



# Granite State Geologist

The Newsletter of the Geological Society of New Hampshire,

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## In this issue:

- **Spring Dinner Meeting – April 18 at Red Blazer – Karen Johanneson is coming! Will the curse be broken?**
- **Spring legislative update**
- **Summer Field Trip Announcement**
- **Raffle prize sparks history dig**
- **McAuliffe-Shepard Discovery Center speaker**
- **Upcoming Events and Much More!**

## MESSAGE FROM THE PRESIDENT

Julie Spencer, AECOM, GSNH 2012-2014 President

Snow still on the ground and warmer temperatures in the air, late winter in New England can be so enjoyable!

Unfortunately I was unable to attend the January Meeting, but I heard that everyone enjoyed Peter Thompson's "philosopher naturalist's take on geology." Congratulations to Peter for his publication in Appalachia magazine. There were two raffle prizes awarded. Wayne Ives won the lepidolite sample mined by Loren Merrill a century ago at Mt. Mica in Paris, Maine. This specimen was donated by Robert Whitmore. Patricia Dubay won the beryl specimen donated by the UNH Department of Earth Sciences. The GSNH appreciates both mineral donations which help us to raise money for our educational outreach programs.

We have some great educational opportunities coming up in the next few months. First, our April dinner meeting presentation will be the long-awaited re-scheduling of Dr. Karen Johannesson's talk on arsenic in groundwater. Originally scheduled for January 2011 and thwarted by one of our winter storms, we decided to try for a month that was more amenable to travel. Thanks to Wayne Ives for his persistence in getting this widely anticipated talk back on our calendar!

We will also be joined by two special guests from the McAuliffe-Shepard Discovery Center that evening. They are trying to expand their emphasis on earth science at the center and I hope that some of our members will be able to assist them. They will give a short presentation on their goals and the opportunities for us to help out. Please make some time to talk to them during the social hour and after the meeting.

Plans are underway for the GSNH Summer Field Trip. Please save the date: June 22 (rain date June 23). We will be exploring both bedrock and surficial geology of the Lakes Region of Central New Hampshire. Russ Wilder has been hard at work putting together a full program that will be both educational and enjoyable. Details are included in this issue of the newsletter.

A bonus talk is being planned for this summer when we will

again partner with the Vermont Geological Society. We will jointly sponsor a presentation by Doug Howard, USGS, on his work on the Mars Rover program. The date and location will be announced later, but we will be looking for a venue more intermediate to our two societies. Stay tuned for more details!

Hopefully some of you will be able to attend the Northeastern Section GSA meeting at Bretton Woods this month. GSNH is a proud sponsor of the K-12 Educator's Workshop. Look for our banner near the registration table.

Don't forget to reserve a space early for the April dinner meeting!

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## MINERAL HUNTING SEASON



<http://themineralogist.tumblr.com/post/44865427535/manganite-and-rhodocrosite>

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## MINERALFEST – 2013 MINERAL SHOW CALENDAR

Find nationwide mineral shows announcements at <http://www.mineralfest.com/calendar.html> like the ones coming **May 4-5** at Topsfield, MA; **July 27-28** in South Burlington, VT; or **August 24-25** in Concord, NH.

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## THE NEXT GSNH DINNER MEETING IS

**APRIL 18, 2013**  
**AT RED BLAZER.**

***SOCIAL HOUR START AT 5:30, DINNER AT 6:30 –***  
**RESERVATION FORM IN THIS NEWSLETTER.**

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## **THE GEOLOGY OF NEW HAMPSHIRE'S WHITE MOUNTAINS FROM WOODY THOMPSON AND BRIAN FOWLER**

A new book for the public, titled "The Geology of New Hampshire's White Mountains" has just rolled off the press. Maine co-authors are Dyk Eusden, Woody Thompson, and John Creasy, together with Brian Fowler, Thom Davis, Wally Bothner and NH State Archaeologist Dick Boisvert. This 175-page book has been in the works for 20 years, having originally been proposed at a 1993 Mount Washington Observatory symposium on the glacial geology of the White Mountains. It encompasses the bedrock, plate tectonic, and glacial origins of the mountains, as well as climate change, Paleoindian settlement, landslides, waterfalls, alpine permafrost features, mining history, and the demise of the Old Man of the Mountain. The book is geared toward the non-scientist and is the first of its kind for this part of New England. It is illustrated throughout with color photos and graphics. The book will be available at Northeast GSA and bookstores, or can be ordered from Durand Press: <http://www.durandpress.com/books.htm>

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### **WANT EGGS WITH THAT SPAM?**

Remember when the old NHCPG website domain was bought out from under us and turned into an "adult content" site overnight? Well, internet troubles struck the GSNH website again and many of us also got emails. Early this January, GSNH was the target of random hacker/spammer. Some unsavory type used our name and email to spam thousands of people. It was so bad that our host was blacklisted and nearly shut down. The GSNH website was taken off the host server until the host sorted out their blacklisting and got the site back up and running. Everything was quickly back in working order.

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### **MCAULIFFE-SHEPARD DISCOVERY CENTER TO SPEAK AT GSNH APRIL MEETING**

Taylor Poro, an AmeriCorps volunteer at the McAuliffe-Shepard Discovery Center will give a quick presentation at our April meeting. As part of the new "Treasure!" exhibit, the Center is trying to expand their emphasis on Earth Science, Astronomy and Engineering. This presentation would be a great opportunity for anyone who might be interested in teaching Earth, Space and Atmospheric Sciences, as well as engineering and New Hampshire history.

