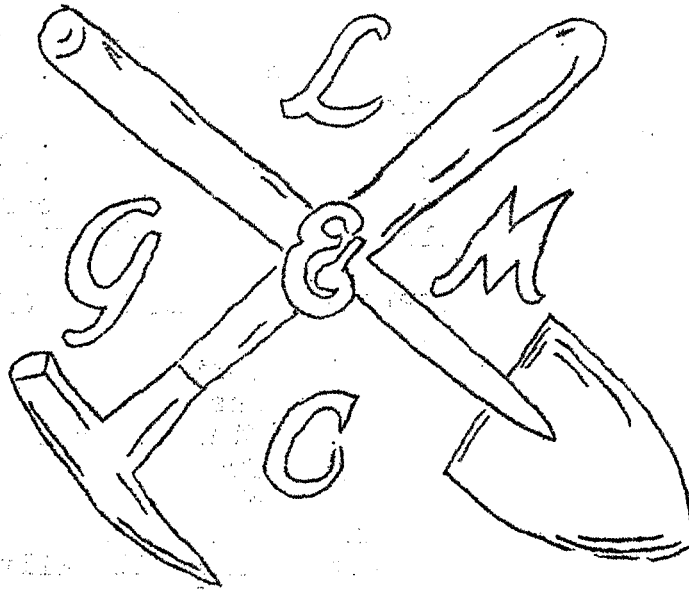


THE PICK & SHOVEL



Official Publication of
THE LINCOLN GEM AND MINERAL CLUB, INC.

Box 5342
Lincoln, Nebraska

NOV - 1970

MIDWEST FEDERATION OF MINERALOGICAL AND GEOLOGICAL SOCIETIES
AMERICAN FEDERATION OF MINERALOGICAL SOCIETIES
NEBRASKA STATE ASSOCIATION OF EARTH SCIENCE CLUBS, INC.
COMMUNITY ARTS COUNCIL OF LINCOLN

THE PICK & SHOVEL

Official publication of Lincoln Gem & Mineral Club, Inc., Box 5342, Lincoln, NE 68505, published Sept. thru May, 10 days prior to the meeting date of the club.

The Lincoln Gem & Mineral Club meets at the W.O.W. Bldg., 732 S. 27th St., Lincoln, NE, on the 4th Sat. of the month, Sept. thru May.

The purpose of this corporation shall be to study, promote an interest in, and disseminate knowledge of lapidary and various Earth Sciences, including but not necessarily limited to geology, paleontology, and mineralogy. It shall be a particular purpose of the corporation to provide education in these fields to its members and the general public, particularly youth and student groups.

ELECTED OFFICERS FOR 1970

President	Mrs. Phyllis Parks	2435 S. 19th, 68502	423-6798
1st Vice-Pres	George E. McGinnis, Jr.	3444 Somerset Ave. 04	466-4878
2nd Vice-Pres	C. Ray Waddle	2640 Everett, 68502	423-3196
Rec. Sec.	Mrs. Evelyn Ulrich	3521 S. 48th, 68506	488-9051
Treasurer	Ralph Ulrich	3909 Pace Blvd. 68502	423-0419
Board Members	Irl Everett	2941 N. 65th, 68507	466-6204
	Jim Parks	2435 S. 19th, 68502	423-6798
	Roger Pabian	300 Sycamore, 68510	489-3081
	Lynn Wells	2940 Vine, 68503	435-6758

APPOINTED OFFICERS, CHAIRMEN & COMMITTEES

Liaison Representative	Darline Sprick
Field Trips	Tom Simmons
Program	G. W. McKinney, Frank Marsh, Darline Sprick
Historian-By Laws	Frances Tracy
Library	Kay Ulrich
Membership-Guest Book	Lynn & Marie Wells
Refreshments	Eugene & Marcella Hilton
Coupons-Stamps	Helena Baegl
Show Chairman - 1970	Roger Pabian <i>Lynn & Marie Wells</i>
Uniform Rules	Frank Rule
Housing & Property	Phyllis & Jim Parks
Rep. to Com. Arts Co.	Edith Holdorf, Norma Miller
Calling Committee	Glenna McGinnis, Nelda Oliver, Vi Van Cleave
Rock Swap - 1970	Howard Taylor and Crew
Communications-State Assoc.	-Norma Miller
Safety Chairman	Lawrence Van Cleave

STEERING COMMITTEE FOR 1974 FEDERATION SHOW: Ralph Ulrich, Chairman; Gene Eno, Vice-chairman; Irl Everett, Secretary; Bruce Simon, Financial Secretary; and Howard Taylor and Larry Rupert.

Editor: Norma Miller, 931 Cottonwood Dr. 68510 489-3956
Co-Editor Phyllis Parks, 2435 S. 19th, 68502 423-6798
(Members of National Association of Bulletin Editors)

Articles published in the PICK & SHOVEL may be reprinted if credit is given and a copy of the publication sent to the editor. Annual subscription for the PICK & SHOVEL (which is automatically included with full club membership) is \$2.00 per year.

