

*A FIELD GUIDE
TO THE
CASPER MOUNTAIN
AREA*

Gary J. Keimig
1978

GEOLOGICAL SURVEY OF WYOMING

REPRINT 45

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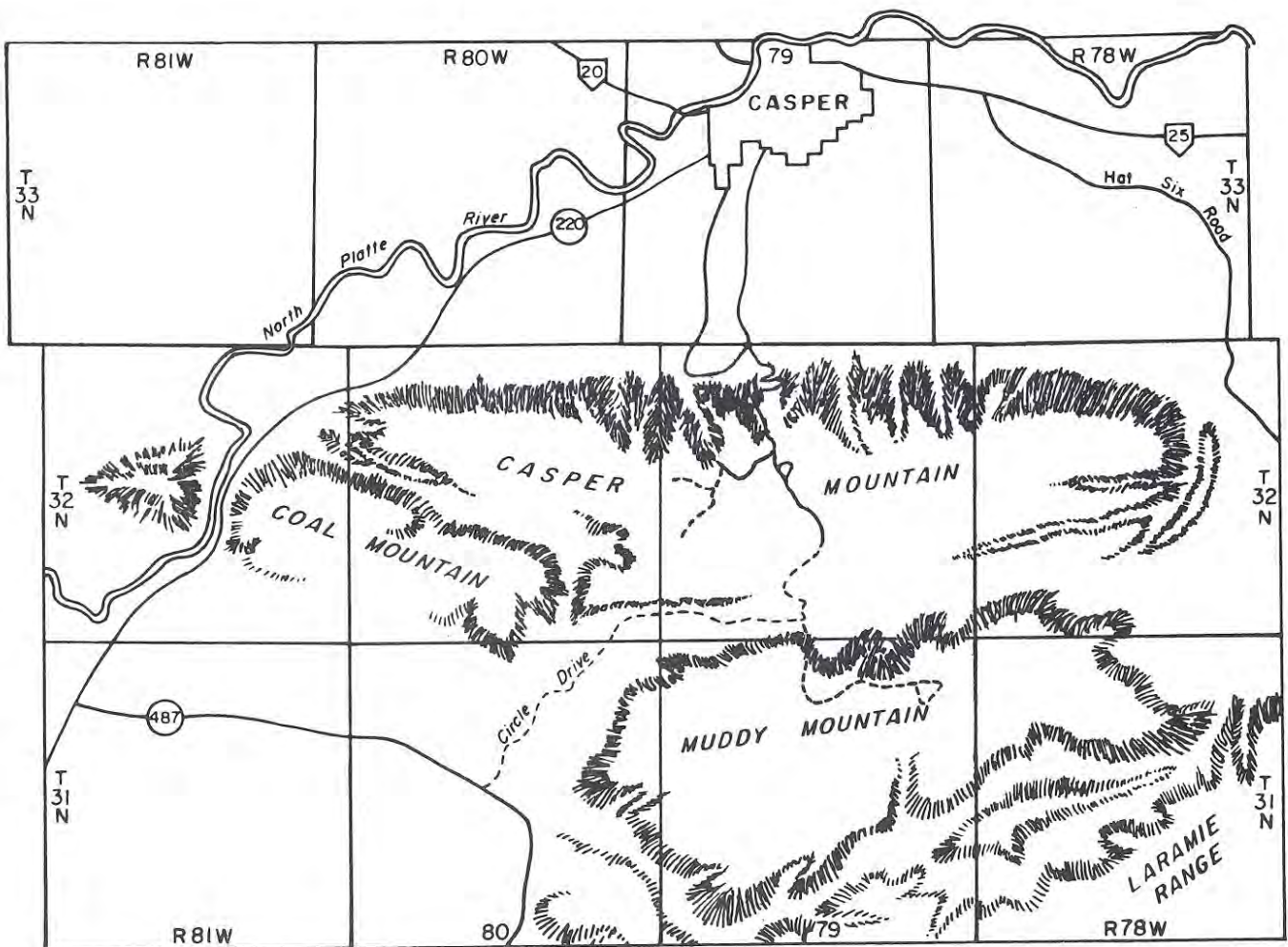
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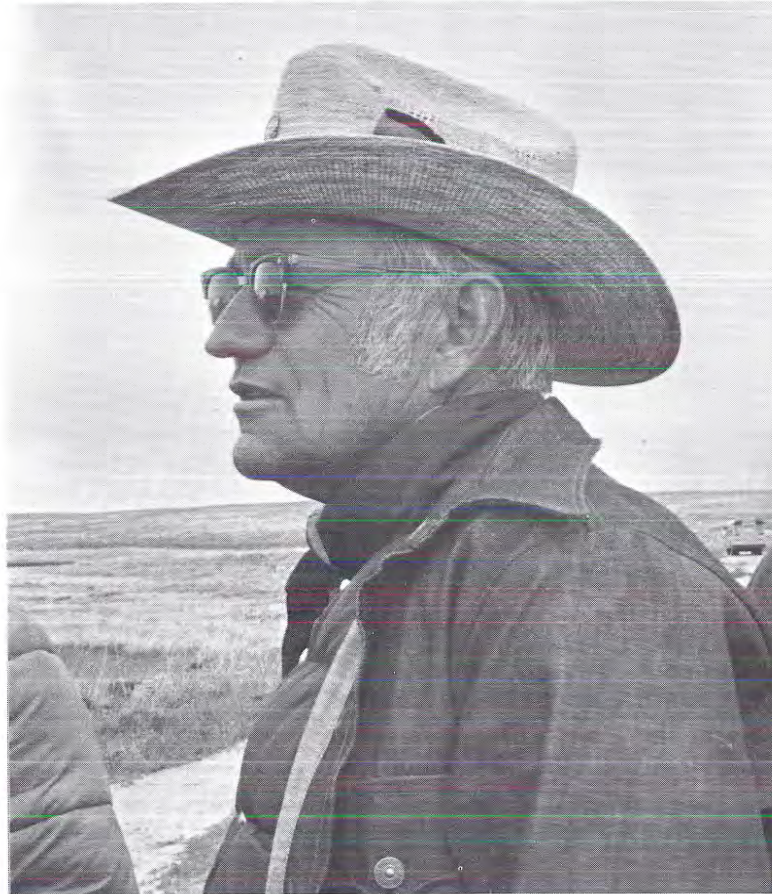
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A FIELD GUIDE TO THE CASPER MOUNTAIN AREA

A self-guiding tour covering the Casper Mountain-Muddy Mountain area, starting at Wolcott and College Drive, following the highway up the north face and down the south face of Casper Mountain (Circle Drive Road) and continuing on to join the Alcova Highway (U.S. 220), plus the Muddy Mountain road and the road to the Archery Range.



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This field guide is dedicated to Chuck Ward.

No one knows how many hours Charles E. Ward has spent, over and above his job, working with outdoor education. He designed (and each year organizes and supervises) a unique Conservation Week program which has reached all ninth grade students in Casper for 21 years. He has taken his talent and his trunk of furs to many fourth grade classes to enhance their appreciation of the part trappers and fur traders played in Wyoming's history.

Guest speaker for a multitude of groups and radio and TV game and fish reporter for some 20 years, he has become a celebrity in Wyoming. In 1977 he was recognized as Friend Of Education by the local teachers' association. He has received numerous other awards from various organizations including the National Wildlife Federation's Conservationist of the Year and Conservation education awards in 1966.

Chuck Ward cares about the country and its wildlife. He cares about people — especially young people. The students and staff of the Wyoming Field Science Foundation recognize his efforts, his inspiration, and his friendship and dedicate this publication to him.

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Casper, Wyoming
1978

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WHAT THIS IS — AND HOW TO USE IT

The field guide was prepared to help you better understand and enjoy Casper Mountain. It will answer some of the “I wonder” type questions and provides a list of references for further investigation. Information about the geology, biology, and history of the area is included in the guide.

Material is arranged in “road log” form to correspond with road mileage. Mileage is given both from the beginning and from one point to the next. Because the guide is designed for use by persons travelling by car, only the most conspicuous items have been included.

The History of Field Science and the Wyoming Field Science Foundation

In 1963 the search for “a better way to teach” by Casper Earth Science teachers Dana Van Burgh, Jr. and Ed Strube led to the offering of a summer school course called Field Science. The two felt the ideal situation was to take students outside — to the field — where they could actually climb across an anticline, key plants to genus and species, hunt for fossils, and study historical areas first hand.

The original Field Science course consisted of five day-long trips studying geological and biological environments in the Casper area. Each summer classes asked for additional field experiences. This led to new programs.

In Advanced Field Science students and instructors spend eight to ten days exploring the geology, biology and history of a particular area in depth, including observation of their own environmental impact.

In order to cover more territory, Science-History loops lasting from five to seven days were developed. About 15 students, plus staff, travel by school bus, camping out or sleeping in school gymnasiums at night. Students observe the interaction between the basic geology, biology and economics of the area in relation to the “people” element. “Loop” trips have been taken to each corner of Wyoming plus Colorado, Utah and Montana.

One result of a “loop” is the Lee McCune Braille Trail on Casper Mountain, created after a Field Science program visited a similar trail in Colorado's White River National Forest.

After school bus number 14, a veteran of many years of travel with the field programs, was retired from active duty in 1975, it was converted into a Mobile Museum. Inspiration for this project was a visit to the Anna Miller Mobile Museum in Newcastle on a Northeast Loop. The bus now transports displays, hands-on materials, and related programs to grade schools in the district.

The publications program was developed to meet the need for printed material in the field class. Beginning with annotated picture sheets used to clarify geologic formations for students, the program has expanded to publish pamphlets and books of interest to students and non-students alike.

The term “Four-pager” describes a series of monographs written by students describing geologic and historical sites including the Goose Egg Ranch House, Ayres Natural Bridge, Casper's City Halls, the Cole Creek Train Wreck, Record in Stone and Bone, and others.

The book, *Sketches of Wyoming*, includes line drawings, creative writing, and historical background on unique sites in Wyoming by students and adults.

A Field Guide to the Alcova Area was published in 1974.

Funds for the publication of the books, including **A Field Guide to the Casper Mountain Area**, are provided through the Wyoming Field Science Foundation, a non-profit trust able to accept tax deductible donations. The foundation was established in 1972 with the assistance of Casper oilman Tom Stroock.

All money from the sale of publications is returned to the Foundation to be used for future projects, field equipment and scholarships.

Donna Strube

GENERAL INFORMATION CONCERNING CASPER MOUNTAIN AND MUDDY MOUNTAIN

BIOLOGY

In this field guide no attempt was made to describe the hundreds of species of plants and animals which might be found in the area. A list of suggested additional reading is included with the bibliography.

The basics of field study lie in careful observation.

BIRDS: Size, shape, color and field marks, behavior, flight pattern, voice or sound, location of sighting, and season. A bird list may be found on page 72.

MAMMALS: Size, shape, tail length and character, ear size and shape, color, field marks, behavior, tracks and habitat.

PLANTS: Flower color, shape, number and arrangement of petals, leaf shape and distribution, and habitat.

VEGETATIVE ZONES

There are remarkable differences in the kinds of plants and animals found at lower elevations compared to those at higher elevations. Few of the plants found on the mountain top grow down on the plains.

Animal and plant life change not only as elevation increases, but also as latitude or distance from the equator increases. As a guide, every 1,000 foot rise in elevation at a particular latitude is equivalent to travelling 300 miles north of the equator. To better describe and classify these changes, biologists have divided vegetation into zones or belts. Some plants are limited to a single zone, but many exist in several zones.

Vegetation zones in Wyoming generally correlate with altitude and its effects on sunlight, water, wind and soil nutrients. Casper Mountain plant zones do not conform to any textbook definitions — most seem to overlap or telescope into one another. Because zones are incomplete and intermixed, plants are often found growing at elevations outside their normal range. Possible explanations for the abnormal vegetative zones include weather patterns, geologic disturbance of the area, and extensive destruction by fire.

TOPOGRAPHIC MAPS

The fold out to the right is a topographic map. Topographic maps show the shape and elevation of surface features by using contour lines. Each of these lines is at a set elevation above sea level.

A few items of information will make a topographic map more usable.

1. A contour line never changes elevation.
2. Contour lines are an established vertical distance apart. This distance is called "contour interval" and is given on the margin of the map. Going from one contour line to another changes elevation by one contour interval. On this map that is 100 feet.
3. The closer together the contour lines the steeper the slope.
4. The small squares on this map are called "sections." They are 1 mile by 1 mile and provide a handy means for estimating distance.

A topographic map is valuable even without close study. At a glance it shows the general shape of mountains and valleys and gives an indication of the steepness of the slope.

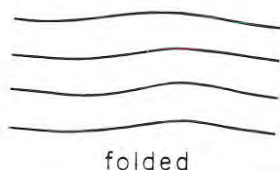
GEOLOGY

Before considering the present geologic features of Casper Mountain, one must look at the geologic history of the area. The oldest rocks exposed on Casper Mountain are igneous and metamorphic and are probably about two and a half billion years old. Most of the interesting minerals are found in these rocks.

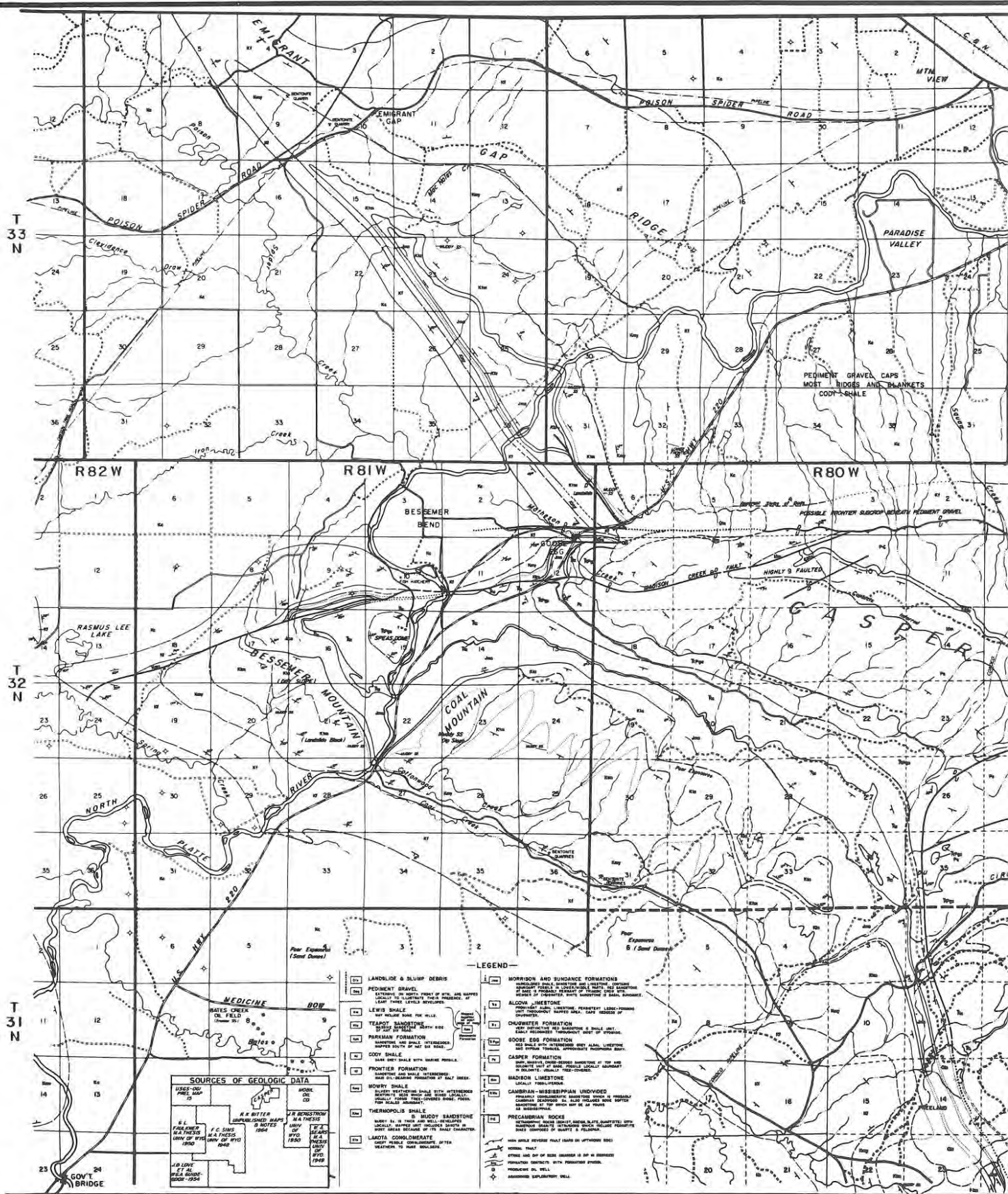
At a much later time, starting about a half a billion years ago, the igneous and metamorphic rocks were covered by a sequence of sedimentary rocks. Sedimentary rocks are those which have been deposited in layers. These layers are the result of small particles of rock, eroded and carried in by water and wind and deposited when the area was a sea. The sedimentary history of the area involves a succession of advancing and retreating seas.

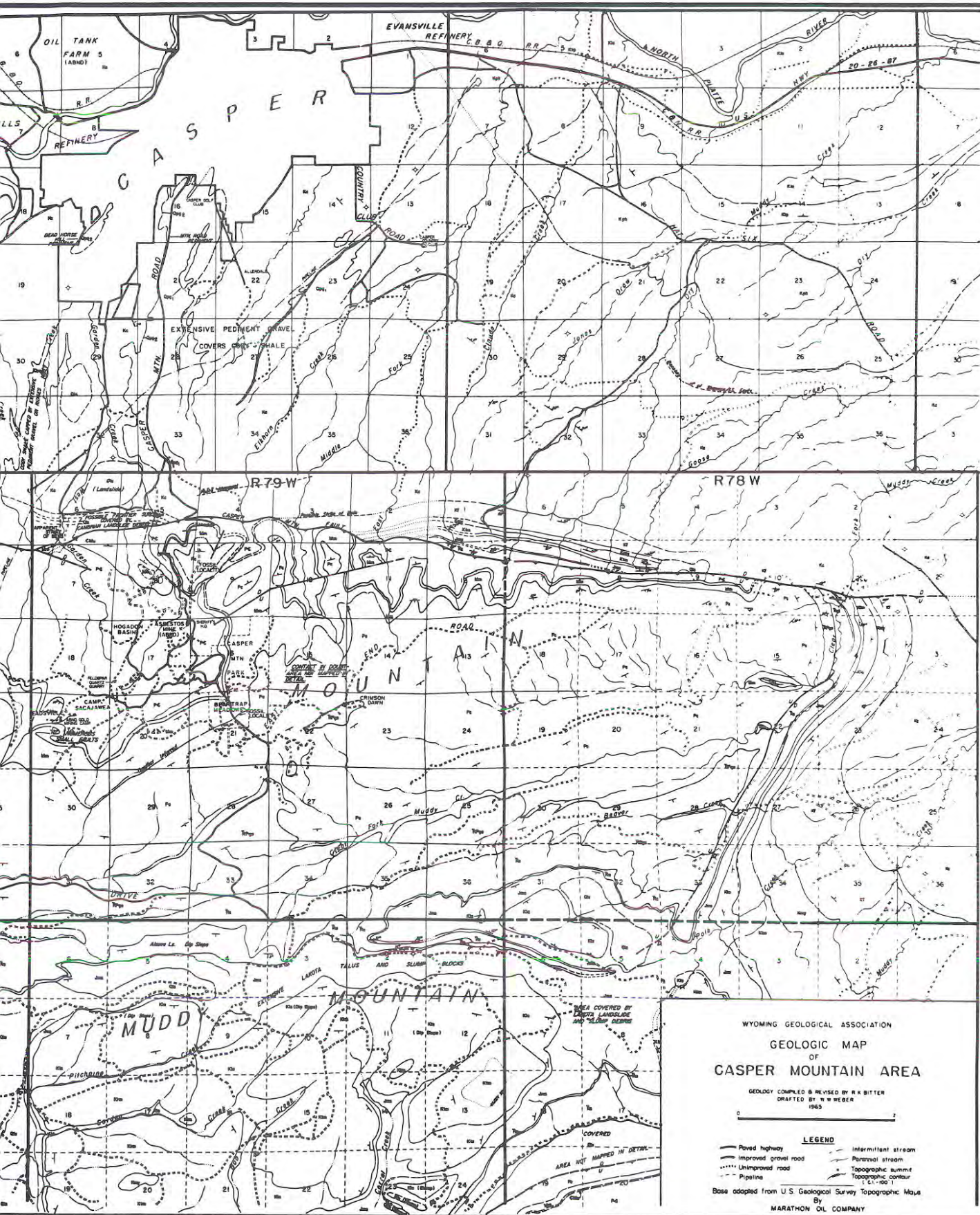
Sedimentary rocks are deposited in horizontal layers. Anytime one sees layers of sedimentary rock that are **not** horizontal, it is safe to assume that they moved after they formed. Younger layers are deposited on top of older; therefore unless the area has been disturbed, rocks near the top of a ridge should be younger than those at the bottom. The stratigraphic column on page 79 shows the thickness and age of each of the layers in the Casper area. Note: it took many years for each layer to form.