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### **NEW HAMPSHIRE GEOLOGICAL SURVEY'S 2013 ANNUAL GEOLOGIC MAPPING WORKSHOP** Tuesday, April 16, 2013: 9 am – 2 pm\* at NHDES Auditorium, 29 Hazen Drive, Concord, New Hampshire 03302-0095

\* Following the general workshop there will be a short meeting for those who are mapping for the NHGS under the STATEMAP program during the 2013 field season.

The New Hampshire Geological Survey is pleased to announce that its annual Mapper's Workshop will take place on April 16th, 2013, here at the NH Department of Environmental Services. Please RSVP to [geology@des.nh.gov](mailto:geology@des.nh.gov) if you plan to attend so that we can anticipate the number of attendees. If you need further information, please contact the NH Geological Survey.

This workshop provides an educational forum, which highlights recent mapping projects in New Hampshire and neighboring states, and encourages feedback from the geologic community and other map users. Methods, map standards and, most importantly, science are the central themes. The poster session and oral presentations are open to the public.

Mark your calendars now. An agenda will follow by email – watch your inbox! If you would like to present a poster, please contact us ASAP at [geology@des.nh.gov](mailto:geology@des.nh.gov). We hope to see you at the 2013 Workshop!

Certificates will be given for continuing education for those in attendance seeking NH Professional CEU's (contingent upon number of hours attended).

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## **GILSUM ROCK SWAP AND MINERAL SHOW COMING JUNE 22-23, 2013**

Gilsum, NH -- The town of Gilsum, located in the scenic Monadnock Region in southwestern NH, will once again host thousands of people from all over the U.S. who will attend the Gilsum Rock Swap and Mineral Show. Here more than 60 dealers, swappers, distributors, wholesalers and collectors can buy, sell, or swap beryl, quartz crystals, semi-precious stones, and rocks and minerals of all sorts. Displays range from newly found specimens in the rough to fossils, prized collector's pieces and even hand crafted jewelry.

The event takes place at the Gilsum Elementary School grounds, Route 10 in Gilsum, just north of Keene, NH, and is about 2 hours from Boston. Show hours are 8:00 AM to 6:00 PM Saturday and 8:00 AM to 4:00 PM Sunday.

This year's event includes a special presentation by Bill Petronis, owner of Hickory Hill Diamond Diggings, a venue in New York where visitors can dig for Herkimer diamonds. Petronis will talk about the history of the mineral and offer tips on where and how to find specimens. Samples will be on display. The presentation takes place Saturday at 2:00 PM.

Gilsum's many mines operated until the 1940s and yielded feldspar, mica and beryl. Most are now abandoned, although one, the Beauregard mine, is available to mineral clubs through prior arrangement. Today collectors prize other minerals such as beryl. Maps showing locations of local mines are available during the show.

Since the show's inception, the town of Gilsum has opened its doors for the event. Activities include a presentation on prospecting Saturday, daily pancake brunch, bake sale, book sale, a traditional Saturday night New England ham and bean supper with all you can eat home-made pies and a chicken barbeque dinner Sunday afternoon.

Admission is free, although donations are graciously accepted. All proceeds go to youth recreation and community programs.

For more information, please contact Robert Mitchell at the Gilsum Recreation Committee, P.O. Box 76, Gilsum, NH, 03448; call 603.357-9636; or send e-mail to [gilsumrocks@gmail.com](mailto:gilsumrocks@gmail.com).

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## **RUSSIAN METEOR WAS LARGEST IN A CENTURY from Radio Free Europe**

It's been nearly a month since a fireball lit up the crisp blue skies over Ural Russia as an unusually large meteor plunged to earth, creating a shockwave that blew out windows and injured more than 1,200 people.

The event seared its way into the national consciousness and drew comparisons to the biggest meteor impact ever recorded, the so-called Tunguska event over Siberia nearly a century ago.

It also mobilized Russia's and other scientific communities, and sparked a public and private rush to cash in on the passing fame that this rare event offered.

But this week it buttressed Russia's determination that humankind should be more aggressively pursuing ways to prevent the kind of catastrophic collision that many think wiped out the dinosaurs 65 million years ago.

Speaking to a special session of the upper house of parliament, the Federation Council, officials from that country's space agency, nuclear agency, and astronomical institute pressed their case for billions of dollars of investment to prepare for what could eventually be nuclear strikes to deflect or take out approaching comets or asteroids.

They cited the Apophis asteroid's projected near-miss in 2036 and said concrete measures to monitor and possibly intercept an asteroid could be in place as soon as 2018.

"The unexpected appearance of out-of-space objects close to the Earth is not an exception but a typical situation and we may have very little time to make a decision to counteract," Boris Shustov, director of Russian Academy of Sciences Astronomy Institute, chairman of the experts' group for space threats," said, according to Reuters.

The meteor that exploded over Chelyabinsk, Russia on February 15 was thought to have been around 15 meters in diameter before hitting the atmosphere and breaking into many pieces, with its largest chunk most likely plunging into Lake Chebarkul.

The tracking and avoidance systems under study or in their early stages so far are generally thought to be aimed at tackling larger fragments. And while the Russian meteor was indeed terrifying to those in its immediate vicinity, the urgency of calls for impact-avoidance systems are tempered by

the historical record -- the Chelyabinsk event was the largest reported meteor since Tunguska in 1908.

