TAR HEEL ROCKHOUND

JULY 2025

Catawba Valley Gem & Mineral Club, Inc.

2024 Officers and Committees

President:	Tracie Jeffries 828-430-1341	Education:	George Max 828-328-9107
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Editor:	Tracie Jeffries 828-430-1341		

Club Address: PO Box 2521, Hickory NC 28603-2521
Regular Meetings: Second Tuesday, 7:00 PM
St. Aloysius Catholic Church, 921 2nd St. NE Hickory, NC
Annual Dues: Family, $25, Individual, $18

The purpose of the Club is to increase the individual's knowledge of the earth sciences and to aid in the development of lapidary and related arts and skills; to promote fellowship and exchange of ideas; to hold exhibitions, contests, lectures, and demonstrations for educational purposes; to help interest more people in the gem and mineral hobby; and to capture and preserve the beauty of nature, the arts, and the works of man.

CATAWBA VALLEY GEM AND MINERAL CLUB, INC.

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http://www.cvgmc.com

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INSIDE

PRESIDENT'S REPORT

Hello Fellow Members,

Some people have expressed an interest in having club t-shirts. This would be a great way to advertise our club, increase the sense of belonging, and a way to identify ourselves at the annual gem and mineral show and community outreach/educational events. David I., took the initiative and created an updated logo and shirt design. We will need to get feedback from the club and eventually vote. So, between now and the next club meeting, think about the following:

Do we want one color, or have the shirt available in several colors?

Is the updated logo okay? Yes, no, suggestions?

We can also put something on the back of the shirt, an image, a saying, or both. There are lots of funny and smart sayings. Below are a few.

- Not all who wonder are lost, some are just looking for rocks.
- Never trust tectonic plates. They are way too shifty.
- I'd rather be Rock Hounding.
- WARNING May stop suddenly for Rocks.
- I suffer from O.R.D. Obsessive rock collecting disorder.
- Stop the car. I see a Rock.
- Just one more rock, I promise.
- Geologist have their faults.
- Geology really Rocks!
- Geology, I dig it.
- Have a Gneiss Day!
- Schist happens.

GEM AND MINERAL CLUB, INC.
CATAWBA VALLEY
Hickory, North Carolina
Organized 1969

Sincerely,

Tracie J.

CVGMC MINUTES FOR JUNE 10, 2025

The June 10, 2025, meeting of the CVGMC was called to order by President Tracie J. at 7:00 PM.

Visitors: Kevin N, Grace H., Jack L.

Program: “Tourmaline” by Jeff S.

Minutes: A motion was made by Harry and seconded by Ron to accept the May 13, 2025, minutes. The Club passed the motion.

Treasurer Report: No Report

Education Committee:

1. CVGMC will do two programs for the Catawba County Library System on Friday, July 16, in Maiden (Volcanos) at 3:00 PM and Friday, July 17, in Conover (Gemstones) at 10:00 AM. Don't hesitate to get in touch with Tracie J. if you would like to help.

2. George B. will do a kids’ mini mine activity on June 21st, at the St. Aloysius Catholic Church picnic.

Show Committee:

1. The next CVGMC Annual Show will take place from March 6 to 8, 2026. We will return to the Hickory Room, where the October 2024 show was held.

2. The Club needs someone to take over the Facebook advertising for next year’s show.

Field Trip Report: None

Old Business:

1. The Treasurer and Secretary will be unavailable for the July meeting. We need someone to volunteer to take minutes for the next meeting.

New Business:

1. The club discussed a possible Labor Day trip to Kentucky. More Information to come in the next newsletter.

2. A silent auction will be held during the August meeting.

3. An application for the Wild Acres Scholarship will be available soon.

Announcements:

Jeff S. invited the club to join several other clubs for a field trip to the Raleigh State Museum on July 19, 2025. The clubs will be given a private tour of the museums’ geology collections.

Closing of Business: The meeting was adjourned at 7:45 PM

Respectfully Submitted,

Tracie Jeffries, President

JULY PROGRAM

The July program will be given by George M. He will do a presentation on the 'Historical Aspects of Norway'.