CALENDAR

ROCK TALK.....Nov. 28, Saturday 7:00-7:30 PM
A time to bring your specimens for identification,
questions, answers, comments.

REGULAR MEETING...7:30 PM

PLACE...W.O.W. Bldg.-734 S. 27th St.

BUSINESS...Election of Officers

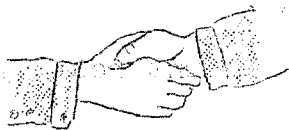
PROGRAM...An interesting film about a catastrophe!
Come and see what it's all about.

NEXT MONTH...our Christmas meeting-party will be held on Dec. 12th
at the W.O.W. Bldg. Details will be given you by
phone when plans are completed. There will be a
gift exchange - bring one if you want to receive one.

-Program Chairman, Mac McKinney

NEW MEMBER:

James Marburger
Abel Hall, Rm 224
860 N. 17th St. 68508



CHANGE OF PHONE NUMBER: Norma Miller - 489-8849
Roger Simmons - 432-4966

ROOM 104...Every Friday evening - 7 to 10 PM. DIG THEM BONES!

LAPIDARY CLASSES...new session starting Nov. 23, 24 and 25.
Phone 423-2391 and register.



- Nov. 14-15 - Ellsworth, Kansas Gem & Min. Festival
Guard Armory, Ellsworth, Kansas
- Jan. 22-24 '71 Apache Junction Rock & Gem Club Show
Elks Lodge Bldg., Apache Junction, AZ
- Feb. 12-14 '71 Tucson Gem & Min. Soc. Show,
Fairgrounds, Tucson, AZ
- Feb. 14-21 '71 Chugach Gem & Min. Soc. Show
Community Center, Anchorage, Alaska
- Feb. 18-20 '71 Scottsdale Rock Club Show,
Fashion Square Mall, Scottsdale, AZ
- Feb. 26-28 '71 Gila County Gem & Min Soc. Show,
North of Globe, AZ on Hy 60. (Fairgrounds)

NOTICE - MAY 7-9, 1971 SHOW LINCOLN GEM & MINERAL CLUB

National Guard Armory, 1300 Military Rd.
Lincoln, Nebraska

+++++

Your membership chairman says...

PAY YOUR DUES

Before you get those end-o-year blues



LAST MONTH

Thanks to Eleanor Rupert, Luella Paul and Letha McKinney who hosted the refreshments.

Guests present were Duane Butler, Pam Ducher, Robert Matson, Ed Woten, Jim Marburger, Merle Geyers, Mr. & Mrs. George Miller, and Dr. & Mrs. L. A. Benjamin and Cynthia.

It was announced that Lawrence Van Cleave is our new Safety Chairman. (This is an important post, especially with the number of field trips in which our club members are involved. We hope to be receiving regularly safety tips and precautions for printing in the bulletin.)

Marie Wells accepted the position of Junior Member Chairmanship. (This, too, can be an important phase of our activities. Keep us informed via the bulletin, Marie.)

Discussion was held regarding the LGMC 1971 Show. It was decided we would hold it in the Spring of '71 and possibilities of location would be checked out. Marie and Lynn Wells are the 1971 Show Chairmen.

The nominating committee presented its slate of officers for 1971. Election will be held in November at the regular meeting.

Mac McKinney provided those present with the viewing of an interesting film about the growth and forming of mountains.

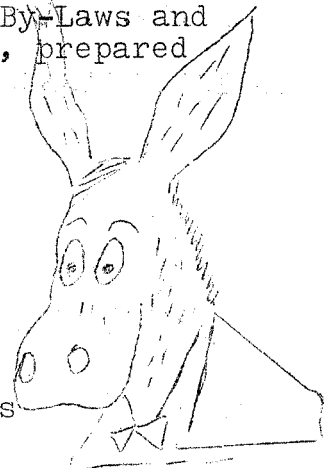
The nominating committee, consisting of Norma Miller, Larry Rupert and Hazel Bagg, have, according to the By-Laws and Constitution of the Lincoln Gem & Mineral Club, prepared the following slate of officer candidates for the year 1971:



President
 1st Vice-Pres.
 2nd Vice-Pres.
 Secretary
 Treasurer
 Board Members

(four to be elected)

Phyllis Parks
 Marie Wells
 Roger Pabian
 Evelyn Ulrich
 Ralph Ulrich
 Irl Everett
 Don Lawson
 George McGinnis
 Nelda Oliver
 Jim Parks
 Darline Sprick
 Lawrence Van Cleave
 C. Ray Waddle
 Lynn Wells



(The nominating committee failed to include the name of Irl Everett as a candidate for Board Member when the slate was read at the October meeting. Sorry about that.)

HAPPY THANKSGIVING ---



A Message from Phyllis -

"Thank you!" to the nominating committee for their vote of confidence in asking me to run for a second year on the slate of officers. I am again eager to work with the officers which you will select and would like to help fulfill any goals which you have in mind for 1971. The nominating committee devoted a great deal of time to the selection of officers for your approval on November 28. Get out and vote.