NASA is [already spending money](#) to develop an Asteroid Terrestrial-Impact Last Alert System (ATLAS), which its backers say could give about a day's warning in cases like that in Chelyabinsk, pinpointing the area of impact within a kilometer or two.

In late February, less than two weeks after the Russian meteor, Canada's space agency [launched a microsatellite](#) as part of its experimental "Sentinel in the Sky," intended to provide an early-warning system for space debris and other near-Earth objects. Russian researchers and volunteers are still rounding up fragments of the meteorite that exploded over the Urals, with initial tests suggesting the event was unusual in its size but not in its other essentials. Researchers at Ural Federal University (UrFU) have already collected hundreds of fragments from the area where the meteorites came down, referred to as the "strewing field." UrFU's Institute of Physics and Technology professor Viktor Grokhovsky, who launched its meteorite expedition, told RFE/RL recently: "Our expedition has made three visits to the site and found over 300 fragments, from 3 millimeters to 150 millimeters. There have been several thousand fragments found mostly by the local residents. The ones that could have reached the ground can be up to half meter long."



Aleksei Ischenko, head of lab scanning methods at Ural Federal University's Nanotechnologies and Nanomaterials center, inspects Chelyabinsk meteorite fragments and data.

Source - <http://www.rferl.org/content/russia-meteorite-chelyabinsk-findings/24927784.html>

## AFTER ANOTHER NEAR MISS, PROFESSOR WANTS TO FIND ASTEROIDS THAT THREATEN EARTH

On Saturday, March 9, 2013, an asteroid the size of one and a half football fields flew within 240,000 miles of Earth. If it had hit land, it would have leveled an area the size of San Francisco Bay. If it had hit the Pacific Ocean the impact would have sent a tsunami to every facing shore. And yet until March 3<sup>rd</sup>, no one had any idea it was headed toward Earth.

Scott Hubbard, a consulting professor of [aeronautics and astronautics](#) at Stanford, thinks we can do something about that. Hubbard, a former director of [NASA](#) Ames Research Center, is also the program architect for the B612 Foundation, which aims to track down the hundreds of thousands of unknown asteroids that could pose a threat to Earth.

Many asteroids that come near Earth – such as 2013 ET, or 2012 DA14, the football stadium-size asteroid that passed inside the orbit of Earth's [communication satellites](#) in February – have unusually long orbits.

There are an estimated million of these near-Earth asteroids longer than 100 meters, or about 300 feet. But because they are relatively small and spend so much time far from Earth, scientists tend to find them only by chance.

"We know about 90 to 95 percent of the asteroids larger than a kilometer," Hubbard said. "But we know only maybe 1 percent of the asteroids in the 100 meter range."

This is worrisome, considering that an impact from a 100-meter asteroid would be equal to detonating a 100-megaton hydrogen bomb.

The first step toward protecting the planet from these asteroids, Hubbard said, is to detect them. To that end, B612 is in the process of raising public funds to build an asteroid-hunting [space telescope](#) called [Sentinel](#).

Near-Earth asteroids are particularly difficult to spot. In addition to being relatively small, they are comprised mostly of [black carbon](#), so they blend in with the equally black background of space. The upside to being dark is that the rocks absorb a decent amount of heat, which will make them obvious to Sentinel's planned array of infrared detectors.

"Once we detect an asteroid and track it long enough to know what the orbit is, then we can just apply the laws of physics and know exactly where it will be 50 to 100 years from now," Hubbard said.

Using this method, Sentinel, which will cost around \$450 million to build and launch, should discover nearly all the asteroids larger than 140 meters, and about half of those between 50 and 140 meters.

"The fundamental technology needed to achieve this exists, we just need to demonstrate that the detectors are sensitive enough and scale up to what we need," he said. "We're drawing on the heritage from two previous space telescopes, Kepler, which was used to detect exoplanets, and Spitzer, an infrared telescope. So far it all looks very doable, but we need a prototype to confirm the design."

Should Sentinel find an asteroid on a crash course with Earth, the Hayabusa and Deep Impact spacecraft (asteroid and comet impactors, respectively) would provide a basic strategy for deflecting the rock: run something into it.

"We just need to alter its velocity by about the speed of an ant walking, and over the years its course will be changed enough so that it will miss Earth," Hubbard said. "You don't need a nuclear bomb to do that."

Another plan calls for a gravity tractor, a process that involves placing an object in the vicinity of the rock. The gravitational interaction between the asteroid and the object throws off the asteroid's velocity by a tiny amount that multiplies over time so that it misses Earth.

But neither of these solutions is possible unless we know an asteroid is bearing down on us a few years in advance, making efforts such as Sentinel all the more important.

Provided by [Stanford University](#) to <http://phys.org/news/2013-03-professor-asteroids-threaten-earth.html>

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## **STREAM GAGES MAY BE CUT DUE TO SEQUESTER**

NH-VT USGS has posted the following notice on its stream gage webpages:

**USGS TO DISCONTINUE STREAMGAGES DUE TO SEQUESTRATION:** The U.S. Geological Survey (USGS) will discontinue operation of up to 375 streamgages nationwide due to budget cuts as a result of sequestration. Additional streamgages may be affected if partners reduce their funding to support USGS streamgages. The USGS is working to identify which streamgages will be impacted and when, and will post this information as it becomes available. Streamgages are used nationwide to predict and address drought and flood conditions by monitoring water availability. The USGS and over 850 Federal, State, and local agencies cooperatively fund the USGS streamgaging network, which consists of over 8,000 streamgages. When budget fluctuations occur, the network is impacted.

