60 Years
Diggin' Rocks
& Minerals

Denver Gem & Mineral Guild
Founded March 1964

AFMS Silver Medal Club 2016

May 2024

TIPS & CHIPS SUPPLEMENT

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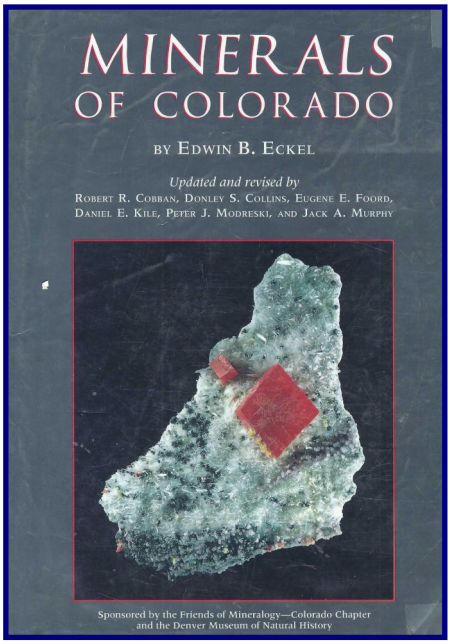
DGMG's HERITAGE—Part II—Our authors, Part A, Richard M. Pearl!

Most of us cut our eye teeth on Richard M. Pearl's mineral collecting books—"How to Know the Rocks & Minerals," "Minerals of Colorado," etc., etc. Pearl, a professor at Colorado College in Colorado Springs was voted an honorary member of the Guild in the 1960s. We devote many pages to his legacy in this supplement.

Other DGMG members have written tomes about minerals, mineral collecting history, collecting, local history, and even have made a movie which starred DGMG members! So this month, we will focus on our many authors in this supplement. It will take two supplements to cover all of the authors.



Probably the most important mineral book produced by Colorado mineralogists, including DGMG members, is the *Minerals of Colorado* book. Published in 1997, it was a much needed update of Ed Eckel's USGS Bulletin 1114, *Minerals of Colorado-a 100 year record*.

Both Dan Kile and Pete Modreski, listed as authors, were/are Guild members. And descriptions and pictures of minerals throughout the book bear many Guild members' names.

Pete will fill us in on how the BIG BOOK came to be.

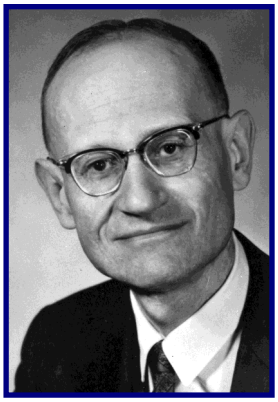
Supplement B, the publications lists from Guild authors other than Pearl, is too long to reprint and mail out—26 pages (at the moment). If you wish to read it, you will have to go on line to the club's webpage.

In This May 2024 SUPPLEMENT PART A

60 years of DGMG

RICHARD MAXWELL PEARL

(1913-1980)



Born in Brooklyn, NY, Richard Maxwell Pearl was raised in Detroit, MI, where his father, Morse Pearl, owned a jewelry store. He graduated with a BS in Geology from the University of Colorado in 1939, worked for a while in the industry, served in the US Army from 1942-1944, then returned to Harvard in 1946 for a Master of Arts Degree in Education. He came to Colorado College and became internationally renown as a mineralogist and certified gemologist, employed as a professor there from 1946-1980 and the curator of minerals. He founded the American Federation of Mineralogical Societies. At one point in time, he owned a mineral supply shop at 1539 Broadway. He authored over 300 articles in various scientific and popular periodicals, and over 30 books on popular mineralogy. We assume you have at least one! He was the editor and publisher of *Earth Science Magazine* from 1973-1980, copies of which are in the club library. He was the Guild's first honorary member and the original secretary/treasurer of the Colorado Mineral Society.

List of books by Richard Maxwell Pearl

Gem Mining in Colorado 1939, *Colorado Magazine* (ATTACHED)
Mineral Collectors' Handbook 1947
Popular Gemology, 1948
America's Mountain: Pikes Peak 1954, 1964
How to Know the Minerals and Rocks, 1955, 11 printings
Rocks and Minerals, 1956, 1966
1001 questions Answered about the Mineral Kingdom
1001 answers to questions about earth science 1965
Handbook for Prospectors 1926, 1931, 1935, 1943, 1954, 1973 (5 editions)
Wonders of Rocks and Minerals
Colorado Gem Trails and Mineral Guide 1951, 1953, 1953, 1972
Geology 1960, 1962, 1963, 1966 (4 editions)
Gems, Minerals, Crystals, and Ores, The Collector's Encyclopedia (4 editions, 1964, 1967, 1977)
Successful Mineral Collecting and Prospecting 1961
Colorado Rocks, Minerals, Fossils 1964
Exploring Rocks, Minerals, Fossils in Colorado 1964, 1969
Rocks and Minerals 1956, 1961
An Alternative Future for America
Faceted Gems-A Historical Article
American Gem Trails 1964
The Wonder world of Metals 1966
Wonders of Rocks and Minerals
Wonders of Gems
An Introduction to the Mineral Kingdom 1966
Gem Identification Simplified 1968
Cleaning and Preserving Minerals 1975
Springs of Colorado 1975
Nature's Names for Colorado Communities 1975
Landforms of Colorado 1975
Popular Gemology
Garnet Gem and Mineral 1975
Turquoise 1976
Seven Keys to the Rocky Mountains 1968
Historical Atlas of Colorado
Nature as Sculptor: A Geologic Interpretation of Colorado Scenery
Waterfalls: An Appreciation
Field Book of Minerals
What the Rocks Yield
Dinosaurs: Their Life and Times
The Boundary Book
Gem Identification Simplified
Blowpipe and Chemical Testing of Minerals
Atlas of Crystal Stereograms
Guide to Geologic Literature
The Art of Gem Cutting with Dr. H.C. Dake
A Geologic Interpretation of Colorado Scenery

THE DENVER GEM AND MINERAL GUILD—60 Years old!