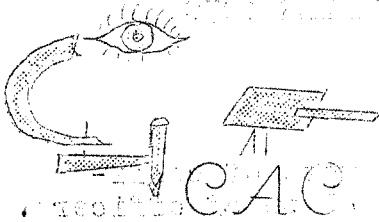
A "BIG" Thank You to all of the 1970 elected officers who have worked so hard on each project and tried to carry out your wishes whenever they are known. They are a great group of people and deserve the plaudits of the entire club.

Now--"Wanta try something new?" Several of our members have been concerned at the lack of "Rock Talk" at meetings and are eager to help promote for all who are interested a period when we can share experiences and discover new dimensions of our hobby as a group. This month we plan to kick off this idea with a preliminary session and if interest is shown we can plan to develop and enlarge the scope. See the calendar page for suggestions and time.

It seems that we overestimated ourselves on the 1970 Show and will not show the customary gain. It mostly boils down to one point - the cost for rental and services at the downtown location can not be offset by the rental received from only eight dealers. This together with a drop in advance ticket sales and increased costs of the better attractions and of advertising present a rather dismal picture.

At the October club meeting the members present voted to produce a show in 1971, in the spring, possibly the 3rd week-end of April if a suitable location could be found and no conflicts were discovered. Mr. & Mrs. Lynn Wells accepted the job of Show Chairman and with much enthusiasm burst into full swing, naming chairmen for the many jobs connected with a show. Howard Taylor as their Show Advisor, and delegated by me at the October Board Meeting, looked into the Fair Grounds Coliseum and Exhibition Hall possibilities and into the chance of renting the National Guard Armory. Nothing of a suitable size at the price we wanted to pay was available on the April date but he found that we could have the entire amount of space needed at the Armory on May 8 and 9. After considering all of the facts with several of their committee heads our Show Chairmen decided to host our 1971 Lincoln Gem & Mineral Club's 13th Annual Show at the National Guard Armory on May 7, 8, 9, 1971. This met with the approval of the Board of Directors. At the Armory we will have the use of the drill floor, kitchen, hallways and lounge on first floor; the large auditorium and several classrooms on the second floor, plus the very enthusiastic reception and service of our friend Mr. Jim Hasic.

Now is the time to start planning your cases for the 13th Annual Show and the time for offering your services to the Show Chairmen. Don't wait to be asked - be a volunteer and help make this another memorable show. Keep The Lincoln Gem & Mineral Club growing in service and interest in our wonderful hobby.



The October meeting of the Community Arts Council was devoted to the review of a study of The Arts in the Lincoln Public Secondary Schools. The purpose of the study by Dr. J. Earl Green of the University of Nebraska was to analyze and appraise the arts program (which includes music, visual arts, dance, creative writing and dramatics) in the public junior and senior high schools in Lincoln.

In summary, some recommendations derived from this study indicate that allied arts or humanities courses should be provided at the senior high level for the non-performing student, and the junior high program should be introductory and exploratory in nature. This does not call for the elimination of course for the performing student, but rather a total program for all.

that arts personnel and school administrators should work more closely together in defining the place and purpose of the arts in the total development of young people, and in determining the best means to implement these goals.

that grouping in all the performance classes should be done on the basis of ability rather than by grade level.

that more inclusive studies should be undertaken within each of the five areas encompassed within this study.

that evaluation of the arts program by students and school administrators should be undertaken.

that a companion study should be conducted within the elementary schools in the Lincoln system.

The concluding paragraph of Dr. Green's study states: "Many of these recommendations will necessitate shifts in traditional philosophy as well as the addition of courses, the utilization of teacher-aides, and in some cases additional staff and facilities. Nevertheless, if arts instruction is to take its rightful place, consideration will need to be given to ways of continually reassessing and restructuring the program in order to meet the ever-changing needs of society."

Some thought-provoking statements were made in the discussion period that followed:

For years art has been presented as an elective in both junior and senior high schools, as something one does when he has extra time.

The student who is truly interested in art is required to study science and other subjects.

If there is a possibility of making esthetics an important element of everyone's life, it should be available at every level.

It is not very valuable if it is continually used as something to make statistics.

We have got to get ourselves involved in making it available all the time to all people not as a necessity but as a way of life.

A MESSAGE FOR YOU



BIG CHANGE COMING UP!!

A NEW LOOK
WE'RE GOING BACK HOME

The 13th Annual
LINCOLN GEM & MINERAL CLUB SHOW
will be going back home to the
National Guard Armory,
1300 Military Rd., Lincoln, Nebr.

for their spring show on May 7, 8,
and 9, 1971.

This will be a three day show to accommodate the bussing of school children on Friday to visit the exhibits. On Sunday we suggest bringing Mom to the Show and let her pick her own Mother's Day gift from our dealers displays.

Our goal - every member to exhibit at least one case in the Show. We want to see what each of us have to share with fellow rockhounds and visitors. This is what makes a show so much fun.

