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MINERALS AND GEMS OF WYOMING

WYOMING - RICH IN TREASURE

Few states enjoy the abundance of natural resources that Wyoming has within its borders. Great geological formations, many close to major highways, reveal the centuries-long upheavals that created this land of never-ending change. Mineral and rock and gem fields of many types are to be found in all parts of the state - thus providing a treaureland for prospecting.

Each year, Wyoming's fields attract enthusiasts, both professional and amateur, from all parts of the world, who come to prospect for outstanding mineral specimens - many of which are world famous. Such specimens include, alabaster, onyx, marble, agate, petrified wood, quartz crystals, jade, chalcedony, garnet, sapphire, azurite, and malachite that are found many places in the state.

In addition, Wyoming is one of the world's great mineral storehouses. A few of the more than 70 mineral and rock classifications that are found within the state are: anorthosite, bentonite, coal, copper minerals, glass sand, gypsum, iron minerals, phosphate, trona, sulphur, titanium, uranium, thorium, and rare earths minerals.

Wyoming is the nations' leading producer of bentonite, and ranks high in trona production. The state is also 13th in coal production and is the second largest producer of uranium in the United States.

Wyoming mineral production includes gypsum, iron ore, fertilizer, oil, gas, etc. Other minerals of economic importance are found in various quantities in Wyoming, and await development by new industry.

JADE, AGATE, & FOSSILS

Most Wyoming jade is found in the central section of the state and occurs two ways - as pebbles in stream and terrace gravels, or as veins or pods in Pre-Cambrian basement rocks. Often the jade pieces are naturally polished by wind or stream agencies and are known as "slicks". But they may also be coated with a rind that is brown, tan or light gray - the result of chemical weathering.

Of 55 veins and pods of nephrite jade found in Wyoming up to the present time, two are apple green or contain some apple green veinlets, 13 are black and the remaining 40 are olive and dark green in color. All 13 of the black deposits occur adjacent to diabase dikes.

Not all that glitters is jade. You will see many rocks that look like jade, but there are four tests that must be made before you have a reasonably positive identification. The only positive test is by X-ray analysis and gross physical properties.

1. If a small chip is knocked off the end of a suspected slick, the fresh surface should not sparkle in the sun. If it sparkles or glitters, it is not jade.

2. Try scratching the piece with the point of a knife. If you can scratch it, it is not jade.

3. Jade is heavy and the rock should be heavier than a common rock of similar size.

4. The rock will have a smooth, almost waxy, look if it is jade.

AGATE

Agate occurs throughout the state, alone and in association with petrified wood. Some of the most noted Wyoming agates are plume and Glendo agate, both of which polish beautifully and show many colors. Other types of agate found in Wyoming are moss agate, wood cast agate, stalactitic and banded agate, dendritic agate, fortification agate and Fairburn.

FOSSILS

Wyoming also has a wide variety of fossils. The Paleozoic rocks most commonly yield brachiopods and corals. The marine Mesozoic rocks are characterized mainly by molluscs - snails, oysters, clams and ammonites. Among the ammonites the baculites and scaphites are most common, but there is a great variety. The internal guard of squids, called belemnites, are common in the Jurassic Sundance formation. The nonmarine Mesozoic rocks have yielded a variety of dinosaurs. The Tertiary rocks are all nonmarine and are replete with mammalian fossils and fossil wood of various sorts. Beautifully preserved fossil fish occur in western Wyoming, and Fossil Butte, where the finest specimens have been quarried, is presently being considered as a National Monument.

The museum in the Geology Building at the University of Wyoming, Laramie, has an excellent collection and history of fossils on display. Additional information on Wyoming fossils can be obtained from the Geology Department, University of Wyoming, Laramie.

PRINCIPAL AREAS WHERE IMPORTANT GEMS CAN BE FOUND

The state offers more for the collector than can be imagined. One must remember that you just don't walk out and pick up valuable gems - it takes time and work, but in the long run it pays off.

The following indicates sections of the state where some of the more important gems are located The Geological Survey of Wyoming can give the collector specific information about the gems listed and can also point out the areas of greatest concentration.

NORTHWEST

Fossils, Wood Cast, Petrified Wood, Agate, Amethyst.

NORTHEAST

Fortification Agate, Fossils, Petrified Wood, Feldspar.

SOUTHWEST

Fossils, Agate, Wood Cast, Eden Valley Wood, Jade.

SOUTHEAST

Stalactific Agate, Jade, Fossils, Petrified Wood, Wood Cast, Feldspar, Garnet, Fairburn Type Agate.

The following set of Wyoming minerals is available to the collector, for the cost of postage, perparation and handling, from:

The Geological Survey of Wyoming
P.O. Box 3008, University Station
University of Wyoming
Laramie, Wyoming 82070

Set of two Wyoming minerals - 25¢ in postage stamps or coins. This set contains anorthosite and magnetite - ilmenite which are common to the Laramie area and are not necessarily the most common or the most important found in the state. The most important rocks, economically, are bentonite and trona, and the most important minerals are the uranium minerals.

Specimens of Wyoming minerals may be purchased from Wyoming dealers. A complete list of gemstone dealers may be obtained on request from the Geological Survey of Wyoming.

