

MWF News

Midwest Federation of Mineralogical and Geological Societies

January 2025 - Issue No. 638

Website – www.mwfed.org

Member of the American Federation of Mineralogical Societies



PRESIDENT'S MESSAGE

Intolerable, tolerable, acceptable, delightful, gorgeous – just some of the adjectives we use to describe how we feel about the weather. The adjective is used to describe how you feel about

the weather conditions – and it is subjective.

Some may say it's too cold or too hot – you may say that it isn't cold enough or hot enough. It also depends on what you are planning for the day. If you are planning on skiing, you don't want it too warm to melt the snow. If you are planning on a day at the beach, you don't want it to rain.



Weather is the mix of various events that occur each day in our atmosphere. Weather is different in various parts of the world. Weather constantly changes over time and is controlled by changes in air pressure.

Our rock clubs are like the weather! How people see the club is subjective. If you are having a meeting that is hands-on, members who enjoy crafting would say that it is a great meeting, while people who

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CONVENTION ACTIVITIES WILL BE VARIED

The Lincoln Gem and Mineral Club in Nebraska has put together great activities for the Midwest Federation's 2025 convention on April 5 and 6, 2025. The convention will be held in two venues at the Sandhills Global Event Center at 84th and Havelock in Lincoln; meetings and the awards banquet will be held in the Center's Lincoln Room, and the show will be in the Ag Society Hall.

But LGMC will be kicking things off on Thursday the 3rd with a field trip to the Rose Clay Pit, for fishtail selenite, and to a road cut to collect fossils. There is no charge, but be sure to be at the Event Center at noon when ride-sharing arrangements will be made. The trip will be on a "weather permitting" basis, and updates about the weather will be on the club's website or Facebook page.

Friday's fun will include a "field trip" to the Event Center's parking lot, a site that will be liberally salted with agates, jaspers, petrified wood, fossils, artifacts, and other specimens. Friday night there will be a "meet and greet" with complimentary snacks at the Hy-Vee Club Room at 1601 N. 84th Street; besides catching up with your fellow MWF rockhounds, you'll

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CONVENTION ACTIVITIES, CONTINUED

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hear a program by mineral expert Eric Fritzsch. There's no charge for either of these events.

Of course the highlight of any convention is the rock and mineral show, and LGMC always has a good one. This year the theme is "Petrified Woods of America." The show will be held Saturday the 5th, 9 a.m. to 5 p.m., and Sunday the 6th, 10 a.m. to 4 p.m. If you're interested in submitting a display case, either competitive or simply educational, the deadline for submitting your application is February 28th. (More information about this is below.)

But now, down to business! The MWF State Directors' and Executives' meetings will be held beginning at 9 a.m. on Saturday the 5th, with a lunch break following. The meeting of Delegates from MWF clubs will begin at 1 p.m. At these meetings, decisions are made about Federation actions and activities, so club delegates' votes are important.

Then, at 6 p.m. on Saturday, everyone will go right back to the Lincoln Room for the annual Awards Banquet, with food, fun, and presentations. A social hour will begin at 6 p.m., and the buffet dinner at 7 p.m. The cost per person is \$32.

Four forms are on pages 8 through 11 of this issue. Everyone who wants to attend the convention should fill out the Convention Registration Form on page 8; people who want to exhibit either competitive or educational display cases will find applications to do that on pages 9 and 10. All three of these forms need to be sent to Sharon Marburger, LGMC Secretary, by February 28th. People who will be voting delegates representing their clubs need to fill out the form on page 11 and be sure that it's signed by the club president; that form needs to be submitted to MWF Credentials Chair David Root by March 21st. Details are on all of these forms.

LGMC members are encouraging people to find time to visit the University of Nebraska State Museum at Morrill Hall in Lincoln. Among many natural history exhibits are fossils from the Mesozoic Era and fossils of rhinos and giant camels that roamed the Nebraska plains during the Tertiary Period. The museum also has a Minerals and Meteorites collection which, at this time, is closed; but with luck, maybe it'll be open by April!

MWF OFFICERS

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Treasurer: Steve Shimatzki 4295 County Road 16 Woodville, OH 43469 567-868-8794 woodvillerocks@gmail.com



CONVENTION: WHERE TO STAY IN LINCOLN

Attendees of the MWF's annual convention in Lincoln, Nebraska will have a wide choice of places to stay.

