

The Lake George Gem and Mineral Club -

***Club Monthly Meeting,
January 11, 2014***



**Regular Meeting of the Lake George Gem & Mineral Club
Saturday, January 11, at 10:00AM
Lake George Community Center**

Club member Pete Modreski, of the U.S. Geological Survey, will talk to us about

**"Pegmatites in Colorado:
Where They Are and What They Are"**

Pete sent the following abstract of his talk:

"Pegmatites"

Pete Modreski, U.S. Geological Survey

As the source of most of the collectible minerals in Colorado (including those in the Lake George area), pegmatites are important to collectors who want to learn about the minerals they find in them. Here I'll try to make a short summary of the key points—which I'll elaborate in my talk and slide show at the January meeting.

What are they? Pegmatites are a variety of granite. They form from granite magma that cools to form unusually large and well-developed crystals, sometimes including unusual minerals and gem crystals. A common criterion is that they are composed of crystals an inch or more in size, in contrast to "ordinary granite"; but the size can run to many inches, or feet, or even tens of feet.

How do they form? A common, not completely correct, answer is to hear that "pegmatites form from magma that cooled very slowly". It is true that, all things being equal (which they rarely are), magmas that cool most slowly form larger crystals. However, the main factor in pegmatite growth is that they form from granitic magma that is extremely rich in water. Usually, this occurs because the pegmatite-forming magma is the final, residual magma left after a large body of granite has crystallized. H₂O dissolved in the magma reduces its viscosity, allowing more rapid and more perfect crystal growth, and often also results in the concentration of unusual elements in the pegmatite. These can include both light elements (lithium, beryllium, boron, fluorine) and heavy elements (cesium, tantalum, niobium, tin, uranium, thorium, and rare earth elements).

Types of pegmatites. There are many physical and chemical varieties of pegmatites. They can form as bodies within the parent granite—this is the case within the pegmatite source that we know best, the Pikes Peak batholith—or as dikes that intrude metamorphic “country rock”, often far from any known body of granite (this is the case in most of the other pegmatite districts in Colorado). The Pikes Peak Granite pegmatites are chemically classed as “NYF” pegmatites, meaning they are rich in the chemical elements Niobium, Ytrium, and Fluorine. Such pegmatites usually form in “anorogenic” geologic environments—meaning within continental crust not connected to any clear mountain-building event. The other chemical class of pegmatites, “LCT” pegmatites, are enriched in the elements Lithium, Cesium, and Tantalum. These occur in orogenic (mountain-building) geologic environments, connected to plate collisions.

In the Precambrian Pikes Peak batholith, pegmatites can occur as **dikes, linings of miarolitic cavities** (vapor-filled pockets, into which large perfect crystals can freely grow), or **cylindrical “pipes”**, such as are found in the South Platte pegmatite district, mostly within the northern part of the batholith. The pegmatite dikes can range from thin, almost imperceptible seams (often only visible as hematite-coated fractures), which may thicken into dikes lined by “graphic granite”, and then expand into large dome-like “pockets”, where the best amazonite, smoky quartz, and other crystals are found. Because the chemical “NYF” enrichment in the Pikes Peak Granite includes fluorine, common, and much sought after, pegmatite minerals there include topaz, which contains fluorine; and fluorite (CaF₂).

Pegmatite districts elsewhere in Colorado include the Crystal Mountain district (Larimer County); the Eightmile Park district (Park and Fremont counties), Trout Creek (Park County) and others scattered throughout the Front Range and elsewhere, wherever Precambrian crystalline rocks are exposed by uplift. These pegmatites are more often of the LCT type, sometimes containing lithium minerals (rarely including lepidolite, spodumene, and colored tourmaline), and, having formed at greater depths, usually do not contain pockets with free-growing crystals.

Younger pegmatites in Colorado are represented by those on Mount Antero and Mount White, where miarolitic cavity-type pegmatites contain aquamarine, smoky quartz, fluorite, and related minerals.

Dues are due....see membership application at the end of this Newsletter.