Founded in 1964, the Denver Gem and Mineral Guild pursues exploration, experimentation, and education in the earth sciences; the discovery, development and preservation of minerals and mineral deposits; and the advancement, encouragement and utilization of the principles of art and craftsmanship as applied to gems and minerals.

The Guild meets on the second Friday of the month at 7:00 pm at the Wheat Ridge United Methodist Church, 38th & Wadsworth, Wheat Ridge, except for June, July, August, and December. Picnics, field trips, and parties replace regular meetings those months.

Deadline for article submission for the Tips & Chips is the 20th of each month. Email photos and articles to editor Beth Simmons at mineralguild@gmail.com. Exchange with other newsletters is invited, and reprinting of material from this newsletter with proper attribution is encouraged.

Richard M. Pearl

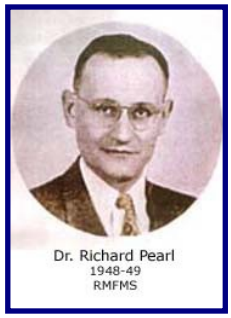
Rock hobbyists and professionals have lost a true friend and benefactor with the passing of Richard M. Pearl on November 28, 1980. He was 67.

Professor Pearl was known throughout the United States and in other countries as one of the foremost authors in the mineral, gem and geology fields. He was editor and publisher of EARTH SCIENCE Magazine; a writer for various other magazines, including GEMS AND MINERALS; and the author of numerous books.

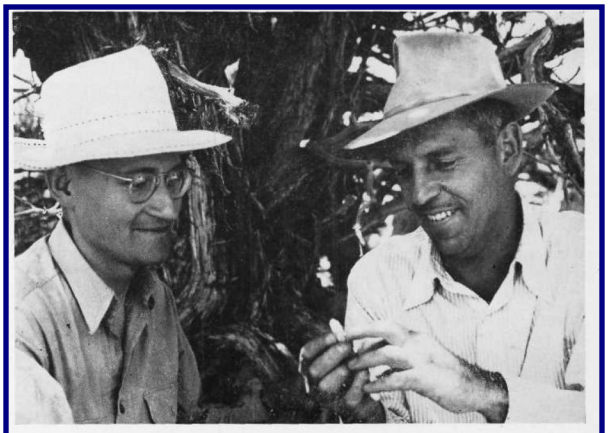
In the rock hobby Richard Pearl is known as a co-founder, along with Dr. Ben Hur Wilson, of the American Federation of Mineralogical Societies. He was that organization's first vice-president and the second president.

Mr. Pearl taught for 34 years at Colorado College, Colorado Springs, Colorado, and was professor emeritus of geology. He is survived by his widow, Mignon. ☆

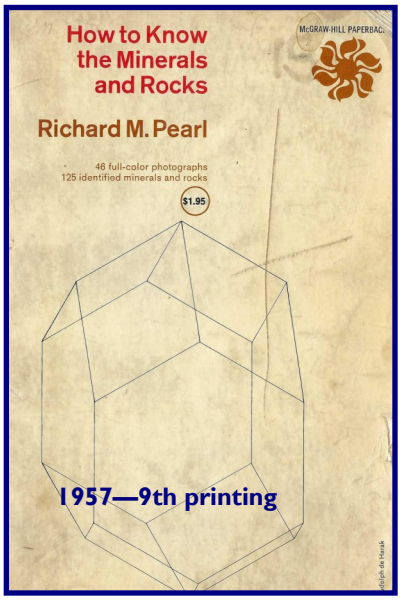
60 yrs DGMG

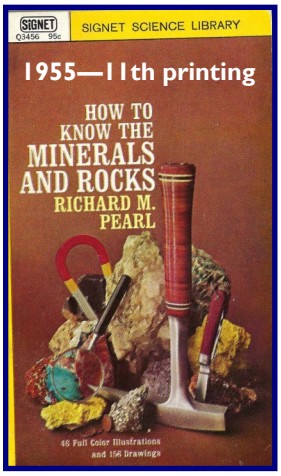


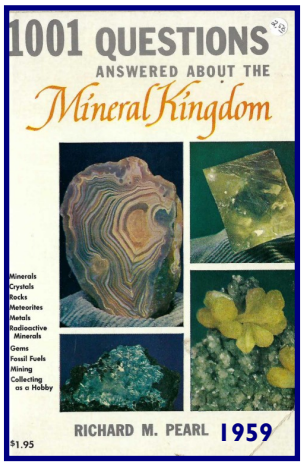
Dr. Richard Pearl
1948-49
RMFMS

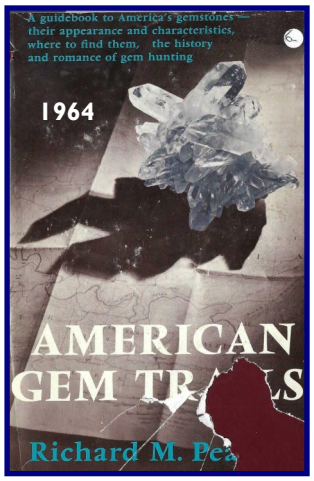


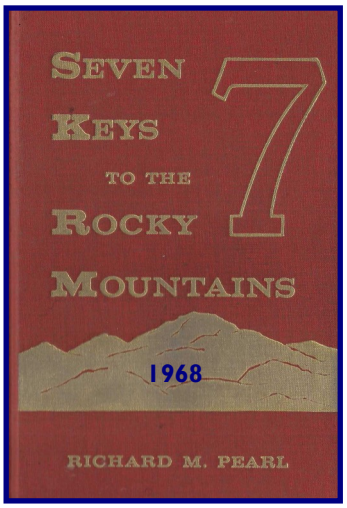
Chester R. Howard, new president of the Rocky Mountain Federation (right), shows his prize topaz crystal to Richard M. Pearl, vice-president of the new American Federation of Mineralogical societies.