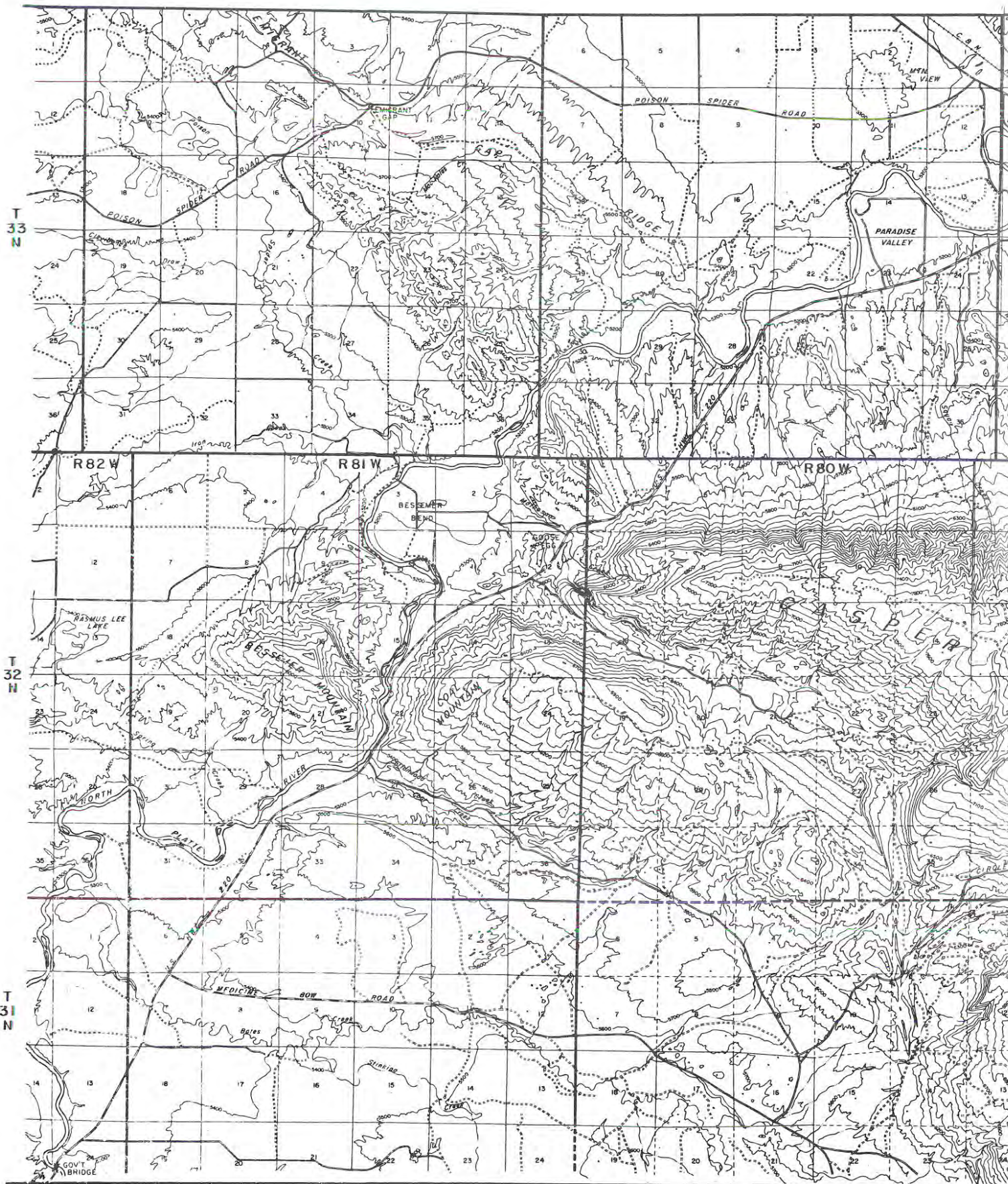
Casper Mountain is a large up-fold which geologists call an anticline. In cross section an anticline looks like this:

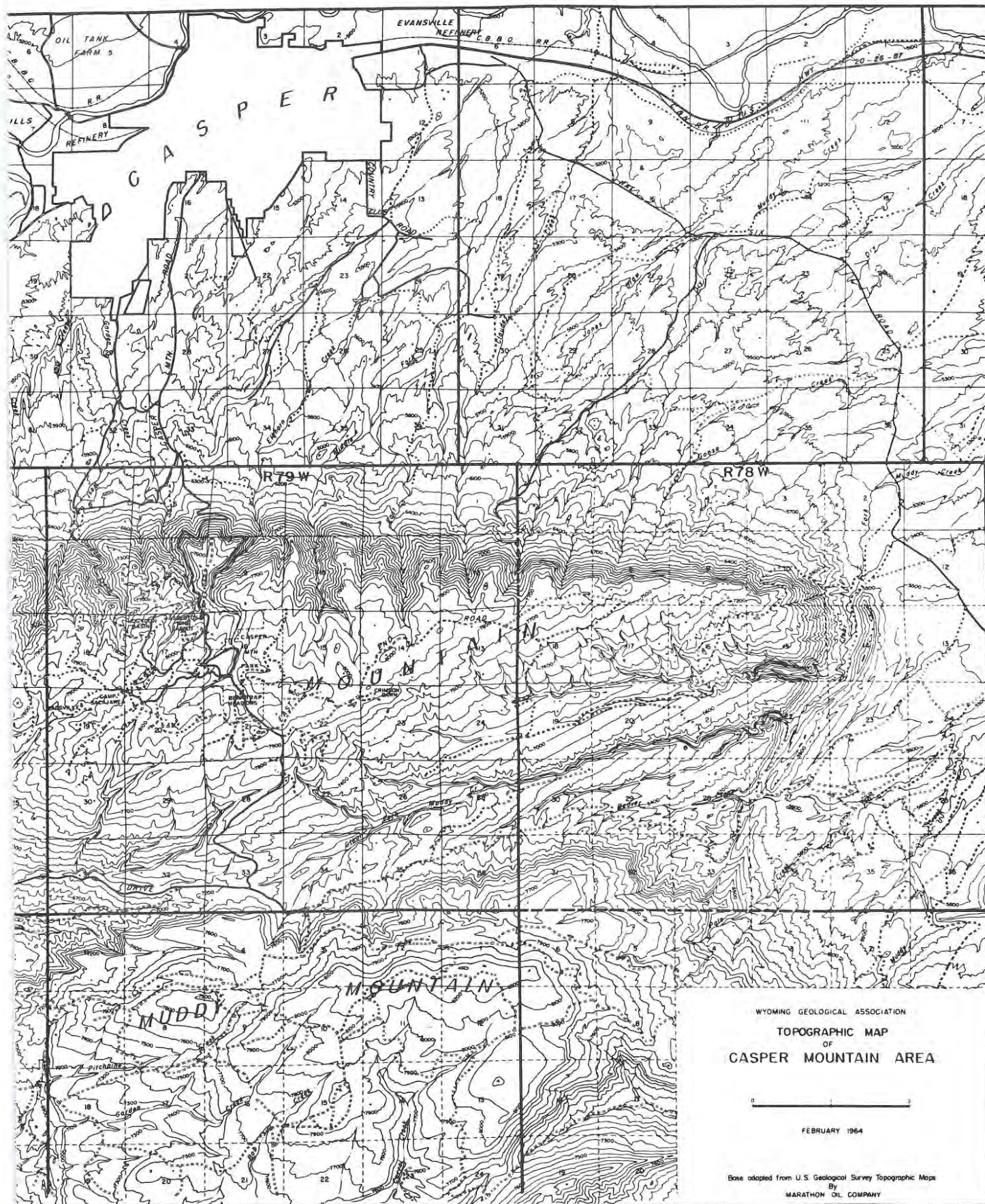


Each band represents a layer of rock. Viewing it this way is like cutting a layer cake and looking at the exposed layers.









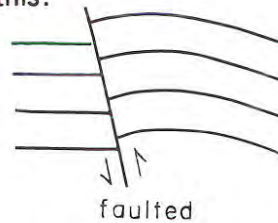
GEOLOGIC MAP

The geologic map on the inside of the opposite fold-out (pp. 6a-6b) shows the rock formations which appear at the surface in the Casper Mountain Muddy Mountain area. It is mapped as though the soil had been removed.

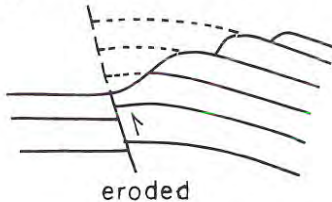
Symbols are used to identify each formation. As was noted earlier, each formation has a name and is identified according to age. The symbols indicate both. For example: Kc Stands for Cretaceous Cody shale. K represents Cretaceous (70-135 million years old) and C stands for Cody. Mm is Mississippian (330-350 million years old) Madison limestone. The map legend translates each symbol. Reference to the stratigraphic column (p. 79) may be helpful.

GEOLOGY CONTINUED

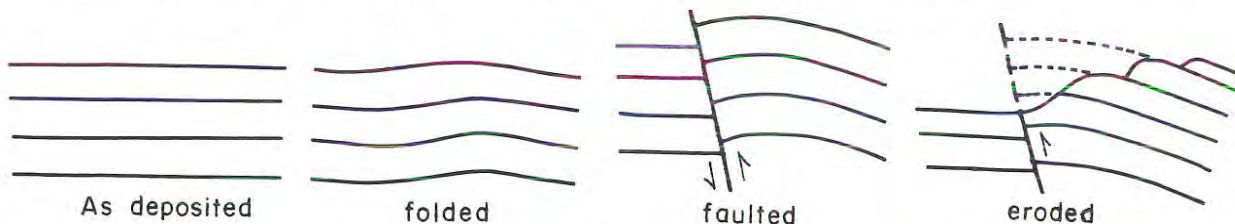
As Casper Mountain anticline formed it broke along the north side. This break is called a fault. A simple cross section of the faulted anticline would look like this:



Because the movement of folding and faulting was very slow, part of the mountain eroded away as it formed.



The rocks exposed on Casper Mountain are much older than those upon which Casper is located. Originally these older rocks covered the entire area but as the mountain pushed up, much rock was eroded away. In simple cross sections the sequence of events might look like this:



Referring to the cross section (pp. 79b-e) it is apparent that many feet of rock have been eroded from the crest of Casper Mountain. The eroded rock was carried away by streams and is now located along streams from the mountain to the Gulf of Mexico.

This same cross section shows that the formations underlying Muddy Mountain are not up-warped into an anticline. Instead the rock layers bend down under the mountain. This is called a syncline.

The folding, faulting, and subsequent erosion of Casper Mountain and Muddy Mountain have provided a beautiful area in which to study geology. This field guide will introduce some areas for observation and investigation. At the end of the book is a list of sources which contain information about the area.

GEOLOGIC TIME

Because the geologist deals with approximately four and a half billion years and because it is not possible to provide an exact date for most geologic events, it is more convenient to use named units of time instead of number of years ago. The stratigraphic column (pp. 79b-e) provides a comparison of named units and number of years ago. These named units of time are similar, though much longer, to divisions such as "The Dark Ages" or "The Iron Age" used by historians. Rock formations are usually identified by geologic age and formation name. For example, Mississippian Madison limestone was formed during the Mississippian period some 330-350 million years ago. It was named the Madison by someone who did the early study of the formation. The type of rock is limestone. On maps and photos this information is reduced to a symbol, in this case, Mm.

Within this guide many photos are annotated to indicate formation boundaries (called "contacts") and the name of the formations. Where symbols are used because of space limitations, it may be necessary to refer to the stratigraphic column for the name and age of the formation.

ARCHAEOLOGY

Archaeological evidence indicates Indians periodically inhabited Casper Mountain starting about 11,000 years ago. Although stone artifacts older than 4,500 years are rare on the mountain, many artifacts and campsites dating from about 2,500 B.C. have been found there. Most of the Indian campsites on Casper Mountain are located in open areas near streams. Other campsites have been found near quartzite outcrops. Indians collected or quarried this stone for fashioning tools such as spearheads, arrowheads, knives, and scrapers. Campsites near the quarries are usually littered with flakes produced from the manufacturing of these tools. Currently eight sites from the Casper Mountain area are in the University of Wyoming's archaeological site file. Steven Lund

HISTORY

The Hayden Expedition of the United States Geological Survey conducted scientific observation in the Casper Mountain area in August of 1870. The expedition travelled up the valley of the North Platte and spent several days in the vicinity of Casper. Hayden described the mountain, Deer Creek valley to the east, and the area of Red Buttes to the west. Famous photographer William H. Jackson was a member of the Hayden party and discovered the canyon at the west end of Casper Mountain which now bears his name.

Early commercial activity on the mountain included timber cutting and ranching but the most excitement was generated by prospecting. (Information about mining is included in the road log where appropriate.)

ROAD LOG: CASPER TO THE ALCOVA HIGHWAY — VIA CIRCLE DRIVE

A road log is designed to allow you to use the odometer of your car, as well as prominent landmarks and highway mileage signs to locate the features described.

In the left column is an item number for each feature. These numbers allow quick reference in the text and easy communication with others in a group. The next column is cumulative mileage from the starting point. Add this to the odometer reading at the starting point to determine the odometer reading at the point described. Indented below the cumulative mileage figure is the increment distance between two points on the log. This figure enables you to estimate how soon you should look for the next location.

CAUTION: Not all odometers read the same. Prominent points and highway mileage markers are included to allow you to compare your odometer with the one used to prepare the road log. Signs, or even the road itself may have been changed since the guide was prepared.

- | | | |
|----|---------------|--|
| 1. | 0.00
00.05 | Intersection of South Wolcott Street and College Drive. The next point on the road log is less than one tenth of a mile from here. |
| 2. | 0.05
00.30 | An outcrop (or exposure of a body of rock) of Cody shale in the road cut at Casper College. Shale is a mixture of fine grained quartz and clays. This rock is Cretaceous in age, or roughly 70-135 million years old. The highway now climbs one of a series of pediment surfaces which exist between Casper and Casper Mountain. A pediment is a relatively flat, eroded surface which extends out from the base of a mountain. |
| 3. | 0.35
00.20 | Thunderbird Gymnasium. |
| 4. | 0.55
01.00 | Skelton Energy Institute. |





Western Meadowlark (*Sturnella neglecta*): A chunky brown bird with a yellow breast, spotted sides, a black "V" on its chest, and white outer tail feathers.

Sagebrush is perhaps the most abundant shrub found in this area. These shrubs, which are members of the sunflower family provide food and shelter for many species of wildlife. Antelope, deer, and sage grouse in particular depend on sagebrush for browse. Smaller animals make use of the cover sage for nest and den sites. The evergreen leaves of this plant can be boiled to make a bitter tea, thought by Indians to possess various medicinal qualities. Sagebrush blooms in late summer and early fall, producing inconspicuous yellow-green flowers. Three species of sagebrush — big sagebrush, silver sage, and pasture sage — are found in this area. The most conspicuous species is big sagebrush (*Artemisia tridentata*) which grows 2-10 feet tall. The leaves of this plant are wedge-shaped with three divisions or "teeth" at the end of each leaf. Its species name is derived from the Latin words "tri" meaning three, and "dent" meaning tooth. Silver sage (*Artemisia cana*) grows 2-3 feet tall and has long, narrow toothless leaves. Silver sage is so named because its leaves are covered with numerous silver hairs. Pasture sage (*Artemisia frigida*), growing only 8-12 inches, is the smallest of the three species in this area. The leaves of this species are deeply divided and often have a feather-like appearance. Pasture sage is more commonly found at higher elevations (7,000 to 10,000 feet) but may be found in lower areas that have not been overgrazed. Sketch below shows pasture sage (left), silver sage (center), and big sage (right).



5. 1.55
00.50 Seventh-day Adventist complex and Boy Scout Headquarters.
6. 2.05
01.30 Intersection with outer belt road.



Lark Bunting (*Calamospiza melanocorys*): A black sparrow-sized bird with a large white wing patch. Lark buntings nest on the ground.



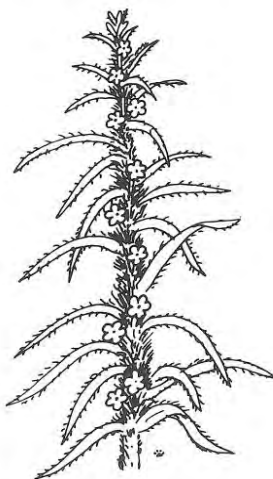
Old postcard view toward Casper Mountain.

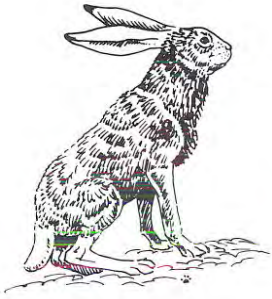
7. 3.35 House and stable east of the road.
00.20

Commonly found blooming on western plains, Miner's candle (below left) produces tall spikes of white flowers. Stiff hairs covering the stems and leaves cause grazing animals to avoid it. This plant's scientific name is *Cryptantha virgata*. A plant's scientific name is Latin and consists of two parts, the genus and the species. These two names serve to distinguish one plant from all others.

Gumweed, *Grindelia squarrosa*, (below center) a member of the sunflower family, bears numerous yellow flowerheads. This plant derives its common name from the fact that it is covered with a sticky substance which it secretes.

Showy yellow flowers resembling sweet peas characterize golden banner, *Thermopsis divaricarpa*, (below right). The leaves of this member of the pea family appear in clusters of three leaflets.





White-tailed jackrabbit (*Lepus townsendi*): A large brownish-gray hare with a white tail. These animals weigh 5-10 pounds, and can cover 10-20 feet per hop.

8. 3.55
00.45

Gravel quarry west of the road.



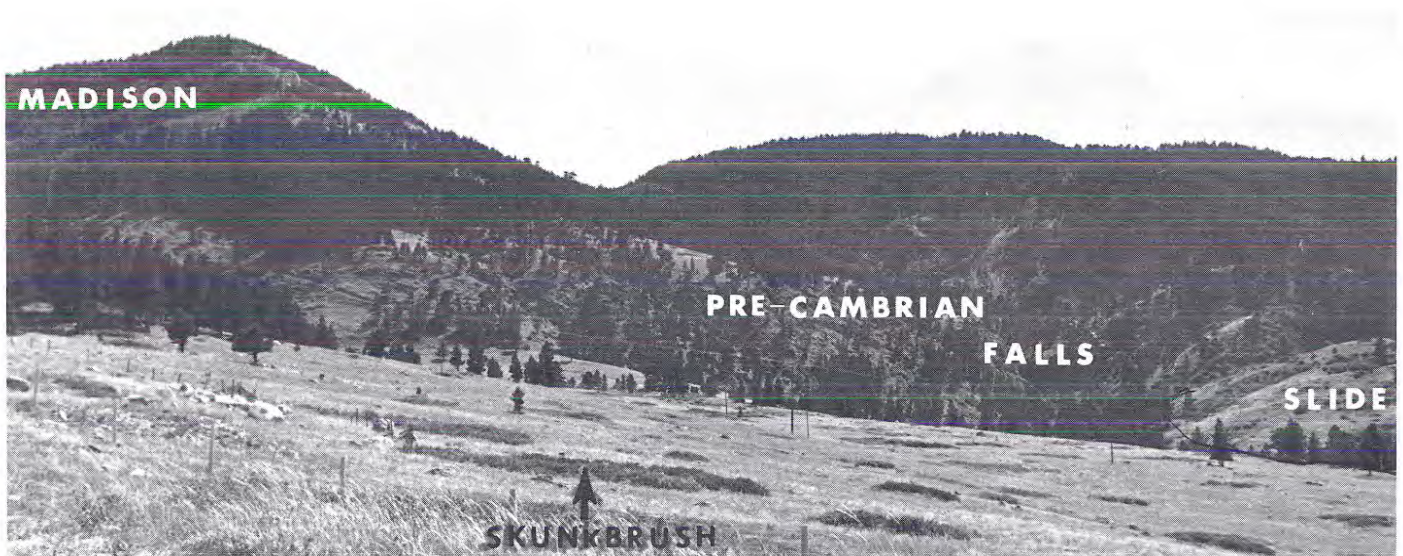
This photograph shows the result of a landslide which took place in the area between the east and west forks of Garden Creek.

9. 4.00
00.45

Junction with Garden Creek Road (State Secondary 1301).

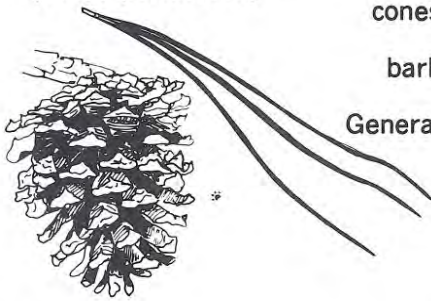
10. 4.45
00.10

Garden Creek Falls overlook. The falls are cut in rocks of Pre-Cambrian age (over 600 million years old). Note the light colored patches of Quaking Aspen. The pines are Ponderosa and scattered Limber. The top of the slope is Lodgepole pine.



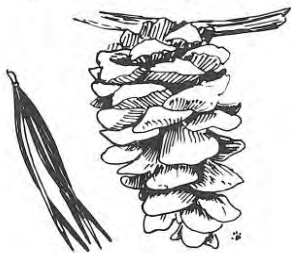
There are three different species of pine trees on Casper Mountain. All are evergreens — they do not lose their leaves in the fall, have needle-like leaves in clusters, and form seed cones. Characteristics of each species are as follows:

Ponderosa pine
(*Pinus ponderosa*)



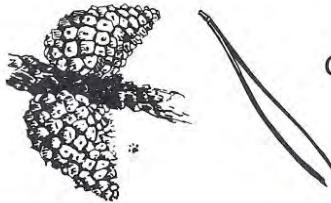
- needles: long (4-8 inches), dark green, in clusters of 2 or 3, turpentine aroma
- cones: 3-5 inches long, reddish brown with prickly spines at the end of each scale
- bark: yellow-brown or red-brown, with vertical ridges, giving the bark a scaly appearance
- General: Trees are 60-70 feet tall with a rounded crown and drooping branches. They are an important source of lumber.

Limber pine
(*Pinus flexilis*)



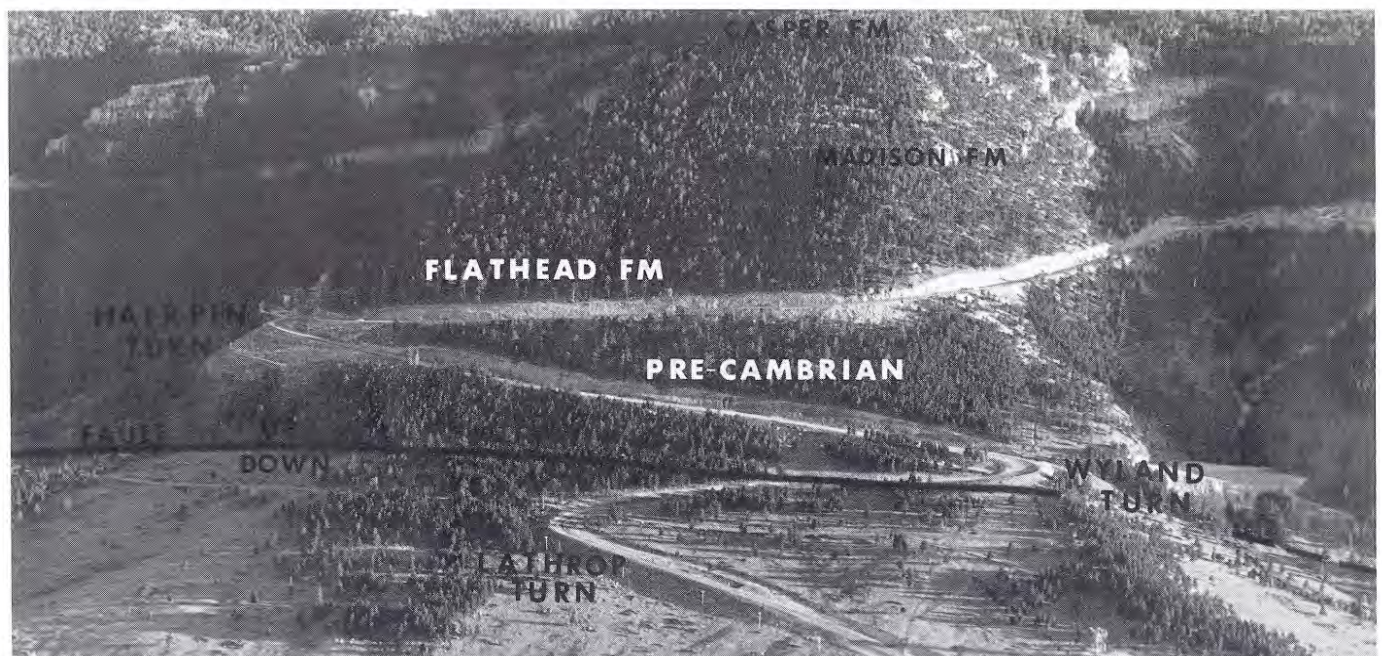
- needles: short (1-3 inches), stiff, light to dark green, in clusters of 5
- cones: 5-6 inches long, tan or light brown, no prickly spines
- bark: thin, smooth, light gray
- General: Trees are small (25-50 feet) with irregular drooping branches, twigs and small branches are not easily broken — quite flexible

Lodgepole Pine
(*Pinus contorta*)



- needles: short (2-3 inches), yellow-green, in clusters of 2, often twisted or contorted
- cones: 1-2 inches long, asymmetrical cones with a slender spine on each scale
- bark: brownish-orange to gray, thin with loose scales
- General: Trees 70-80 feet tall, pyramidal shape to crown, trunks straight and slender, trunks used as tepee poles, hence the name "Lodgepole" pine

This aerial view of the north face of Casper Mountain should help in locating the various points mentioned in the road log.