Coming Events

- | | |
|---|-------------|
| <u>Columbine Mineralogical Society Monthly Meeting</u> 6:30PM, Shavano Manor, 525 W. 16 th (at J St.), Salida. | ... Jan. 9 |
| <u>Pueblo Rockhounds, Monthly Meeting</u> 7:30PM, Westminster Presbyterian Church, 10 University Circle, Pueblo. | ... Jan. 16 |
| <u>Colorado Mineralogical Society, Monthly Meeting</u> 7:00PM, Colorado Springs Senior Center, 1514 N. Hancock Ave., Colorado Springs. | ... Jan. 16 |

Club News

Lake George Gem and Mineral Club

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▶▶ At the October meeting, the following officers and committee chairs were elected for 2014:

President: **Suz Core** (suzc@peakinet.net)
Vice President: **Jo Beckwith** (shawneewolf@hotmail.com)
Treasurer: **Wayne Johnston** (wjohnston719@q.com)
Secretary: **Norma Engelberg** (njengel60@gmail.com)
Newsletter Editor: **Bob Carnein** (ccarnein@gmail.com)
Membership/Badges: **Jerolynn Kawamoto** (Jerrolynn@wildblue.net)
Field-Trip Coordinator: **Todd Mattson** (busman842@q.com)
Webmaster and August Show Chair: **Dan Alfrey** (AlfreyDan@aol.com)
Pebble Pups Coordinator: **Steve Veatch** (sgeoveatch@att.net)

▶▶ **Diick Lckmond** sent this description of an easy way to measure specific gravity:

This is how I check my faceting rough's specific gravity. This technique can be adapted for any stone/rock that you can hold suspended in water. I will demonstrate on a small scale but it works, with modifications, for large rocks as well. On rough rocks, I have tied my thread to an orthodontic rubber band as well.

First I glue a thread to my rough with CA (cyanoacrylate) and weigh it:

Suppose, in this case, 25.33 grams.

Next I place a cup of water on the scale and zero it out. (If your scale will not tare, then record this measurement and use it to subtract from the next measurement to get the difference):

Finally, dangle the stone on the thread into the water and record the new weight:

In this case, suppose it's 9.71 grams.

To calculate specific gravity, divide the first number by the second: $25.33/9.71 = 2.61$
(the specific gravity of a synthetic faceting stone called Jewel Lite or Laser Gem).

I also have an analytical scale that measures to 0.0001 gm, and it is surprising how accurate my little \$10 scale works...

The smaller the rock, the more accurate your readings need to be. So, I use the analytic scale for cut gems that might weigh < a ct or two and my \$10 scale for unknown rough. I find this the cheapest and quickest way to separate my dirty quartz from topaz. It can help with the beryl vs. quartz issue, if your beryl is on the higher end of sp. gr. (ranges 2.60 to 2.90).

Hope this helps.
Sue

▶▶ **Steve Veatch** sent the following note about recent Pebble Pups accomplishments.

Dear Board Members, a number of Pikes Peak Pebble Pups were part of a research team that included members of the CSMS and the LGGMC for presentation at the Mineral Symposium on the campus of New Mex Tech. Today in my mail was the peer-reviewed New Mexico Geology journal. It had the adult names and the pebble pups names. In this case all the pebble pups were in middle or high school. This is a huge accomplishment for the pebble pup program.

Steve

▶ The new series of "Prospectors" shows continues on the Weather Channel on Sunday evenings at 7PM, and Club members are welcome to gather at Denny's in Woodland Park to toast our prospectors. A recent show included the fantastic topaz find by Rich Fretterd and Jean Cowman that was written up in the September newsletter.

Earth-Science Scholars/Pebble Pups Corner

Here's the schedule for this year's Pebble Pups/Earth-Science Scholars classes and activities:

Jan.: Metamorphic Rocks (**Bob Carnein**)

Field Trip to DMNS to meet Dr. Ian Miller and tour paleontology and mineral halls

Feb.: World of fossils (**Steve Veatch**)

Family Geology Day at WMMI

Science writing and research (**Steve Veatch; Zach Sepulveda**)

March: Amazing world of garnets (**Steve Veatch; Jenna Salvat**)

Field trip: Cave of the Winds

April: Colorado-Wyoming diamond area (**Steve Veatch; Gavin Noller**)

National Poetry Month

May: Orienteering, Map/Records Reading (**Dan Alfrey**)

Earth-Science Scholars and Pebble Pups meet **from September through May** on the **third Tuesday of each month at 6PM in the Lake George Community Center**. Be sure you check regularly at www.LGGMClub.org for details and updates, or contact **Steve Veatch** at steven.veatch@gmail.com.

Remember, new students and their parents are always welcome; Earth-Science Scholars and Pebble Pups are welcome on LGGM Club field trips.