CLUB OUTREACH AND VOLUNTEER OPPORTUNITIES

In July, the club will do two programs for the Catawba County Library System. On Thursday, July 17th, at 10:00 AM, the club will give a program about 'Gemstones' at the Conover Library. A second program, on volcanoes, will be held at the Maiden Library on Friday, July 16th, at 3:00 PM. If you would like to help with either program, please contact Tracie J.

GEOLOGY MADE EASY: HOW TO CLEAN ROCKS AND MINERALS

By Tracie J.

One way to improve and increase the value of your collection is to have clean specimens. This may sound easy, but some specimens may be challenging to clean. Let's start by looking at some basic cleaning materials.

MATERIALS:

All collectors should have basic cleaning tools, such as brushes. It is convenient to have brushes of different sizes and bristle hardness. I use three basic brushes: a toothbrush, a medium-sized soft-bristled brush, and a larger brush with stiff bristles (See Image 1). Some people also use wire brushes. A wire brush should only be used on hard specimens like quartz; otherwise, the rocks/minerals can be damaged. Brushes with brass bristles are slightly softer than steel bristles.

Crock-pots are handy when using chemical methods such as 'Iron Out' or oxalic acid. Crock-pots have chemical-resistant ceramic vessels, lids for safety and to reduce exposure to fumes, and can be gently heated to enhance the effects of chemicals (See Image 1). Look for used and cheap crock-pots at yard sales and second-hand stores.

Kitchen strainers are useful. Specimens can be loaded into a strainer that can then be lowered into or raised out of a cleaning solution. Having multiple specimens in a strainer also makes it easier to hose or rinse them off without any getting lost. Many collectors prefer plastic

strainers (See Image 1). Metal strainers may rust and corrode when exposed to the chemicals used to clean specimens.

Collectors will need plastic containers, with lids, of all sizes. (See Image 2). Purchase heavy-duty chemical-resistant containers. The containers can be used to temporarily store specimens, soak them in soapy water to start the cleaning process, immerse specimens in chemical baths, and neutralize and rinse specimens. The number and size of containers will depend on each collector. Buckets with handles and lids are the most versatile to use. However, large plastic storage tubs are handy for extra-large or large numbers of specimens.

HANDY TIP: Buy black buckets and tubs and place them in the sun. This will heat your cleaning solutions, making them more effective.

Toothpicks and metal picks are great for cleaning out cracks and small, hard-to-reach crevices. Toothpicks are cheap but break easily. Metal pick sets are reusable, long-lasting, and quite affordable (See Image 3). The latter can be purchased for less than ten dollars at many hardware and tool stores.

Image 1: Here is a sampling of tools and items used to clean rock and mineral specimens. Note the tongs, variety of brushes, strainer/colander, crock-pot, measuring cup, and funnel. Many of these items can be purchased cheaply at discount or second-hand stores. Photo by Tracie J

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IMAGE 2: A wide variety of chemical-proof plastic containers with lids are useful. Have designated containers for chemical solutions.

IMAGE 3: Metal picks, similar to dental picks, are great for cleaning small cracks and crevices.

https://www.harborfreight.com/6-piece-pick-set-93514.html

Safety gear is a necessity! Chemical-based cleaning methods can be dangerous if you don't follow directions and/or wear personal protective equipment (PPE)(See Image 4). When working with chemicals, cover as much of your body as possible, wear shoes, long pants, and long-sleeved shirts. Invest in heavy-duty chemical-proof gloves. These gloves are usually made of butyl rubber, neoprene rubber, nitrile rubber, or polyvinyl chloride (PVC). Protect your eyes

from chemical splashes and fumes with chemical-proof splash goggles. Buy goggles with indirect vents, not direct vents. If you wear prescription glasses, make sure the goggles fit snugly and comfortably over your glasses. You may also want to invest in a half-face respirator mask to protect yourself from noxious fumes. Don't let this scare you away from trying various chemical cleaning methods. To be safe, research chemical products and read Safety Data Sheets, follow directions, wear PPE, work in a well-lit and ventilated area, and use common sense.

IMAGE 4: Examples of Personal Protective Equipment or PPE.
Note the chemical-proof rubber gloves, goggles, and a half-face respirator.
https://www.amazon.de/-/en/Respirator-Activated-Filters-Against-Particles/dp/B094XWX7TQ

GENERAL INFORMATION:

Know your specimens and what your main goal is before you start cleaning. Do you want to remove dirt and debris, rust stains, and/or matrix? The composition of your samples and your goal(s) will help determine which method(s) to use.