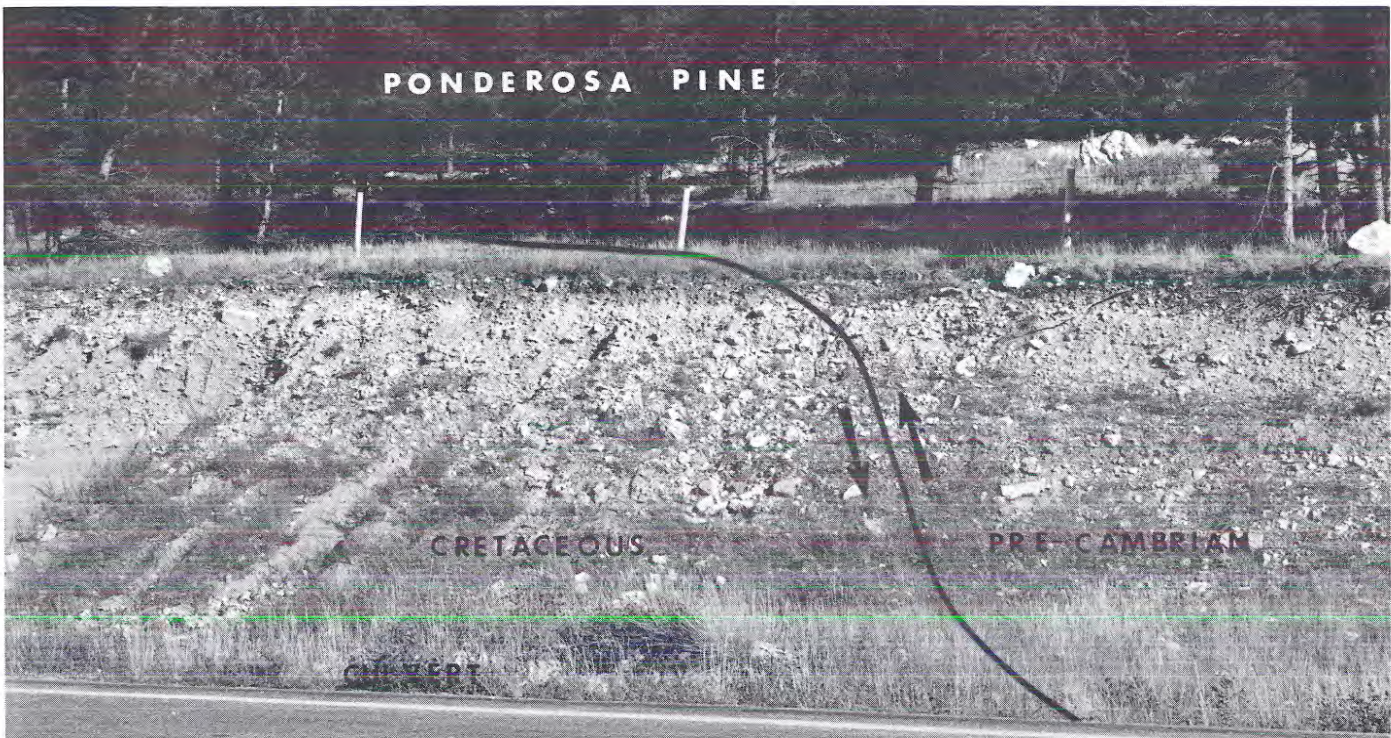


Red-tailed Hawk (***Buteo jamaicensis***): A large broad winged hawk, brownish in color with a band of streaks across its breast. Red coloring appears on the top of its rounded tail. This hawk soars in wide circles.

11. 4.55
00.40 Telephone company installation. The prominent evergreens are Ponderosa pines.
12. 4.95
00.10 First hairpin turn (Lathrop turn). A short distance ahead the road will cross the Casper Mountain fault.

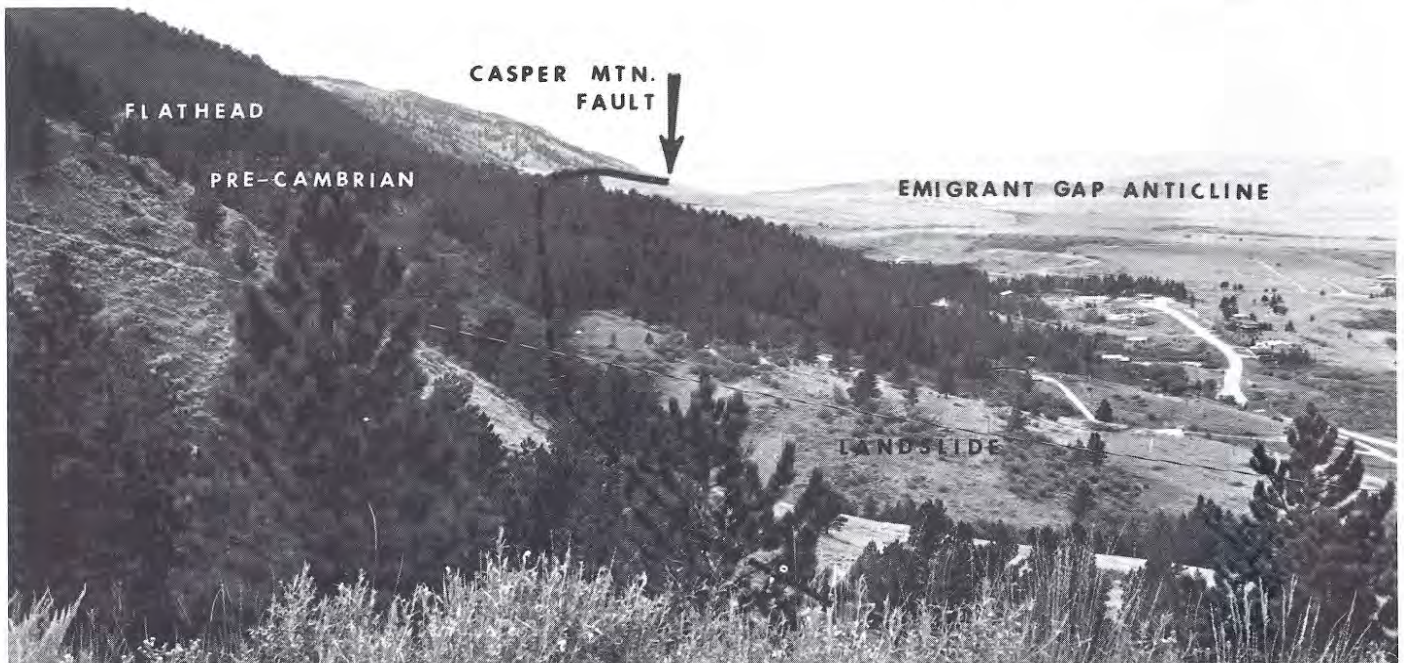
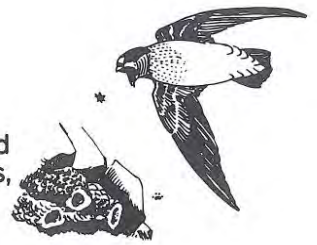
A fault is defined as "a break in the rocks of the earth's crust along which movement has taken place." In this case, the break raised the mountain relative to the plains and left Casper Mountain with a very steep north face. The relative effect of the fault can be seen on the north-south cross section found on page 79d-e. The fault and uplift occurred about 65 million years ago.

13. 5.05
00.05 Indication of Casper Mountain fault in road cut. See photo below.



14. 5.10
00.05 Six mile marker.
15. 00.45 Wyland Turn, the second hairpin. The photography at the top of the next page is the view west from this turn. It shows the approximate line of the Casper Mountain fault. To the left(south) of the fault the contact between the Pre-Cambrian igneous rocks and the sedimentary Cambrian Flathead sandstone is labeled. Part of the previously mentioned landslide is visible. Pre-Cambrian rocks are exposed between Wyland turn and the next hairpin turn, but, for a large portion of the way, these rocks are partially obscured by broken rock called talus.

Cliff Swallow (*Petrochelidon pyrrhonota*): A slim streamlined bird with long pointed wings and squared-off tail. Cliff swallows build their nests on the outside of buildings, cliffs, and bridges. These birds glide in long ellipses and catch insects in flight.



Green Gentians (*Frasera speciosa*) produce conspicuous (2-5 feet tall) flower spikes bearing many small greenish-white flowers. The pale blossoms ($\frac{1}{2}$ inch in diameter) are wheel shaped and spotted with purple. These plants flower in mid summer.



In mid-summer **Salsify (*Tragopogon dubius*)** produces conspicuous single yellow flower heads about two inches across. Mature white seed heads resemble the seed heads of their relatives, the dandelions, but are much larger. Each seed bears its own parachute for transport by the wind. Other names for this plant are goatsbeard and oyster plant.



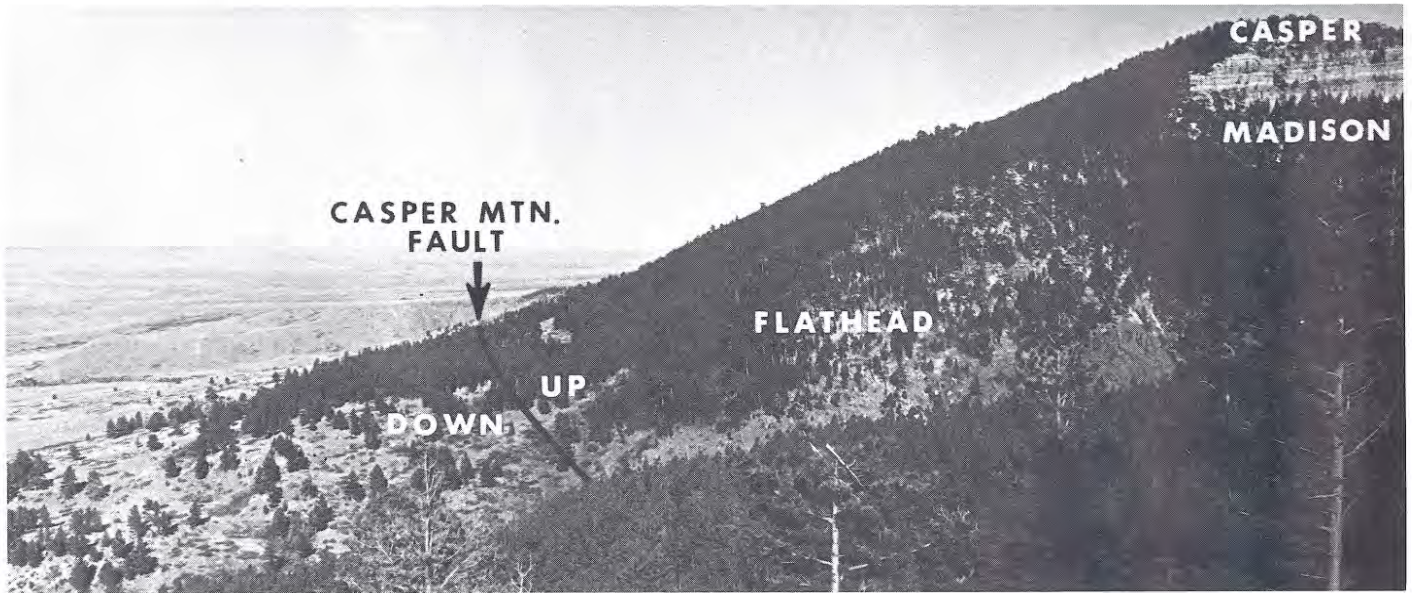
Bobcat (*Lynx rufus*): A golden-brown cat with black streaks and spots, small ear tufts, and a short tail which is black on the upper tip.



Compare these two photos looking toward Hairpin Turn. The old photo (top) shows two "needles eyes" in the cliff. The signs read "Men Working" and "Notice — Observe All Caution Signs." The second photo (below) is a modern view.



16. 5.60 Hairpin Turn (Layman Turn). Below is the view east from this turn. On a clear day
00.35 Dave Johnston Power Plant can be seen in the distance.



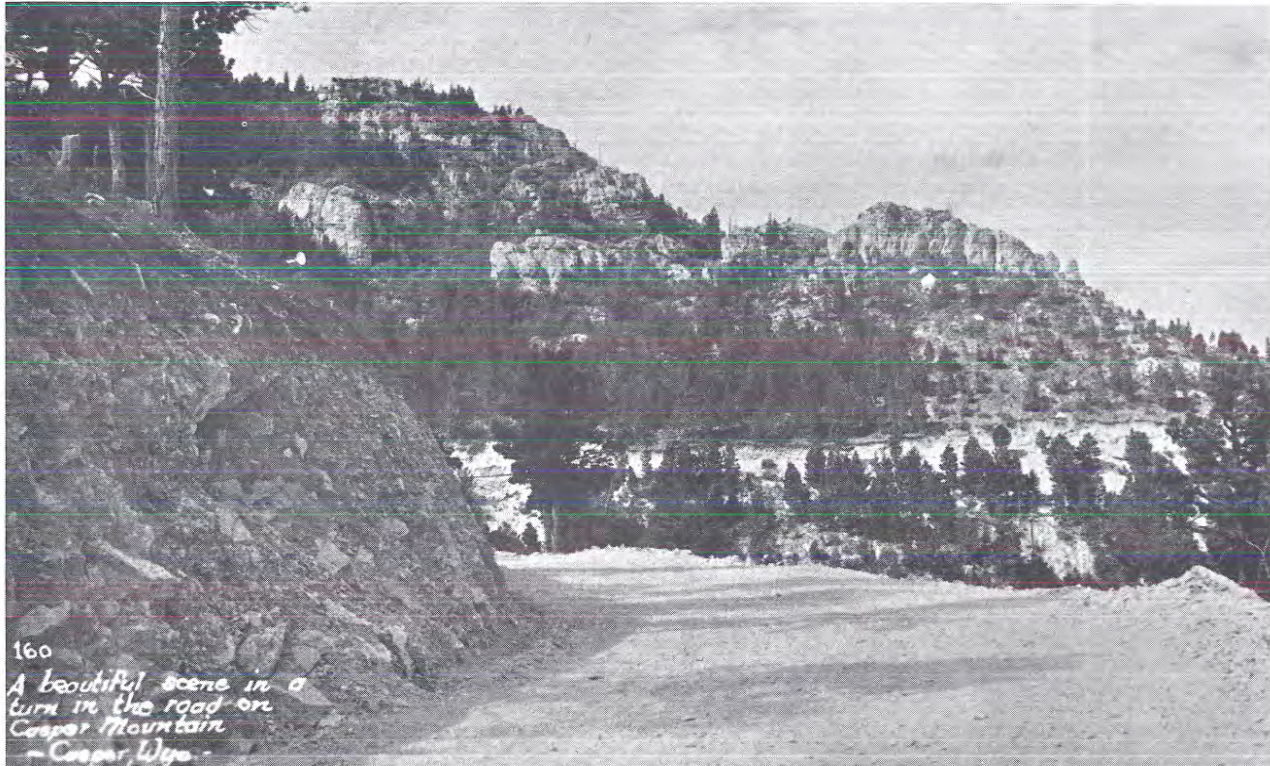
17. 5.95 Outside turn. Fault zone just beyond turn. THIS FAULT ZONE CAN BE OBSERVED
00.05 FROM LOOKOUT POINT AHEAD. A fault zone is composed of broken and displaced
rock disturbed as a result of the faulting.

This photograph was taken looking back toward the fault zone from Lookout Point.





Striped Skunk (*Mephitis mephitis*): A small black animal with a characteristic odor, bushy tail, a narrow white stripe up its forehead and a broad white stripe which divides to form a "V" across its back.



Above is an old postcard view from this point toward Lookout Point. Below is a modern photo. Note the changes which have taken place.





White Crowned Sparrow (*Zonotrichia leucophrys*): A brown-streaked bird with a gray breast and a black and white striped head.

18. 6.00 Seven mile marker.
 00.20
19. 6.20 Inside turn. Cambrian Flathead sandstone outcrops here.
 00.05
20. 6.25 Contact, Cambrian (500-600 million years ago) Flathead sandstone and Mississippian
 00.10 (330-350 million years ago) Madison limestone. This area may be observed from
 Lookout Point.
21. 6.35 Pullout. Lookout Point overview. Refer to pictures below and on the next three pages.
 00.25



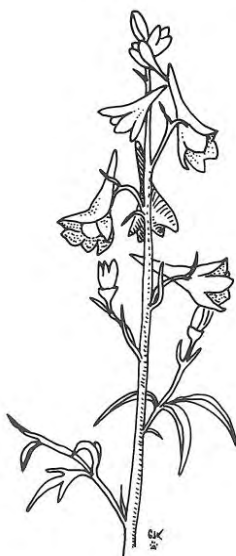
View back toward the inside turn. Shown is the contact zone between the Cambrian Flathead sandstone and the Mississippian Madison limestone. Chert, a dense, hard sedimentary rock consisting of layers of fine-grained quartz with porcelain-like surfaces, forms nodules in this area of the Madison limestone. Slickensides (rock surfaces polished by the movement of rock against rock during faulting) are apparent on some exposures of the Madison limestone. This view also shows the approximate contact between the Madison and the younger Casper (Tensleep) sandstone which is Permian-Pennsylvanian in age or about 270 million years old.

On the next page is a photograph of the North Platte River valley from this location.

Refer also to the photograph on page 15 (item 17) looking toward the fault zone.

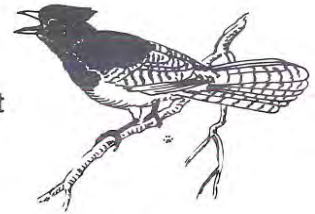


Cow parsnip (*Heracleum lanatum*), left, is a member of the parsley family, bearing large coarse leaves and numerous tiny white flowers. Growing up to eight feet tall, cow parsnips are topped with lacy umbrella-like flower heads approximately one foot in diameter. The wild geranium (*Geranium fremontii*), center, which grows in woods and shady places has pink to rose-purple flowers with conspicuous dark veins in each of its five petals. Geraniums bloom in early summer and are consumed by deer and elk. Arrowleaf balsamroot (*Balsamorhiza saggitata*), right, is an early-blooming yellow flower often confused with the true sunflowers. Although a member of the sunflower family, unlike true sunflowers, balsamroots possess long arrowhead-like leaves which surround the leafless flower stalks.



Wax currants (*Ribes cereum*), above left, are low shrubs that bear white or pink flowers (June) which are followed by bright red berries (Aug. or Sept.). Currants are generally differentiated from gooseberries (which they closely resemble) by the currant's lack of spines or prickles on its woody stems. Chokecherries (*Prunus virginiana*), above, blossom in early summer, producing small white flowers in long dense heads. The dark purple fruits ripen in late summer and are used for making jelly and wines. Leaves of this shrub are oval with finely toothed edges. Spikes of larkspur (*Delphinium nelsonii*), left, though generally blue, may vary from purple to white. The bright flowers are easily identified by the characteristic spurred shape of the upper petals. Some species of larkspur are poisonous to livestock.

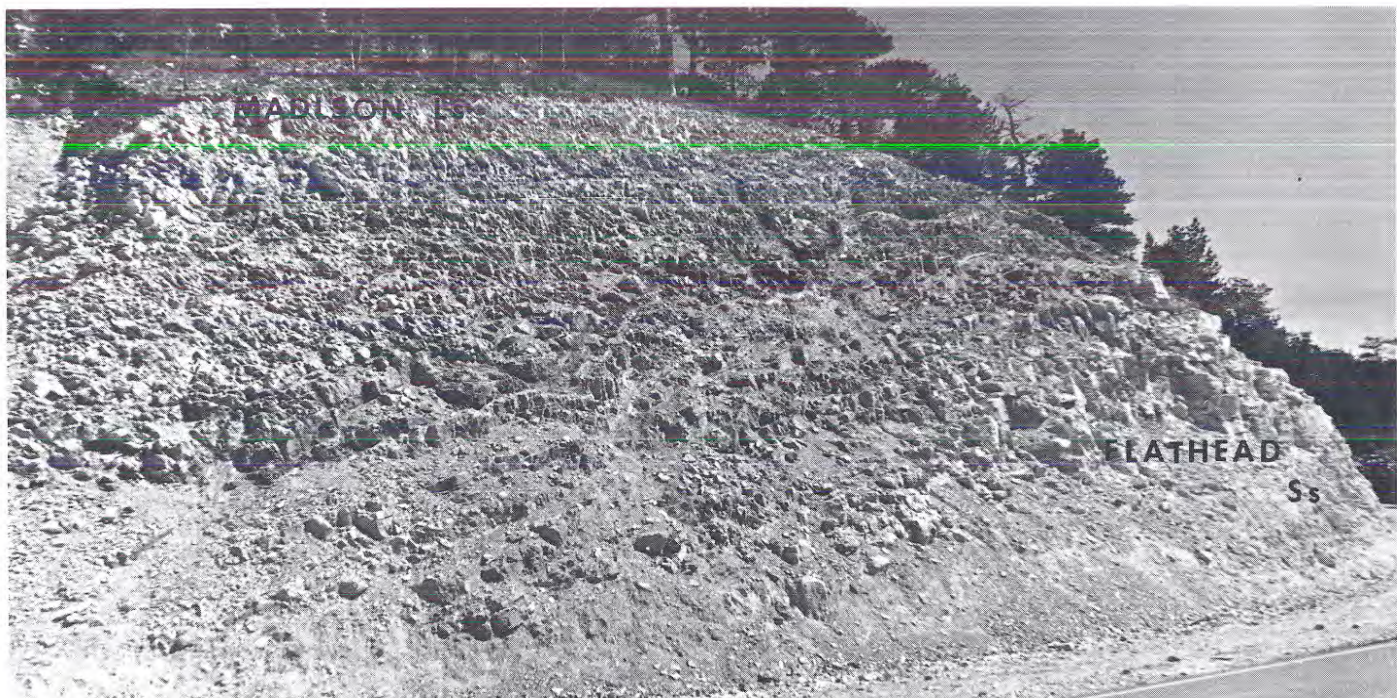
Steller's Jay (*Cyanocitta stelleri*): A large, colorful, crested bird with black front portions and blue rear portions.



Looking west along the face of the mountain the contact between the Pre-Cambrian rocks and the Cambrian Flathead can be seen. The approximate trace of the Casper Mountain fault is indicated. It was this break that caused the steep north face of the mountain. Note the difference in vegetation on the east and west walls of the canyon. This is especially noticeable in the trees. On the west side there are many firs, while on the east the trees are mainly ponderosa pines.



22. 6.60 Outside turn. Madison limestone (Mississippian, 330-350 million years ago) and
00.10 Flathead (Cambrian, 550-600 million years ago) are exposed in the road cut. From
here to the top of the mountain, the road follows the canyon of the east fork of Garden
Creek. On some old maps this creek is called "Kemmi Creek."





Red Crossbill (*Loxia curvirostra*): A dull red bird the size of a sparrow with black and white wings and a crossed bill.



23. 6.70
00.15

Note filled stream channels (see photo above) in the road cut. At one time streams flowed in these channels, but as conditions changed the channels were filled and buried. Across the valley (photo below) is an outcrop of Flathead sandstone (Cambrian). Note also the mixture of tree types including sub-alpine fir, ponderosa pine, limber pine, and quaking aspen.





Downy Woodpecker (*Dendrocopos pubescens*): A black and white wood-boring bird with a red patch on the back of its head. Note the small bill and powerful feet.

24. 6.85
00.15 Cross-bedded (layers at an angle to one another) Cambrian Flathead sandstone is exposed along the road north of the site of Brookside.
25. 7.00
00.05 Site of the old Brookside Inn which burned in the late 1950's. The Inn was a well-known eating establishment. The cabin area in the valley below was one of the earliest developments on the mountain.
26. 7.05
00.05 This area is the transition zone between Ponderosa and Lodgepole pine.



Oregon grape, or holly grape (*Mahonia repens*), right, is a low shrub (less than one foot tall) with holly-like leaves, producing bright yellow flowers that develop into dark bluish-purple berries. Ripe berries are edible, but quite sour. Though mainly eaten by birds and mammals, the berries can be used for making jelly. Leaves of this shrub turn bright red in fall. The shrubs are commonly found in moderately dry soil of woods and hills.



Mountain cottontail (*Sylvilagus nuttalli*): A small brown-gray rabbit with short ears, a cottony white tail, and white feet.



27. 7.10 Outside curve. Flathead sandstone exposed in roadcut.
00.05

28. 7.15 Fault zone. Gently dipping Flathead bends to vertical against a fault. The Flathead is in
00.10 fault contact with the Pre-Cambrian rocks. Small biotite fragments are found in the
Pre-Cambrian rocks at this location. Biotite is black mica. The same situation is
present across the valley. The light colored trees are Quaking Aspen (*Populus
tremuloides*).





Bohemian waxwing (*Bombycilla garrula*): A brown, sleek crested bird, with a black throat, and white and yellow markings on its wings.

29. 7.25
00.10 Outside turn with double garage. Note jointing (fractures with no resultant movement of rock faces) in the Pre-Cambrian rock. In this area (and on to Asbestos turn) there is a series of fault gouge zones (broken rock along a fault) in the Pre-Cambrian rock. Small zones of mica schist (a metamorphic rock which breaks easily into layers) are easily seen in the road cuts.
30. 7.35
00.10 Inside turn.
31. 7.45
00.10 Schist zone.
32. 7.55
00.05 Fault zone. Note water pipe as reference point in photograph below. Pre-Cambrian rocks cut by quartz veins and schist zones, the quartz veins being the youngest.