NOTES FROM THE EDITOR

Bob Carnein, Editor
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Here's a fascinating article by **Jack Shimon**, a Colorado Springs Pebble Pup, who recently interviewed a Russian paleontologist about dinosaurs and scientific illustration.

Andrey Atuchin: An Interview with a Natural History Illustrator

By Jack Shimon, Pikes Peak Pebble Pups
(Colorado Springs Mineralogical Society)



I met Andrey by email this summer when I requested permission to use a piece of his art in a story I was writing about *Nasutoceratops*. Of the images I found online his was my favorite. When I was finding a way to contact him I discovered that he has a whole online gallery of dinosaur artwork and it is very good¹. I was fascinated by the idea that this was his job. Andrey and his family, wife Svetlana and son Daniil (probably the youngest dinosaur expert in Russia), live in the provincial city Kemerovo, in South-Western Siberia, the center of Russia, which is a country very different than my own, although we both have dinosaurs. Being a curious 3rd grader I asked if I could interview him about his job and how he got started in such a remote part of the world (I looked at his hometown on Google Maps). Like me, Andrey was fascinated by dinosaurs and science as a kid, but his career began with his imagination and love of art.

Andrey calls himself a Natural History Illustrator because of the wide range of subjects he illustrates. I have also learned that his skills aren't limited to traditional forms of art and that he also does ice sculpting, makes polymer clay dinosaurs, and preserves beetles, among other things. His official career began in 2004 when he got an offer from the British publisher Anness to illustrate Dougal Dixon's illustrated encyclopedias of dinosaurs. He loved painting encyclopedias, where a variety of animals are painted in the same style. And like many of us as little kids, like 5 and 6 years old, he had a fascination with dinosaurs and was given his first set of plastic toy dinosaurs by his sister who found them in Moscow. After that he relied on books and articles in magazines, although he didn't have the endless choices like we do here.

Following is my interview of Andrey conducted by email. He was very patient answering my questions, and then a second round of questions after I read his

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responses, and I had a lot of fun learning about what he does. I think you will really enjoy his story and after you read it you should go online to his gallery and check out his art.

What type of education did you have for this job?

I am a biologist by education. I graduated from university from the Department of Zoology and Ecology. Originally, I wanted to work as a Paleontologist, but at the university I had to study leaf beetles as there was no department of paleontology or related professions.

Before then I studied at an art school for children for a couple years. One day I brought my drawings to the art school and showed them to the teachers. I drew dinosaurs by pencil and gouache (paint similar to watercolor but the artist can control the opacity) and I painted beetles, which I collected. The teachers allowed me into the art school without an exam. I also took personal lessons in drawing.

You mentioned a beetle collection, I really want to hear more about that.

When I was 13-14 years old I started to collect insects in the field. I liked to find new species (new for my collection) and define them by using a special book with a key. I mounted them on a pin and then I drew them with gouache (beetles mostly): leaf-beetles (Family Chrysomelidae), longhorn beetles (Family Cerambycidae), ladybugs (Family Coccinellidae), ground beetles (Family Carabidae), and many others. I even engaged myself in growing larvae (mainly leaf-beetles and ladybirds) and recorded in a notebook the dates and sketched larvae and pupae.

How did you learn English?

I learned English in school. At first, I was making great progress, but in high school we had a terrible teacher, a wicked witch. Because of this, I stopped my knowledge of English. The result is that I got a bad grade on the school certificate. Then I strongly improved my knowledge in college. At university I was again out of luck with the teacher. However, I have independently studied the language, read articles, and communicate on the internet.

What was the first dinosaur you ever did?