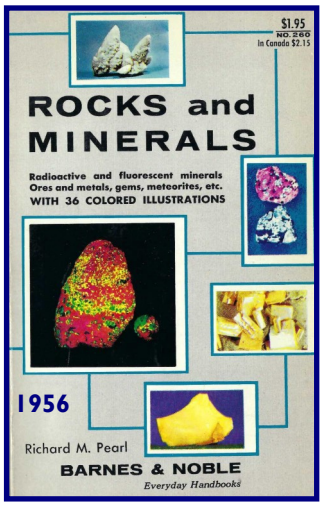


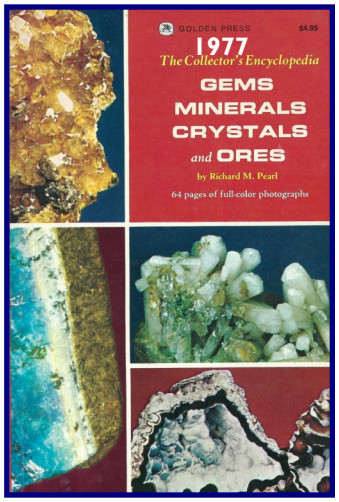


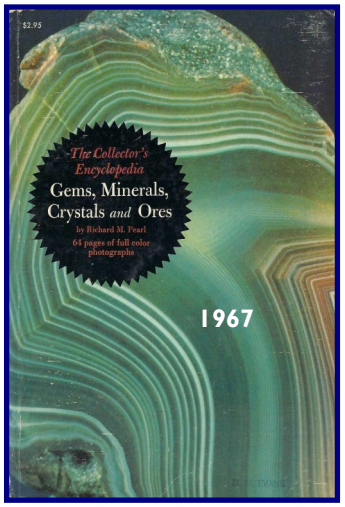


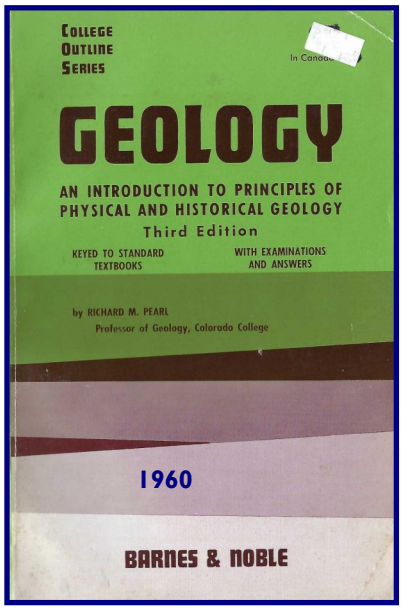


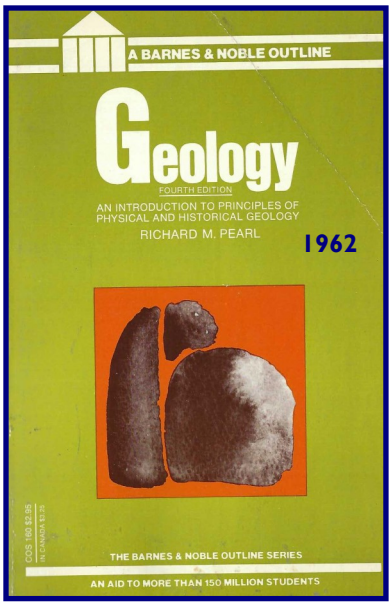









College Outline Series
GEOLOGY
AN INTRODUCTION TO PRINCIPLES OF PHYSICAL AND HISTORICAL GEOLOGY
Third Edition
KEYED TO STANDARD TEXTBOOKS
WITH EXAMINATIONS AND ANSWERS
by RICHARD M. PEARL
Professor of Geology, Colorado College
1960
BARNES & NOBLE