Guests attending our 1970 Show came from 109 Nebraska towns and 15 other States, and at least two foreign countries. There were 21 Iowa and 12 Kansas towns represented and other states were California, Colorado, Illinois, Michigan, Minnesota, Montana, Missouri, New Jersey, Oregon, Ohio, South Dakota, Texas and Washington. We can conclude that our Lincoln Show does draw people and we need not take a back seat to anyone.

As your 1971 Show Chairmen, Lynn and I are asking for the help and contributions of each club member to make the '71 Show one long to remember with pleasure for the club.

So "GO ROCKHOUNDS"
And PLAN BIG

Your 1971 Show Chairmen - Lynn and Marie Wells

IN CUTTING OPAL one often finds small cracks that detract from the beauty of the finished gem. Immersing in oil makes the cracks invisible, but eventually the oil seeps out again. A New Jersey Lapidarist has found that by melting paraffin and immersing the Opal in it, the paraffin will penetrate the cracks in the Opal, and it will not seep out later. The Opal may be dug from the hardened paraffin, scraped off and wiped with a cloth dipped in acetone. (via The Pseudomorph & The Monthly Grind.)

JOKE: Powder man at the mine: "If you think women ain't explosive, just drop one!". (Show-Me Newsletter)

SHOP HINT...For drawing a cab outline onto a slab from templates, try using a knitting needle. They have good sharp points, last longer than the brass, and much cheaper than aluminum marking pencils. (From Brophy & Wagner via Show-Me)

FOOD FOR THOUGHT: A good listener is not only popular - after a while he knows something. via The Pyriter

AFTER LAPPING FLAT STONES, such as cut thunder eggs, with 600 grit, wash them and then leave under a heat lamp or a 100 watt light bulb for about 5 minutes. When the stones are warm, polish them on a felt wheel with tin oxide. By preheating, the polishing is almost instant. Otherwise, the felt wheel has to heat the stone before the polishing action begins. (via Michigan Gem News)

TO CLEAN CHALCEDONY ROSES...to one dishpan of roses, add water to cover, one cup of detergent, one pint of clorox. Heat thoroughly then cool overnight. Scrub with a bristle brush. Put a few roses at a time in muriatic acid. Leave until it stops bubbling. Remove with wooden tongs. Soak 7 to 10 days in oxalic acid solution (one pound xls to 2 gallons of water.) Remove and wash thoroughly. Lots of bother, but the results are beautiful. (via Breccia)

CLEANING MINERAL SPECIMENS - Quartz crystals: Red and brown stains on quartz can usually be removed by soaking in a concentrated solution of oxalic acid. Black stains may be due to manganese. Try to remove it with hydrochloric acid.

Fluorite: can be cleaned with a little of the same acid. It will eat limestone, so don't overdo it.

CLEANING COPPER - Use one part of glacial ascectic acid to ten parts water (always add acid to the water and do it slowly). Immerse copper until it is bright and shiny. Rinse in clean water. Then, neutralize in ammonia. Rinse in water, dry, spray with clear plastic and your specimens will look beautiful.

via The Gravelog & Cedar Valley N

CLEANING FOSSILS-so many fine pyritized fossil specimens are ruined by cleaning them in muriatic acid. Instead, use #2 SPAREX, for a perfect result. Don't soak specimens in Sparex, just dip a toothbrush in the solution and scrub specimen carefully. (via Snooper & Ced. Val. News.)

A FEW DROPS OF ALCOHOL in the water in which you keep opals will keep them from turning dark and prevent the water from getting stagnant.

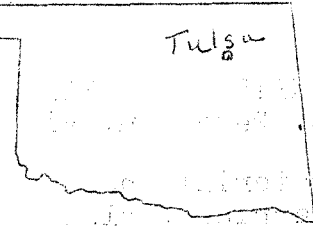
IF YOUR SILVER jewelry has become badly tarnished and no silver polish is at hand, the shine can be restored by applying any standard brand of toothpaste with cotton. Rinse jewelry in warm water and dry thoroughly. This emergency measure will not harm the silver.

IF you use kerosene and lubricating oil in your trim saw, try hair oil instead of lubricating oil. The perfumed hair oil will give off an agreeable odor and if you use the type with lanolin in it, the mixture will be kinder to your skin.

MICH. GEM NEWS via THE ROCKETTE

TRUE OR FALSE? No matter what happens there is always someone who knew it would!

JUST A LITTLE NOTE...about our trip. Lois and I left here to spend a few days in Oklahoma with the Painton's in October (19th to 22nd). We arrived there Monday night (19th) and after the usual hugs and kisses, Ivan asked us to come up to his studio. As we sat there talking he handed me a slab of Nebraska petrified wood I gave him over a year ago and said, "Here's your slab back". (You see he promised to paint me a picture of it. He is well noted for his "Roc Art". In fact, he has received many honors from this.) After a few minutes I felt that he had forgotten my painting, but no - he said, "There's your own painting on the easel."