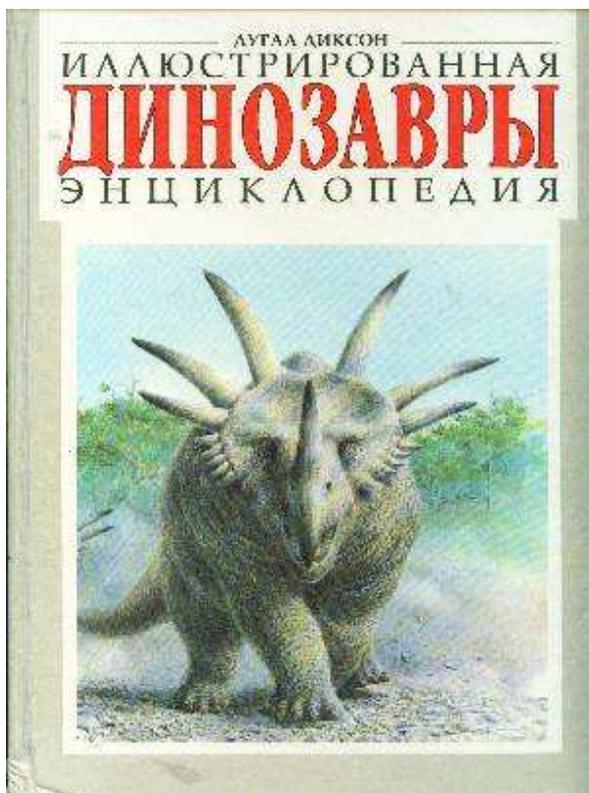
Hmm... I really can't remember now. But I remember how and why I started to draw dinosaurs. The first drawings I made were in 1994 under the impression of the film "*Jurassic Park*". I think it was the *Tyrannosaurus* that attacks *Ornithomimids*. Translated foreign books about dinosaurs began to pass in our country, probably on a wave of popularity of dinosaurs after the movie. Encyclopedias! I love encyclopedias. But Russian books about dinosaurs were a rarity, especially in provincial regions. And in my town, I did not even know that there was such a wonderful book with pictures by Zdenek Burian (a Czech painter and book illustrator whose work played a central role in the Lake George Gem and Mineral Club

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development of paleontological reconstructions)². One day in the book store I saw an amazing and terrific book - an illustrated encyclopedia of dinosaurs by Dougal Dixon. I had never seen such a book. It included many different dinosaurs with their Latin names, colorful images, description, and most importantly - the figures of a skeletons and skulls. This book has been read so much by me that it is falling apart.

So you can understand my feelings when I received the offer to illustrate Dougal Dixon's new illustrated encyclopedia of dinosaurs in 2004. I didn't believe it... such an amazing coincidence.

The lack of books with quality illustrations prompted me to start drawing illustrations myself. I just wanted to read a good book about dinosaurs and started drawing dinosaurs how I wanted to see them in a book.



Russian Edition- Dougal Dixon's Illustrated Encyclopedia of Dinosaurs

What is your favorite dinosaur and have you drawn it for publication before?

In fact, I do not have a favorite dinosaur. Rather, I love groups of dinosaurs. I love *Hadrosaurs*, *Ceratopsians*, and *Abelisaurs* and some others. I often and gladly draw dinosaurs from these groups for publishing.

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What do you use to make your art- paint, colored pencils, water colors, or is everything digital painting?

Earlier, I used a pencil, ink (for skeletons, bones), gouache, and watercolor. I did a lot of watercolor drawings for the books for Anness publishing: dinosaurs, prehistoric creatures, insects and flowers. Now I paint mainly in digital graphics, although I'm using a very similar style as if I was painting with a brush and paints. Digital graphics gives me freedom, more opportunities to do so as I would like, to correct some errors (watercolor does not forgive mistakes and I have to repaint again). Also in my spare time I sculpt dinosaurs by using polymer clay.

Since no one has ever seen a living non-avian dinosaur do you work with paleontologists or other scientists to understand how they look? Such as how tall they are, frills, horns or ridges, etc? Or are you asked to illustrate a dinosaur and you have to figure out what you think it looks like?

I believe that if someone wants to be a professional illustrator then he must study the subject. For example, a good illustrator who specializes in drawing birds should be an ornithologist or a biologist. That is the best way to do professional artwork. My education helps me in my work as I know well the animals, their anatomy, behavior, evolution, ecology, and more. I study science books and original publication about dinosaurs. I also consult with paleontologists to collaborate and work together with them. Sometimes I study the real bones, take part in expeditions and excavations, and prepare fossils. In fact I am a research scientist first and foremost, and I have learned as an artist in the second turn to qualitatively depict animals. Often, I will illustrate the dinosaurs based on my own speculation which is based on my science background.

Where have you been on your excavating trips? Just within Russia? Have you found fossils of dinosaurs you have drawn?