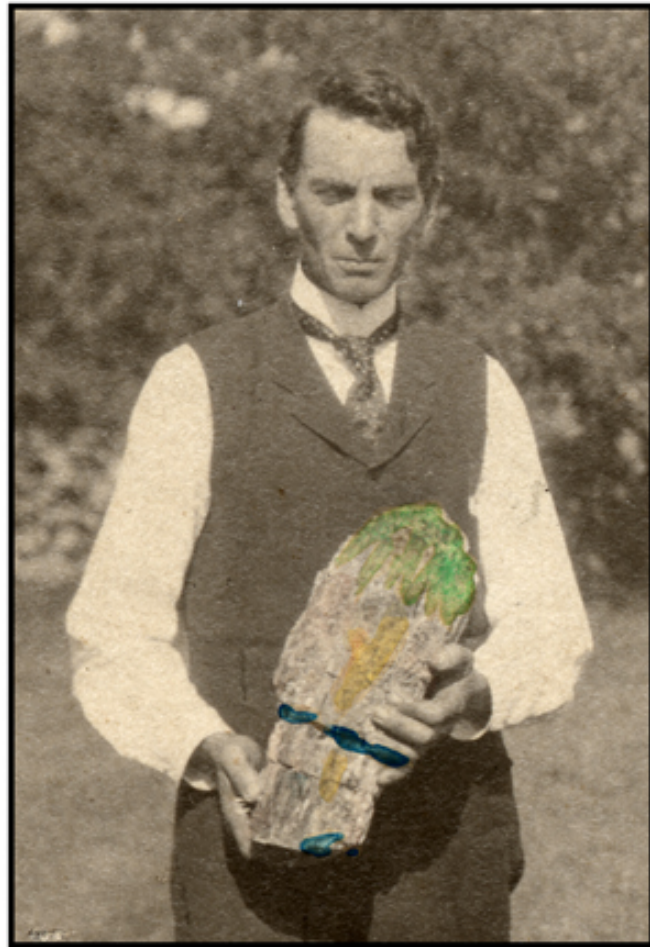
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## A RAFFLE PRIZE WITH A HISTORY

At the January meeting, one of the raffle prizes came with a tag noting the sample's collection. The label identified the lepidolite sample as mined by Loren Merrill sometime around 1890 to 1913 at Mt. Mica in Paris, Maine. Since Merrill is a family name, I did some digging to see if we are related and although I never found that out, I did discover an interesting story about this rock hound from a century-ago and the pegmatite mine he worked.

**Loren B. Merrill** (February 14, 1853- March 29, 1930) of Paris Hill, Maine was born the son of farmers James and Eliza Merrill of Oxford. At first he worked on the family farm, but by 1880 he had left the farm. He began mining for minerals in the mid to late 1880's at Mount Apatite, Auburn, Maine.



Loren B. Merrill holding a large tourmaline crystal (partially hand-colored) **Source:** <http://www.minrec.org/labels.asp?colid=526>

There are two dates of origin for the Mt. Mica mine, both of which were well before Loren Merrill's involvement. The first says that the Mt. Mica mine in Paris, Maine was the site in 1820 where amateur naturalists Elijah Hamlin and Ezekiel Holmes virtually tripped over a clear green crystal, the first gem tourmaline discovered in the United States.

The second says, "Mount Mica was found in 1821 by two professional men: one a doctor of medicine, Ezekiel Holmes, and one a lawyer, Elijah Hamlin. The day following the discovery was marked by a surprise early snowfall preventing further exploration until Hamlin's younger brothers drilled and blasted the ledge in the summer of 1822. (Although there are numerous reports which cite Augustus Hamlin's histories of the locality claiming an 1820 discovery, the date is incorrect for many

reasons and the actual snowfall date is now known [Sturtevant, 1948; Perham, 1987; Kin, 2000, 2001, 2006a, b, 2012]. Analysis of snowfall records made by Parker Cleaveland as well as a search of Oxford County town histories corroborate Sturtevant (1948) and Pelham (1987) and point to October 18, 1821 as the day of the discovery of Mount Mica and the famous snowstorm covering Mount Mica until the spring (King, 2012).

According to an exhibit in the Peabody Museum at Harvard University, "For years, mining on Mt. Mica continues as a small-time affair. More ambitious mining began in 1868, when Elijah Hamlin and his son Augustus launched a blasting program that uncovered new pockets." Merrill became associated with Augustus Hamlin about 1888. His relationship with Hamlin seemed to transition over the years from contractor to business partner to lessee, although in 1896 Merrill was also described as the owner of Mt. Mica mine.



Largest pocket ever found at Mount Mica. This pocket measures 20 by 12 by 7 feet and contains three connecting chambers. Mr. Loren B. Merrill at the right. Oxford County, Maine.

[http://commons.wikimedia.org/wiki/File:Mount\\_Mica\\_Maine\\_1911.jpg](http://commons.wikimedia.org/wiki/File:Mount_Mica_Maine_1911.jpg)

Merrill is universally credited with designing and constructing a faceting machine used to cut tourmalines. Merrill had never personally seen a faceting machine when he constructed his and he only had word of mouth descriptions and perhaps engravings of typical machines to guide his design. The faceting machine is believed to be the first such device intended for the use of the cottage and amateur faceter. Merrill did not sell many gemstones until he had taught himself to produce commercial-grade gems about 1901. Merrill taught many local mineral collectors to facet tourmaline. He was a mineral dealer from the 1880's until his death. An early, if not original Merrill faceting machine is preserved at the Paris Hill Historical Society.