The host hotel for the convention will be the Comfort Suites East Lincoln-Mall Area on North Cotner Boulevard. This hotel has set aside a block of rooms for the convention at a reduced price for those giving the group name (Midwest Federation) and group number (ZP55Z1). The phone number is 402-817-2456.

Other nearby hotels, all in Lincoln, include Candlewood Suites, 402-420-0330; New Victorian Suites, 402-464-4400; Country Inn and Suites, 402-476-5353; and Staybridge Suites Lincoln Northeast, 844-208-4307.

For those who prefer camping, there is an RVUniverse campground at the Sandhill Global Events Center, where the convention will be taking place; however, the water will be turned off through April 14th. Reservations can be made at sandhillsglobaleventcenter.org/visitors/camping; sewer and/or winter water truck service can be arranged by calling Uribe Refuse, 402-467-1239.

According to its website, Camp A Way Campground & RV Park in Lincoln does have winter water service. The website is campaway.com; the phone number is 402-476-2282.

MWF PEBBLE PUP FROM MICHIGAN WINS PRIZE IN NATIONAL FOSSIL DAY CONTEST

Release from the Grand Traverse Area Rock and Mineral Club (Michigan)

A member of the Grand Traverse Area Rock and Mineral Club (GTARMC) Pebble Pups program has won first place in the category of 8 Years and Under in the National Fossil Day Art Contest!

Iris, a 7-year-old second-grade student, submitted a beautifully detailed piece to the contest, which is sponsored by the National Park Service. Her artwork depicted a serene Michigan beach with Petoskey stones, bringing to life these ancient corals that existed millions of years ago.

Iris was very excited upon hearing the news. Fossils have always fascinated her and learning about how the Earth used to be. Winning this contest means she can now share a little bit of that history with everyone who sees her art, which is on display for the public on this website: https://npgallery.nps.gov/SearchResults/albumid/c8bc2985-a929-4f38-aaeb-4e0cd9904670.



National Fossil Day, observed each year in October, is an initiative of the National Park Service to celebrate fossils as a national resource that offers a window into Earth's deep past. The contest, open to K-12 students, encourages young people to learn more about the ancient world and our planet's history.

This achievement has brought pride not only to Iris but also to GTARMC and the entire Traverse City community. Steven Veatch, the club's Pebble Pups Coordinator, shared her excitement, saying, "Iris has shown a special talent for bringing history to life in her art. We are all so proud to see her earn such a well-deserved honor." Taking part in the National Fossil Day Art Contest has become an annual highlight in the GTARMC's Pebble Pups program.

As a reward for her winning piece, Iris will receive a certificate of recognition from the National Park Service. The National Park Service will display Iris's artwork on the National Fossil Day website and social media. This will allow fossil enthusiasts, artists, and students across the country to see it.

DEADLINE CALENDAR

Entries for the **Bulletin Editors Contest** and for the **All American Club Awards Contest** must be sent to Mary Ann Ferguson-Rich by **January 10, 2025**. Her email address is mafr43@hotmail.com. Go to amfed.org/contests, for more information.

Deadline is **January 15, 2025** for submission of club **membership renewal forms** and **Calendar of Events forms** to MWF. Clubs who renew on time can get a discount on insurance. Information and forms are on pages 4-6 of this issue.

Deadline for registration at the next MWF Convention is **Feb. 28, 2025**. The convention and show will be held April 5-6, 2025, at the Sandhills Global Event Center in Lincoln, Nebraska, hosted by the Lincoln Gem and Mineral Club. More information can be found in this issue and on the club's website, lincolngemmineralclub.org/happenings/2025-midwest-federation-convention.

Rockhound of the Year Awards may be submitted at any time for certificates and a mention in the MWF News. Contact Jeanine Mielecki, jaynine9@aol.com.

February Issue Submission Deadline Is January 8th!



CLUBS THAT RENEW ON TIME GET TWO GREAT BENEFITS

The 2025 Midwest Federation forms for renewing club memberships are on the following two pages of this issue of MWF News. Please alert club officers to collect information for the forms.

One important piece of information needed is the total number of individual adult and youth members during the year <u>completed</u> during 2024. These figures are used for dues and insurance calculations. The rationale is that your total membership, by the end of the year, is usually about the same, so you always pay the current year dues based on your past experience. The treasurer needs this information **before January** 15th so our insurance can be activated on time.

The Midwest Federation will only publish each club's public contact information. Please make sure that the mailing address is checked at least weekly and the phone number connects to a real person who can answer questions about your club. We still need direct contact information that will be distributed on a need-to -know basis to Federation leaders.