Yes, just within Russia. I had never been abroad at all, with the exception of one city in China, on the border with Russia. It is very expensive for my budget to go abroad, and there are often difficulties with visas. I participated in excavations in Blagoveshchensk, Far East Russia which is the location of the bone-bed of Late Cretaceous dinosaurs, *Hadrosaurs* mainly. I drew dinosaurs from that place – *Amurosaurus riabinini* for example, *Olorotitan arharensis* (from another location – Kundur), *Kundurosaurus*, *Tyrannosaurids*. Also I studied the bones of *Amurosaurus* and *Olorotitan* and reconstruct them by making drawings of the skulls and the skeleton that appears in scientific publications.

I took part in one digging in Sharipovo. It's near the border of our region and has Middle Jurassic bone-beds that contain fish, turtles, crocodiles, mammals, *Stegosaurs*,

sauropods, theropods and ornithischians. Do you know the *Kileskus* – the huge *Tyrannosauroid* similar to *Guanlong* and *Proceratosaurus*. I drew this one too.

Near my town we have the location of Early Cretaceous fauna with *Psittacosaurus sibiricus*.



Excavations in Sharipovo

What about colors and design? Who decides what coloring each dinosaur has? Color wasn't preserved in fossils like the basic structure. Is it a guess? Do you ever want to do something really crazy with the color or design? Sort of like the pattern on *Sinoceratops zhuchengensis* (which we really like).

Excellent question. I use color exclusively for the more lively and naturalistic perception of the viewer. The human brain is accustomed to perceive the world in color, we see the colorful world. Therefore, colored drawing will look more natural for us. When we picture an animal that has been extinct for millions of years and it is not easy to find modern equivalent of it, it is very important that the audience believe that this is a real animal, so it is perceived plausible, natural and alive. To make the color more natural you can explore how modern animals are colored, relatives of dinosaurs, crocodiles, other reptiles, and birds. You can try to imagine what kind of lifestyle or habitat led to such coloration of a dinosaur and paint it accordingly. Ultimately this is a reconstruction of coloration- we still cannot claim it as truth. The aim is to look natural,
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for better perception as a once living animal. Also, I do color design so that the animal looked aesthetically beautiful.

However, in recent years many publications revealed remains of coloration of dinosaurs. For example the study of fossil melanosomes can answer how feathered dinosaurs was colored, the presence of spots, a striped tail and what color is it. It is also possible that patterns on the scales of mummies of *Hadrosaurs* and skin impressions may be indicative of color, and in this case they were striped or spotted. Traces of color were found in one fossilized *Psittacosaurus*. In these cases we can reconstruct the color and pattern and not only to look natural like a living being, but also to show the real color pattern. That's an amazing thing that science had brought to us in recent years.

As for the crazy color, I still prefer a more natural color and not too flashy, but with interesting design.

How many dinosaurs have you drawn? Who do you do the artwork for?

Oh, it's very hard to count them all, hundreds of them. I make drawings for books, encyclopedias, and magazine articles. Recently I painted birds, amphibians, insects and mammals of the Red Book of my region. Also, I create illustrations and murals for museums around the world. Sometimes I create textures for 3D animals which are created by a colleague 3d modeler and 3d artist Vlad Konstantinov³.

You said you have done murals for museums- any in the United States?

Yes, I have one in the new beautiful Natural History Museum of Utah in Salt Lake City. They made the mounted skeleton of the new (unpublished) *Tyrannosaur* from Utah and this exposition now has my new mural behind the skeleton⁴.



We looked at the image of *Psittacosarus*⁵ in Vlad's gallery that you textured. It is AMAZING. But I do have a question about the things on the tail... are those quills like a porcupine? How did you know about those? I have a new appreciation for how you create and color your dinosaurs after learning about the fossil melanosomes (my mom explained those to me).

The fact is there is one great fossil *Psittacosaur* from China that has bristle-like structures on the base of the tail. Therefore you can usually see some *Psittacosaurus* from different artists who drew it with such bristles. Maybe they are like bristles, maybe like porcupine quills, but more thin and flexible I think.

The *Psittacosaurus sibiricus* created by Vlad and I has bristles because the customer asked us to do that.

Do you draw other things besides dinosaurs and insects? What is your favorite thing to draw?

Yes. I draw other animals, ancient and modern. I even painted Ediacaran organisms and Devonian fish, ammonites, trilobites, and much more. Ironically, among other things I have grown fond of astronomy. I love space, planets and stars. As a child I drew pictures on the theme of space. This fascination came in handy when I was asked to draw a spaceship for the GEO magazine. If you're an illustrator and live in Russia, then you should be able to draw a lot of things far from your specialization otherwise remain out of work and earnings.