33. 7.60
00.10 A diabase dike shows in the road cut on the east side of the road. A dike is a long, narrow, more-or-less vertical igneous intrusion.

Evening Grosbeak (*Hesperiphona vespertina*): A chunky short-tailed finch, dull yellow with black and white wings, dark head, yellow eye stripe, and large pale bill.



Yarrow (*Achillea lanulosa*) is a fern-like plant with clusters of many small white flowers. The leaves can be used medicinally.



Spring beauty (*Claytonia rosea*) is a common early spring flower found throughout the Rockies. Its blossoms vary from pink to white.

34. 7.70
00.15

Asbestos Turn. Road cut shows an excellent example of folded metamorphic rocks. Older Pre-Cambrian rocks were altered to schist. Quartz intruded the schist and later the whole area was deformed. These folds are known as "chevron folds" because of the "V" shapes. It is believed that the folding may be older than the origin of the mountain.





Deer mouse (*Peromyscus maniculatus nebrascensis*). A small dark colored mouse with large ears and long tail.

ASBESTOS MINING

Casper papers of the late 1800's and early 1900's contain glowing prose about prospects for the asbestos industry in this area. In an article about mineral development the **Wyoming Derrick** of December 17, 1891 says: "Asbestoes (sic) will also receive its share of notice before the dew drops glitter in the hollow of the butter cups."

Charles Hogadon (or Hogadone) reportedly made the initial discovery of asbestos on Casper Mountain sometime in the 1880's. Most claims were staked about 1890. By 1906 the **Natrona County Tribune** reported "... there was so much asbestos on Casper Mountain that it was too big to talk about."

The mine and mill near Asbestos Turn were in operation by 1911. The mine was opened before this time and had generated much news about "experts" who proclaimed the richness and extent of the ore.

Alfred T. Brile built a wagon road from the bottom of the mountain to the mill. A portion of this road is still visible leading west from Asbestos Turn. (See photograph.) This is private property.



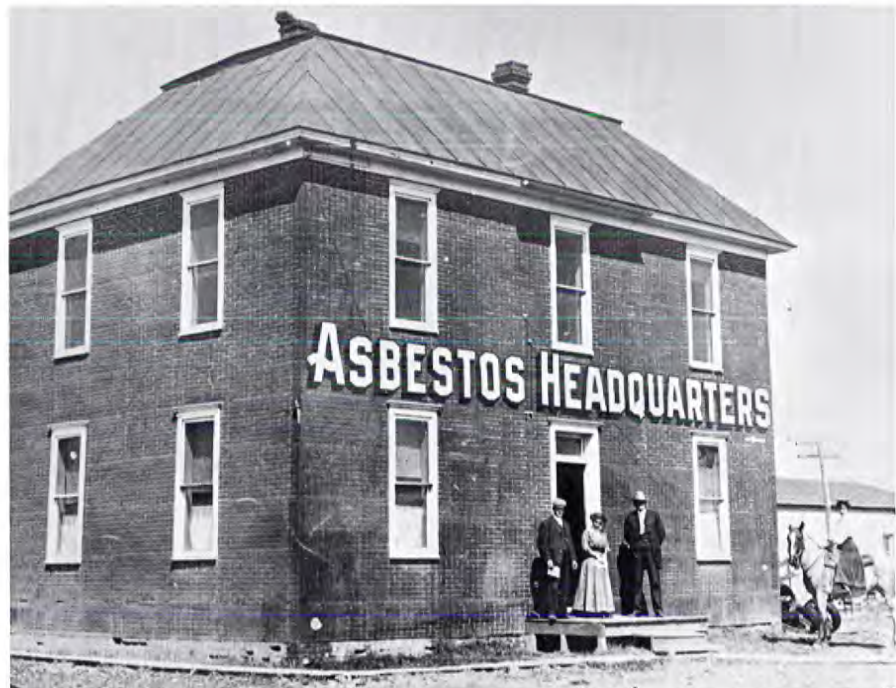
Old mine road.

In August of 1911, it was reported that workmen had started clearing the route for a tramway from the mill to the foot of the mountain. The route was to extend directly over Garden Creek Falls to a terminal at the base. There was some talk of having a steam traction engine to move the ore from this point to the railroad. Research does not indicate that the tramway was ever constructed.

By 1914 Brile, at this time superintendent for the Midwest Asbestos Co., announced that the mine would be reopened and the ore would be shipped in crude form since the shipping rate was cheaper than for milled asbestos. The wagon road was to be widened so a truck could be used to supply the mine. A new proposal for an aerial tram for moving ore to the base of the mountain was mentioned.

A rebirth of activity occurred in 1934 and, according to owner Fred Patee, the first truckloads of asbestos were rolling down the road from Casper Mountain for shipment to Denver. The asbestos was to be used for chimneys on a housing project.

The mill has been replaced by a home and the mine is closed.



At one time this building was the court house.



Historic photos of the asbestos mine area. Arrows point to the mill building.



Red-winged Blackbird (*Agelaius Phoeniceus*): This black bird with red and yellow wing patches (or epaulets) is generally found near water.

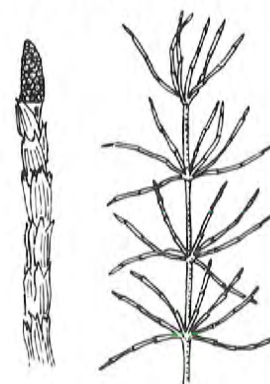


- 35. 7.85 Outside turn. End of major climb.
 00.05
- 36. 7.90 View north down Elkhorn Canyon.
 00.10
- 37. 8.00 Junction of Casper Mountain Road and
 00.10 Hogadon Road. Granite pegmatite (coarse-
 grained igneous rock) poorly exposed in
 the roadcut west (to the right) of the road.

NOTE: Road log to Hogadon Ski area and the archery range begins on page 57.

- 38. 8.10 The whitish, coarsely crystalline rock is quartz pegmatite.
 00.20
- 39. 8.30 Site of Mountain Inn. See photo above of old ski run.
 00.10
- 40. 8.40 Sign: "Entering Casper Mountain Park." Park garage. Small outcrop of fine gneiss
 00.20 (banded metamorphic rock) with vertical foliation (or layering). Quartz veins cut
 across the layers. This gneiss is some of the oldest rock on Casper Mountain.
- 41. 8.60 Sign: "Information Guide." Junction. Turn left for Braille Trail — see information next
 00.10 page. At this corner a few spruce trees can be seen — spruce are relatively rare on
 Casper Mountain.

See needle and cone sketch on next page.



Field horsetails (*Equisetum arvense*), with their unique jointed stems, are relics of plants that existed during the Carboniferous period. These unusual plants produce two different sorts of shoots — brown, unbranched spore-producing shoots with conelike spore cases at their tips, and pale green, branched shoots which are sterile.



Blue Spruce (*Picea pungens*). These trees have short, square (4-sided) needles which are stiff and sharply pointed. Their cones are straw colored with thin papery scales. Spruce trees are blue-green to silvery, grow 60-100 feet tall, have dense cone-shaped crowns and gray bark.

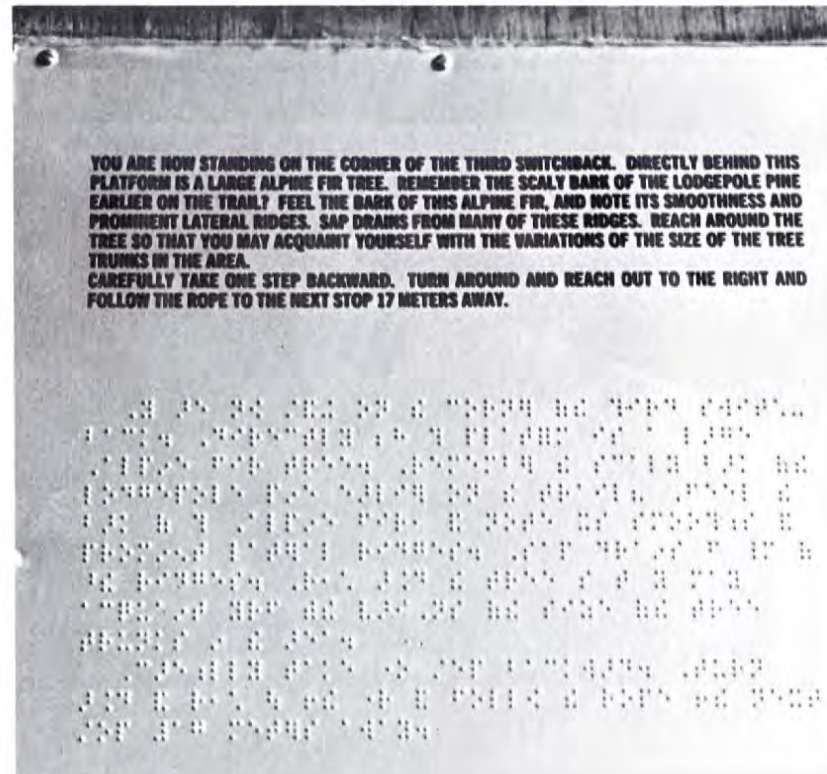


The Lee McCune Braille Trail is located along Elkhorn Creek at the north end of City Park Loop. The trail provides blind and sighted persons with the opportunity to enjoy nature's wonders.

The 37 stations, covering one-third of a mile, are connected by a hand-dug path and nylon rope, which allows the blind to walk the trail without assistance. Aluminum plates at each stop describe types of vegetation, rock formations, tree characteristics and the surrounding environment. Material is written on each plate in both print and Braille.

Casper biology teacher Ed Strube designed the trail and supervised its completion in 1975 with the help of Field Science Students, the Casper Mountain Lions Club, and many other interested people.

In 1976 the trail was designated as a component of the National Recreational Trail system by the U.S. Department of Interior, the first so designated in Wyoming.





Western Tanager (*Piranga ludoviciana*): A yellow bird with a red face, black back and wings, and white wingbars.

- 42. 8.70 Telephone Company box. A dark mafic dike cuts across the road. Lighter color
00.10 boulders are granite pegmatite which cuts the older mafic dike. Note that trees do not grow well on mafic rocks.

- 43. 8.80 Quartz monzonite (Pre-Cambrian rock) and pegmatite outcrop.
00.10

- 44. 8.90 Camp Wyoba and Powderhouse Hill junction. A series of parallel prospect pits were
00.05 located to the west. These were made in evaluating a chromite deposit in 1939.

- 45. 8.95 Eight mile marker.
00.05

- 46. 9.00 Outcrop of talc actinolite schist. Some of this rock shows indications of two stages of
00.05 metamorphism. Photo below.





Clark's Nutcracker (*Nucifraga columbiana*): A pale gray bird built like a small crow, with black wings and tail.

47. 9.05
00.15 Junction. Beartrap and Circle Drive to the right. Stay right. Road left leads to the Braille Trail and around City Park Loop to item No. 41 on this road log. The stream is Elkhorn Creek.

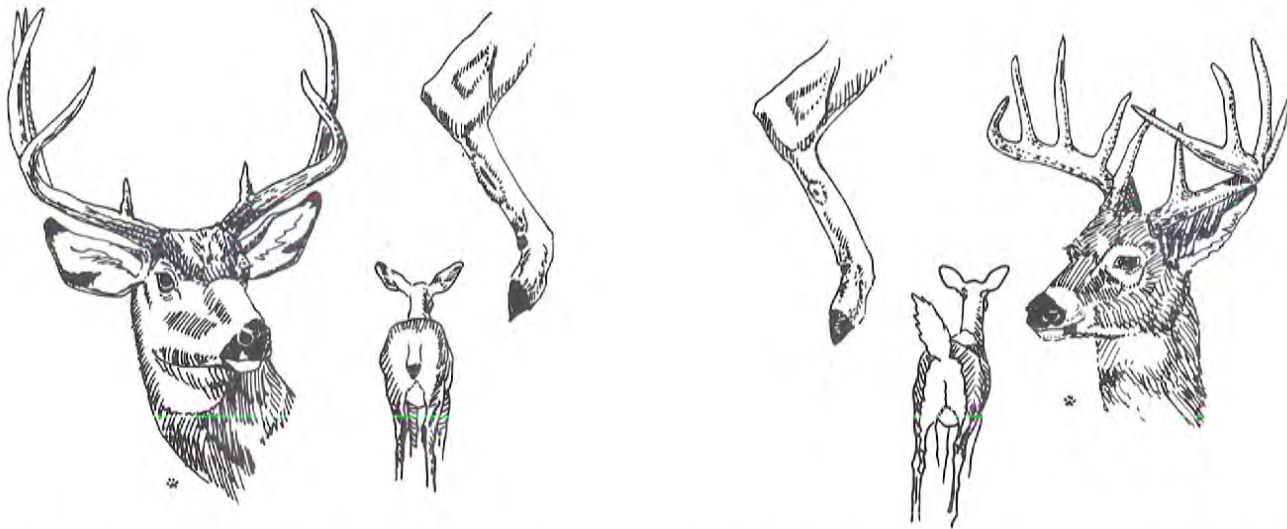
Just east of the junction and above the picnic site is an excellent outcrop showing the contact between Pre-Cambrian pegmatite and the Cambrian Flathead sandstone. Photo below.



48. 9.2
00.15 Sign: "Entering Beartrap Meadow Park." Power line cut across the road. The Cambrian Flathead is visible a short distance up hill to the east. The contact between the Flathead and the Pre-Cambrian is covered.
49. 9.35
00.10 Beartrap Meadow north shelter house. Flathead exposed in the parking area east of the road. Road to Tower Hill picnic area is just above the contact between the Flathead sandstone and the Madison limestone. The Madison caps the hill to the east.



Yellow violets (*Viola nuttallii*) can be found in the meadows in early spring. This short stemmed inconspicuous plant produces beautiful yellow flowers with brownish-purple veins in their throats. Unlike the blue-purple violets, yellow violets have lance-shaped leaves.



Mule deer (*Odocoileus hemionus*) the more common of the two species found on Casper Mountain, have large ears and rich, rusty-red coats. They have white rope-like tails, with black tips, which they hold down while running. Mule deer have branched antlers.

White-tailed deer (*Odocoileus virginianus*) have smaller ears, tawny coats, white bushy (flag-like) tails which are held upright when running. They have non-branching antlers. Upright prongs extend from one forward-curving beam.



Quaking Aspen (*Populus tremuloides*), the prominent deciduous trees on Casper Mountain, have small oval to round yellow-green leaves which are silvery underneath. The flattened and twisted leaf stalks allow the leaves to flutter in even the slightest breeze. Their magical shimmering quality resulted in the common name "quaking aspen" as well as the species name "tremuloides" (trembling). The trees have slender, straight trunks with smooth chalky-white (or greenish-white) bark which may become rough and black. In autumn aspen turn a variety of rich hues from red to gold. The varying colors have been attributed to diverse local weather conditions and differences in soil composition, as well as to genetic variations between clumps of trees. Extensive damage has been done to this stand (and others) by vandals carving on the trunks.

Beartrap Meadow is a good example of a high-use, high-demand area. Summer picnicking and winter snowmobiling have exerted tremendous pressure on the vegetation. The chronological series of photos on the next page gives some indication of the changes that have taken place.





Beaver (*Castor canadensis*): A dark brown stocky mammal with waterproof fur, webbed hind feet, and a broad flat tail. Beaver feed on bark and twigs. The pelts of these animals lured trappers to explore the northwest.

The leafless stalks of shooting stars (*Dodecatheon pulchellum*) terminate in rose-purple flowerheads whose five petals flare backward. The tips of the exposed stamens form a tight cone projecting forward. This combination of petals and stamens results in a "shooting star" appearance. These plants generally grow in the mountains and bloom in early summer.



50. 9.45 Deerhaven turnoff.
00.05

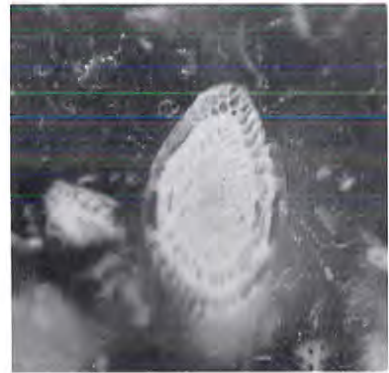
51. 9.50 Good Madison Limestone outcrop on the left side of the road. The Madison limestone boulders on either side of the road may contain brachiopod and coral fossils. Brachiopods are invertebrate animals having two shells. The two shells have slight differences in size and shape which distinguish them from clams. Corals are simple animals that resemble plants. They have a cone-shaped skeleton with a soft sac-like body topped by a circular row of tentacles. Both brachiopods and corals tell something about the environment during the Mississippian period. They lived only in clean, shallow, warm water. The Casper or Tensleep formation (item 52) contains fusulinids. These extinct one-celled organisms, about the size and shape of a grain of wheat, flourished in the sea that covered this area about 270 million years ago.



Brachiopod



Coral



Fusulinid

Photos: Terry Logue

Broad-tailed Hummingbird (*Selasphorus platycercus*): A small bird with a green back, bright rose-red throat, and needle-like bill for sipping nectar. Hummingbirds hover when feeding.



52. 9.65
00.15 Approximate Madison limestone — Casper (Tensleep) formation contact. The Casper formation is Permo-Pennsylvanian in age. That is, it was deposited starting in the Pennsylvanian and ending in the Permian. Fusulinids (see p. 34) indicate the Casper formation.

53. 9.80
00.20 Sign: "Leaving Beartrap Meadow Park."

54. 10.00
00.10 Sign: "Crimson Dawn." Land donated by Neal Forsling for a county park. Neal Forsling long entertained Casper residents with her Midsummer's Night Eve festivities.

55. 10.10
00.15 Two mile marker.

56. 10.25
00.20 Thin veneer of Goose Egg formation — red-orange color — on the Casper formation. The road is on the dip slope and the contact. That is, the angle of the road and the angle of slope of the formation are about the same. Dip is the direction a formation slopes and the angle of dip is the angle between the surface of a layer of rock and the horizontal. Refer to cross-section (page 79b-e).

57. 10.45
00.25 Gate sign: "El Rancho No Dinoro" (sic).

58. 10.70
00.15 Ryan sign. Starwallow. Starwallow was owned by well-known Casper artists Linn and Ruth Joy Hopkins. Some of their paintings hang in the Capitol Building in Cheyenne.

This is the approximate contact of the Casper Formation and the overlying Goose Egg Formation.



Northern Pocket Gopher (*Thomomys talpoides*): A small, grayish, burrowing gopher with digging claws on its front feet, and large fur-lined cheek pouches.

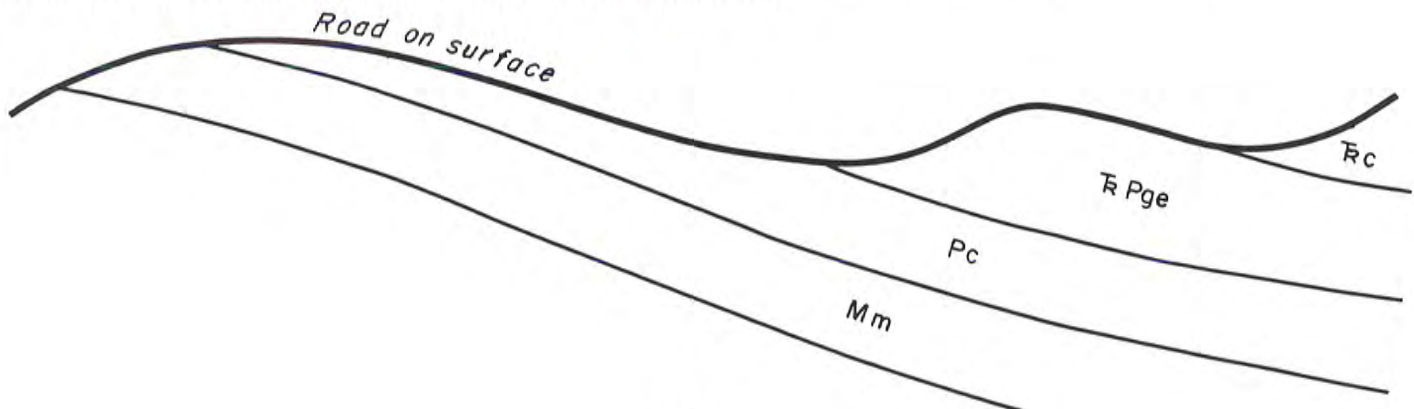


View east from Ryan sign.

Sub-alpine fir (*Abies lasiocarpa*) has short, flat, blunt needles (not in clusters). Its cones are dark purplish cylinders extending upright from the short, thick branches. Fir trees are deep blue-green, grow 50-70 feet tall, and have slender tapering tops. This is a species used commonly for Christmas trees.



Coming down the south slope of Casper mountain you travel from older to younger rocks. The sketch below shows how it is possible to go down hill, yet up the geologic column.



Turkey Vulture (*Cathartes aura*): An eagle-like bird with a small unfeathered head, and two-toned blackish wings. Turkey vultures, often incorrectly referred to as buzzards, soar with their wings above the horizontal (in a dihedral).



59. 10.85 Top of "Shepherd Ridge." Good vantage point. Below is a photo of the view east.
00.10 Note the change in dip from Casper Mountain - Muddy Mountain to the Deer Creek Range.



60. 10.95 Dolomite outcrop in the Goose Egg Formation causes unpaved road surface to be rough.
00.70

Several good vantage points in this area enable you to stop and look at the face of Muddy mountain to the south. The stratigraphic column on Muddy mountain is:

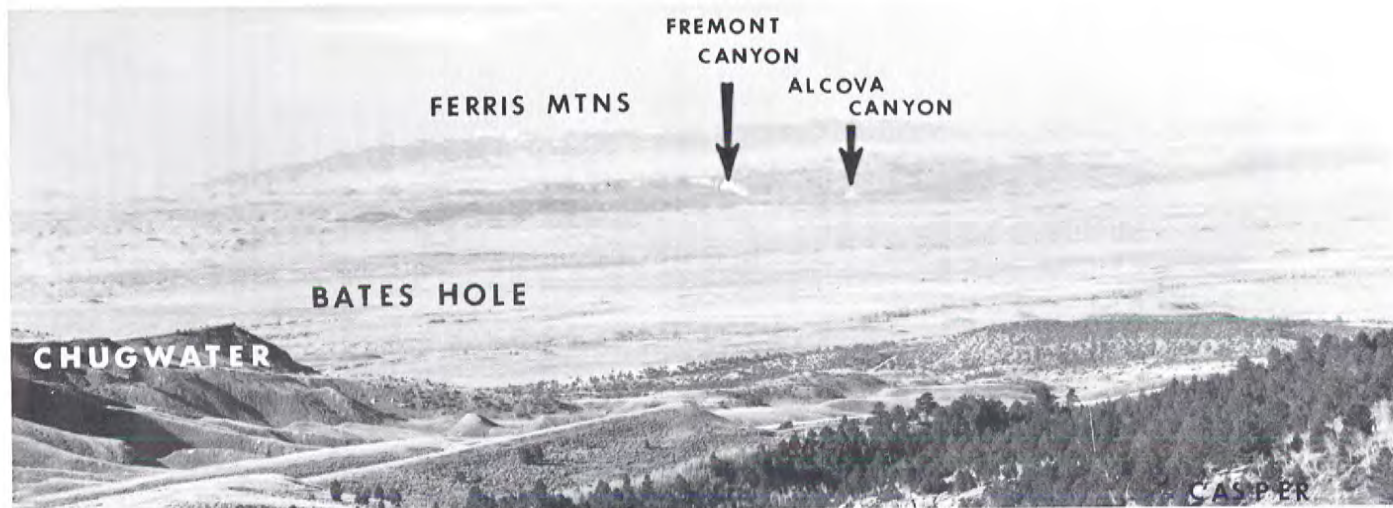
Lakota Conglomerate	Cretaceous 70-135 million yrs. ago
Morrison	Jurassic 135-180 million yrs. ago
Sundance	Jurassic 135-180 million yrs. ago
Alcova Limestone	Triassic 180-225 million yrs. ago
Chugwater (Red Peak)	Triassic 180-225 million yrs. ago
Goose Egg	Permian-Triassic 225 million yrs. ago





Golden Eagle (*Aquila chrysaetos*): An almost entirely brown eagle with a wash of gold on its neck. Eagles soar or glide with wings flat.