A BARNES & NOBLE OUTLINE
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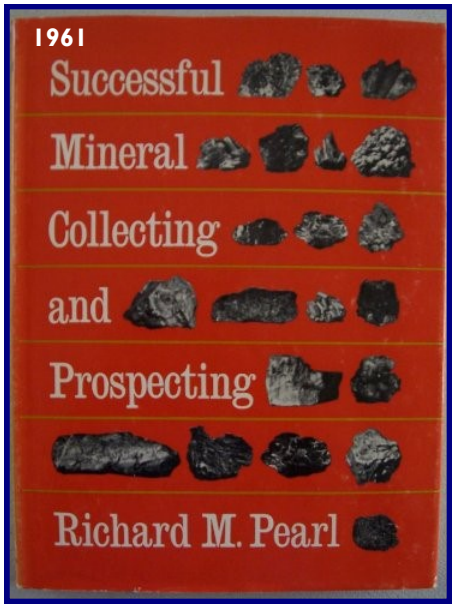
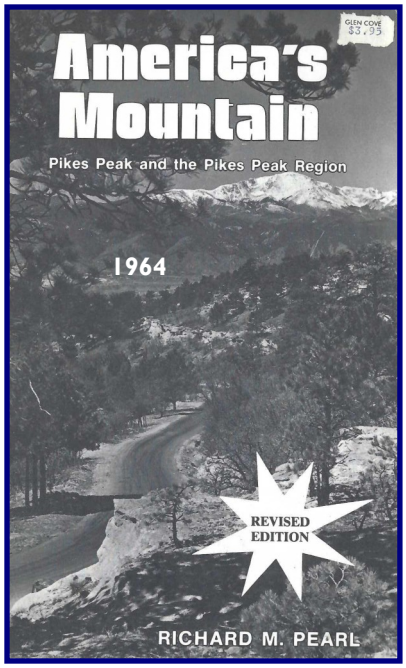
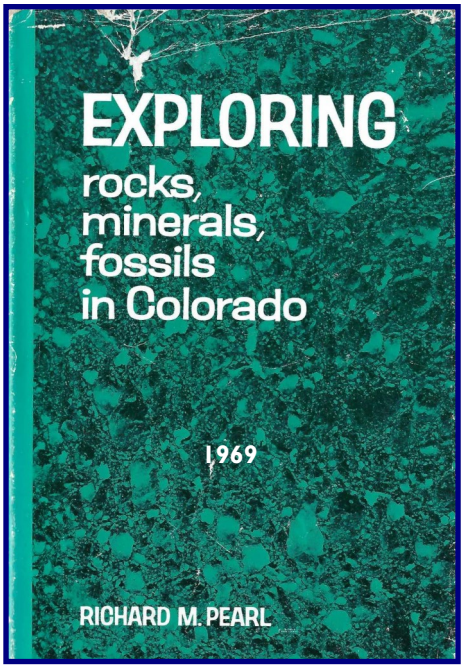
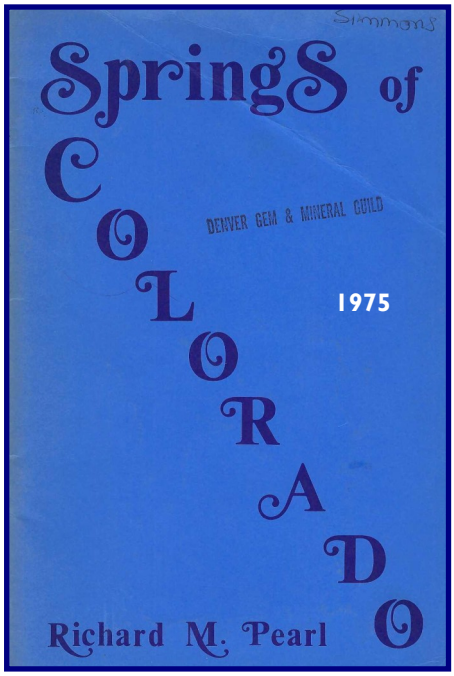
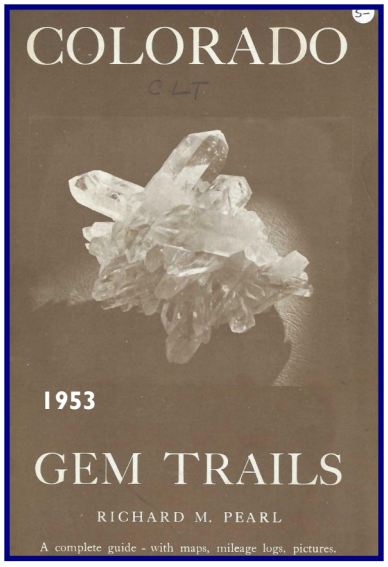
AN INTRODUCTION TO PRINCIPLES OF PHYSICAL AND HISTORICAL GEOLOGY
RICHARD M. PEARL
1962
THE BARNES & NOBLE OUTLINE SERIES
AN AID TO MORE THAN 150 MILLION STUDENTS

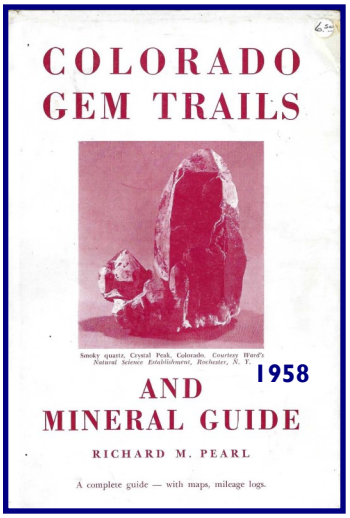

1961
Successful
Mineral
Collecting
and
Prospecting
Richard M. Pearl

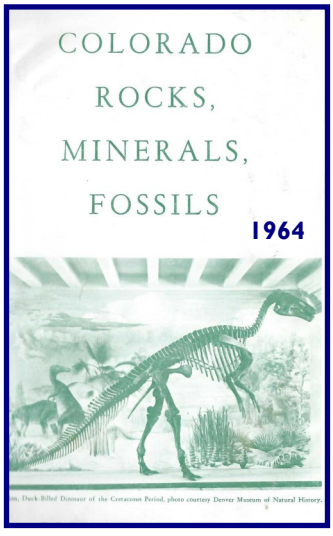

America's Mountain
Pikes Peak and the Pikes Peak Region
1964
REVISED EDITION
RICHARD M. PEARL

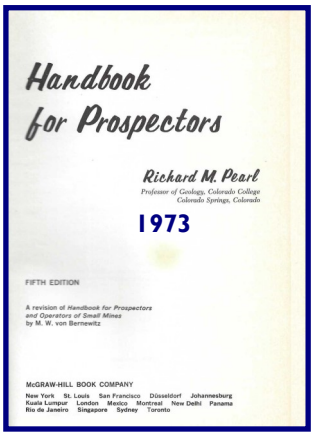

EXPLORING
rocks, minerals, fossils in Colorado
1969
RICHARD M. PEARL

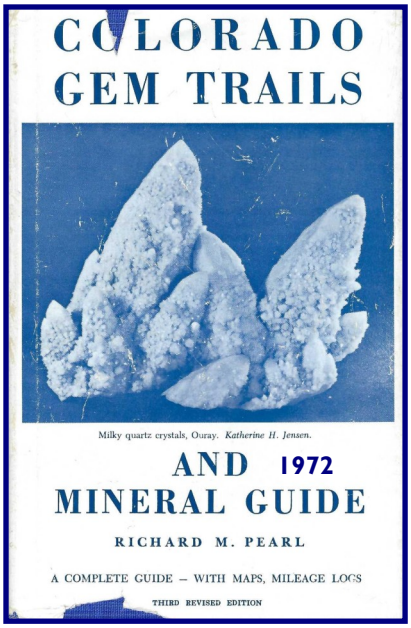

Springs of Colorado
DENVER GEM & MINERAL GUILD
1975
Richard M. Pearl

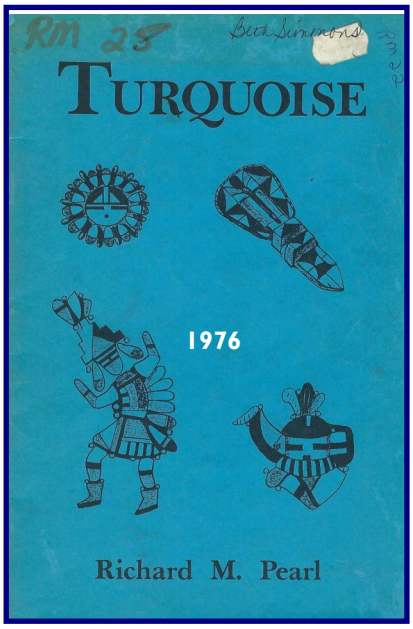

COLORADO
1953
GEM TRAILS
RICHARD M. PEARL
A complete guide - with maps, mileage logs, pictures.