Now needless to say Lois and I were thrilled. And we will have both slab and painting at the meeting.

We stayed with them till Saturday morning and then left for Tulsa. In staying with them we once again got a little more history of them and their homestead. Ivan told us that next year (1971) the store which his father started will have been in operation for 75 years - and what history is in their area! His father homesteaded this place in the Oklahoma land rush...

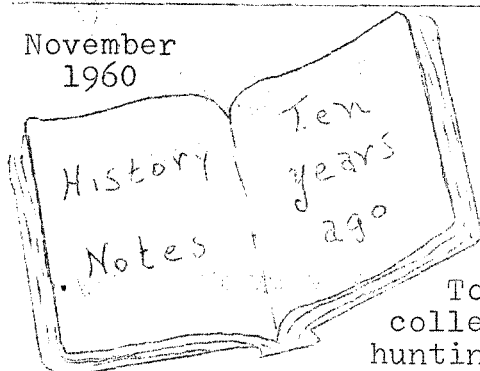
Anyway, after we left them we went about 10 miles from their place and coming down the hiway was a steer, and of course, I hit the thing! (Not too hard). Just \$120 worth of damage to my truck! Lois jumped out to see what happened to the cow and I jumped out to see what happened to the truck. and ran away - I got back in the road a ways and Lois said "Boy, I'm glad that poor cow got up and ran." I said "Why?" Lois said, "How would we ever get it in the truck?" I said, "Why would we want it in the truck?" Lois - "well to take the poor thing to the hospital." I said, "Mrs. Everett, can you see us taking a steer to the hospital in the back of our truck? They would have locked us all up." Anyway, we had a lot of chuckles over this.



We went on to Tulsa to the Rock Show and met all our old friends there. Also met an old member - a Mr. Fast who now lives in Oklahoma on his Dad's old place. He said to tell all the folks "Hi". We came on back home Monday and Gee, what lovely colors we saw in the scrub oak in Oklahoma and Kansas.

This is enough of our trip but we did have fun!

- Ev



Regular meeting held at Morrill Hall. Thirty-four members were present. Mr. Robert Fast was welcomed as a guest.

Work was begun by the secretary in compiling the necessary information to submit to the Department of Internal Revenue in order to obtain an income tax exemption.

Tom Simmons displayed samples of specimens he collected during the summer and told about his hunting experiences.

- From the notebook of Historian - Frances Tracy

CHRISTMAS ANYONE? Here is Christmas Motif Pin and Earrings, by Harry E. Peterson, via THE OPAL, that you can finish just in time!

Materials needed: Ga. 18 Sterling sheet for Pin. Ga. 24 sheet for Earrings, plus the necessary findings.

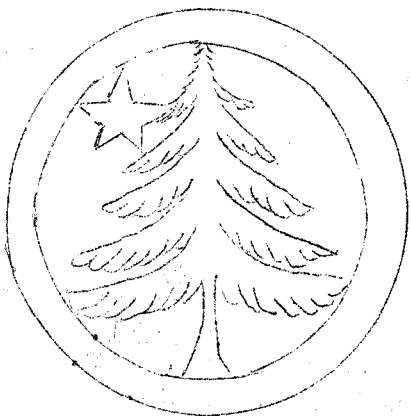
Step 1: Transfer design of Pin to the Ga. 18 silver. Drill a small hole for saw blade in each place to be cut out, then carefully saw out the tree and star design leaving only the six small spaces where they are attached to the outside rim. A shallow line should then be chased at these points. All the lines on the lower edges on the branches are simply saw cuts, carefully cut into the branch after the rough outline has been sawed. Saw out the outside of the blank, file and emery all edges.

Step 2: Cover the outside rim with small hammermarks, use the ball end of a small ball peen hammer. Note that the hammer should be highly polished so that it will leave small shiny hammermarks.

The outside rim should then be domed slightly with a hammer on wood. Some of the tree branches may also be raised to suit your taste.

Step 3: Buff back of blank, solder hinge and safety catch in place, pickle, then buff entire piece. Attach pintong and give a final finish.

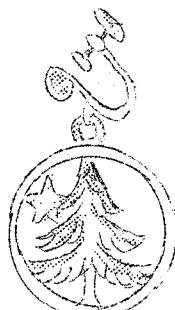
The earrings are made in the same manner, except that you drill a hole and leave a small loop at the top for dangle earrings. Carefully cut out one blank then use it as a pattern for the other one. Because the parts are so small, the hammering is omitted and the whole blank is domed up slightly after all cutting is done. Also note that one blank is turned over so that you will have a matching pair.