61. 11.65 1.40 End of ridge. Road turns south down the hill. On a clear day it is possible to see much of interest from this point.



62. 13.05 01.90 Intersection. Road south to the top of Muddy Mountain. Log for this road begins on page 53. At this point the road is still on the Goose Egg. The Goose Egg contact with the younger Chugwater is just south of the intersection.
63. 14.95 00.30 Another dolomite outcrop in the Goose Egg.



Richardson's ground squirrel (*Spermophilus richardsoni*) (or called *Citellus richardsoni* east of the Mississippi): A reddish-drab ground squirrel approximately a foot long with buffy underside and a white bordered tail. Another name for this animal is "Picket Pin" because it is usually observed sitting upright and looks like the stake, called a picket pin, used to tether a horse.

64. 15.25 An interesting phenomenon is "Jenkins' Trench" which runs along the crest of the
00.60 ridge in this area.



Below is a photograph of the view south from the area of Jenkins' Trench. Note the tree pattern on the north face of Muddy Mountain. Note also the distinctive red color of the Chugwater formation. The red color of this formation indicates that it formed in a tidal flat, or shore line of a sea, where the water was shallow. The iron minerals present in the shales, siltstones, and sandstones of the Chugwater formation underwent oxidation (or rusting), thus creating the red color.









1. Aspen
2. Mountain Bluebird
3. Yellow Bellied Marmot
4. Harebell

5. Fairy Slipper Orchid
6. Porcupine
7. Wild Rose
8. Limber Pine

9. Black-capped Chickadee
10. Mule Deer
11. Indian Paintbrush
12. Big Sagebrush



13. Balsam Root
14. Squirrel
15. Lodgepole Pine
16. Black Bear

17. Chipmunk
18. Shooting Star
19. Bistort
20. Ponderosa Pine

21. Junco
22. Subalpine Fir
23. Lupine
24. Fireweed

25. Heartleaved Arnica



Bald Eagle (*Haliaeetus leucocephalus*): The national bird of the U.S. is a large, brownish-black eagle with a snow white head, neck, and tail. When in flight, the wings of the bald eagle (which may spread up to seven feet) are held horizontal.

65. 15.85 01.40 Looking west along the Goose Egg formation — Casper formation contact. The south dip of the Casper formation is easily observed.

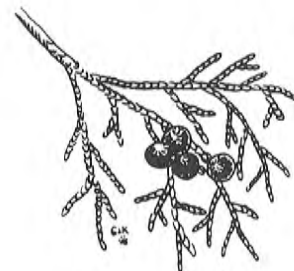


66. 17.25 00.20 View east along the north face of Muddy Mountain.



The well exposed white layers in the Goose Egg Formation along the road in this area are gypsum. Gypsum is an evaporite, meaning that it was deposited as water evaporated, leaving behind the mineral which had been dissolved in it. In Wyoming it can be found in the massive form (called alabaster), as it is at this location, or in a crystalline form called selenite. Selenite is often mistaken for mica, but unlike mica, the selenite does not peel off in resilient layers.

Juniper (*Juniperus scopulorum*, *Juniperus monosperma*, and *Juniperus osteosperna*) are aromatic trees with scale-like blue-green leaves approximately one-eighth inch long. These plants produce dry (or somewhat fleshy) blue-black berries which are actually tiny cones. Junipers, incorrectly called cedars, possible because of their "cedar chest" aroma, occupy the transition zone between sagebrush flats and coniferous forests.



- 67. 17.45 Cattle guard.
 00.70

- 68. 13.15 View to the right side of the road is north-westward along the south flank of Casper
 00.10 Mountain.

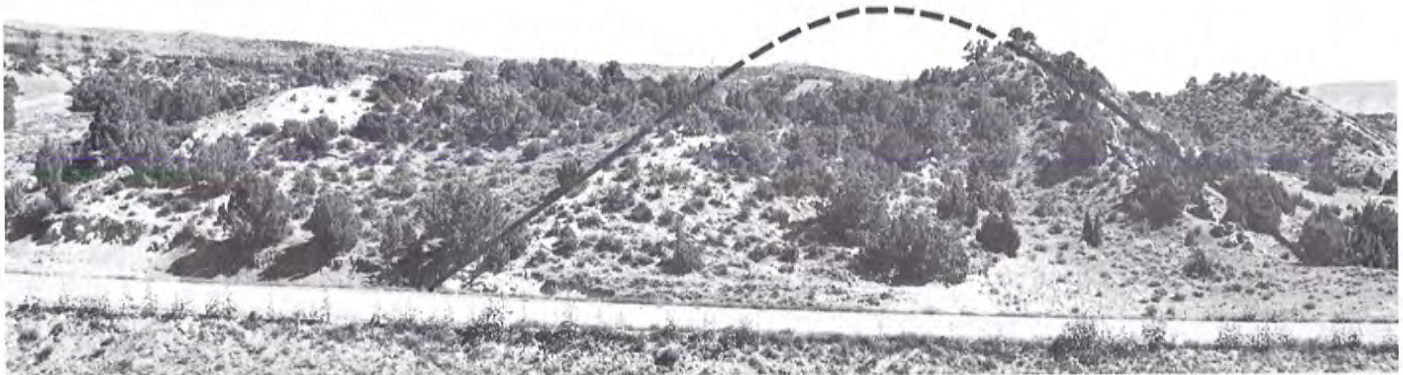
- 69. 18.25 This is a good location to stop and view a small anticline located to the south. An
 00.05 anticline is an up-fold in the rocks. This stop is on one of the gypsum beds in the Goose
 Egg Formation.



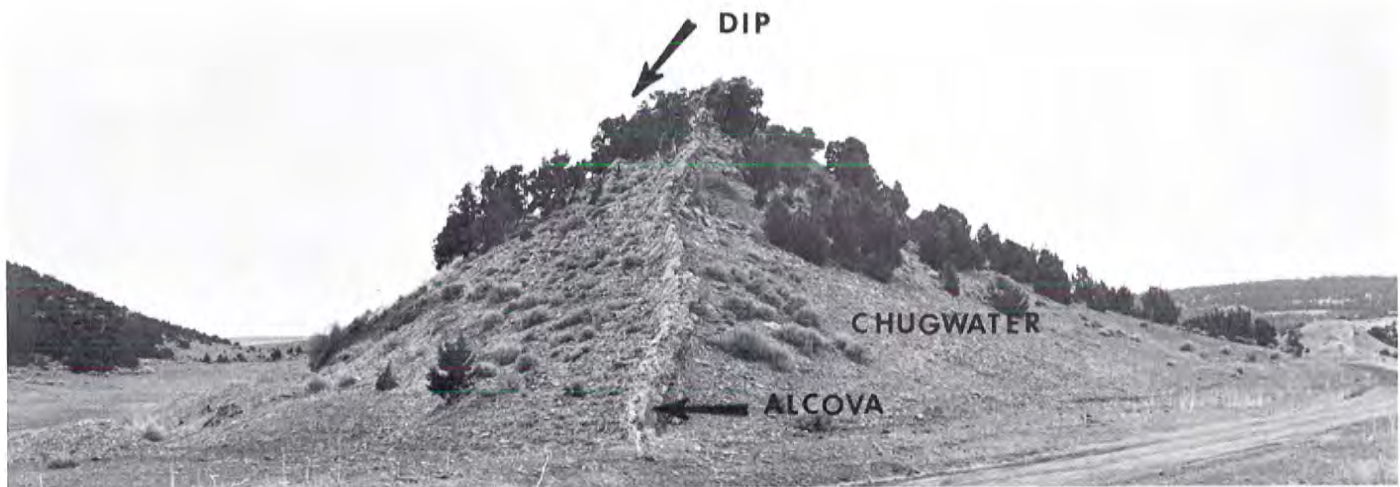


Thirteen-lined ground squirrel (*Citellus tridecemlineatus*): This slender ground-dwelling squirrel has alternating dark and white stripes on its body but not on its face.

70. 18.30 Short steep hill. The structure of the small anticline viewed at item number 69 is
00.45 visible along the south side of the road on this hill.



71. 18.75 This sharp ridge is called a "hogback." The rock forming the backbone is the Alcovia
00.10 limestone (Triassic, 180-225 million years old). It dips steeply (53-56°) west. Strike which is always at right angles to dip, the "long way" of the outcrop, is about 5° west of north. A faint smell of petroleum can be detected from a fresh break.



The valleys on either side of this hogback are excellent examples of strike valleys, or valleys which run in the direction of the strike of the rock beds. The major stream drainage in this area is to the west with a secondary pattern north-south.

72. 18.85 Steep hill.
00.20

Horned Lark (*Eremophila alpestris*): A brownish, sparrow sized bird with small black "horns," displaying a yellow face, black bib, and black tail.



73. 19.05 Road cut. This road follows an old stream channel that has been left high and dry when
00.05 the drainage pattern changed. It is called a "perched channel." The rock outcropping north of the road, the boulders along the hill, and the outcrops above the road are Lakota conglomerate (Cretaceous, 70-135 million years old). Cross-bedding is apparent.



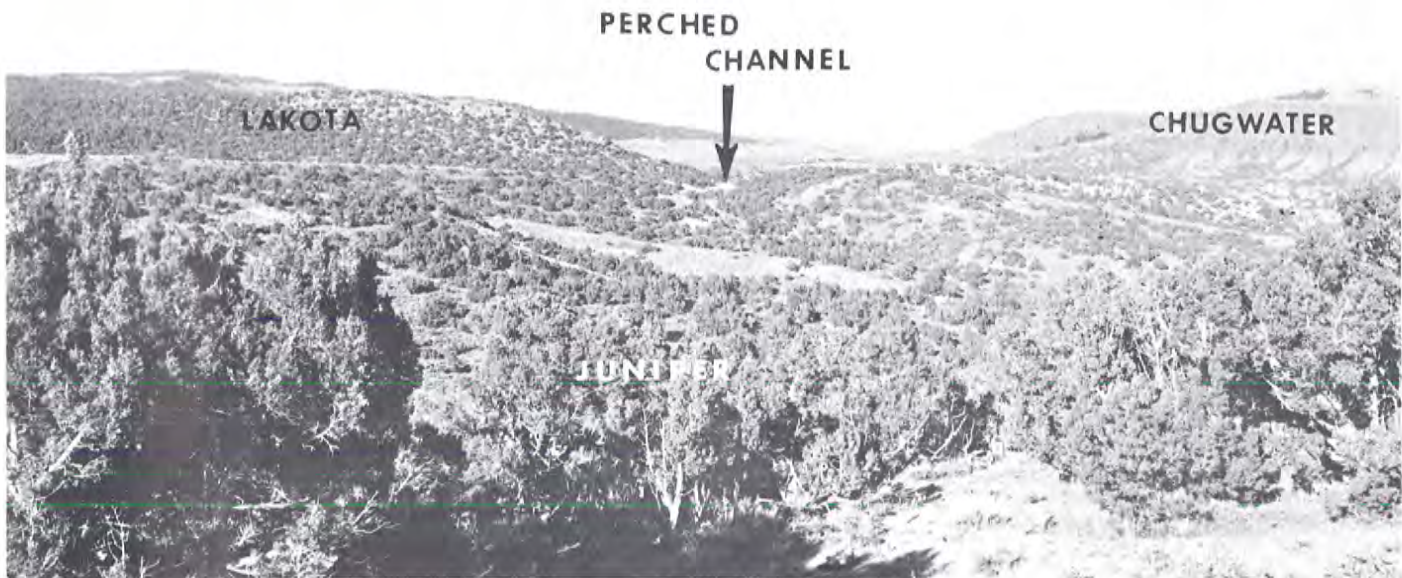
On the north (left) side of the road is Lakota. On the south side is material deposited in the stream channel. The heavy brush in this area is Juniper.

74. 19.10 Cattle guard.
00.25



Black-billed Magpie (*Pica pica*): A large black and white bird with a long wedge-shaped tail, and a black bill.

- 75. 19.35
00.05 Crest of hill. Dakota siltstone outcrops.
- 76. 19.40
00.20 Contact with Thermopolis Shale (Cretaceous, 70-135 million years old).
- 77. 19.60
00.10 Muddy sandstone (Cretaceous). There is oil production from this rock at various locations in Wyoming.
- 78. 19.70
00.10 Thermopolis Shale-Mowry Shale contact. Both are Cretaceous, but the Thermopolis is black, while the Mowry weathers to a silver gray.
- 79. 19.80
00.05 Overlook. View back toward the perched channel visited at stop number 73.

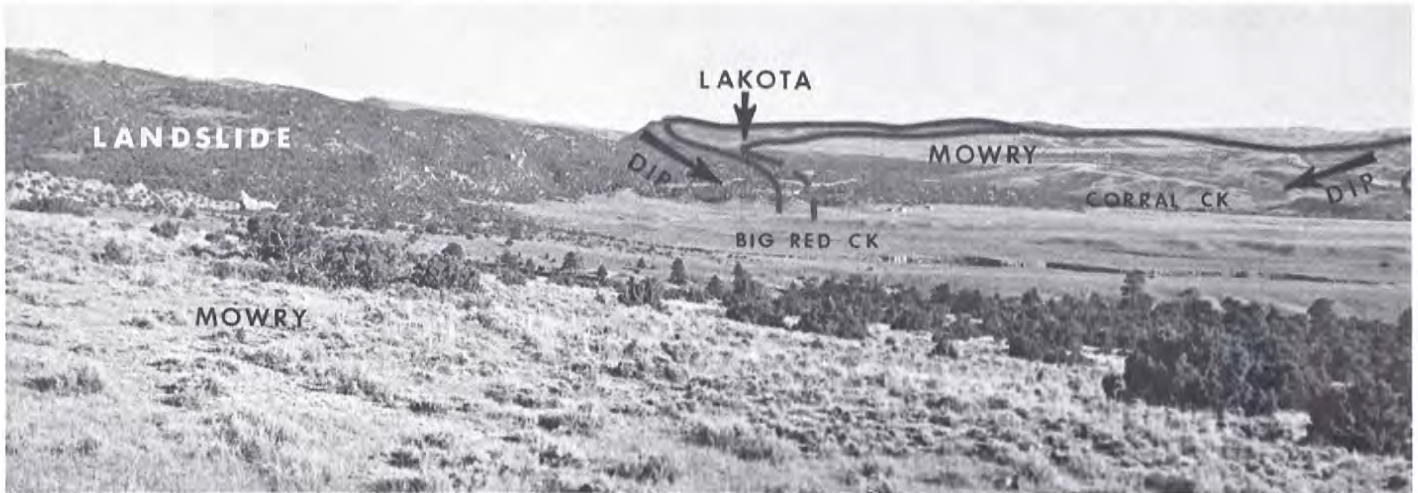
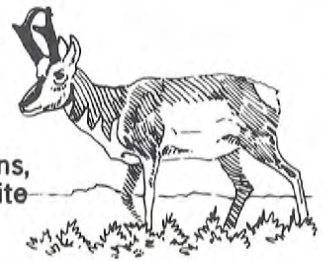


This location affords a good view of Bates Hole country.

Named after a Captain Bates stationed at nearby Fort Caspar, Bates Hole did not see any permanent white settlers until the 1880s when a number of successful ranches were established. Of the earliest settlers, the Body, Cheney, McGraugh and Tobin families still have ranches in the Hole. Two Bates Hole pioneers played a prominent role in local affairs, Ed McGraugh as first County assessor for Natrona County, and Cordelia Cheney as first Superintendent of Schools. Not a community to be behind the times, Bates Hole established the Freeland Telephone Company in 1902. Maintained by the local ranchers, the Company provided phone service to most of Bates Hole until its abandonment in the 1930s. Phone service was not reinstated for much of the Hole until 1976. Many of Bates Hole's pioneers are buried on a hill at the base of Muddy Mountain in the Freeland Cemetery.

—George "Pete" Scott

Pronghorn (*Antilocapra americana*): A deer-like animal with slightly curved horns, bearing single prongs projecting forward. These speedy mammals are tan with a white rump patch, and two broad, white bands across the throat.



Sego lily (*Calochortus nuttallii*) the state flower of Utah, has bare, grass-like leaves and a creamy white tulip shaped flower. The showy blossom has three petals, each with a purplish band or spot at its base. The edible bulbs of sego lilies, when boiled, taste like potatoes.



The beautiful blue flowers of the flax plant (*Linum lewisii*) are very short lived: petals drop off 2-3 days after the blossoms open. The slender stems contain long tough fibers from which linen thread and cloth are made. Widely used linseed oil is extracted from flax seed.

80. 19.85 Long hill on Mowry shale. This formation, which is marine in
00.35 origin, contains an abundance of fossil fish scales. The large
trees in this area are Ponderosa pines.

Photo by Terry Logue





Scorpions can be found under loose pieces of shale. Caution. Generally feared because of their sting and ugly appearance, scorpions have long been victims of bad publicity. Of the 40 species found in the United States, only two species are considered poisonous, and these inhabit the extreme southwestern states. The venom of most scorpions simply causes a mild to severe local reaction at the site of the sting, similar to the discomfort of a wasp sting. Care should be taken as people vary in their reaction to stings. Scorpions are not insects, but rather arachnids, or eight-legged creatures in the same class as spiders. They are yellow-brown in color and grow to be 2-2½ inches long. The segmented tail is tipped with a single stinger fed by venom glands. Scorpions are nocturnal predators which feed on insects and spiders.

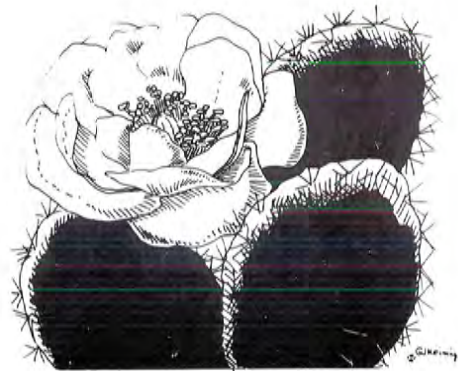
81. 20.20
00.70

Bentonite quarries are apparent on both sides of the road. This is the Clay Spur Bentonite found at the contact between the Mowry and the overlying Frontier formation (also Cretaceous). Because bentonite expands when it becomes wet, it has many uses, including drilling mud, sealing small reservoirs, roofing, candy and powdered insecticides.

Bentonite is formed when fine rock dust (ash) from a volcano decomposes.



Prickly pear cactus (*Opuntia polyacantha*) is well adapted to dry conditions. The thick, fleshy stems store water when the supply is plentiful, and the waxy substance which coats the plant prevents the loss of stored water through evaporation. Cacti produce large, waxy, yellow flowers in early spring.



82. 20.90
00.20

Junction with the Old Medicine Bow road. Keep left. You are driving on the Frontier formation (Cretaceous). The road log follows circle drive road to the left.

83. 21.10
00.50

Dry hole marker to the left.

84. 21.60
00.25

Frontier outcrops in roadcut west of the road.

[Due to road construction at time of 2nd printing mileage has changed.]

Coyote (*Canis latrans*): A buffy-gray doglike animal with a long bushy tail which is held down between its hind legs when running.



Shrubs common to this area include: Left, Russian Thistle (***Salsola kali***) a much branched green plant with spiny leaves. It becomes the common tumbleweed when mature. Center, Greasewood (***Sarcobatus vermiculatus***) is a spiny weed-like shrub which grows 2-8 feet tall. It is well adapted to dry, salty soils. Right, Rabbitbrush (***Chrysothamnus nauseosus***) is a low shrub with narrow leaves. It blooms in late summer with small heads of yellow or orange flowers. This plant serves as winter browse for pronghorn, deer, and jack rabbits.

85. 21.85 Junction with highway 487 — the Medicine Bow Road. Turn right.
 00.10

86. 21.95 Frontier outcrop to the north.
 00.80

87. 22.75 Old log buildings — the Fredericks Place.
 00.05

Typical of many homesteads, John Fredericks and his wife Zelta built the cabin on the north side of the highway in the spring of 1911 and ranched there for nine years. Until 1978 the Fredericks' old barn stood on the south side of the road. In the 1920's Mrs. Gladys Huffard maintained the Freeland Post Office in the cabin.

—George "Pete" Scott



88. 22.80 Continental Oil Company Products pipeline crosses road. This pipeline was constructed in 1963. Note how well the vegetation has returned to the scar.
00.40
89. 23.20 Frontier outcrop to the north.
00.35
90. 23.55 Little Red Creek.
02.70
91. 26.25 Two Bar Ranch. Founded in the mid 1880s by the mammoth Swan Land and Cattle Co., the Two Bar Ranch was purchased by John Mahoney of Rawlins in 1898. Shortly after 1900 John Tobin became manager, and eventually bought the ranch. A local legend, John Tobin was responsible for all of the buildings on the ranch, and for maintaining it as a superb cattle and sheep outfit through the years. —George "Pete" Scott
02.75



The three deciduous trees (those which lose their leaves in the fall) found in the area of the ranch are 1) Narrowleaf cottonwoods (*Populus angustifolia*) with their lance-shaped to oval leaves, 2) Boxelders (*Acer negundo*) with their broad, paired leaves composed of three toothed leaflets, and their distinctive winged seed pairs, and, 3) Willows (*Salix* sp.) with their narrow, pointed leaves, occurring generally as shrubs or small trees.

White flowers adorn the climbing vines of wild clematis (*Clematis ligusticifolia*). This vine must depend on other objects or plants for support and thus is generally found twined about other bushes. Clematis produces feathery-tailed seed heads designed for wind transport.



92. 29.00 Bates Creek Oilfield. The field was discovered in 1954, and there is minor production from the Frontier formation at about the 1200 foot depth. The brush is mainly greasewood and rabbitbrush.
01.10
93. 30.1 Junction of Medicine Bow Road (487) and the Alcova Highway (U.S. 220). Turn right to return to Casper — approximately 19.3 miles.

END OF CIRCLE DRIVE ROAD LOG.

[Due to road construction at time of 2nd printing mileage has changed.]

ROAD LOG: MUDDY MOUNTAIN

1. 00.00
00.05 Junction of Circle Drive Road and Muddy Mountain Road. The geologic map says Chugwater at this point, however, the Goose Egg extends to just south of the corral.
2. 00.05
00.50 Contact of Goose Egg and Chugwater formations.
3. 00.55
00.35 There is a good exposure of Chugwater siltstone in the roadcut.
4. 00.90
00.05 Prominent rim or ledge is created by the Alcoa formation (Triassic 180-225 million years ago).
5. 00.95
00.40 Cattle guard. Photo below is looking east-north east from the cattle guard.