Identify specimens before you clean them. Some minerals, such as Halite, Kalinite, and Selenite, readily dissolve in water. While others, such as Gypsum and Fluorite, will dissolve slowly over time. If your specimen is composed of calcite or a carbonate, it can dissolve or be damaged by some cleaners, such as Iron Out, Muriatic Acid, and oxalic acid.

Below is a link to a solubility table for over 650 minerals. It has columns for minerals that dissolve in water, hydrochloric acid (HCl)(muriatic acid), and several other acids. There is no data in the chart for oxalic acid ($H_2C_2O_4$). However, oxalic acid reacts similarly (a double replacement reaction) as HCl in the presence of calcium carbonate ($CaCO_3$) (See Figure 1).

Therefore, it would be prudent to assume that minerals dissolved by HCl will also be dissolved by oxalic acid. Correspondingly, if there is a strong 'fizzing'/effervescence reaction when the samples are placed in the cleaning solution, they are likely calcite or carbonate-based and might be damaged.

$$CaCO_3 + 2HCl \rightarrow CaCl_2 + H_2O + CO_2$$

$$CaCO_3 + H_2C_2O_4 \rightarrow CaC_2O_4 + H_2O + CO_3 -$$

FIGURE 1: Both hydrochloric acid (HCl) and oxalic acid ($H_2C_2O_4$) do double replacement reactions in the presence of calcium carbonate ($CaCO_3$). In practical terms, this means that calcite and carbonate-based minerals can dissolve and/or be damaged by these acids.

Solubility Data on 646 Common and Not So Common Minerals:
https://www.mindat.org/article.php/553/Solubility+Data+on+646+Common+and+Not+So+Common+Minerals

What is the hardness of your rock or mineral? It is possible to scratch and damage softer specimens if you scrub them with hard bristles or wire brushes. Even highly pressurized water can damage or destroy softer rocks and minerals, such as Talc, Gypsum, Calcite, and many sedimentary rocks like Shale.

Always test a small sample before putting all your specimens in a chemical solution. Some specimens may dissolve, lose their luster, or even change/lose color (See image 5). Remember, time is a critical factor. Some samples may be fine in a solution for a few hours, but if left overnight (24 hours), they can be ruined. When using a chemical solution for the first time, check the samples every few hours until you achieve the desired results. Designate separate containers for specific chemicals; do not use these containers for any other purpose. Work in a well-lit, well-ventilated area, read and follow directions carefully, wear proper PPE, and neutralize and dispose of chemicals as directed.

Be careful not to 'shock' specimens. When moving rocks and minerals from one solution to another, the temperature of the solutions should be similar. For example, if a crystal is transferred from a hot chemical solution to a rinse bucket of cold water, the crystal could crack or even break.

There is a large amount of advice, good and bad, on how to clean your specimens and what products to use. After considerable research, I have picked several physical and chemical methods to discuss.

IMAGE 5: The image at the top is Purpurite, a manganese phosphate mineral. The mineral can be a beautiful, bright purple color. The bottom left sample started as bright purple; however, after being cleaned with Iron Out, it lost its color and satin luster. The bottom right image shows the same sample after it was cut on a trim saw. Unfortunately, the damage extended deep into the sample. Top Image;
https://en.wikipedia.org/wiki/Purpurite#/media/File:Purpurite__Sandamab_Pegmatite,_Erongo_Region,_Namibia_2.jpg

Bottom images by Tracie J.

PHYSICAL METHODS:

Preparing samples for cleaning is important. All cleaning processes should start by scrubbing samples with a liquid detergent and water. It helps to presoak the specimens for several days to soften and loosen dirt and debris. Presoaking also helps saturate pores in porous rocks, such as sandstone. This allows cleaners to penetrate more efficiently for cleaning. Once soaked, use warm, soapy water and brushes to scrub the rocks and/or minerals. Some collectors even use pressurized water at car washes to preclean large samples or large amounts of specimens. However, after this initial cleaning, additional methods may be needed to achieve your goal.