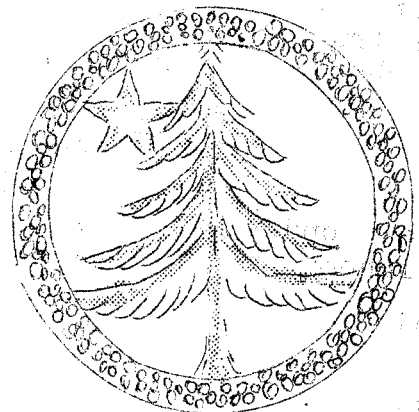
Pattern
for Pin



Pattern
for
Earring



Finished
Earring

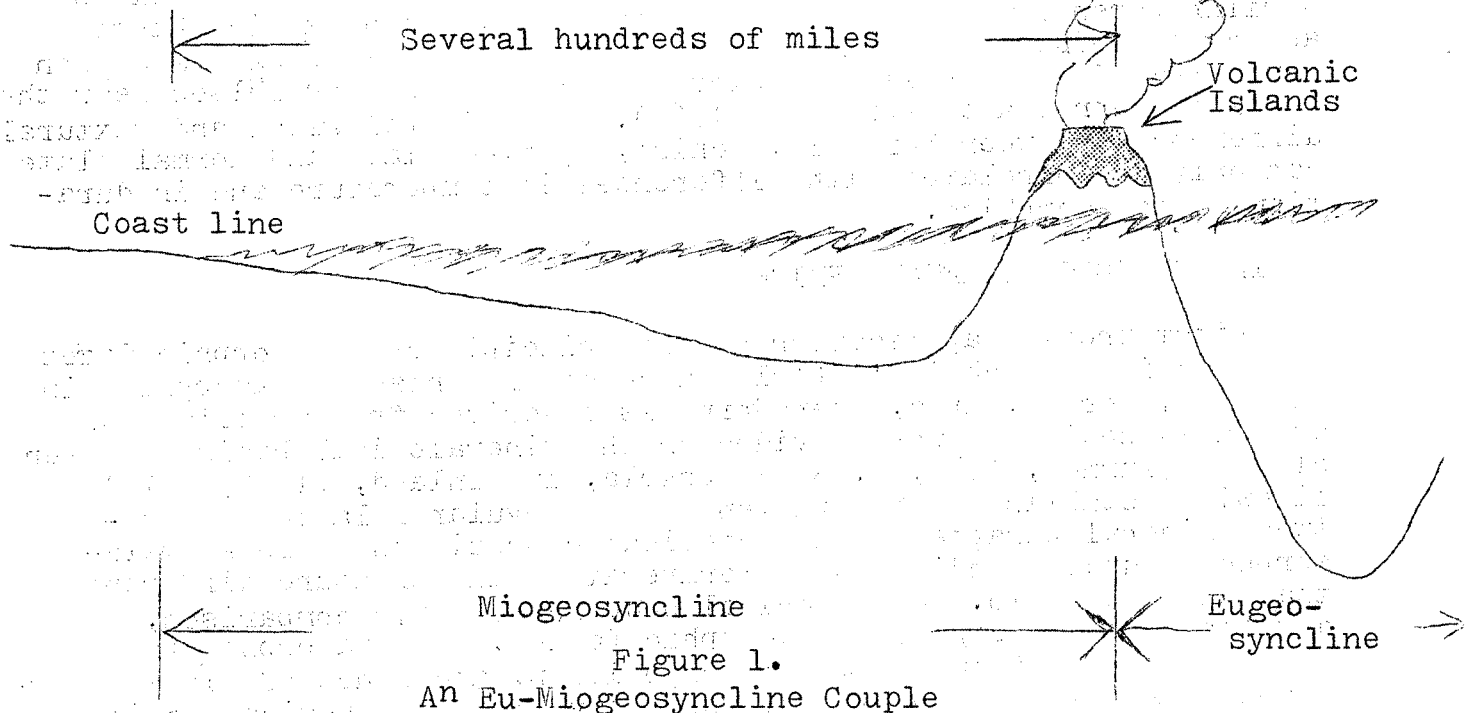


Finished Pin

You may not believe it but Christmas really is not very far away.
Have Fun!

METAMORPHISM AND CRUSTAL DEVELOPMENT-by Roger Pabian (continued from last month)
 The simple (or elementary geosyncline) is the eu-miogeosyncline couple (Aubouin, 1965, p. 68). (See figure 1).

Sandstone, shales, and carbonate rocks accumulate in the miogeosyncline whereas black graptolitic shales, radiolarian cherts, and spillitic lavas (Steinman's trinity) accumulate in the eugeosyncline.



BASIC INTRUSIONS AND CONTACT METAMORPHISM

As the Geosyncline develops, volcanic activity may begin in or near the mobile belt and these volcanoes may build up new island arcs of the present day (e.g. the Aleutins, Japanese Archipelago) (Read and Watson, 1966, p. 183). These island arcs furnish thick sediments of graywackes with which andesitic or rhyolitic lavas may be associated.

As ultrabasic lavas are intruded into the sediments of the eugeosyncline, we should expect, and indeed find, evidence to indicate contact metamorphism. Hence, the order of metamorphism in the geosynclinal pile would be contact metamorphism due to ultrabasic intrusions, followed by regional metamorphism and finally contact metamorphism related to the emplacement of granitic bodies.