Clubs are encouraged to provide name, position and email address for additional officers, board members and members who would like to receive the *MWF News*. This information will only be distributed to our editor and secretary. This is a great way to make sure that all of your officers are "in the know."

Clubs who renew on time will receive an email subscription to the juniors publication Mini Miners Monthly, distributed only via email. If you wish to have the Mini Miners Monthly subscription sent to someone other than your (1) junior program coordinator or your editor, please provide a name, position and email address for that person and indicate that he or she is to receive the Mini Miners materials.

Use the EVENTS form to submit details of shows and events during the coming year and the first four months of 2026. If the Events form is submitted with the dues, we will make sure it gets to the website, newsletter and directory coordinators. If it is submitted later, or separately, it is more likely to get overlooked.

Insurance will stay the same for 2025. Our current rate is \$4.50 per club member, and all members must be covered. Clubs that submit their dues on time (postmarked no later than January 15, 2025), may take a discount of 25ϕ per member.

Remember: The Federation insurance policy will cover groups of clubs jointly sponsoring shows or events **only if** all of the sponsoring clubs are current federation members and all of the sponsoring clubs purchase federation insurance. Requests for insurance for these jointly sponsored events must include a list of all sponsoring clubs.

Questions about your MWF forms or dues? Contact Stephen Shimatzki at 567-868-8794 or woodvillerocks@gmail.com. Direct insurance questions to Sue Goedert at 616-337-1162 or sonbeams2000@yahoo.com.

MICHIGAN CLUB MEMBERS SHARE BOUNTY



From the November, 2024 Arrowhead News of the Indian Mounds Rock & Mineral Club (Michigan):

Members Don and Lois VanDyke gave the club's Juniors Program a dozen buckets of rock in September from their extensive years of collecting. Juniors Coordinator Joan Stoker hosted Juniors Team members Jillian and Jamie, and several young helpers, to start sorting and bagging. Lulu, Aubrey, Myla, and Emmy worked through copper ores, chalcedony roses, and other great stuff. Tidus and Oliver (above) worked through six buckets of all sizes of Petoskey stones and other fossils.



Midwest Federation of Mineralogical and Geological Societies 2025 Annual Club Dues, Insurance and Club Contact Information

DUES AND INSURANCE FORM, AND EVENTS FORM, ARE DUE BY JANUARY 15, 2025 Use black INK. Mail to: MWF c/o Steve Shimatzki, 4295 County Road 16, Woodville, OH 43469

CLUB NAME:		STATE: _	
2025 Annual Club Dues Use me	mbership figures from ye	ear <u>completed</u> December :	31, 2024
Number of Adult Club Members:	X \$2.00 =		\$
Number of Youth Club Members: Do You wish MWF Membership Cards:	X \$0.50 =	YES / NO	\$
2025 Club Insurance	(Optional, but if chosen,	must pay for <u>all</u> members	s)
Total number of members from above:	2025 receive a discou		
Club Publi	c Information for Direc	tory & Website	
Club mailing address:	City: _	State:	Zip:
Info phone number:Email:	Website:Facebook Na	me:	
Meetings Location:			
Date & Time:			
Check following that apply to your club:	_Kid friendlyFRA _Rock ShowEdu	-	shopField trips
Direct Contact Informa	tion for Mailings (THIS	WILL NOT BE PUBLISH	ED)
Individual (other than Treas	surer) designated to rec	eive official Federation ma	terials:
Name:	Position:	Phone:	
Email:	Alternate phon	e:	
Address:	City:	State:	Zip:
Treasurer	Email:	Phone	e:
Address	City:	State:	Zip:
CLUB BULLETIN NAME:			
Editor:			
Address_	City:	State:	Zip:

Please use separate sheet to list additional officers and members (name, position, email) who would like to receive the Federation newsletter and/or juniors materials via email.