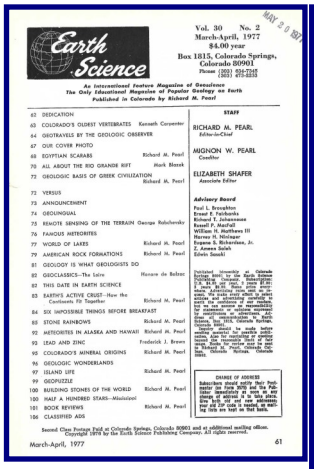

COLORADO GEM TRAILS
1958
AND MINERAL GUIDE
RICHARD M. PEARL
A complete guide — with maps, mileage logs.

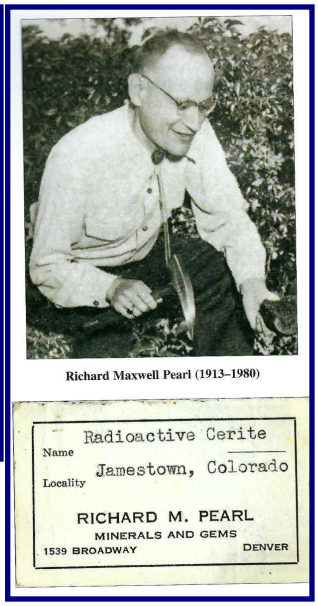

COLORADO
ROCKS,
MINERALS,
FOSSILS
1964


Handbook for Prospectors
Richard M. Pearl
Professor of Geology, Colorado College
Colorado Springs, Colorado
1973
FIFTH EDITION
McGRAW-HILL BOOK COMPANY









MINERAL-INTERESTING PLACES IN COLORADO

1965

By RICHARD M. PEARL

Colorado College, Colorado Springs, Colo.

The mineral hobbyist finds much to interest him in Colorado besides the specimens he collects. This article is a brief survey of the sort of things that have a special appeal to the rockhound while he tours the state.

That he is interested, more so than other visitors, in the physical geology as expressed in the rocks, is self-evident and need be mentioned no more except to say that Colorado has at least its share of fine scenery, which is "geology at the surface."

The rock, mineral, and gem specimens to be collected are likewise diversified. Colorado has more mineral species recorded than any other state except California, although New Mexico has nearly as many. It was, in fact, while traveling over the state in the summer of 1964 for a complete revision of my book *Colorado Gem Trails and Mineral Guide* that the idea for this article came to me.

Museums are an obvious attraction to the visiting collector. Several of the Colorado museums are among the world's best, and others are surely worth seeing also. Of the outstanding exhibits, those of the Denver Museum of Natural History (in City Park), the Colorado State Historical Society (in the State Museum Building, across from the Capitol Building), and the Colorado School of Mines (in Berthoud Hall, Golden) are of exceptional quality. The University of Colorado Museum (in Boulder), the Pioneers' Museum (in Colorado Springs), the Municipal Museum in Canon City, the Western State College Museum (in Gunnison), the Saguache County Museum (in Saguache), and the Fort Collins Museum, each merit a stop, and you may be surprised at the value of these displays.

Before attempting to collect at the noted locality of the Table Mountains just outside Golden, for example, the collector should inspect the exhibits and the Geologic Museum of the Colorado School of Mines to become familiar with the names and appearance of the numerous zeolites to be found there. A similar procedure is recommended at other localities.

The exhibits in the State Museum Building were formerly under the care of the State Bureau of Mines, which arranged them according to county. The collector can therefore see which specimens are found in each county, as did the prospector of the old days.

Besides the regular museums, there are good collections in scattered libraries, county buildings in the mining counties (at Central City, for example), assay offices, banks, chamber-of-commerce offices, and elsewhere. The Holland House hotel in Golden, for instance, has a good display loaned by the Colorado School of Mines. In Building 25 at the Denver Federal Center, the U.S. Geological Survey always has an excellent mineral display in the hall or the library. So does the Atomic Energy Commission at its Grand Junction headquarters.

While touring during the summer, you can hardly escape one or more of the mineral shows in Denver, Boulder, Pueblo, Grand Junction, Colo. Springs, or other cities. No collector needs to be reminded how useful these are for seeing local material and for meeting local collectors.

In other seasons, and sometimes even in summer, the clubs and societies have regular meetings to which visitors are welcome. The Stone Age Fair, held in October in Loveland, combines both rocks and archeology in appropriate fashion, for early man used stones as an important part of his daily life. The famous Lindenmeier site near Fort Collins was a major camp ground for Folsom man.

A visit to a mine is a worthwhile experience. At Idaho Springs the Colorado School of Mines operates its Experimental Mine for the instruction of the students of this famous institution. Free guided tours are run from 9 to 5 on weekdays from Memorial Day to Labor Day, and you can see the actual mining processes under favorable conditions. Perhaps your guide will be from India or Brazil. The Edgar mine has been leased for this purpose for 99 years and consists of 4,000 feet of tunnels and other workings, furnished with $200,000 worth of equipment, most of it contributed by manufacturers.