Turner and Verhoogen (1960, p. 657-658) discuss some of the details associated with contact metamorphism due to basic intrusions. They indicate that contact metamorphism is caused by injections of liquid magma into the country-rock where metamorphic temperatures were likely controlled by temperature gradients connected with the outward flow of heat from the magma. They report such contacts especially along the lower surfaces of the 'Karoo dolerites' of South Africa and 'Duluth gabbros' of Minnesota. The effect of metamorphism in sensitive rocks as slates may be seen in an aureole 500 to 1000 feet from the contact.

(continued next page)

Metamorphism and Crustal Development-by Roger Pabian (continued)

Generally, the aureoles associated with ultrabasic intrusions are narrower than those that surround comparable granitic intrusions.

Broad aureoles surrounding basic intrusions may show progressive zones from slate to biotite schist to cordierite or hypersthene hornfels. The resulting mineral assemblages - e.g., cordierite-hypersthene-plagioclase-biotite, quartz-biotite-orthoclase-plagioclase - are in most cases identical with assemblages recorded for rocks of similar parentage in some granitic aureoles. Metasomatic changes as the introduction of CaO and FeO and the removal of K₂O have been demonstrated for xenoliths enclosed in gabbro and hornfelses near the contact (Turner and Verhoogen, 1960). The mineralogical and textural differences between hornfels, schist, spotted slate and normal slate can only be correlated with differences in temperature and in duration of metamorphism.

FACIES OF CONTACT METAMORPHISM

The first precise application of the principle of metamorphic facies is found in Goldschmidt's (1911) account of contact metamorphism in the Oslo, Norway, area, where hornfelses derived from argillaceous and marly sediments were divided on the mineralogical basis into ten classes (Turner, 1948, p. 54.) Eskola, in Finland, (1914, 1915) likewise established the existence of a regular relationship between mineral paragneesis and chemical composition of rocks metamorphosed under conditions of temperature and pressure different than those at Oslo. As a logical sequence to this comparison, he developed the concept of metamorphic facies. A metamorphic facies includes rocks of any chemical composition, and hence of widely varying mineralogical composition, which have reached chemical equilibrium during metamorphism under a particular set of physical conditions. Implicit in this definition are several points:

- 1) for a given facies the mineral assemblage that develops in a rock of a given chemical assemblage is constant,
- 2) minerals that are stable over a wider range of temperatures and pressures may belong to several facies.
- 3) for a precise definition of a facies, minerals with a narrow pressure and temperature stability range are desirable, and
- 4) rocks of the same facies can be termed isofacial or isograde (isogradic).

Turner and Verhoogen (1960) list four facies associated with contact metamorphism. These are, in order of increasing temperature (at constant water pressure) or decreasing water pressure (at a constant temperature):

- 1) Albite-epidote-hornfels facies. This facies typically occurs on the outer margins of zones aureoles and passes inward into rocks of the hornblende-hornfels facies.

(continued next page)

Metamorphism and Crustal Development- by Roger Pabian (continued)

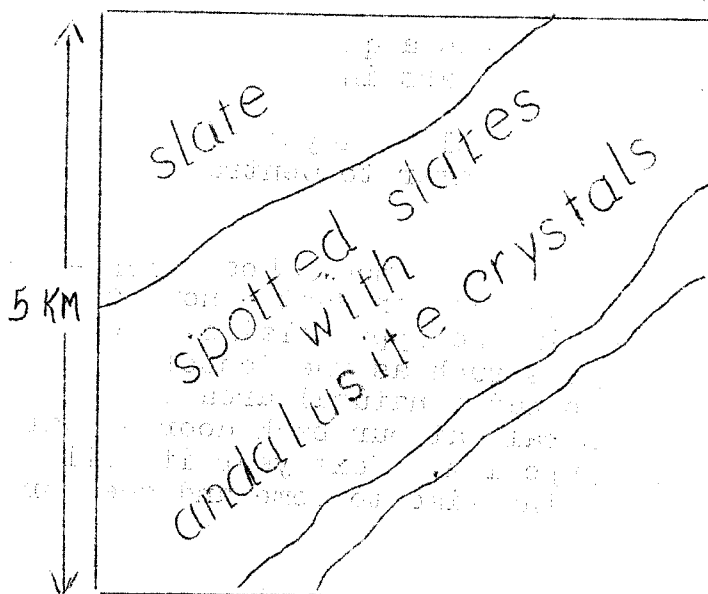
Because of the low temperature of metamorphism, recrystallization is imperfect. Mineral assemblages are similar to greenschist facies of regional metamorphism.'

2) Hornblend-hornfels facies. Rocks of this facies occur extensively in contact aureoles. Where these are zoned, an inner zone of higher grade pyroxene - hornfels facies may separate the hornblende-hornfels and their associates from the igneous contact. Eskola attributed this facies to lower temperatures and higher pressures of metamorphism than the pyroxene-hornfels facies.