Calendar Of Events Listing Information For Publication In MWF Directory, Website & Newsletter

Use black INK. Print, type, or complete form online, then print out and mail, with dues, to:
MWF, c/o Stephen Shimatzki, 4295 County Road 16, Woodville, OH 43469

DEADLINE FOR DIRECTORY INFORMATION IS JANUARY 15, 2025

* * Please include event listings for January, February, March and April 2026. * *

CLUB NAME:			STATE:			
Show Chair:		Email:				
— — — — Event Type:Annual Show _						
Dates:	Days/Tim	es:				
Facility/Location Name:						
Street:						
EVENT CONTACT INFORMATION (This will be publish	ed!)				
Contact Person's Name:		Phor	ne:			
Email: Club Website:						
	- — — — — — ADDITION	— — — — — - AL EVENT				
Event Type:Annual Show _	Rock Swap	Other:				
Dates:	Days/Ti	mes:				
Facility/Location Name:						
Street:						
EVENT CONTACT INFORMATION (This will be publish	ed!)				
Contact Person's Name:		Pho	one:			
Email:	Club W	ebsite:				

Questions? Call 651-459-0343

REMEMBER, this information, including contact information, will be published in the *MWF Directory*, posted on the *MWF Website*, and listed in the *MWF News*.

PRESIDENT'S MESSAGE, CONTINUED

(Continued from page 1)

are not interested in creating a project find the meeting uneventful. The same person who loved one hands-on project may find another one not so inviting.

Some lectures may be too simple or too hard to understand. Some meetings may contain too much drama or politics within the club.

It is the members of the club, as a whole, that make the club. There may be meetings that are similar to those sunny days and then there may be some drab meetings – perhaps gloomy. It is the responsibility of the executive board to provide the direction of the club and make decisions on behalf of the club. If a member of the club is not happy with an issue, it is that member's responsibility to notify the executive board. They cannot fix something if they do not know it is broken.

If you have a great, enjoyable meeting, let your executive board know that as well. If you can help your club – which is possible in numerous ways – let your executive board know. Our clubs are a mixture of events that occur to each of us, and each of us can provide sunshine within our club.

I'm looking forward to seeing everyone's sunny face at the convention in April. Looking forward to meeting everyone and creating our own whirlwind of excitement! Happy Rockhounding!

MWF CLUBS JOIN FUTURE ROCKHOUNDS

Reinee Hildebrandt, Chair MWF Junior Activities Committee

Two new youth programs in the Midweat Federation have joined the American Federation of Mineralogical Societies' Future Rockhounds of America (FRA) program. One is the CAGMAG Juniors of the Central Arkansas Gem, Mineral and Geology Society; the other is the White River Juniors Club of the White River Rock, Gem and Mineral Club in Michigan.

Future Rockhounds of America provides clubs' juniors coordinators with the outline of a learning program and activities in 20 different rock-related categories. Juniors who complete steps in any of these categories – which include Collecting, Field Trips, Earth Processes, and Rocking on the Computer – receive a badge from the program.

Besides these badges, there are other awards along the way – a badge for simply joining FRA, one for successfully completing six badges, a "Rock Star" pin for obtaining all 20 badges, and, for older juniors, stars for more advanced work in badge categories they completed when younger.

The Midwest Federation has 23 youth clubs enrolled with the FRA. Several additional clubs have youth activities at their shows or club meetings but are not a part of the national program.

THE MINERALS THAT ATTACK YOUR CONCRETE DRIVEWAY

Dr. Bill Cordua, MWF Geology Chair Seventh Place, 2024 AFMS Bulletin Editors Contest, Advanced Adult Articles

Those hard concrete driveways! How nice they are when first laid. Then they crack, crumble, spall, and need replacing. This is not only true of your driveway but of our whole concrete infrastructure, ranging from stadiums to dams to interstates, which costs the U.S. an estimated \$150 billion a year. What eats the concrete?

It turns out that many of concrete's foes are minerals.

Concrete consists of cement paste (a complex mixture made mostly of calcium hydroxides and

calcium aluminum silicates) and aggregate (sand and gravel). The process of making the cement begins with limestone and clay. These are mixed, heated, ground and treated with gypsum. Adding water to this starts a number of chemical reactions, forming calcium hydroxides (one of which is called portlandite), calcium aluminum silicates, and calcium sulfates (such as ettringite). These reactions continue for days until the cement is finally set and hard. What minerals attack this formidable material?