PETRIFIED WOODS OF WYOMING

Some of the finest standing stone forests in America are located in Wyoming and more than 150 different kinds of fossil plants, including trees, have been identified in the state. One of the largest and best preserved petrified forests ever to be found lies near Green River, Wyoming, in the southwestern part of the state. This is the locality of the world-famous Eden Valley Wood.

Thousands upon thousands of specimen trees, both prone and standing erect where they grew, are found in this area. At least ten different kinds of trees, including giant redwoods, various kinds of pine, and hardwoods like sycamores, oaks, and walnuts have been identified in this area.

The wood found near Green River, in many instances, is so real that one can scarcely believe that it is not living fiber. Even the finest lines and fluting of structure and flakes of bark are perfectly preserved. Much of the wood is still in its matrix, but is broken in short sections within its covering.

The hollow interiors of many of the silicified logs are crowned with clusters and rosettes of beautiful crystals and amethyst. Literally speaking, this forest is a paradise for lovely gems of exquisite beauty and color.

OREGON BUTTES AREA

In this vicinity it is the wide variety of fossils that creates the most interest. Algae have been petrified in massive occurrences and the thickly bedded sedimentary deposits have also produced petrified woods in many hues and shades, ranging from jet black surrounded by a white volcanic ash matrix, to opalized and agatized woods. This wood takes a high polish and can be made into gems of the finest quality.

PETRIFIED FORESTS OF YELLOWSTONE PARK

The standing stone forests of Yellowstone National Park are perhaps some of the best known in the United States. Of all petrified forests, those of Yellowstone National Park are the most remarkable - not only for the number piled one upon the other, but because the trees are often found standing up exactly where they grew in life. Collecting specimens in the Park is forbidden by law, but the beauty of this forest is a sight to behold.

There are many other petrified forests in Wyoming, and a visitor should check with the local rock club in the area visited for information and locations of these ancient forests.

RULES AND REGULATIONS ON ROCK COLLECTING

Almost every Wyoming community has a rock club whose members will gladly point the way to deposits of rocks and minerals in their areas. A note of caution - many areas in which specimens are to be found are private property, and permission to prospect must be obtained. Collecting specimens is prohibited in National Parks and National Monuments.

Nearly 30-million acres of land within Wyoming are federally-owned, and from this government-controlled land, 135 major development sites have been created for camping, picnicking, hiking and rock collecting.

A free map, showing the general location and main access points to the public lands in Wyoming can be obtained from the Bureau of Land Management, State Office, Cheyenne, Wyoming 82001.

There are, however, limitations to collecting certain materials on public lands. The Antiquities Act of 1906 states that a person may not, without permission, "appropriate, excavate, injure or destroy any historic or prehistoric ruin or monument, or any object of antiquity" on lands under federal government control. This means the Indian ruins and artifacts and all types of fossils cannot be collected on these lands without a special permit. In addition, there is a state law which prohibits excavating for archaeological or paleontological material on public lands without a permit. Permits are issued only to representatives of scientific institutions.

Petrified wood specimens from the public lands can only be collected under certain rules and regulations. In total, not more than 250 pounds can be gathered by one person within a year's time. A daily limit of 25 pounds plus one piece is also in effect. Permits must be obtained from the Bureau of Land Management District Office for any specimens weighing 250 pounds or more.

For information on gems and stones in a specific area, contact the local chamber of commerce or the rock club in the area of the state you wish to visit. Additional information on minerals, stones and gems in Wyoming is available from the Geological Survey of Wyoming.

PREHISTORIC MAN IN WYOMING

Evidence of prehistoric man's occupation of Wyoming has been found in most areas of the state. The findings have shown that man has occupied Wyoming for nearly 11,000 years.

Remains of mammoths, recently discovered, indicate that the animals had been slain and butchered by humans. Folsom Man, who fashioned the beautiful projectile points and other lithic artifacts, occupied many sections of Wyoming. He and other Early Prehistoric Period nomads found Wyoming a suitable home.

Numerous stone circles and other stone alignments are common on the prairies and hills in east-central and southeastern Wyoming, some of which show evidence of Middle Prehistoric Period occupation.

Many Indian tribes made their homes in Wyoming. The Shoshonis and Utes lived in southwestern Wyoming, and to the north were the Crows The eastern half of the state was occupied by the Arapahoe, Cheyenne, and Sioux tribes. These tribes were preceded in this area by the Apache and Plains Woodland groups.

The amateur archaeologist can render valuable assistance in tracing early man's progress by reporting all artifact finds and site locations to the Wyoming Archaeological Society.

Persons primarily interested in searching for arrowheads, spearheads, scrapers and other surface items of early-day man should contact the Chamber of Commerce in the areas visited.

Further information about Wyoming minerals, gemstones and artifacts can be obtained at the following state agencies and organizations:

Wyoming Travel Commission
2320 Capitol Avenue
Cheyenne, Wyoming 82001

State Department of Economic Planning and Development
210 West 23rd Street
Cheyenne, Wyoming 82001

Secretary, Cheyenne Chapter
Wyoming Archaeological Society
118 East 2nd Avenue
Cheyenne, Wyoming 82001

Geological Survey of Wyoming
P.O. Box 3008, University Station
University of Wyoming
Laramie, Wyoming 82070