3) Pyroxene-hornfels facies. Rocks of this facies are found in the innermost zones of some contact aureoles. Their development is favored by shallow depths (where pressures are low) and proximity to intrusions of basic magma (where temperatures are high).

4) Sanidinite facies. The field occurrence of the sanidinite facies is restricted to xenoliths in lavas and dike rocks, fragments in breccias, and local developments of contact rocks in the immediate vicinity of near-surface intrusions. Water and other substances of high vapor pressures escape easily. The sanidinite facies develops under the maximum temperatures and minimum pressures of metamorphism.

The contact aureole of the Inch gabbro on northeast Scotland (Read and Watson, 1966, p. 148) is a good example of contact metamorphic facies related to a basic intrusion. Andalusite-cordierite hornfels are nearest the intrusion. Spotted slates with small crystals of andalusite are seen at a distance of about 3 km. from the contact, the pelitic country rock, slate, is found. (See Figure 2).



During and after the intrusion of a body of magma, heat flows outward from the magma toward the country rock. A thermal gradient results such that those rocks nearest the magma, and subjected to the most heat for the longest period of time are the most profoundly altered. Thus, the thermal gradient declines as we move away from the magma while the pressures increase.

(To be continued next month)

Figure 2

Contact Aureole of the
Inch Gabbro, Scotland

BLACK HILLS MINERAL SOCIETY HAS FIRST MICROMOUNT SYMPOSIUM

By Ron Ruchs

About sixty people gathered for two days of lectures, lab experience and field trips on August 22-23 at the South Dakota School of Mines and Technology at Rapid City.

The symposium started out with a registration and reception at the Mineral Industries building at Mines. There I met micromounters and collectors from Ohio, Minnesota and even a club from Newcastle, Wyoming. These members want to keep their club active by participating in as many rockhound events as possible.

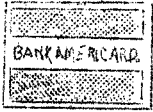
We were introduced to Mr. Williard Roberts, President of the State Association and the Black Hills Mineral Society which will be host to the state show next June. Mr. Roberts is also curator of Mineralogy at Mines and author of Mineralogy in the Black Hills. Our other assistant and lecturer was David H. Garske who is professor of Mineralogy at Mines. These two men were the chairman for the weekend helping us identify and collect Black Hills minerals.

Mr. Roberts took us on a tour of the Mineral Industries building and its facilities. He showed us his toys in helping identify minerals of the area. Several of the machines dealt with identification of atomic composition of minerals. The x-ray defraction and x-ray fluorescence machines tell and break down the atomic composition of minerals. Thus far, Mr. Roberts has found several new minerals in the Hills area plus discovery of minerals known only to exist in Europe or else where from that area or the U.S.

Saturday afternoon was a series of lectures acquainting ourselves of the Black Hills materials with labs in the afternoon.

Sunday we gathered in the morning to travel to Keystone to the Big Chief Mines to start collecting and later to Central City and the Carbonate Camp.

The whole event was a very worthwhile experience. Most micromount symposiums have been held in the East or West - now we have a great possibility to have one in the Upper plains. We were very fortunate to have facilities such as the School of Mines and our lecturers, but we also had a natural area of untapped resources for collecting minerals at our back door - what a good way to start a micromount symposium. Next year it will probably be offered again - do take the time to come and see for yourself.



CLAUS

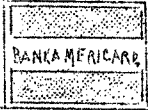


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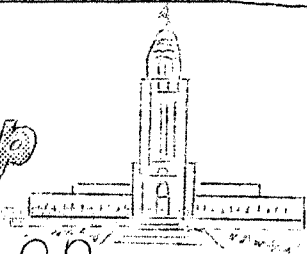
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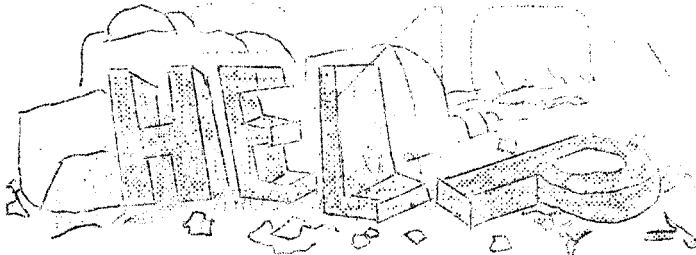
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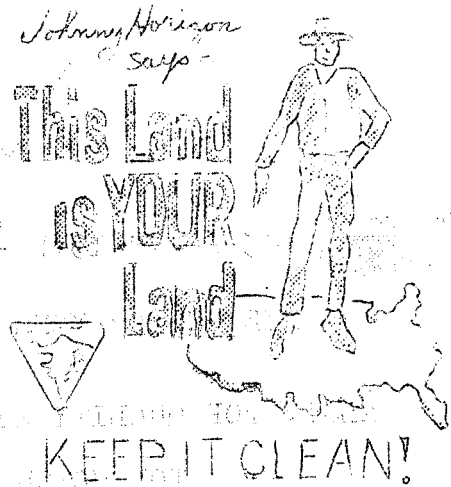
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