Ice is an obvious villain. Ice is a perfectly good mineral — inorganic, naturally occurring, and possessing a crystalline structure. When water freezes to ice, it expands by about 9%, exerting tremendous

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MWF CONVENTION REGISTRATION FORM Lincoln Gem & Mineral Club, Inc.'s 65th Annual Show "Petrified Woods of America"



Sandhills Global Event Center, 84th & Havelock, Lincoln, Nebraska Meetings and banquet will be held in the Event Center's Lincoln Room; show will be in the Event Center's Ag Society Hall

April 5 & 6, 2025

Registrant			
Additional Registrant			
Address			
City	State	Zip	
Email	Phone	e	
Club & Region			
AFMS Position(s)			
MWF Position(s)			
Γhursday Field Trip to collect fossils & selenite (leav	ring Event Center at noon): _	(number attending)	
Friday: 5:30 p.m. Complimentary evening snacks at a Hy-Vee Club Room, 1601 N. 84th St. (84th & Guest speaker, mineral expert Eric Fritzsch. 7	& Holdrege)	(number attending) as not yet been determined.	
Saturday Lunch: On your own. Event Center Concess	sions or go out to one of many	nearby fast food restaurants.	
Saturday: 6:00 p.m. Social Hour 7:00 p.m. Awards Banquet (buffet) (Stuffed chicken breast, applewood pork loin California veggie blend, scalloped potatoes, o	, garden salad,	(number attending) =	\$
One Day Show Pass Two Day Show Pass	\$8 per person x _ \$15 per person x	(number of people) = (number of people) =	\$ *
Total Enclosed	. 1		\$

Mail completed registration form with payment in full (check made out to LGMC), no later than February 28, 2025, to:

Sharon Marburger Lincoln Gem & Mineral Club, Inc. P.O. Box 5342 Lincoln, NE 68505-0342

Questions: Contact Sharon Marburger, lgmc.editor@outlook.com, 402.429.3323.



COMPETITIVE EXHIBIT APPLICATION

Lincoln Gem & Mineral Club, Inc.'s 65th Annual Show Sandhills Global Event Center, 84th & Havelock, Lincoln, Nebraska April 5 & 6, 2025



Please complete one application PER EXHIBIT CASE. Copy this form for additional cases.

Name:		Phone:			
Email Address:					
Address:					
City:		State:	Zip:		
Club Membership:					
All exhibits mus	st be hobby-related (agates, geo	logy, mineralogy, paleontology,	archeology, or lapidary).		
COMPETITIVE EXHIBI	T CASE TITLE				
Division:	Class:	If Junior, provide	birth date: Jr. Society		
Exhibitor Group: Master (Exh	Advanced No iibitor is responsible for choosing	vice Junior So ng proper DIVISION, CLASS,	ciety Jr. Society and GROUP.)		
Do you need electricity?_	Wide: Deep: Deep: Deep: Deep: Deep: No (Please	euse CFL or LED lights.) ish risers, backdrop, and lock.)			
Exhibitor's Signature:	re: Exhibitor's Society:				
	as an officer of the above name f my knowledge, is eligible to exh		a member in good standing of the ecording to the rules.		
Signature		Title	Date		
property of this society or or workmanship exhibited for minor findings or whe	as an officer of the above name r the personal property of at least d is the property of any one mem	five members of the Society; that iber; and that the lapidary and je ne work of members of this Society	Jor workmanship exhibited are the at no more than 20% of the material welry exhibited are entirely (except ety. It is agreed that the exhibit will		
Signature		Title	Date		

Please mail the completed form to: Sharon Marburger - Competitive Exhibits Lincoln Gem & Mineral Club, Inc. P.O. Box 5342 Lincoln, NE 68505-0342

EDUCATIONAL (NON-COMPETITIVE) EXHIBIT APPLICATION Lincoln Gem & Mineral Club, Inc.'s 65th Annual Show Sandhills Global Event Center, 84th & Havelock, Lincoln, Nebraska April 5 & 6, 2025



Please complete one application PER TWO EXHIBIT CASES. Copy this form for additional cases.

Name:		Pl	Phone:		
			Zip:		
Club Membership:					
All exhibits must	be hobby-related (agates, ge	eology, mineralogy, paleo	ntology, archeology, or lapidary).		
EXHIBIT CA	ASE #1 TITLE				
Please describe your exhibi	t or display:				
Exhibit Case Size Do you need electricity? (Exhibitors must furnish)	Bringing my own case: V I need a case: Yes No (Please use Crisers, backdrop, and lock.	Wide: Deep: Approximately 4' x2' x2' (I CFL or LED lights.)	High: First-come basis, no guarantees)		
EXHIBIT CAS	E #2 TITLE				
Please describe your exh	ibit or display:				
Exhibit Case Size Do you need electricity? (Exhibitors must furnish)	Bringing my own case: V I need a case: Yes No (Please use Crisers, backdrop, and lock.)	Wide: Deep: Approximately 4' x2' x2' (I CFL or LED lights.)	High: First-come basis, no guarantees)		
I agree to comply vinappropriate, if so requeste		Show and will follow the S	how Rules. I will remove any items dee	— med	
Signature		il the completed form to:	Date	-	