From a memorial written by Charles Palache comes these descriptions: Loren B. Merrill of Paris, Maine, died at his home on March 30, 1930 at the age of 77 years. The death of Mr. Merrill will bring



a sense of great personal loss to a wide circle of friends who came to know him through his love of minerals. He was active at Mt. Mica from the very earliest period of its working as a tourmaline mine and after the dissolution of the first company organized by Mr. Hamlin of which he had been an employee, he became the owner. Single handed or with one or two helpers only he carried on the work for many years, his enthusiasm overcoming the ever increasing difficulties of operation as the zone of gem-pockets went deeper into the ledge.

Harvard University had acquired some years before the lease of a tourmaline ledge on Noyes Mt. in Greenwood, Maine. I hoped to develop this ledge in such a way as to add to our scientific knowledge of these pegmatite deposits. Mr. Merrill, then more than 70 years of age, was engaged to do the actual work of opening the deposit. The mine was high up the mountain, 350 feet above the road up a steep trail. I can never forget the sight of Merrill's gaunt, bent form toiling up the trail laden with drills, water, powder, or any of the necessary supplies for the work; sliding down at night burdened with specimens developed during the day; striking the drill hour after hour in the heat of the morning sun which beat into the shallow opening. Never did he seem to tire or lose his intense interest. After each blast he was the first to be down to see what might have been revealed.

Self-taught in his mineral lore, he could teach us all much about minerals. He was a natural mechanic and made seemingly of iron and whipcord. The gems mined with his own hands and cut with the eye of an artist were far more to him than money. I count it a fortunate chance that made it possible for me to call this kindly, simple, sincere enthusiast, my friend.

The Mt. Mica Mine is the oldest gem mine in the United States and one of the few still in operation in Maine. The first [Rose Quartz](#) crystals known in the world were found at Mount Mica Quarry about 1913-1915. Mount Mica is an LCT or Lithium, Cesium, and Tantalum enrichment class granite pegmatite. Located in Paris, Maine, Mt. Mica is famous the world over for its gem tourmaline crystals. Minerals observed at this locale include tourmaline (green, pink, blue, watermelon), biotite, garnet, beryl (aquamarine, morganite, green, white) eosphorite, cassiterite, cookeite, flourapatite, hydroxylapatite, hydroxyl-herderite, columbite, microcline, montmorillonite, muscovite, pollucite, quartz (milky, smokey, rose crystals), rhodochrosite, siderite, schorl (tourmaline), spodumene and many others. Mt. Mica is presently owned and operated by Gary Freeman. Lots of pictures and info [here](http://www.coromotominerals.com/) (<http://www.coromotominerals.com/>).

Sources:

<http://www.minrec.org/labels.asp?colid=526>

<http://www.mindat.org/loc-3784.html>

<http://maineanencyclopedia.com/mining/>

[http://digmainegems.com/mines/mt\\_mica.htm](http://digmainegems.com/mines/mt_mica.htm)

[http://www.minsocam.org/ammin/AM15/AM15\\_277.pdf](http://www.minsocam.org/ammin/AM15/AM15_277.pdf)

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## **RUSSIAN METEOR WAS LARGEST IN A CENTURY from Fox News**

The meteor that crashed to earth in Russia was about 55 feet in diameter, weighed around 10,000 tons and was made from a stony material, scientists said, making it the largest such object to hit the Earth in more than a century.

Large pieces of it have yet to be found. However, a team from Ural Federal University, which is based in Yekaterinburg, collected 53 fragments, the largest of which was 7 millimeters, according to Viktor Grokhovsky, a scientist at the university.

Data from a global network of sensors indicated that the meteor's fiery disintegration as it neared earth near Chelyabinsk, Russia, unleashed nearly 500 kilotons of energy, more than 30 times the energy of the Hiroshima atomic bomb.

It is the largest reported meteor since the one that hit Tunguska, Siberia, in 1908, according to the National Aeronautics and Space Administration. The U.S. agency's new estimate of the meteor's size was a marked increase from its initial one.

"We would expect an event of this magnitude to occur once every 100 years," said Paul Chodas of NASA's Near-Earth Object Program Office. "When you have a fireball of this size we would expect a large number of meteorites to reach the surface and in

this case there were probably some large ones."

<http://www.foxnews.com/science/2013/02/19/russian-meteor-was-largest-in-century/>



Mark Van Baalen with Harvard students at the Skitchewaugh Nappe, NEIGC 2012.

### **DINOSAURS! – AT THE SEE-SCIENCE CENTER**

**When:** Open daily through Sunday June 16, Monday through Friday from 10am to 4pm and Saturday and Sunday from 10am to 5pm (closed Easter.)

**Where:** 200 Bedford St., third floor, Manchester

**Cost:** Admission to Dinosaurs! Is \$8 per person. For \$12 , visitors can access the SEE-Science Center and the dinosaur exhibit.

**Contact:** Call 669-0400 or visit [www.seedinos.org](http://www.seedinos.org).

Source: February 14-20, 2013 HIPPO - <http://www.e-pages.dk/thehippo/251/>



An albertosaurus mid-roar at the SEE Science Center. Cory Francoer photo.

**HAVE YOU EVER PULLED OVER TO THE SHOULDER TO LOOK AT SOME GEOLOGY?**

How sure are you of your contacts? This geologic cross section tattoo is from Carl Zimmer's [Science Ink](#).