Throughout the mining districts are a number of properties open to the public for a fee. The Molly Kathleen mine at Cripple Creek is an outstanding example. The Silver King mine at Silver Plume features 20 barbeque pits in its picnic area and has a rock shop adjoining. The Central City Mine and Mining and Historical Museum has both of the facilities named. The Bobtail tunnel at Black Hawk, the Lost Gold mine at Central City, and the Mystery mine at Silverton are similar to others of their kind.

At Idaho Springs you can enter the Blue Ribbon tunnel free and see the waterwheel run by Bridal Veil Falls a short distance beyond. These are maintained as municipal attractions.

Some of the mines are open for the purpose of treating ills by means of the radium emanations that accompany the escaping radon gas, one of the so-called daughter elements of uranium. The Alma Lincoln health mine west of Idaho Springs also offers guided tours as well as a cure. These places are good for rheumatism—if you don't have it when you go in, you probably will, after you have sat around long enough.

Not every rockhound really knows how to pan gold, but this method is also useful for quickly testing many kinds of mineral deposits. A number of "professional old-timers" operate stands around the state where you can learn the art. Vic's Gold Panning near Black Hawk is a typical place.

The observant person will learn much of local geology by looking at the stones used for the buildings. A gasoline station in Lamar is constructed of petrified wood found in Prowers County. This is admittedly an unusual building material, but the stones that have been used for this purpose make an interesting study for the traveling rockhound.

We hope you try to collect some of Pearl's works. They are Guild treasures!

GEM MINING IN COLORADO BY **RICHARD M. PEARL (his first article)**

THE COLORADO MAGAZINE: NOVEMBER, 1939, V. 16, #6, p. 213-220

(Mr. Pearl is a Graduate student in the Mineralogy Department of the University of Colorado and is Secretary-Treasurer of the Colorado Mineral Society-Ed.) (DGMG editor—I think you will find it interesting what Pearl told about the many gemstones found in Colorado. This was in the late 1930s, at the end of the Depression!)

Almost from the earliest days of its gold and silver discoveries, Colorado has held a leading place in the production of gems, ranking among the first half-dozen states in value of output. Over a hundred localities may be named as having yielded material of gem quality, representing about thirty mineral species and varieties, as well as the organic substance, jet.

There have long been, of course, more or less isolated finds of gem-stones that often received the benefit of local gossip but rarely were made known to the outside world. Other than these, the first gems were obtained by scientists who used them for purposes of study and made them famous. Then prospectors, individually or as small companies, mined them commercially. In recent years mineral collectors have done their share in becoming responsible for an increasingly large proportion of the total.

But the history of the gems of Colorado goes back far beyond hobbyist or prospector or scientist. It is to the building of the Rocky Mountains, which occupy the central of the three major north-south topographic divisions of the state, that Colorado is indebted for practically all its rich mineral resources, and the gems are no exception. Most of them either were formed by depositional or metamorphic processes associated with the mountain-making activities, or were exposed by the uplift (and subsequent erosion) that followed most of the compressional folding. As one dealer has expressed it, these gems are true Western antiquities! Igneous rocks, especially those of granitic composition and the closely related pegmatites, predominate among the rocks that contain the gem minerals.

The first list of Colorado gems to appear formally seems to have been that included in the classification of metals and minerals prepared by J. Alden Smith for Ovando J. Hollister's fascinating book, *The Mines of Colorado*, published in 1867 by Samuel Bowles an Company of Springfield, Massachusetts. In 1870 Smith, later to become Colorado's first State Geologist, published a similar list, somewhat augmented, *A Catalogue of the Principal Minerals of Colorado with Annotations on the Local Peculiarities of Several Species*. This booklet of sixteen pages, including the paper cover, was "printed at the Register office" in Central City, and described about fifteen kinds of gems. Some more varieties were added by members of the Hayden Survey, the seventh annual report (for 1873) having a complete list of the minerals that had been found up to that time in the Territory, as well as a separate list of those found within the district assigned to the South Park division.

J.A. Randall in 1886 issued a forty-eight page paper-covered booklet, *The Minerals of Colorado*, "printed by the Courier, Georgetown, Colorado," describing several hundred minerals and giving chemical analyses and the original references. Other editions were published later, the third in 1893, in which eleven pages were added as an appendix.

There are a few scientists, field men and analysts, whose names the reader encounters repeatedly in the gem literature of Colorado's earlier years- R.T. Cross, Samuel L. Penfield, Walter B. Smith, Whitman Cross, Douglas B. Sterrett, George Frederick Kunz, and, more recently, Douglas B. Sterrett, the last two of whom wrote the annual chapters on precious stones for *Mineral Resources*.

Many were the prospectors who searched the mountains of the state for signs of "color," for surface crystals of gems, and for the structures that might be likely to yield more of them. Quartz veins and pegmatite dikes were regarded as especially indicative of gem minerals. Several of the men were more generously endowed than the rest with the qualifications that make for successful mineral hunting, as well as with a bit more of luck, and they were able to report rather frequent discoveries over a number of years.

No name appears more often than that of J.D. Endicott of Canon City. During the beginning decade or so of the present century, especially around 1908, he found, claimed, and worked a variety of gem deposits throughout central Colorado.

The famous gem region around Mount Antero in the Sawatch Range must always be associated with N.D. Wanemaker, who made the first discovery of aquamarine there in 1884 or 1885. He lived for years in a small stone cabin in the glacier-gouged amphitheater on the south side of the mountain, about eight hundred feet below the summit. The roofless ruins of the old cabin still stand, entirely surrounded by barren rock, the only timber fifteen hundred feet below, the only water from a small pond which dries up before the end of summer.

W.C. Hart of Manitou was another early veteran in the search for gems in Colorado, and his activities extended almost to the Wyoming border. Mr. Hart's two daughters continued until recently to operate his store in Manitou, where part of his collection could be seen.