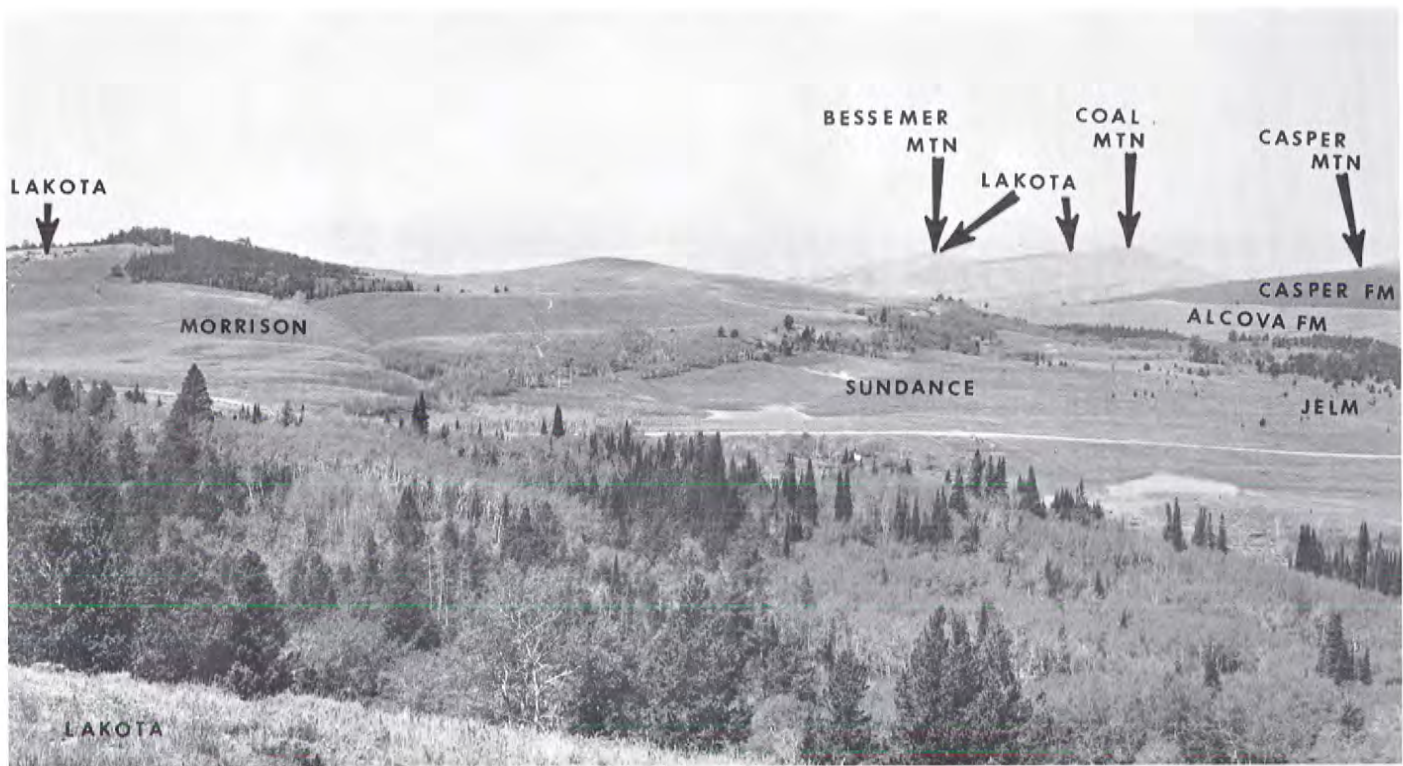


6. 01.35
00.15 Loading chutes. Stock pond and beaver ponds. Contact of the Jelm and Sundance formations.
7. 01.50
00.35 Cattle guard.
8. 01.85
00.20 Sign: Leaving Private Land.
9. 02.05
00.20 Hairpin turn sign. Roadcut provides good exposure of the Morrison formation. Lakota conglomerate boulders present along the road.



Snowshoe hare (*Lepus americanus*): A large-footed brown hare, which turns white in winter. Its ears are longer than those of the cottontail, but shorter than those of the jackrabbit.

10. 02.25 00.20 The Lakota formation is not as well cemented here as it is at Alcova. It has weathered to the appearance of gravel over much of the top of Muddy Mountain.
11. 02.45 00.30 Sign: "Entering Private Land."
12. 02.75 00.20 Overlook. Photograph is west-northwest from the rim. Because the Lakota is not well cemented on Muddy Mountain, it does not form the prominent rims typical of other locations.

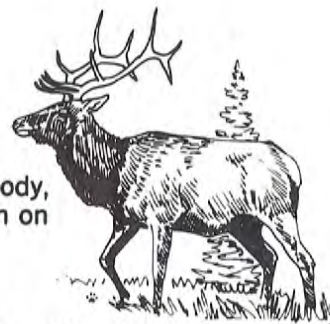


13. 02.95 00.50 Sign: Leaving Private Land. Cattle guard. Still on the Lakota formation, which outcrops north and south of the road.

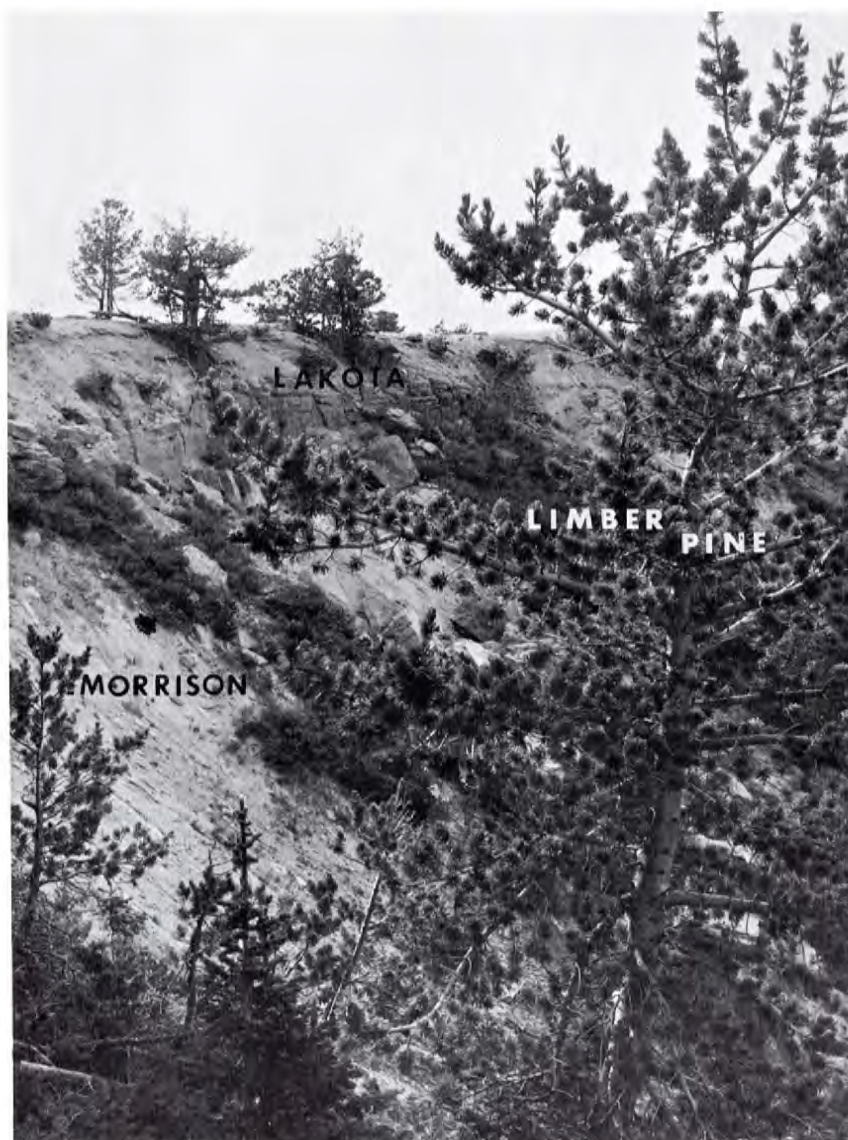
The white flowers of field chickweed (*Cerastium arvense*) are composed of five deeply notched petals. Generally found in dry rocky places, these plants bloom throughout the summer. The seeds are eaten by birds and mice.



Elk (*Cervus canadensis*): This large deer-like animal with a reddish-brown body, darker head and neck, and paler yellowish rump patch is more likely to be seen on Muddy Mountain than on Casper Mountain.



14. 03.45 Turnout. Overlook. Photograph is looking west along the north face of the rim. It shows
00.20 the Lakota formation capping a good Morrison formation exposure.



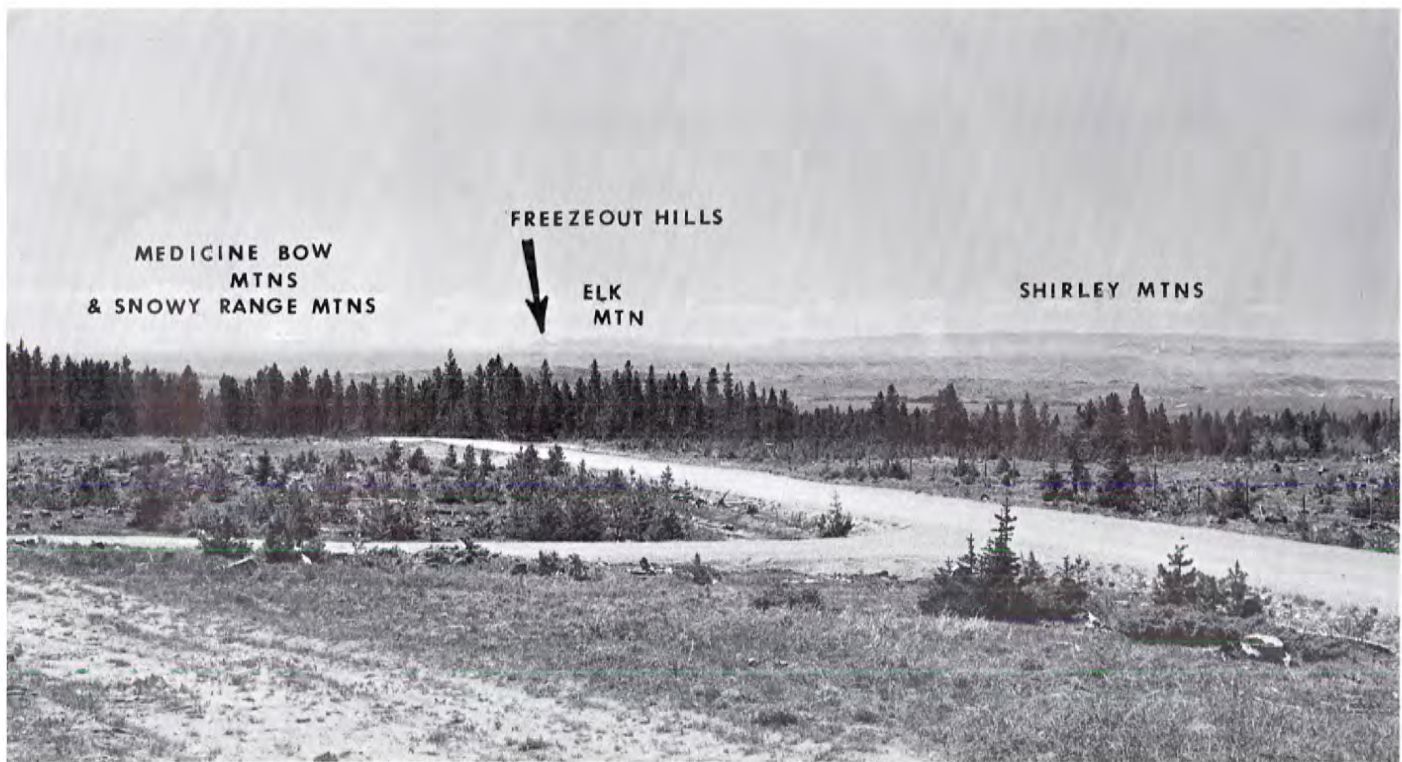
15. 03.65 Fire-spotter reference marker on hill to south.
00.65
16. 04.30 Location of old Muddy Mountain triangulation tower north of the road. This tower was
00.35 used when Muddy Mountain was surveyed. The elevation is 8,287 feet (slightly higher than the highest point on Casper Mountain).
17. 04.65 Junction with the old road down the north face. This road leads to the Texaco Oil Co.
00.01 dry hole which is the south reference point on the cross section (page 79). The road is in poor condition and crosses private land. Please do not travel this road.



Black bear (*Ursus americanus*): These medium sized bears range in color from black to brown to cinnamon. They have pointed heads, brown faces with straight muzzles (grizzlies have "dished" muzzles), short dark claws, a small white patch on the breast, and no prominent shoulder hump.

18. 04.66 Cattle guard
00.01

19. 04.67 Junction with road south, which is a loop road. There is an excellent vista south from
00.23 this point.



20. 04.90 Picnic loop. Stay right.
00.30

21. 05.20 Junction with loop road. Stay right.
00.10

22. 05.30 Sign: Muddy Mountain Natural area. Road to the right continues the loop and rejoins at number 19 above. The log returns to the north loop. Stay right (north) at the first junction.

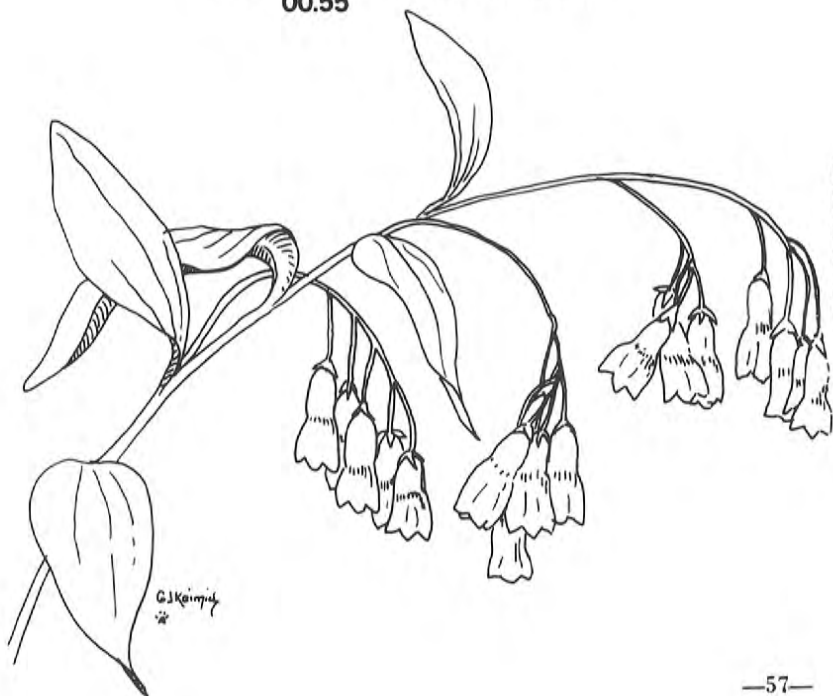
END OF ROAD LOG

ROAD LOG TO HOGADON AND THE ARCHERY RANGE

1. 00.00 Junction of Casper Mountain road and Hogadon Road. Granite pegmatite to the west
00.15 of the road.
2. 00.15 Outcrop of metadiabase.
00.10 The trees in this area are a mixture of lodgepole pine (*Pinus contorta*), quaking aspen (*Populus tremuloides*), and alpine fir (*Abies lasiocarpa*).



3. 00.25 Trolley car cabin.
00.55



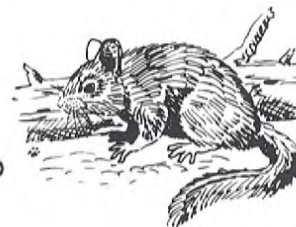
Clusters of deep blue, drooping, bell-shaped blossoms characterize this common bluebell, or chiming bell (*Mertensia* sp.). Unopened blossoms found among the flower clusters are pink in color, changing to blue when in full bloom. Deer, elk, and bear feed on these plants.



Blue grouse (*Dendragapus obscurus*): A dusky hen-like bird with a light band at the tip of its dark tail.

4. 00.80
00.15 Junction with dirt road to the south. KTWO-TV tower south.
5. 00.05
00.15 Pegmatite dike. A dike is a long, narrow, more-or-less vertical igneous intrusion. If the rock around it were removed the dike might look somewhat like a wall. Pegmatite is a very coarse-grained igneous rock. It cooled slowly, allowing large clumps of each mineral to "grow" separately. Some clumps may be tens of feet across.
6. 01.10
00.10 Valley. East fork of Garden Creek.
7. 01.20
00.05 Serpentine outcrop in roadcut.





Bushy-tailed Woodrat (*Neotoma cinerea*): The local packrat has soft, fine, gray to black fur, white hind feet, large ears, and a long bushy squirrel-like tail

8. 01.25 Pegmatite dike.
00.05
9. 01.30 Junction. This junction is on the divide between the east and west forks of Garden
00.20 Creek. Good view.



The road log follows the road to the left. The road to the right continues 0.3 mile to the Hogadon Ski Area.



10. 01.50 Pegmatite outcrop east of the road.
00.15

Photo by Ann Stroock



White-breasted Nuthatch (*Sitta carolinensis*): A small, stout bird with a white face, black cap, and black eye. These nuthatches climb down trees head first.

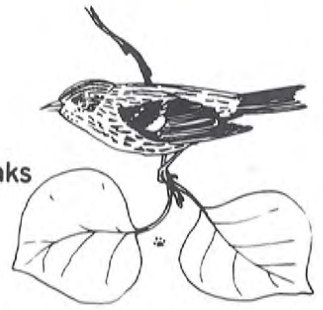
Feldspar quarry. CAUTION — DANGEROUS — KEEP AWAY.



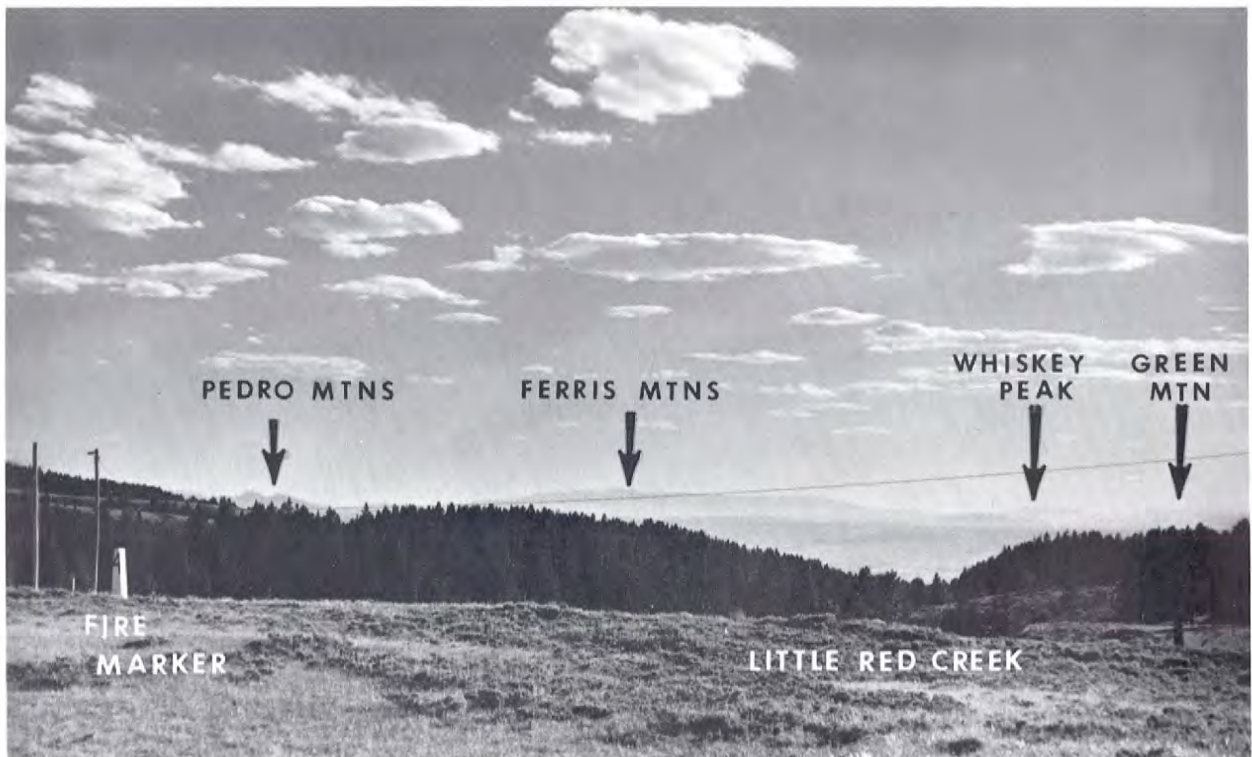
Microcline feldspar, quartz, mica, and some beryl are found here. The mine is operated occasionally to extract the microcline. Some of the material from this mine has been used to surface roads in the picnic areas of the mountain. The photo below is a view of the interior of the mine.



Pine siskin (*Carduelis pinus*): A small dark-streaked finch with yellow wing streaks and a notched tail. Pine siskins commonly nest in conifers.



12. 01.70
00.10 Quarry. Rock for road construction is extracted from this quarry.
13. 01.80
00.15 Junction. Turn left. Mining prospect pit beside road. Road to the right leads to home sites and a telephone company installation. This road is logged on page 66.

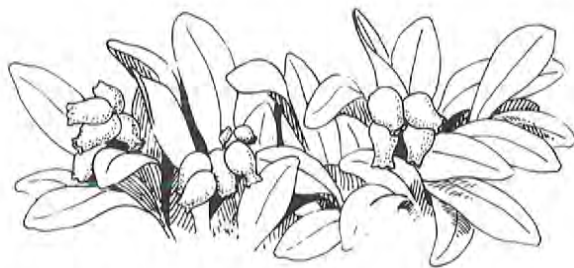


14. 01.95
00.05 Junction. Girl Scout Camp Sacajawea to the right. Archery range sign. Follow sign. Concrete marker to the west is a fire marker.
15. 02.00
00.20 Junction. Take road to the right. The road to the left leads to the television tower.
16. 02.20
00.15 Right turn. Towers to the left are on the highest point on Casper Mountain (8,200 feet).
17. 02.35
00.45 Head of East Fork of Little Red Creek. Valley area is known as Speas meadow. View of Bates Hole and Shirley Basin.



Great horned owl (*Bubo virginianus*): A large, nocturnal bird of prey with ear tufts ("horns"), a white throat collar, and a heavily barred breast.