[http://www.amazon.com/Science-Ink-Tattoos-  
Obsessed/dp/1402783604/ref=sr\\_1\\_1?ie=UTF8&qid=133600221&sr=8-1](http://www.amazon.com/Science-Ink-Tattoos-Obsessed/dp/1402783604/ref=sr_1_1?ie=UTF8&qid=133600221&sr=8-1)



**Doug Allen thanks Peter Thompson for his GSNH dinner talk on the Thoreau's take on the geology of Mt. Monadnock at the Red Blazer Restaurant January 17, 2013.**

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### **MEMBERSHIP RENEWAL**

If you don't remember whether you paid your dues, then you probably haven't. Please renew your membership for 2013 with the [one-page membership form, conveniently available on our website](#) or near the end of this newsletter. <http://www.gsnh.org/membership/membership.shtml>

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## **GSNH LEGISLATIVE UPDATE** from Russ Wilder and Tom Fargo

Here are current bills in the NH Legislature that may be of interest to GSNH Members. If GSNH members know of other bills that we should keep an eye on, please notify Russ Wilder at [russwilder@msn.com](mailto:russwilder@msn.com).

**[SB 12](#)** Relative to protection and preservation of significant archeological deposits. Prime Sponsor: Nancy Stiles. Introduced and Referred to Public & Municipal Affairs. Committee Amendment 0235s, AA, VV. Ought to Pass with Amendment 0235s, MA, VV; OT3rdg

**[SB 124](#)** Establishing an integrated land development permit. Prime sponsor: Bob Odell. Introduced and Referred to Energy and Natural Resources. Sen. Odell Floor Amendment #2013-0875s, AA, VV; Ought to Pass with Amendment 0875s, MA, VV; OT3rdg;

**[HB 184-FN](#)** Relative to the oil discharge cleanup funds. Prime sponsor: Leigh Webb. Referred to Ways and Means. Executive Session: 3/19/2013 2:00 PM LOB 202

**[HB 185-FN](#)** Relative to the fuel oil discharge cleanup fund. Prime sponsor: Leigh Webb. Referred to Ways and Means. Executive Session: 3/19/2013 2:00 PM LOB 202

**[HB 513](#)** Relative to the shoreland protection act. Prime sponsor: Judith Spang. Introduced 1/3/2013 and Referred to Resources, Recreation and Development. Amendment #0590h: AA VV. Ought to Pass with Amendment #0590h: MA VV

**[HB 634](#)** Relative to water resource plans in municipal master plans. Prime sponsor: Judith Spang. Introduced 1/3/2013 and Referred to Municipal and County Government. Amendment #0598h: AA VV. Ought to Pass with Amendment #0598h: MA VV

**[SB 163](#)** Establishing a commission to recommend legislation to prepare for projected sea level rise and other coastal hazards. Prime sponsor: David Watters. Introduced and Referred to Energy and Natural Resources. Hearing: === TIME CHANGE === 3/6/13, Room 101, LOB, 9:45 a.m.; **[SC10](#)**

**[SB 164](#)** Authorizing coastal management provisions in master plans. Prime sponsor: David Watters. Introduced and Referred to Energy and Natural Resources. Hearing: === TIME CHANGE === 3/6/13, Room 101, LOB, 10:00 a.m.

**[SB 167](#)** Relative to groundwater. Prime sponsor: John Reagan. Introduced and Referred to Energy and Natural Resources. Hearing: 3/13/13, Room 103, SH, 9:45 a.m.; **[SC11](#)**

During 2013, we will monitor how these legislative initiatives fare with the new makeup of the legislature. If members are aware of specific legislation that they would like tracked, they should send information to me at [Russ.Wilder@URS.com](mailto:Russ.Wilder@URS.com) and [RussWilder@msn.com](mailto:RussWilder@msn.com).

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## **UPCOMING TALK BY DOUG HOWLAND – ON HIS WORK WITH THE MARS SPACE PROGRAM**

Jon Kim of the VT Geological Survey and Wayne Ives at NH DES are arranging for Doug Howland to give a talk about his involvement with the Mars landing program. The talk is likely on a Saturday afternoon or evening this summer at a joint meeting of the NH and VT Societies and at an intermediate location like West Lebanon, but that has not been set.

## **DATES TO REMEMBER**

**April 16, 2013 - GEOLOGIC MAPPING WORKSHOP 2013** at NH Department of Environmental Services 9am-2pm. Please RSVP to [geology@des.nh.gov](mailto:geology@des.nh.gov) if you plan to attend.

**April 27, 2013 - VGS SPRING MEETING** - student presentations - Contact Jon Kim for information - [jon.kim@state.vt.us](mailto:jon.kim@state.vt.us) – (802)522-5401

**May 26 - June 2, 2013 – 6TH INTERNATIONAL SYMPOSIUM ON GRANITIC PEGMATITES.** Held at Attitash-Bear Peak <http://www.peg2013.org/>. Go to [http://www.minsocam.org/msa/special/Pig/Peg\\_2013.pdf](http://www.minsocam.org/msa/special/Pig/Peg_2013.pdf).

**June 7-9, 2013 - NORTHEAST FRIENDS OF THE PLEISTOCENE**  
Oak Ridges Moraine, Toronto area, Ontario

**June 22, 2013 – NH GEOLOGICAL SOCIETY SUMMER FIELD TRIP - Bedrock and Surficial Geology of the Lakes Region of Central New Hampshire** - Dan Tinkham and John Brooks, Trip Leaders. Start at 8 AM at Ellacoya State Park Beach, 280 Scenic Drive, Gilford, NH. See signup information elsewhere in this newsletter.