Some of Colorado's gems are particularly noteworthy. Wannemaker's discovery of aquamarine, already mentioned, opened up the highest mineral locality in North America, on the sides and virtually at the top of Mount Antero. The first account of the find was somewhat vague, for the place was then quite unknown in the East, but students, collectors, and dealers everywhere are now acquainted with the stones. The gem variety is usually blue to pale blue-green, but some specimens are of the prized deep blue of the Brazilian stones. Within a few months after their opening in 1906, two deposits in Eightmile Park, immediately north of the Royal Gorge of Arkansas River, were the largest producers of tourmaline gems in the United States outside of California. Although they were soon depleted, lovely specimens were obtained in pink, green, lilac, and blue, some of them varying in color form place to place in a single crystal.

The most characteristically Colorado gem is amazonstone. It is a variety of microcline feldspar, which in its usual form is a common and widespread mineral. Amazonstone occurs in bright green and blue, and blends of the two colors, often diluted with gray. It is opaque, and so its appeal is entirely one of color and luster. Often mistaken for jade, it is frequently sold as "Colorado jade" or "Pikes Peak jade." The first notice of amazonstone seems to have been in 1867 by Hollister, who mentioned it as occurring with several other minerals at the head of Elk Creek, "five miles from the old St. Louis Ranch." Peale, of the Hayden Survey, wrote in 1873: "About the base of the peak [Pikes] I found, rather abundantly, good crystals of amazonstone (green feldspar) and smoky quartz." Colorado amazonstone was made known to the world by a large display of it at the Centennial Exposition in Philadelphia in 1876, and the quality and quantity of the specimens and their low prices drove the Russian material from the market and brought grief to the exhibitors who had shipped much of it from Europe for sale at the fair. The Pikes Peak region is still the most important source of amazonstone, and sales of cut gems, mostly to tourists in Denver and Colorado Springs, have gone above a thousand dollars annually for many of the past years.

The first recognition of phenakite in the United States was in Crystal Park, south of Manitou, in 1882. This uncommon mineral, so named from the Greek word meaning *deceiver*, because of the frequency with which the crystals have been mistaken for quartz, makes an attractive gem when fashioned. It is usually colorless, but may be in pale tints of yellow, brown, gray, and rose. It can be very transparent and, while somewhat lacking in "fire," it has a brilliant luster. Phenakite has since been found throughout the Pikes Peak region, in the Crystal Park, Crystal Peak, and Devil's Head areas, as well as in isolated pockets along Bear Creek and Elk Creek, and at Mount Antero.

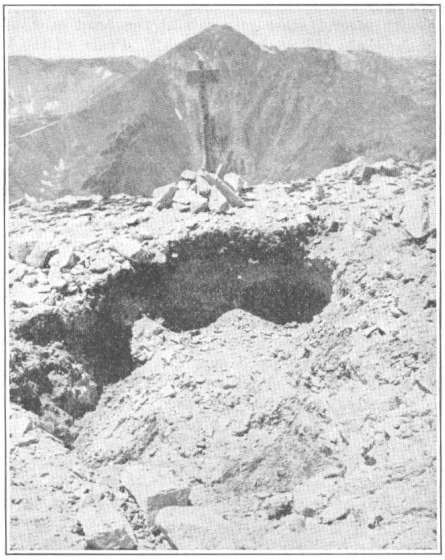
"Beautiful jet, rivaling any jet known" was the description given by Dr. Kunz, Tiffany's gem expert of the material found along Fountain Creek near Colorado Springs many years ago. The same gem, with its rich black velvety luster and serene beauty, has come from Trinchera Mesa in Las Animas County, and Kunz wrote that it "admits of as fine a polish as the finest jet from Whitby, England," the time-honored source of the world's best. Use of Colorado jet has been largely confined to its sale as mineral specimens, chiefly because the general application of jet to jewelry has so greatly declined since the introduction of inexpensively stained black chalcedony. The true connoisseur, however, does not regard this so-called "black onyx" as a serious substitute for jet.

According to Smith, a few small but very brilliant and finely colored zircons were found in 1866 by prospectors at the Bear River diggings, west of Middle Park. The most interesting locality, however, for this remarkable gem, which is next to diamond in brilliancy and colored "fire," and often mistaken for it, is in the rock of St. Peter's Dome, a conical peak directly west of Cheyenne Mountain. A number of fluorine minerals, bearing tricky names, are associated with the zircon, many of them being quite rare and some first described from that place. The smaller crystals are as remarkable for their perfection as for their colors, rich transparent honey yellows, pinks, reddish browns, and emerald greens.

Mineral collectors for fifty years have known the group of three volcanic hills at Nathrop to be an available source of attractive gem garnet and topaz crystals. Practically every piece of rock several inches square contains one or more of them. The choicest material, which is less common, includes spessartite garnet of a fine dark red color in small but transparent and partly perfect crystals, and clear yellow prisms of topaz. Some specimens have, in spite of their small size, found their way into jewelry. They are very attractive. The writer has seen a number of the garnets set pave, that is, close together in a band, with no metal showing between them.

For many years there have been reported references to the occurrence of pyrope garnet in the southern part of Colorado. Nothing more definite is stated than that they are found as rounded pebbles in the sand of ant hills on Navajo reservations, and are sold as "Colorado rubies," just as those found similarly in Arizona and New Mexico are sold as "Arizona rubies" and "Mexican rubies." Ant hills are certainly not confined to the two more southern states while absent in Colorado, but Navajo reservations are. The writer has made a few attempts through correspondence to locate these supposedly familiar occurrences within Colorado, but even those authors who have described them in their books do not seem to be aware of specific places where they may be found. Recently, however, several persons have expressed an acquaintance with some of them, but the stones are of gem quality is not known. Until more definite information is forthcoming, "Colorado ruby" must remain a commercial term without even the half truth of the phrases "Arizona ruby" or "Cape ruby."

Devil's Head has been the source of the finest gem topaz mined in Colorado. The crystals are colorless, light yellow, and bluish, and many of them truly beautiful, completely transparent and often of delicate color, even though almost all the surfaces are rough and stained. The largest one, perhaps the largest complete topaz crystal yet found in North America, weighed over 5,000 carats, and was taken from there in 1935.