Ultrasonic cleaners use high-frequency sound waves, from 20 to 400 kHz, with a cleaning solution to remove dirt, debris, grease/oil, and other deposits from surfaces. They are great for cleaning jewelry and removing grit and polish out of small pits or crevices in tumbled and polished rocks (See Image 6). However, vibrations can loosen stones in their settings and even damage or destroy some softer gemstones such as Onyx, Opal, Pearls, Peridot, Topaz, and Turquoise. Collectors who used these machines mainly used them on stones with a hardness of 7 or more on the Mohs Scale. Rockhounds primarily use them to remove dirt and clay from rock and mineral samples, but the results are often underwhelming. Unless you use it for other purposes, I would not recommend buying and using an ultrasonic cleaner simply for cleaning rocks and minerals.

IMAGE 6: Ultrasonic machines have multiple uses, including cleaning mechanical parts, tools, dental and medical instruments, jewelry, and many other items.

https://factorypure.com/products/vevor-ultrasonic-cleaner-30l-capacity-with-digital-timer-heater-40khz-600w-new

Most collectors now prefer textile guns, over ultrasonic cleaners, for cleaning specimens (See Image 7). Textile guns emit a small stream of water at a high PSI. This is great for removing dirt and clay, especially in small or deep cracks and crevices. Textile guns can also be used to remove softer matrix material and layers of oxidation. However, be cautious, softer rocks/minerals can be damaged. Always start on the lowest level and at a far distance, then slowly move closer to the specimen. You can control the power by controlling the distance from the sample. Wear eye protection and never point the gun at exposed skin. Below is a link to a great video on how to clean rutile with a textile gun.

CLEANING GRAVES MOUNTAIN RUTILE WITH A TEXTILE GUN

https://www.youtube.com/watch?v=YzRj8kvPR2o

IMAGE 7: Textile gun

https://tekmarltd.com/product/tg300-spot-cleaning-gun/

CHEMICAL METHODS:

Iron Out is commonly used to remove rust stains from sinks, toilets, showers, and other surfaces (See Image 8). For rock and mineral specimens, it can remove rust stains (iron oxide) and iron deposits. It can be bought premixed or as a powder at most hardware stores and larger retail stores such as Walmart. The powdered form is more economical to purchase. The active ingredient is sodium dithionite, also known as sodium hydrosulfite. Similar products are Waller

Solution, CLR (Calcium, Lime, and Rust Remover), and Whink Rust Stain Remover. I have tried CLR but prefer the powdered form of Iron Out.

Iron Out is not compatible with all rocks and minerals. It is safe to use on most silicates, such as quartz, chalcedony, agate, and jasper (See Image 9). However, use caution when using it on rocks/minerals that contain high levels of metals such as Hematite, Copper, Magnetite, Manganese, Lead, and Zinc. The Iron Out can cause these rocks/minerals to lose their luster and/or alter color (See Image 5). Iron Out is slightly acidic and can potentially damage or dull carbonates, which include Calcite and Dolomite, especially if exposed for long periods.

Mix about a half cup of Iron Out per gallon of warm water in a crock-pot or a plastic container with a lid. Protect your eyes and do not inhale the fumes. Place the samples in the mixture, cover with a lid, and check them every few hours. It is safer and more economical to use less and soak longer! If the solution turns yellow, mix a fresh solution.

It is not recommended to reuse a batch of Iron Out; always make a fresh solution for new specimens. If the mixture is oversaturated (a precipitate forms), yellow, and/or reused, the released iron oxide may redeposit as a black stain onto the specimens, especially where they contact the container. Additionally, if left too long in the solution, samples can turn yellowish.

If the samples turn black, scrub them with warm, soapy water. This usually removes most of the black stain. To help prevent this in the future, don't over-saturate the solution and place a plastic colander/strainer upside down in the container. The latter keeps rocks from contacting the bottom of the container.

If soaked too long, specimens may turn yellowish. Yellow staining can also happen with oxalic acid and muriatic acid. This is more difficult to clean. Several things to try are:

- Soak the specimens in clean water for a week up to several months.
- Reclean the specimen with a different cleaner.
- Mix solutions with distilled water rather than tap water, especially if you have 'hard' water
- Be sure to rinse well and soak in a solution of baking soda for 24 hours or more to neutralize the acids.