**June 22-23, 2013 - GILSUM ROCK SWAP AND MINERAL SHOW** at the Gilsum Elementary School grounds on Route 10 in Gilsum. 8:00 AM to 6:00 PM Saturday and 8:00 AM to 4:00 PM Sunday with the annual ham and bean dinner with all-you-can-eat home-made pies and a chicken barbeque. Admission is free, although donations are graciously accepted. All proceeds go to youth recreation and community programs. For more information please contact Robert Mitchell at the Gilsum Recreation Committee, P.O. Box 76, Gilsum, NH, 03448; call 603.357-9636; or send e-mail to [gilsumrocks@gmail.com](mailto:gilsumrocks@gmail.com).

**September 9-12, 2013** - The **2013 HIGHWAY GEOLOGY SYMPOSIUM** is to be held in Conway, NH. <http://www.highwaygeologysymposium.org/History.asp>

**October 13-19, 2013 EARTH SCIENCE WEEK 2013** - Earth Science Week 2013. ESW will promote awareness of the many exciting uses of maps and mapping technologies in the geosciences. "Mapping Our World," the theme of ESW 2013, engages young people and the public in learning how geoscientists geographers, and other mapping professionals use maps to represent land formations, natural resource deposits, bodies of water, fault lines, volcanic activity, weather patterns, travel routes, parks, businesses, population distribution, our shared geologic heritage, and more. Maps help show how the Earth systems – geosphere, hydrosphere, atmosphere, and biosphere – interact.  
<http://www.earthsciweek.org/>

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## TSUNAMI DEBRIS ON ALASKA'S SHORES LIKE 'STANDING IN LANDFILL' From NHPR



Trash, much of it believed to be debris from the 2011 Japanese tsunami, litters the beach on Montague Island, Alaska, on Jan. 26. See and hear the story at <http://www.nhpr.org/post/tsunami-debris-alaskas-shores-standing-landfill>.

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### SPACE TELESCOPE SPOTS SMALLEST NEW PLANET By Matt Smith CNN

Planet is slightly larger than the moon

(CNN) —It's not the kind of place you'd call home: an airless, rocky planet so close to its sun that some metals will melt on its surface.

But it's a big little discovery for NASA's space observatory Kepler. The space agency says the planet, dubbed Kepler-37b, is the smallest yet found beyond our solar system.

Slightly larger than the moon and about a third the size of Earth, it's one of three planets circling the star Kepler-37, NASA announced Wednesday -- and the first of dozens of discovered exoplanets known to be smaller than any that orbit our sun.

The findings were reported in this week's edition of the journal Nature.

Kepler-37 is located 210 light-years away in the constellation Lyra, and it's slightly smaller and cooler than our sun. Kepler 37-b circles it closely, completing its "year" every 13 Earth days, the NASA-led team of scientists wrote.

All three planets found in the system are in orbits closer than Mercury. NASA estimates Kepler-37b's surface temperature at about 800 degrees F (427 C), hot enough to melt metals like lead, zinc or tin.

The \$600 million Kepler mission was launched in 2009 and has been scanning a patch of about 150,000 stars in our end of the galaxy for planets orbiting in habitable zones. It has found more than 100 other confirmed planets, ranging from about 1.5 times the size of Earth to larger than Jupiter.

Read more: <http://www.wmur.com/news/national/Space-telescope-spots-smallest-new-planet/-/9857926/19005126/-/m5eaaf/-/index.html#ixzz2NSSDD3Xs>  
<http://www.wmur.com/news/national/Space-telescope-spots-smallest-new-planet/-/9857926/19005126/-/m5eaaf/-/index.html>

## THE NH GEOLOGICAL SURVEY GROUND WATER LEVEL NETWORK SUMMARY

Submitted by the NHGS

**December 2012** NH Groundwater level measurements were collected by the NH Geological Survey from December 24 – December 28, 2012. The statewide December 2012 average groundwater level for **wells in the overburden** (soil on top of the bedrock) showed an increase of +0.34 feet from November 2012. When compared with December 2011, the statewide average groundwater level for December 2012, in these wells, decreased -1.18 feet. The December 2012 average groundwater level in the new **bedrock wells** showed an increase of +1.12 feet when compared with November 2012. When compared with December 2011, the bedrock wells showed a decrease of -1.24 feet for December 2012.

**January 2013** NH Groundwater level measurements were collected by the NH Geological Survey from January 25 – January 30, 2013. The statewide January 2013 average groundwater level for **wells in the overburden** (soil on top of the bedrock) showed a decrease of -.30 feet from December 2012. When compared with January 2012, the statewide average groundwater level for January 2013, in these wells, decreased -0.99 feet. The January 2013 average groundwater level in the new **bedrock wells** showed an increase of + 0.98 feet when compared with December 2012. When compared with January 2012, the bedrock wells showed a decrease of - 0.64 feet for January 2013.

**February 2013** NH Groundwater level measurements were collected by the NH Geological Survey from February 27 – March 5, 2013. The statewide February 2013 average groundwater level for **wells in the overburden** (soil on top of the bedrock) showed a decrease of -.08 feet from January 2013. When compared with February 2012, the statewide average groundwater level for February 2013, in these wells, decreased - 0.68 feet. The February 2013 average groundwater level in the new **bedrock wells** showed an increase of + 0.22 feet when compared with January 2013. When compared with February 2012, the bedrock wells showed a decrease of - 0.14 feet for February 2013.