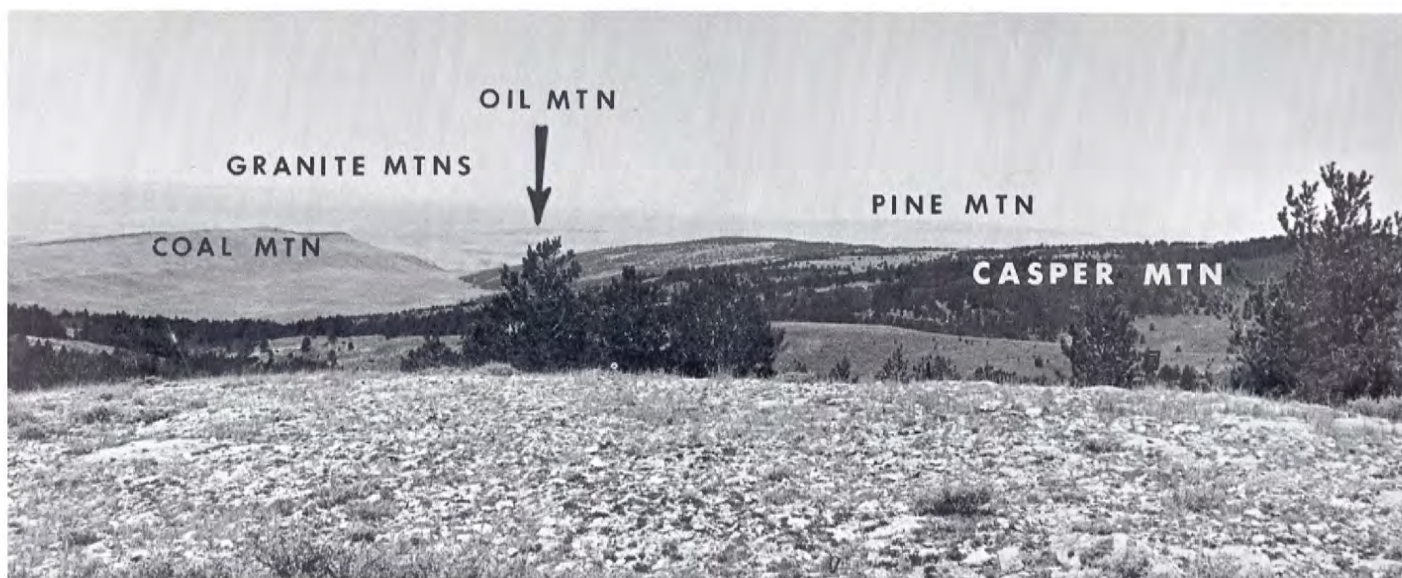
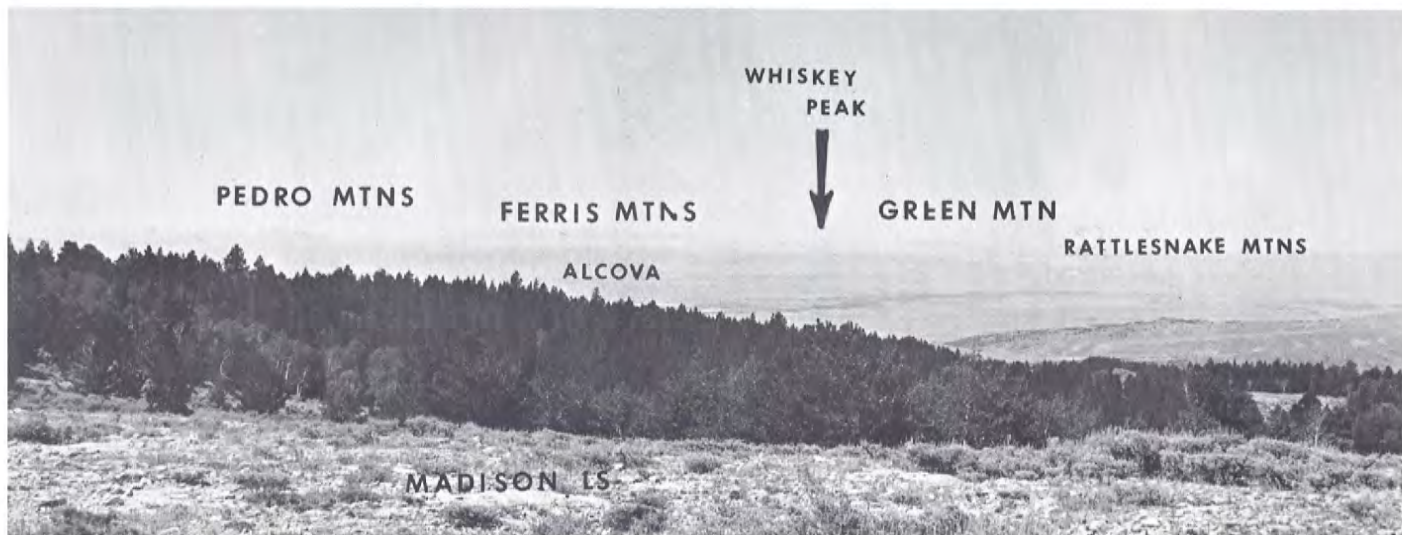
18. 02.80
00.10 Enter woods. Approximate contact of the Pre-Cambrian serpentine and the Cambrian Flathead.
19. 02.90
00.10 Mine tunnel to the left. This tunnel is in the Flathead approximately at the Flathead-Pre-Cambrian contact.
20. 03.00
00.10 Mine tunnel to the left. CAUTION — numerous mine shafts and tunnels in this area are very old and very dangerous. Additional information on mining on pages 67-69.
21. 3.10
00.20 Sign: "Natrona County Archery Range and Camp Area." Public use area. Flathead-Madison contact. The limber pine trees are on the Flathead Formation.
22. 03.30
00.50 Parking area.
Panorama in two photos.



Kinnikinnik or Bearberry (*Arctostaphylos uva-ursa*), shown above, is a low evergreen shrub with glossy, leathery, oblong leaves less than one inch in length. These mat-forming plants produce pink urn-shaped flowers that give rise to bright red, pea-sized berries. Kinnikinnik generally grows in Ponderosa pine forests and serves as food for various animals. Yellow blossoms of the buttercup (*Ranunculus* sp.), shown right, are shiny, waxy, five petaled cups which resemble cups of butter, thus giving this plant its common name. These early spring plants which bloom as the snow recedes contain toxic, perhaps poisonous, substances.



→
The old copper mine located just above site 5 in the Archery Range Camp Ground is in the Madison Limestone. Additional information about mining may be found on page 67.



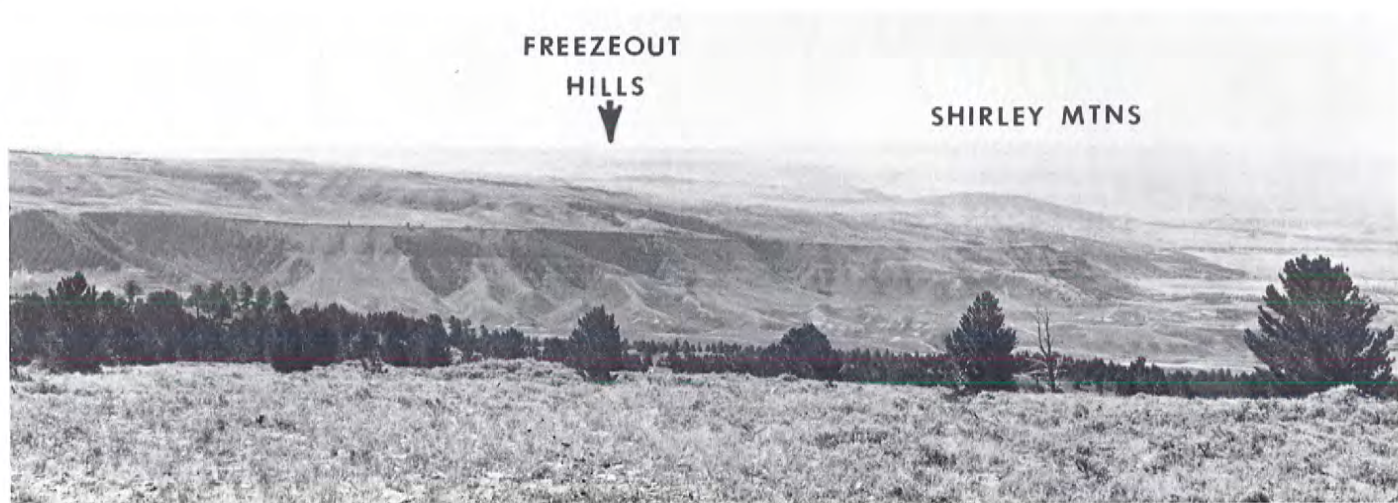
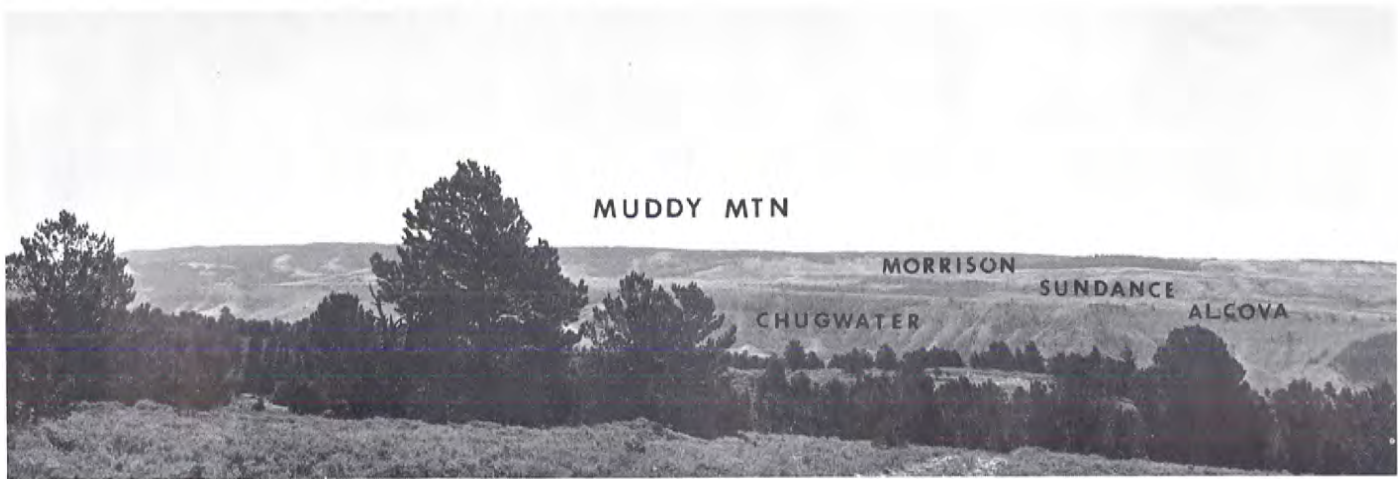
Old copper mine.



Red Fox (*Vulpes fulva*): The red fox's color may vary from red to black, but regardless of its color phase, the animal characteristically has a white belly, and a long bushy white-tipped tail.

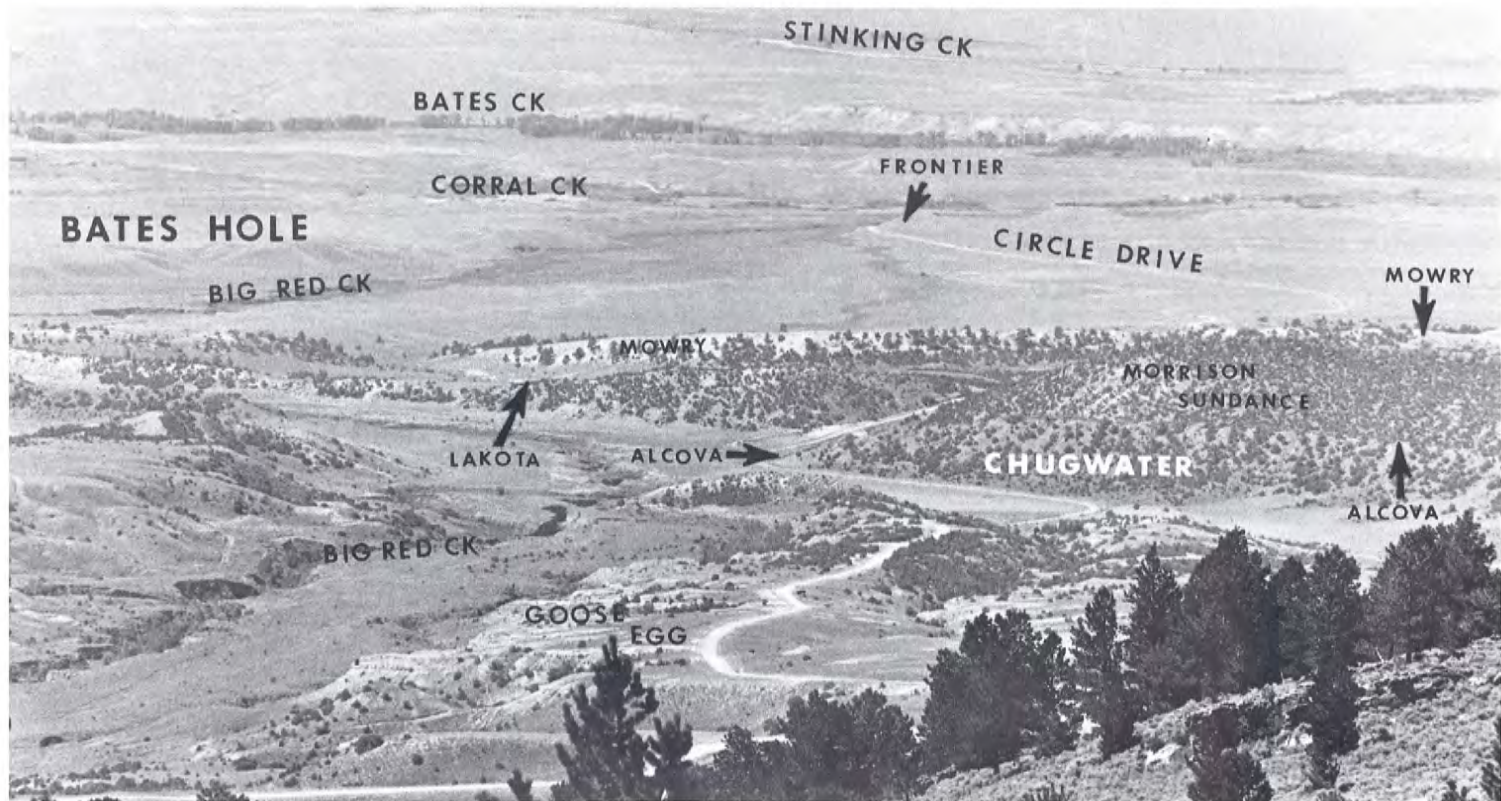
- 23. 03.35 Sign: "Leaving Archery Range."
00.05
- 24. 03.40 Contact between the Madison formation and the Casper formation.
00.15
- 25. 03.55 Open area. End of easily passable road.

Panorama in three photos.



One of the first spring flowers to appear is the Indian Potato or Snowdrops (*Orogenia fusiformis*). These short stemmed plants bear long narrow leaflets and clusters of small white flowers. The tubular roots are edible and have a potato-like flavor.





Telephoto picture



Phlox (*Phlox multiflora*) is a showy plant with a mat-like appearance. The five-petaled blossoms are white to lilac in color, and quite fragrant. Depending on the elevation at which they grow, phlox bloom from early spring to mid-July.

ROAD LOG TO TELEPHONE COMPANY INSTALLATION

1. 00.00 Junction. Point number 13 on the Archery Range road log (page 61).
 00.20
2. 00.20 Outcrop of black hornblende schist. West fork of Garden Creek.
 00.10
3. 00.30 Junction with road to Eadsville. Historical information concerning Eadsville follows
 00.20 this road log. Pedro and Ferris Mountains visible on the skyline.
4. 00.50 Head of Little Red Creek.
 00.20
5. 00.70 Prospect pit and pegmatite outcrop south of road.
 00.20
6. 00.90 Telephone Company gate. Serpentine at the gate. Telephone installation is on quart-
 zite.



Pussytoes (*Antennaria rosea*) are hairy, silvery appearing plants with small heads of inconspicuous whitish flowers. The flowers of this unlikely-looking member of the sunflower family resemble the pads of a kitten's paw.



Cat's breeches (*Hydrophyllum fendleri*) are distinguished by their ball-like clusters of purplish-blue flowers. The stamens extend beyond the petals and resemble the claws of a cat's paw. These plants are members of the waterleaf family, so named because their large leaves catch and hold water when it rains.

CASPER MOUNTAIN MINING

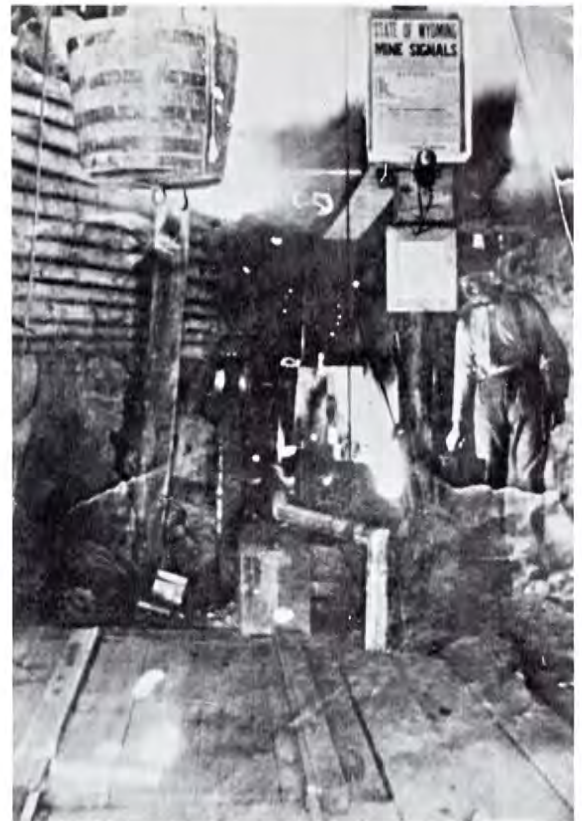
When molten rock deep under the earth cools very slowly, the molecules of various minerals, which solidify at different temperatures, have a chance to clump. The geologic term is a **pegmatite**, which means there are large areas of crystals of each mineral contained in the original molten rock. The central area of Casper Mountain is a pegmatite.

Prospectors visiting a pegmatite, after the overlying rock has been eroded away, may find a large area of some interesting mineral and become very excited. However, more often than not, the quality and quantity of the mineral is not sufficient for a profitable mining operation. This is the story of Casper Mountain.

Early newspapers contain glowing reports about many minerals: gold, silver, lead, asbestos, and copper. Casper was to be the copper capitol of the country. The most active copper claims were the "Cross Fox" and the "Blue Cap." The Blue Cap was started in 1892. By 1906 a shaft had been sunk and miners were making a third cut into what they hoped would be a rich ore body. The **Wyoming Derrick**, November 12, 1891, headlined: "Casper The Copper Centre. Money Invested Here Will Double By April First." In the same issue, it was reported that "Another car of copper sailed merrily out of Casper yesterday from the mast of which floated, in the clear Wyoming breeze, a banner bearing the following talismanic legend 'Copper ore from Casper and still there is more to follow.' " In reality, very little followed. Mine scars on the hillsides are all that remain of the Casper Mountain copper boom.



George Myers and John Irwin in Hidden Treasure Mine tunnel.



Cal Cook, mining engineer and geologist in the Hidden Treasure mine.

The Eadsville area is the best known of the mining developments on the mountain. During the late 1880s activity centered around this little community. According to one story, specimens from a site near land owned by Charles W. Eads were said to contain silver. As word spread, the number of people in the area increased rapidly. Later assay reports dampened the enthusiasm and the population dwindled, until in the early 1900s only a few people remained of the large numbers who dug into the hills in search of wealth. Some reports say there were 5,000 people in Eadsville at one time, but this seems very doubtful as Natrona County's population didn't approach that figure until after 1910. Available photographs of the area show very few buildings. A story about Charles Eads, the man for whom the community was named, appeared in the **Natrona County Tribune**, May 13, 1908: "C. W. Eads, who carries the reputation of a successful horse thief, will do time in the penitentiary for a theft committed in Big Horn County."

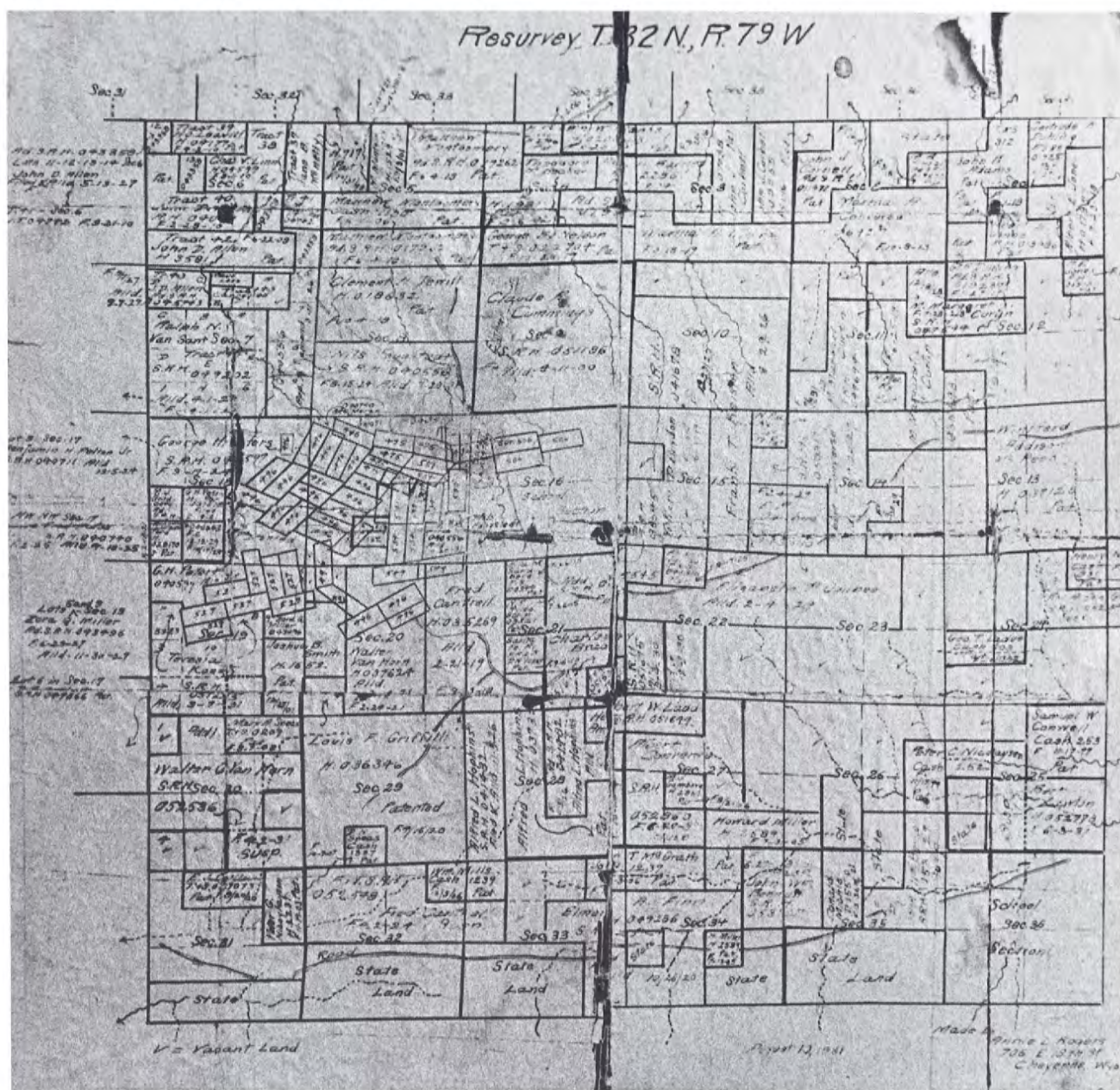
Minor prospecting continued for many years. John Arnold, one of the most determined miners, had several claims and worked both the top and north face of the mountain. More recent activity concerning a metallic ore involved the investigation of chromite deposits. In 1939 a series of exploratory trenches were dug across an area near Powder House Hill. When exploration was completed, the trenches were refilled. Considerable coring was necessary to assess the depth of the deposit. It is interesting to note from the Bureau of Mines report that the two foremen and the truck driver were paid seventy-five cents per hour and the rest of the men sixty-two and a half cents per hour. Much of the excavation was done with pick and shovel after the rock was loosened with dynamite.

In recent years very little mining activity has taken place on the mountain. A feldspar mine near Hogadon Ski Area is worked occasionally. Near the mine a considerable amount of rock was removed for use in road building. On the back side of the mountain there is a small quarry for flagstone.





FADSVILLE ON CASPER MT



GLOSSARY OF GEOLOGICAL TERMS

The definitions are designed with special reference to the needs of this publication and therefore may not be technically complete.

ALLUVIUM: Material deposited by streams.

ANTICLINE: An up-warp in the rocks of the earth's crust.

BEDDING: The layers of sediments in sedimentary rocks.

BENTONITE: A clay formed by the decomposition of volcanic ash.

CONGLOMERATE: A sedimentary rock composed of fragments or pebbles of rock cemented together by various minerals.

CONTACT: The surface where two different kinds or formations of rock come together.

CRENULATED: Wrinkled. Very small folds — a few millimeters across.

CROSS-BEDDED: Sedimentary rock with layers which meet at angles.

DIKE: Liquid rock (magma) was forced into approximately verticle cracks in older rock. It cooled and solidified beneath the surface. Later exposed by erosion. May look like a wall if more resistant than the surrounding rock.

DIP: The direction in which a layer of rock or formation slopes.

FAULT: A break in the rocks of the earth's crust along which movement has taken place.

FAULT ZONE: The area bordering a fault. May have several small faults, broken rock, and slickensides.

FOLIATION: Laminated. Fine parallel layers. Often wavy.

FORMATION: A group of rocks which can be distinguished from other rock because of specific qualities or appearance.

GNEISS: A coarse grained metamorphic rock which shows banding. Usually alternating layers of granular and schistose minerals.

IGNEOUS ROCK: A rock type formed by the cooling and solidification of molten rock (magma) either above (extrusive) or below (intrusive) the earth's surface.

JOINTING: A break in the rocks with no apparent movement.

MAGMA: Liquid rock beneath the earth's surface. On the surface this same material would be called lava.

METAMORPHIC: Rock type formed when other rocks are subjected to heat and-or pressure.