IRON OUT SAFETY DATA SHEET INFORMATION

https://summitbrands.com/wp-content/uploads/2018/03/Iron-OUT-Powder-English-GHS-Rev-02-12-2018.pdf?srsltid=AfmBOoq6dwFfMEMtpMFeIpYKDc2vqILDIoifechEMHhWz2Qd0z9GDBlY

IMAGE 8: Here is a sample of some commonly used cleaning products. Photo by Tracie J.

IMAGE 9: The picture on the left shows the original iron oxide staining. The image on the right shows the dramatic effects of cleaning with Iron Out.

https://www.reddit.com/r/whatsthisrock/comments/njioki/before_and_after_iron_out_what_are_these_rocks/

Muriatic acid is an aqueous solution of hydrogen chloride (HCl). Depending on the brand, it ranges from 14.5 percent HCl by mass to 31.5 percent (See Image 8). Even at the lowest concentrations, it is very corrosive and reactive, and should be used with extreme caution. It has many commercial and home uses and can readily be found in hardware stores as a concrete cleaner under the brand names “Klean Strip Concrete Etcher” or “Acid Magic”. “Acid Magic” is considered to be a safer, more ‘user-friendly’ form of muriatic acid.

Like Iron Out and oxalic acid, muriatic acid can damage or even dissolve calcite or carbonate-based rocks and minerals. It can also turn specimens yellowish to greenish if the concentration is too strong or the specimens soak for too long.

Work outside in a well-ventilated area away from children and pets. Muriatic acid is caustic; it can severely burn skin, cause eye damage, even blindness, and fumes can damage the lungs and nasal passages. When working with any acid, cover as much of the body as possible with protective clothing, wear goggles, a respirator, and gloves. Always have a water source nearby, such as a water hose, and baking soda to neutralize the acid in case of an accident. A link to the safety data sheet is provided below.

Prepare two buckets, one will be the acid bath, and the second will be a solution with baking soda. Place the samples into the designated acid bucket and add enough water to cover them. Then, carefully add the acid and put a lid on the bucket. REMEMBER ALWAYS ADD ACID TO WATER, NOT WATER TO ACID! Let the specimens soak until the desired results are achieved. Once clean, carefully remove the specimens and place them in the bucket of baking soda solution to neutralize the acid. The specimens should stay in the rinse solution for as long as they were in the acid bath. You may need to change the rinse water several times to make sure all the acid has been neutralized and rinsed off. Use baking soda to neutralize the acid in the first bucket. Pour the baking soda in slowly; there will be a vigorous reaction, and the solution may bubble over. Keep adding baking soda until there is no further reaction. Dispose of the used solutions according to directions. Be aware that muriatic acid, along with Iron Out and oxalic acid, can kill vegetation.

SAFETY DATA SHEETS FOR KLEAN STRIP CONCRETE CLEANER AND ACID MAGIC

https://www.acidmagic.com/wp-content/uploads/2022/09/USA-ACIDMAGIC-USA-I08.pdf

https://images.thdstatic.com/catalog/pdfImages/22/224c89c7-91de-45c8-baab-434141e7883f.pdf

Oxalic acid has multiple uses. It is commonly called and sold as ‘wood bleach’ and is used to clean and brighten wooden surfaces such as decks. Its main use with rockhounds is to remove iron oxide/rust stains. It is more economical to buy the powdered form and mix it yourself. Bags of powdered oxalic crystals can be readily purchased in hardware stores, large retail stores such as Walmart, and on Amazon (See Image 10).

Oxalic acid is an extremely toxic substance. It can severely damage the eyes and skin. Oxalic acid is easily absorbed through the skin and can accumulate in the body, potentially damaging organs, especially the kidneys. It can also irritate the nose, throat, and lungs. Handle carefully, and wear proper PPE.

Use oxalic acid in a well-ventilated area and away from children and pets. Mix one pound of oxalic acid powder with five gallons of water. Use warm water or gently heat the water, and stir until completely dissolved. Do not use hot water or boil the solution. Excessive heat can cause specimens to crack. Carefully immerse your specimens, cover with a lid, and monitor until the desired results are achieved. Like muriatic acid, work in an area with a water source and have baking soda on hand to neutralize the acid in case of a spill. Unlike Iron Out, a solution of oxalic acid can be used several times. When eventually finished with a batch, neutralize with water and baking soda. Keep adding baking soda until the solution no longer reacts.