The groundwater level measurements for the deeper of the two Concord bedrock wells (CVWB-1) are now available in real-time on the USGS website at:

[http://waterdata.usgs.gov/nh/nwis/uv/?site\\_no=431034071340501&PARAMeter\\_cd=72019](http://waterdata.usgs.gov/nh/nwis/uv/?site_no=431034071340501&PARAMeter_cd=72019). The data for all of the wells in the NH Groundwater Level Network are shared with and posted on the USGS website at: <http://groundwaterwatch.usgs.gov/StateMaps/NH.html>.

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**RECENT EARTHQUAKES** - A magnitude 8.0 earthquake struck the Santa Cruz Islands on February 6, 2013 at a depth of 28.7 km. The earthquake generated a 1.5 m (5 ft) tsunami, which destroyed several coastal villages, killing 13 people, missing 5 people. A number of large aftershocks were recorded following the quake.

A magnitude 7.5 earthquake struck off the coast of southern Alaska, on January 5, at a depth of 9.9 km. The earthquake prompted the issuing of a tsunami warning for coastal areas of Alaska and British Columbia, Canada.





## **GEOLOGICAL SOCIETY OF NH – SUMMER FIELD TRIP – BEDROCK AND SURFICIAL GEOLOGY OF THE LAKES REGION OF CENTRAL NEW HAMPSHIRE.**

**June 22, 2013 (In case of a storm, check [www.GSNH.org](http://www.GSNH.org) for trip status)**

**Dan Tinkham and John Brooks, Trip Leaders**

This trip will include stops and discussions of both the bedrock and surficial geology of the Lakes Region of Central New Hampshire. Bedrock stops will be focused on a description of the Belknap Range Intrusive Complex, which includes a unique variety of igneous rock types in close proximity. Surficial geologic discussions will include the transition from Glacial Lake New Durham to present-day Lake Winnepesaukee, descriptions of small-scale glaciolacustrine deposits laid down in ice-dammed glacial lakes, ice-contact deposits, glacial outwash settings, and post-glacial fan construction. There is a lot to see in a small area! Prior to the trip we will provide notes about each stop with references so that participants can study up before the trip. The trip will be worth **7 hours of educational credit (CEUs)**.



### **Logistics**

At 8 AM on June 22, we will meet at **Ellacoya State Park Beach, 280 Scenic Drive, Gilford, NH**. We will rent the pavilion for the day. Families may want to come along to enjoy the beach for the day while dad or mom go on the trip. There will be 3 or 4 stops in the morning, followed by a reconvene at the Ellacoya Beach Pavilion for lunch. Also at this time, participants can order and pay for sandwiches from Jon's Roast Beef & Deli (\$5.50 to \$7.50 each w/ pickle and chips), we will also have a couple of cases of assorted soda and water provided by the GSNH. If you wish, you may bring your own lunch (portable grills are permitted at the park). The afternoon will also have 3 or 4 stops and we should be done by 4 pm. We will be walking over rough terrain. It is recommended that you bring

sturdy shoes or boots for the field trip stops. Participants should also bring bug spray, sunblock, drinking water and clothes for varying weather.

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(fill in and return the bottom portion with your check)

**Registration**  
**Geological Society of NH – Summer Field Trip – Bedrock and Surficial Geology of the Lakes Region**  
**of Central New Hampshire.**  
**June 22, 2013**  
**Dan Tinkham and John Brooks, Trip Leaders**

**All registrations must be received no later than May 17th!**

\_\_\_\_ **Members @ \$10.00 each**

\_\_\_\_ **Non-Members @ \$10.00 each**

Registration fee is required to cover the cost of renting the pavilion.

Checks should be made out to the Geological Society of New Hampshire and sent to:

Bill Abrahams-Dematte  
PO Box 1063  
Wilton, NH 03086

Please write "GSNH 2013 Summer Field Trip" in the memo line on your check.

Name(s): \_\_\_\_\_

Address: \_\_\_\_\_

In case of a storm, Check [www.GSNH.org](http://www.GSNH.org) for trip status  
(Half the cost of this event may be tax-deductible as a business expense).





MEMBERSHIP APPLICATION/RENEWAL

Geological Society of New Hampshire

PO Box 3483, Concord, NH 03302-3483

- New member
Renewing member
Check here if you have updates to your information.

Check here if you do NOT want your information published in the directory.

Name & Home Address:

Business Name & Address:

Blank lines for Name & Home Address

Blank lines for Business Name & Address

Home Telephone

Office Telephone

Home Fax:

Office Fax:

E-mail:

E-mail:

Preferred address to receive GSNH communication: Home or Business
Quarterly newsletters are distributed electronically. Check here if you prefer a paper copy:
New Hampshire PG # (if applicable):

Education: Degrees received or in progress:

Table with columns: Year, Degree, Major, College or University

I volunteer to help with one of the following committees or tasks:

- Membership Committee, Regulations Committee, Communications Committee, Legislative Committee, Education Committee, Giving a talk at a meeting, Events Committee, Other

Membership Category:

- Regular Member (Annual Dues \$20.00)
Student Member (Annual Dues \$10.00)...Please complete Education section above.

Make checks payable to "Geological Society of New Hampshire." Note that GSNH dues are not deductible as a charitable contribution, but may be deductible as a business expense.

The Society's Membership year runs from January 1 to December 31.

Signature: Date: