a position she has held since 2003.

#### *Publications and Other Distinctions*

Given his difficulties with English at Andover, who would have predicted that Ed would serve on editorial boards of three prestigious journals? Or that he would write over 160 peer-reviewed scientific papers and edit two volumes of the *Reviews in Mineralogy and Geochemistry* series published by the Mineralogical Society of America?

Ed's impressive list of publications in peer-reviewed journals is joined by an additional 40 more publications, as well as a large number of abstracts. Many are devoted to the mineralization of boron and beryllium.

Ed first came up with the idea of the *Reviews in Mineralogy and Geochemistry* boron volume while he was attending the Geological Society of America annual meeting in San Diego in October 1991. Ed



talked to Larry Anovitz at the meeting and then they co-edited that first volume. He started to work on the beryllium volume in the spring of 2001 and it was published in 2002. During the initial stage of the beryllium volume I proposed to Ed that he could borrow all my literature on beryllium minerals, accumulated over the last 30 years or more, which he gladly accepted. It included a number of rare, critical or less accessible reprints and books, in Russian, Chinese, Japanese, and other languages.

I have already emphasized in the beginning of this article Ed's engagement as chair of the nomenclature of the sapphirine-surinamite groups as well as the garnet supergroup, which have significantly improved the nomenclature of these difficult and complex minerals, and not to forget his considerable contribution to the mineralogy and petrology of Antarctica. I would also emphasize his contribution to the mineralogy of the dumortierite-holtite group in collaboration with Lee Groat and others.

The prolific collaboration with Robert M. Hazen at the Carnegie Institution was initiated when Bob first contacted Ed in July 2008 when he was working on the proofs of his 2008 *American Mineralogist* article on mineral evolution. Bob e-mailed Ed and invited him to collaborate on mineral evolution, because Bob thought that the two *Reviews in Mineralogy and Geochemistry* books that Ed had edited would be the ideal basis on which to develop the evolution of beryllium and boron minerals. Their first presentation, "Evolution of the minerals of beryllium and comparison with boron mineral evolution", was at the GSA Denver annual meeting in 2010. It culminated when Ed and Bob finished their comprehensive paper on "Beryllium mineral evolution" in *American Mineralogist* in 2014, a very detailed and fascinating paper, after their simplified presentation in a Norwegian rock magazine (*Stein*) in 2013, which was published as a surprise on the occasion of my 70th birthday, which turned out to be the highlight of my year! Now we are looking forward to the continuation of their exciting research on mineral evolution.

In 2008 when Ed and I were in the hills at Almgjotheii, ca. 600 m asl looking for borosilicates, our conversation covered a lot of topics—botany, birds, fungi, minerals *etc.*—Ed admitted he was a bit worried at still not having a mineral named after him, but I reassured him that there was no reason to be worried, and I was right.

In 2011 I found a new beryllium mineral in Norway, which would be fitting for Ed because of his interest in beryllium. However, we (Frank Hawthorne and I) were too late! The Russian Galuskin couple were ahead of us, as they had submitted two new minerals for Ed, *viz.* edgrewite and hydroxyledgrewite, which are structural analogues of the clinohumite-hydroxylclinohumite series, which they had discovered within ignimbrites of the Upper Chegem volcanic structure in the northern Caucasus in Russia.

The minerals form elongated relics only 0.1–0.4 mm in length and form a solid-solution series, as described in *American Mineralogist* in 2012. So Ed didn't have to be worried!

And there is more to come! Do you know that Ed has a mountain named after him? Grew Peak, in the Mount Murphy massif in Marie Byrd Land in Antarctica. The peak has an elevation of 1400 meters and was mapped by the USGS from surveys and U.S. Navy air photos. Named by US-ACAN for Edward Grew, exchange scientist to the Soviet Antarctic station Molodezhnaya in 1973, latitude 75° 18' S, longitude 110° 37' W. Ed's family has a history of being honored in this way: more than 300 years ago, one of Ed's ancestors had a plant named after him. The genus *Grewia* was named by the famous Swedish botanist Carl von Linné for the botanist Nehemiah Grew (1641–1712) from England.

In 1990 Ed was presented with a medallion commemorating 30 years of cooperation between the National Academy of Sciences and the Academy of Sciences of the USSR, when he was in the USSR on an interacademy exchange, the year he was able to go to Tajikistan.

This year he was elected for the Collins medal from the UK Mineralogical Society.

In retrospect, Ed has come to recognize what were the greatest gifts that he received from his parents—they gave him a well-rounded humanistic education and taught him to strive always for moral and intellectual integrity. Andover was very much a part of this priceless legacy.

### *Final Thoughts*

I will finally end this Introduction by acknowledging Ed for his continuous and regular communication with me as a non-professional mineralogist for almost 25 years, sharing mutual interest in beryllium and boron minerals. I admire his skills and knowledge on so many subjects in mineralogy as well as in geology, and I am proud to be one of his foreign friends. Ed is a role model, and I have learned a lot from him. He is an inspiration to his students and colleagues, and we acknowledge his contributions to the geological sciences. I will also take the opportunity to thank Ed for nominating me for the Pinch medal in 2009, which is naturally one of the highlights of my mineralogical life.

I would express my gratitude to all contributors to this special issue, who made it possible to realize my idea of making this tribute to Ed.

Finally, but not least, I deeply acknowledge Priscilla Grew for her enthusiasm, for much information and photographs of her husband for this issue.

And I feel tempted to end with my own slogan: "The most important issue in all discoveries is to communicate and disseminate the knowledge."

Roy Kristiansen  
Norway