Lincoln Gem & Mineral Club, Inc. P.O. Box 5342

Lincoln, NE 68505-0342



MIDWEST FEDERATION OF MINERALOGICAL AND GEOLOGICAL SOCIETIES Executive Meeting and Council of Delegates Meeting, April 5, 2025

DELEGATE REGISTRATION FORM **Deadline March 21, 2025**

The Midwest Federation's annual Council of Delegates meeting will be held in conjunction with the Lincoln Gem & Mineral Club's 65th Annual Show at the Sandhills Global Event Center Ag Society Hall, 84th & Havelock, Lincoln, Nebraska. Each member club/society is entitled to one (1) Delegate and one (1) Alternate to represent them. An Alternate may vote only in the absence of a Delegate. Guests are invited to attend the meeting, but are ineligible to vote.

The Council of Delegates Meeting will convene on Saturday, April 5th at 1:00 p.m., with delegate registrations beginning at 12:30 p.m. The delegate appointed by your club or society will represent your interests, and may bring up pertinent discussions and proposals. However, in order to expedite matters, if your society intends to have its delegate present any special motion at the meeting, please notify the MWF President, Cheryl Neary (ciervo.neary@gmail.com), and MWF Secretary, Donna Moore (mwfsecretary@gmail.com) as to the nature of the subject, so that it may be placed on the agenda. This needs to be presented in written form, and should be done at least one month prior to the meeting.

Please fill out this form and return it to the Credentials Chair, SIGNED BY THE CLUB PRESIDENT.

David Root 1051 Meadow Lane Jenison, MI 49428 ravedoot@gmail.com 616-498-4699

DO NOT send this form to the show registration committee. THANK YOU FOR YOUR PROMPTNESS.

MIDWEST FEDERATION DELEGATE REGISTRATION FORM PLEASE PRINT OR TYPE TO AVOID ERRORS

THIS	IS TO CERTIFY	THAT	Name of your	club						
OF	City and									
		THE	FOLLOWING	DELEGATE	ТО	THE	2025	ANNUAL	MEETING	OF
Delegate:				E	Email:					
Addro	ess:									
Alternate Delegate:					F	Email: _				
Addro	ess:									
Club	President					– D a	ate sign	ed		

Valerie J. Meyers, Editor Midwest Federation of Mineralogical and Geological Societies vjmwriter@yahoo.com Post Office Box 13456 Overland Park, KS 66282-3456 Non Profit Org U.S. Postage PAID Fiatt, IL Permit No. 1

THE MINERALS THAT ATTACK YOUR CONCRETE DRIVEWAY, CONTINUED

(Continued from page 7)

force on the sides of any cracks or pores into which it has seeped. As the cracks and pores enlarge, it is easier for more water to enter.

Salt is another enemy. As you spread salt on your driveway, or as salty residue drips off your car, the salt water soaks into the concrete. As the water evaporates, salt crystals grow, forcing apart cracks.

Salt can have a more insidious effect, depending on what aggregate is in the concrete. If the aggregate contains poorly crystalline silica, in the form of opal or even chert, it reacts with sodium, converting the hard silica to a hydrated alkali gel. This decreases the strength of the concrete. Since the gel occupies more volume that the original chert or opal, it further cracks the concrete and helps more water to enter.

By the way, Scott Wolter, in his book "The Lake Superior Agate," describes some deposits of the solidified gel material in voids in concrete that show agate-like banding. This may help us to better understand the formation of agates.

Sulfur, which occurs in soils, seawater, and acidic rain, is another enemy. Portlandite, formed during the hardening of the cement, reacts with the sulfur-bearing water to make gypsum and more ettringite.

Gypsum is soft and water soluble, degrading the concrete. Both gypsum and ettringite cause an increase in volume, cracking the concrete. The more cracks, the more water and sulfate and salt can enter. This cycle limits concrete's lifetime.

Millions of research dollars are going into making concrete more resistant to these attacks. The only way to avoid this completely is to build where water, salt, and ice don't occur. The nearest surface like that is on the moon.

References:

Wenk, Hans-Rudolf and Andrei Bulakh (2004). Minerals: Their Constitution and Origin. Cambridge University Press.

Wolter, Scott (1999). The Lake Superior Agate, Third Edition. Burgess International Group Publishers.