Oxalic acid is commonly used to clean quartz crystals and is safe to use on most silicates (See Image 11). However, like many other acids, it can damage and even dissolve rocks and minerals that are calcite or carbonate-based. Several other problems may also arise. If the solution is too strong or specimens soak too long, they may turn yellowish. Sometimes, a white residue will form on the surface of specimens. This deposit is calcium oxalate, a by-product of the reaction between oxalic acid and calcite (See Figure 1). This deposit is difficult to remove. To avoid this problem, use distilled water and don’t use oxalic acid on specimens rich in calcite.

OXALIC ACID SAFETY DATA SHEET

https://www.fishersci.com/store/msds?partNumber=AC186432500&productDescription=OXALIC+ACID+ANHYDROUS+250GR&vendorId=VN00032119&countryCode=US&language=en

IMAGE 10: Oxalic acid is easily purchased at hardware stores or from online sources such as Amazon.

IMAGE 11: Both of the samples above were taken from the same geode. The sample on the left shows the original iron oxide staining. The sample on the right was cleaned with oxalic acid. There is still some slight yellowing, but the results are quite dramatic. Photo by Tracie J.

Remember, there is always a learning curve when trying something new. Do research, and ask other rockhounds how they clean their specimens. Through trial and error, you will eventually develop your own cleaning protocols. Good Luck!

LABOR DAY KENTUCKY FIELD TRIP

The Labor Day Trip, August 30-September 1, will be similar to past years, but the schedule will be a little different. The order of quarries will be reversed. Saturday and Sunday are currently planned to be at Liter's Quarry. Monday will be in the Danville Quarry. This arrangement will allow a shorter drive home on Monday. Also, be aware that I-40 may still be closed, and travel time will be increased. I am assuming that there will be a rock swap Friday evening and possibly Saturday evening, but the swap has become more of a rock sale.

Friday check-in and Sunday checkout: Wingfield/Greenfield Inn - Elizabethtown, KY - ~$124/Night +taxes and fees

Sunday check-in and Monday Checkout: Quality Inn - Danville, KY - ~$90/night + taxes and fees (cheaper option if non-refundable)

Waivers, at least for Danville, need to be completed and signed before entry into the quarry.

Safety Equipment: At least one quarry has changed ownership/rules. Safety equipment must be worn at all times to be granted entry. Much more stringent this year! Items in bold below are required at least for Danville (good for all quarries), no exceptions.

Tools:

- Buckets
- Gloves
- Knee Pads
- Cooler and Drinks
- Wrapping Material (During collecting and packing for travel)
- Rock Hammer
- Chisels
- Sledge Hammer (4 lb., 8 lb., and larger may be useful)
- **Hard Hat (If purchasing - Recommend full-brim and vented)**
- **Long Pants**
- **Steel-Toe Boots**
- **Safety Glasses**
- **Safety Vest and/or bright (hi-vis yellow or orange) shirt**

Thought also for everyone collecting, here and everywhere: "The amount of "luck" in finding specimens is primarily dependent upon the effort exerted in looking."
Slade needs a head count of people planning or likely to attend. You can also contact Slade if you need anything or have questions.

WHAT'S HAPPENING IN OUR AREA

WHAT	WHEN	WHERE
Treasures of the Earth	July 11 - 13 Hours: Fri 12:00-6:00 Sat/Sun 10:00-5:00	North Carolina State Fairgrounds Address: 4285 Trinity Rd Raleigh, NC 27607
Franklin Chamber Gem and Mineral Show	July 25 – 27 Hours: Fri/Sat 10:00-6:00 Sun 10:00-4:00	Robert C Carpenter Community Building 1288 Georgia Rd Franklin, NC
Grassy Creek Mineral and Gem Show	7 – 27 thru 8 - 3 Hours: 10:00 - 6:00	Parkway Fire and Rescue Event Grounds 136 Majestic View Spruce Pine, NC

NOTE: The annual NC Mineral and Gem Festival (inside show) in Spruce Pine has been canceled, but the Grassy Creek Show (outside show) is still scheduled.

Tar Heel Rockhound

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Club Meetings

2nd Tuesday of Month, 7:00PM

St Aloysius Catholic Church

921 2nd Street NE Hickory, NC

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Organized 1969