AQUAMARINE MINE ON MOUNT ANTERO (Over 14,000 Feet Elevation)
MOUNT BALDWIN IN THE BACKGROUND

The Antero region previously mentioned is also noted for two other gems, rock crystal and its dark cousin, smoky quartz. Tourist jewelry has taken most of the supply that has been sent to Germany for cutting and returned to the United States for setting. Kunz speaks of a large sphere, slightly less than six inches in diameter, cut from Mount Antero rock crystal and shown in the Mines and Mining building of the World's Columbian Exposition; it was not perfect, he says, but "quite equal to the crystal balls of the eighteenth century." This may be the same rock sphere as the one now in the gem hall of the Field Museum of Natural History, Chicago, and described by the curators as "one of the largest" – five and a half inches in diameter. A good quality rock crystal ball of that size would probably cost several thousand dollars today, and would not be at all easy to obtain.

In *Gems and Precious Stones of North America*, Kunz wrote: "Near Trinidad, Colorado, there have been found large quantities of crystalline quartz, with small, doubly terminated crystals, resembling those from Herkimer County, New York. Some of these crystals afford larger masses of clear rock crystal that have ever before been found in the United States, and suggest its use for cut objects, such as the crystal balls, clock cases, mirrors, etc., which are now to be seen in the Austrian Treasury at Vienna." The writer has not been able to find further references to this locality, except a brief comment on its discovery by J.P.M. Butler of Trinidad several years previously, or to its present condition.

The Pikes Peak region, which is the thousand-square-mile are associated with the very old Pikes Peak granite, has produced some of the finest smoky quartz that has ever been found. The sale of cut gems was estimated in 1892 at $7,500 annually, though later figures are not available. Hawkins has recorded two crystal forms of smoky quartz from Pikes Peak that had never before been noticed on any kind of quartz.

Brooches, charms, and other pieces of jewelry have been set with polished pieces of agate found as replacement of some of the bone cells of the dinosaur *Atlantosaurus* unearthed at Morrison early in the century. Similar specimens have been found elsewhere in Colorado in continental Jurassic sediments, but apparently not of gem quality. Agatized or petrified wood from various places in Colorado has been used as gems, the best material being from isolated localities in South Park.

Some amethyst, the transparent violet to reddish purple variety of quartz, has been cut in gem quality, from Creede. The rich silver deposits of that district contain a great quantity of amethyst – massive, crystallized, and in clusters in rock cavities- but little of it is suitable for gems. Good pieces have come from the famous Amethyst mine discovered in August, 1891, by Nicholas C. Creede, the pioneer prospector after whom the town is named.

Smith mentioned in 1870 the occurrence of amethyst in small brilliant crystals of good color at Nevada, now Nevadaville in Gilpin County. He said that he had obtained some especially beautiful specimens in 1864, one of which was cut into a gem described by jewelers as the finest amethyst yet found in America.

The first published mention of turquoise in Colorado appears to have been in 1870 by Smith, who had in his collection specimens cut in keystone form, drilled, and formerly worn in a bracelet, which he had obtained from a Ute chief. The stones were supposed to have come from an uncertain locality in southern Colorado. "They are highly prized by the Indians," he said, "and it is with much difficulty that they can be induced to part with them." This is a good epitome of the whole history of turquoise in Colorado – its basis, the worship of the Indians; its use, in rude but interesting ornamental and talismanic jewelry; and its source, mostly in the southern part of the state, but the precise places obscured by mystery and legend.

Mr. and Mrs. James Rose Harvey, in an article, "Turquoise Among the Indians and a Colorado Turquoise Mine," in the *Colorado Magazine*, September, 1938, described a visit to the King mine in Conejos County, with its evidences of prehistoric diggings.

An open pit west of Leadville was worked several years ago by two Navajos, who mined the rough material in summer and took it south, fashioning it in silver jewelry during the winter. The Hall mine in the Cochetopa Hills region near Villagrove is the only turquoise deposit in the state that was first opened by the white man. The original mining was for copper, the turquoise lying unnoticed on the dump for a number of years. The mine is at present the most important gem producer in Colorado, employing three men and yielding beautiful hard blue gems in nugget and vein form. The excellent quality of many of Colorado's gem minerals has made them widely known. The material from the Pikes Peak region, even that found up to forty miles from the mountain itself, has more often than not been labeled merely Pikes Peak, especially the stones that have been sold in tourist jewelry, because of the attraction and significance of the name. Much of the supply from elsewhere in the state, however, has been sold without any indication as to its source. Turquoise, for an example, is second among the gems of the United States in value of production, and Colorado is exceeded only by Nevada in mining activity, yet encouragement of public appreciation of Colorado turquoise has been greatly neglected.

The stones are sold throughout the whole southwest and as far as Honolulu, but not one purchaser in a hundred knows where they were obtained. Sales are not affected adversely, as there is a market for all that is mined, but enthusiasm for things Coloradan ought to heighten the interest at least within the state. On the other hand, there are many tourists who buy Colorado gems which area, as Sydney Ball has said, “South American stones, cut in Germany, and mounted in Providence, Rhode Island.”

The future of the gem industry of Colorado seems bright. Though the number of professional mineral prospectors, some of whom uncovered gem pockets while looking for gold and silver, has decreased, even more specimen collectors have taken their places. When the high value of gem-stones is considered in relation to bulk, it becomes obvious that only a very small area is required to yield gems enough to easily surpass previous finds in importance. In general, the more rugged the topography, the more highly mineralized is the crust of the earth- and the less thoroughly explored is the land. The search for rare substances of industrial use may be the most successful means of disclosing the great gem mines of the future; emeralds, for instance, have been found while investigating deposits of beryllium, one of the elements of which they are composed. Tourists to the West can usually be counted upon to buy gem-set jewelry for souvenirs and gifts. Their further acquaintance with Colorado gems, and the existence of a growing group of lapidaries, consequent to the increased interest everywhere in minerals as a hobby, will probably have the effect of expanding Colorado’s gem production during the years to come.

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