How many drafts or works in progress does it take to come up with the final design for your dinoart?

In fact, I start working in my imagination where I create most of the sketches. There is a severe selection of sketches in my head. As a result, the paper gets 1-3 sketches. Often I already know what I want to paint and how, so I immediately start drawing a rough draft, which I continue to the finished artwork. I have very limited space to work with. I just have nowhere to work with a lot of sketches, so digital graphics - it's a good way out for me.

What would you like to tell kids interested in natural history illustration?

Just do what you love and what you interested in, no matter what. Be amazed at this world, love it, learn and study. Study nature, watch, and be curious. And do not stop drawing. Drawing, drawing, drawing. Perhaps you will become professionals, and maybe it will be only a hobby, it's not important, as long as it makes you happy.



You can see why I had such a wonderful time with my interview of Andrey. I told him the digital painting of his was my favorite from his gallery and he sent me the image

to share with all of you. Thank you Andrey!

About the author: Jack Shimon is a member of the Pikes Peak Pebble Pups in Colorado Springs, and is in the Colorado Springs Mineralogical Society Unit. He is in 3rd grade and also enjoys cub scouts, mountain biking and playing the drums.



Notes:

1. <http://dinoart1.narod.ru/>
2. http://en.wikipedia.org/wiki/Zden%C4%9Bk_Burian
3. <http://swordlord.cgsociety.org/gallery/1090073/>
4. Image provided courtesy of Andrey Atuchin.
5. <http://swordlord.cgsociety.org/gallery/1090073/>

Lake George Gem and Mineral Club

Box 171

Lake George, Colorado 80827

LGGMClub.org

2014 MEMBERSHIP APPLICATION

Name(s) _____

Address _____ City _____ State ____ Zip _____

Telephone () _____ - _____ E-mail _____

Names and ages of family members (if a family membership):

Annual membership - dues Jan. 1 through Dec. 31 are as follows:

- ___ Individual (18 and over) \$15.00
- ___ Family (Parents plus dependents under age 18) \$25.00

Annual dues are due on or before March 31. Members with unpaid dues will be dropped from the roster after this date. **Any new member joining on/after August 15 shall pay one half the annual dues.**

I hereby agree to abide by the constitution and by-laws of this club.

Signed _____ Date: ____/____/____

I have previously been a member of Lake George Gem & Mineral Club. Yes ___ No ___

My interest areas include:

Minerals ___ Fossils___ Lapidary ___ Crystals ___ Micromounts ___

Other _____

I would be willing to give a talk to the Club or Pebble Pups. ____ If yes, what topic?:

Please indicate which of the following activities you might be willing to help with:

Writing _____ Editing _____ Mailing _____ Local shows _____

Club Officer _____ Programs _____ Field trips _____ Refreshments _____

Questions about the club or club activities? Contact Suz Core (719) 689-2092.

Rev. December, 2013

Lake George Gem and Mineral Club

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Lake George Gem and Mineral Club
P.O. Box 171
Lake George, CO 80827

The Lake George Gem and Mineral Club is a group of people interested in rocks and minerals, fossils, geography and history of the Pikes Peak/South Park area, Indian artifacts and the great outdoors. The club's informational programs and field trips provide an opportunity to learn about earth sciences, rocks and minerals, lapidary work and jewelry making, and to share information and experiences with other members. Guests are welcome to attend, to see what we are about!

The club is geared primarily to amateur collectors and artisans, with programs of interest both to beginners and serious amateurs. The club meets the second Saturday of each month at the Lake George Community Center, located on the north side of US Highway 24 on the east edge of town, sharing a building with the county highway shops. **In the winter we meet at 10:00 AM. From April through October, we meet at 9:00 AM, to allow more time for our field trips.**

Our organization is incorporated under Colorado law as a nonprofit educational organization, and is a member of the Colorado, Rocky Mountain and American Federations of Mineralogical Societies. We also sponsor an annual Gem and Mineral show at Lake George, where collectors and others may purchase or sell rocks, minerals, fossils, gems or jewelry. Annual membership dues (Jan. 1 through Dec. 31) are \$15.00 for an individual (18 and over), and \$25.00 for a family (Parents plus dependents under age 18).

Our Officers for 2014 are:

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