MONZONITE: A granular igneous rock containing approximately equal amounts of the minerals orthoclase and plagioclase. If quartz content exceeds 2 per cent the rock is called quartz monzonite.

OUTCROP: Part of a body of rock that is exposed at the surface.

PEGMATITE: A very coarse-grained igneous rock formed by slow cooling which allows molecules of a mineral to "clump." Crystals thus formed may be several feet long.

REMNERANT: A part of the geologic structure left behind by erosion.

SCHIST: A metamorphic rock which shows fine banding.

SLICKENSIDES: Polished rock surface that results from one rock mass sliding past another — as along a fault.

STRIKE: The "long way" of a rock formation. Always at right angles to dip.

SYNCLINE: A down-warp in the rocks of the earth's crust.

TALUS: Broken rock (rock debris) on a steep slope or at the base of a cliff.

TOPOGRAPHY: The physical features of the surface of a region.

WIND GAP: A valley through a ridge. Originally cut by a stream but the stream is no longer flowing.



BIRD LIST

Compiled by Bart Rea and Oliver Scott

BOLD TYPE - MORE COMMON

FOOTHILLS, PRAIRIES, CREEKS

Summer Only

AMERICAN GOLDFINCH
 American Redstart
 Black-billed Cuckoo
 Brewer's Sparrow
 BROWN THRASHER
 Canyon Wren (very rare)
 COMMON YELLOWTHROAT
 EASTERN KINGBIRD
 Ferruginous Hawk
 GRAY CATBIRD
 KILLDEER
 LARK BUNTING 9
 Red-headed Woodpecker
 Rufous-sided Towhee
 Virginia's Warbler
 WESTERN KINGBIRD
 Yellow-billed Cuckoo
 YELLOW-BREASTED CHAT

All Year

Belted Kingfisher
 Common Snipe
 Gray Partridge (Hungarian)
 HORNED LARK 47
 SAGE GROUSE
 STARLING

Winter

Harris Sparrow
 Rough-legged Hawk

CASPER MOUNTAIN — MUDDY MOUNTAIN TIMBER COVERED AREAS

Summer Only

AMERICAN ROBIN	
AMERICAN KESTREL (Sparrow Hawk)	
Barn Swallow	
Black-headed Grosbeak	
Black-throated Gray Warbler	
Blue-gray gnatcatcher	
BREWER'S BLACKBIRD	
BROAD-TAILED HUMMINGBIRD	35
BROWN-HEADED COWBIRD	
Calliope Hummingbird	
Chipping Sparrow	
COMMON GRACKLE	
COMMON NIGHTHAWK	
DOWNY WOODPECKER	22
Dusky Flycatcher	
GRAY-HEADED JUNCO	
Green-tailed Towhee	
HAIRY WOODPECKER	
Hermit Thrust	
HOUSE WREN	
Lark Sparrow	
Lazuli Bunting	
Lewis' Woodpecker	
Lincoln's Sparrow (rare)	
Loggerhead Shrike	
MacGillivray's Warbler	
MOUNTAIN BLUEBIRD	40-41
MOURNING DOVE	
Northern Oriole (Bullock's)	
Northern Three-toed Woodpecker	
Olive-sided Flycatcher	
Orange-crowned Warbler	
Poor-will	
RED-EYED VIREO	
ROCK WREN	
Rough-winged Swallow	
RUBY-CROWNED KINGLET	
Rufous Hummingbird	
Sage Thrasher	
SAY'S PHOEBE	
Solitary Vireo	
SONG SPARROW	
Swainson's Hawk	
SWAINSON'S THRUSH	
Tree Swallow	
TURKEY VULTURE	37
Vesper Sparrow	
VIOLET-GREEN SWALLOW	
WARBLING VIREO	
Western Flycatcher	
WESTERN MEADOWLARK	8
Western Tanager	30
Western Wood Pewee	
White-crowned sparrow	17
White-throated Swift	
Wilson's Warbler (fall migrant)	
Yellow-bellied Sapsucker	
YELLOW-RUMPED WARBLER (Myrtle, Audubon's)	

All Year

BLACK-BILLED MAGPIE	48
Black-capped Chickadee	40-41
BLUE GROUSE	58
Brown Creeper	
Cassin's Finch	
CLARK'S NUTCRACKER	31
COMMON CROW	
COMMON FLICKER	
Cooper's Hawk	
Golden Eagle	38
Goshawk	
Gray Jay	
GREAT HORNED OWL	62
HOUSE FINCH	
HOUSE SPARROW	
MOUNTAIN CHICKADEE	
OREGON JUNCO	10-41
PINE SISKIN	61
Pinon Jay	
Pygmy Nuthatch	
RED-BREASTED NUTHATCH	
Red Crossbill	21
RED-TAILED HAWK	12
Saw-whet Owl	
Sharp-shinned Hawk	
STELLER'S JAY	20
TOWNSEND'S SOLITAIRE	
White-breasted Nuthatch	60

Winter Only

Bald Eagle	44
BOHEMIAN WAXWING	24
COMMON REDPOLL	
EVENING GROSBEAK	25
Golden-crowned Kinglet	
GRAY-CROWNED ROSY FINCH	
Northern Shrike	
Pine Grosbeak	
Tree Sparrow	

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Arnica cordifolia	40-41	Heracleum lanatum	18
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		Indian potato	64
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Clematis, ligusticifolia	52	Opuntia polycantha	50
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1950s Carrigen Photo

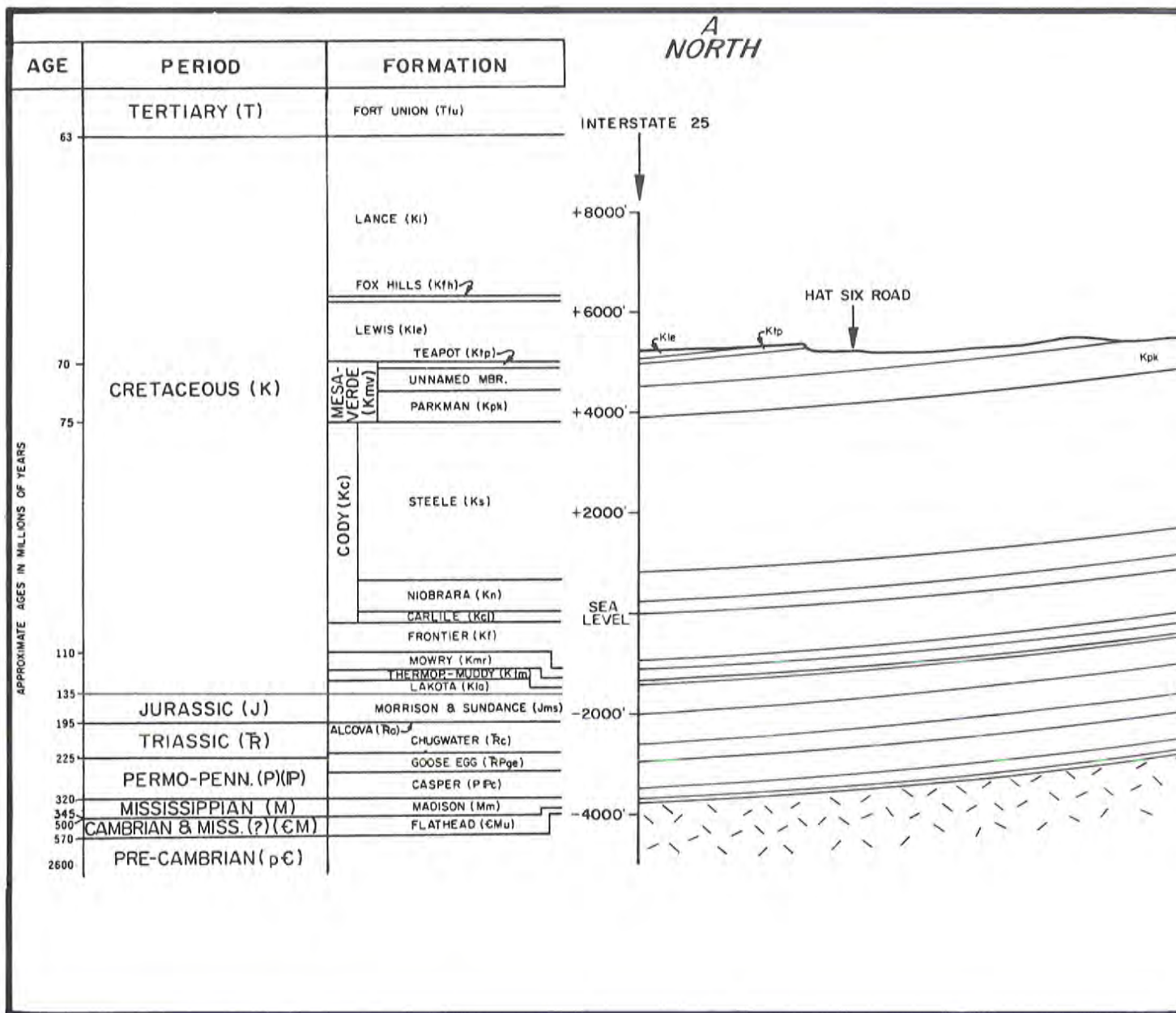
AERIAL PHOTOS

On the fold-out to the left are aerial photos of the Casper Mountain area.

Aerial photos provide a more realistic view of an area of land than does a map. However, it is generally found both photos and maps are more effective if used together.

CROSS SECTION

Within the foldouts (pp. 79b, c, d, e) are two cross sections through the Casper Mountain area. A cross section of the mountain resembles a layer cake with a part moved or cut away so that the layers are visible. The cross section shows the present position of each rock formation, how much rock has been eroded from the top of the mountains, and gives an indication of the folding and faulting involved as the mountains developed.

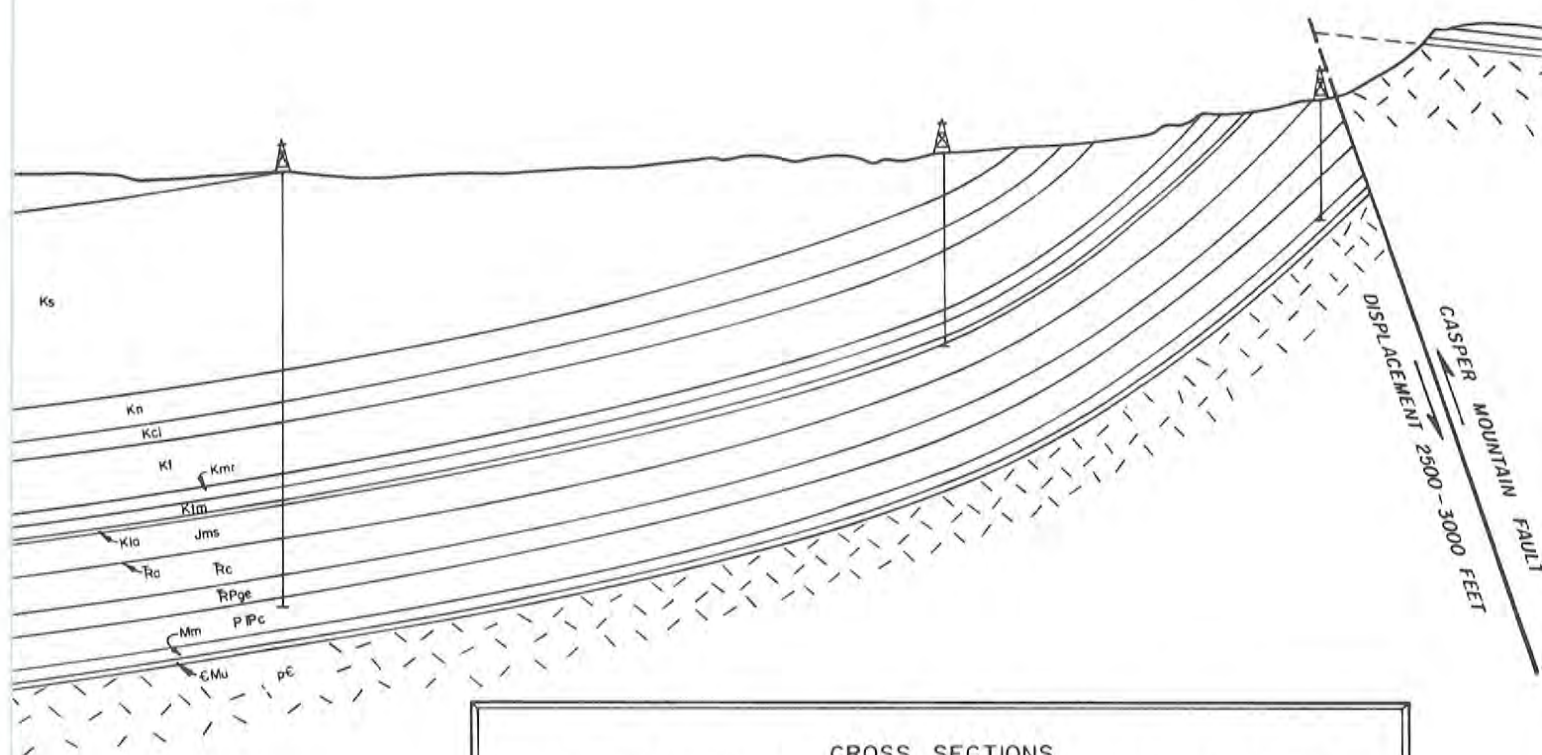


CASPER

AMERADA PETROLEUM CO.
SW NW NE SEC. 29, T 33N-R78W
T.D. 6980' PPc
D&A

SIGNAL OIL & GAS CO.
NW NW SEC. 6, T 32N-R78W
T.D. 3089' Jm
D&A

TEXACO
NWSWNW SEC. 7, T 32N-R78W
T.D. 1940' Mm
D&A



CROSS SECTIONS
CASPER MOUNTAIN - MUDDY MOUNTAIN AREA
NATRONA COUNTY, WYOMING



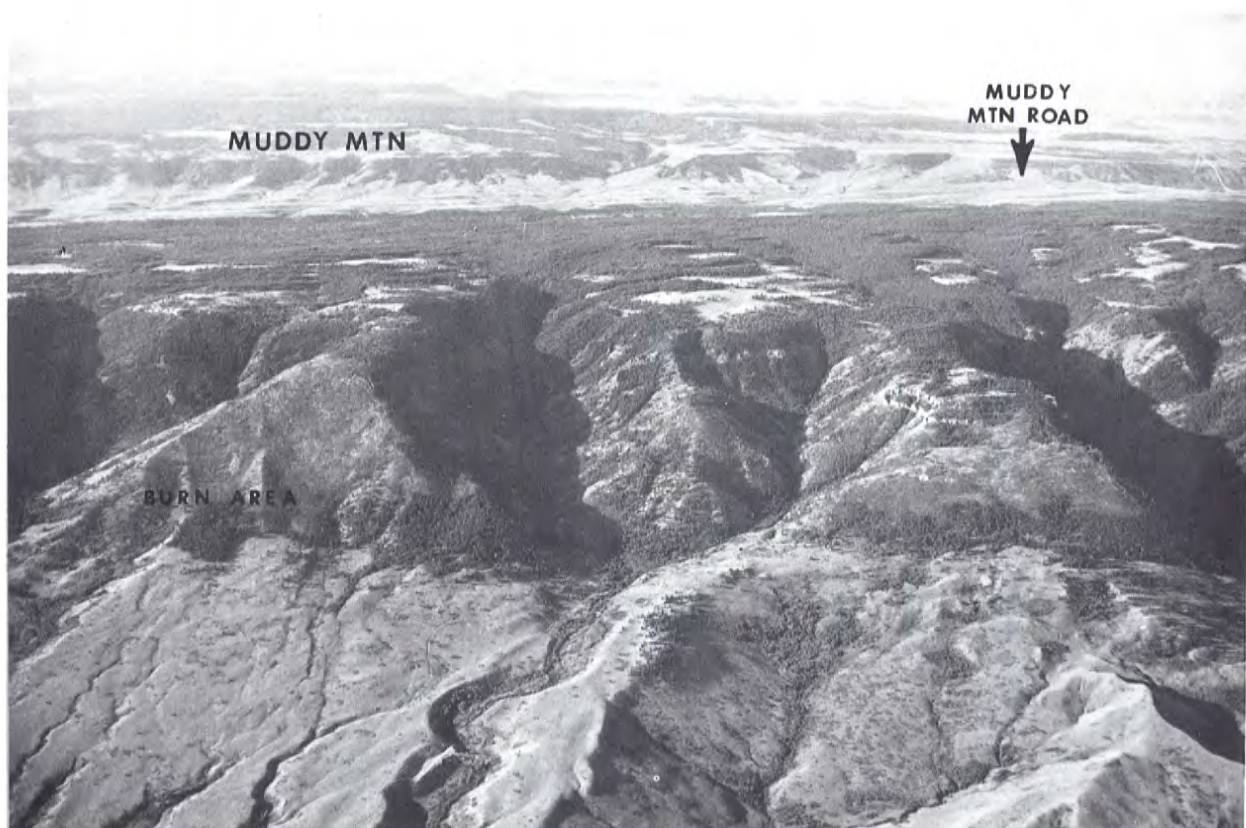
CARL E. JENKINS, B.D. REA

MAY 1972

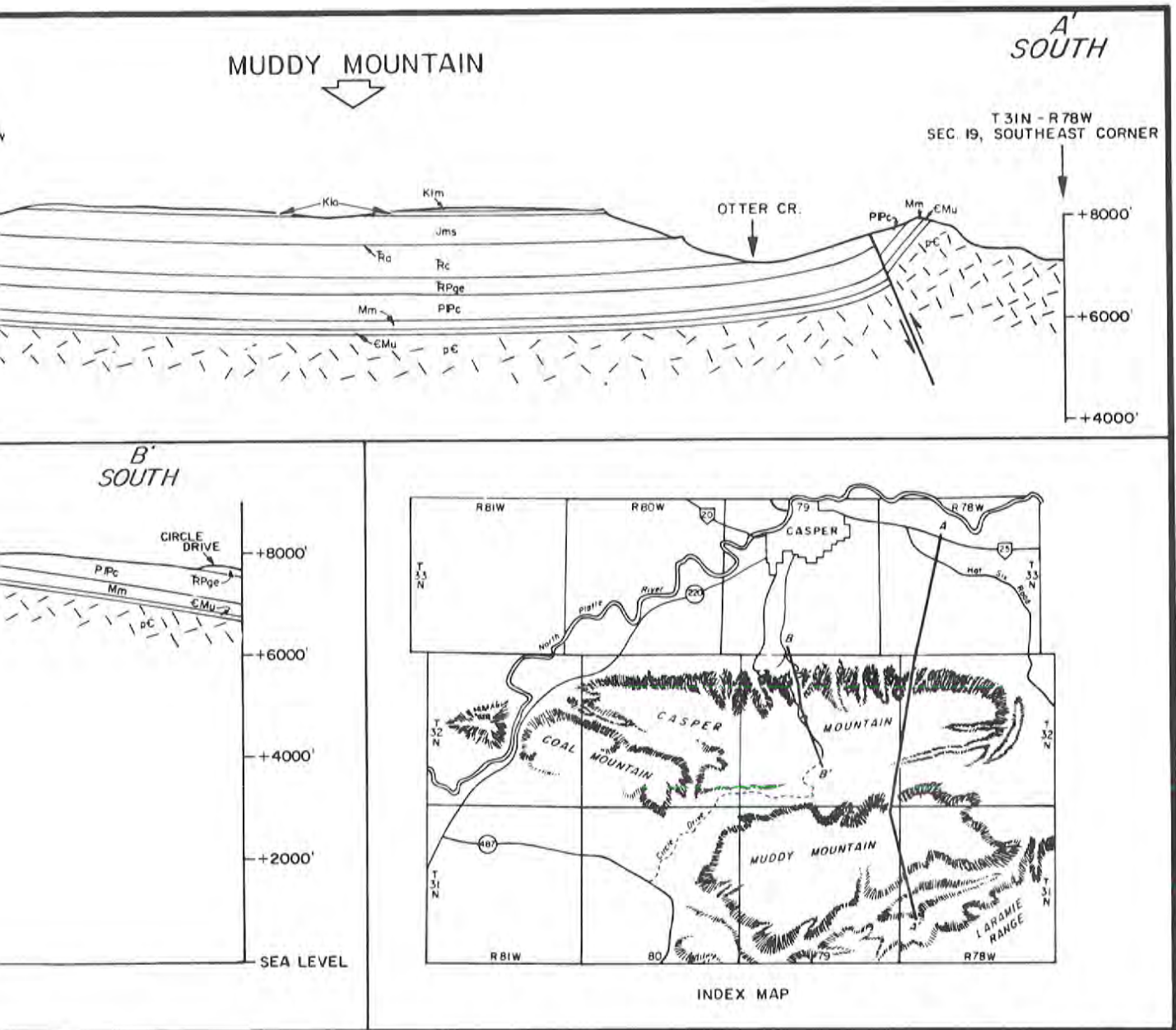
STRATIGRAPHIC COLUMN OF ROCKS IN THE CASPER MOUNTAIN AREA									
ABSOLUTE AGE (millions of years)	GEOLOGIC AGE (Period)		FORMATION		DESCRIPTION OF ROCKS	ORIGIN			
.012 (12,000 yr.)	QUATERNARY		alluvial sand, gravel silt wind-deposited dune sand						
			glacial moraines						
			landslides						
			terrace & pediment gravel						
3	TERTIARY		(younger Tertiary rocks not exposed in mapped area)						
Fort Union			siltstone, sandstone, shale, lignite		flood plain, river channel, swamp				
63	CRETACEOUS		LARAMIDE REVOLUTION — uplift and faulting of Casper Mountain						
70			Lance		shale, siltstone, sandstone		flood plain		
			Fox Hills		sandstone		deltaic		
			Lewis		shale, sandstone		marine		
			Mesa-Verde	Teapot	sandstone, lignite		marine, deltaic		
unnamed				shale, siltstone		marine			
Parkman				sandstone		marine			
Cody				Steele	gray shale		marine		
			Niobrara	chalky shale		marine			
			Carlile	gray shale with calcareous concretions		marine			
90			Frontier		sandstone, shale, bentonite		deltaic, marine, volcanic		
110			LOWER		Mowry		"silvery" siliceous shale, bentonite	marine, volcanic	
					Shell Creek		black shale	marine	
					Muddy		sandstone	marine, flood plain	
					Thermopolis		black shale	marine	
					"Cloverly"	"Fuson" "Lakota"	red, purple, green, brown, gray shale		flood plain
	conglomerate						flood plain, river channel		
135	JURASSIC		Morrison		green, purple, gray shale, sandstone	flood plain			
Sundance			green-gray shale, sandstone, gypsum	marine					
195	TRIASSIC		Chugwater	Jelm	orange-red siltstone, shale	tidal flat			
Alcova				limestone	marine				
Red Peak				red shale, siltstone, sandstone	restricted marine basin				
225	PERMIAN		Goose Egg		red shale, siltstone, gray dolomite, gypsum	restricted marine basin			
280	PENNSYLVANIAN		Casper		cross-bedded sandstone, dolomite, limestone	sand dunes, marine			
320	MISSISSIPPIAN		Madison		limestone	marine			
345	DEVONIAN SILURIAN ORDOVICIAN		(no rocks present in this area)				not deposited or later eroded		
500	CAMBRIAN		Flathead		sandstone, conglomerate	marine			
570			REGIONAL METAMORPHISM, UPLIFT, EROSION						
2600 (2.6 billion yr.)	PRE-CAMBRIAN		Unnamed	quartz veins		igneous	accompanied by metamorphism of earlier rocks to serpentine		
				diabase dikes		igneous			
				granite pegmatite dikes		igneous			
				granite, quartz monzonite intrusions		igneous			
4500 (4.5 billion yr.)				REGIONAL METAMORPHISM OF EARLIER ROCKS TO AMPHIBOLITE					
				mafic dikes metamorphosed to amphibolite		igneous, metamorphic			
				ultramafic intrusions altered to serpentine		igneous, metamorphic			
				quartzite, granite gneiss, schist, amphibolite		meta-sedimentary			
				ORIGIN OF THE EARTH					



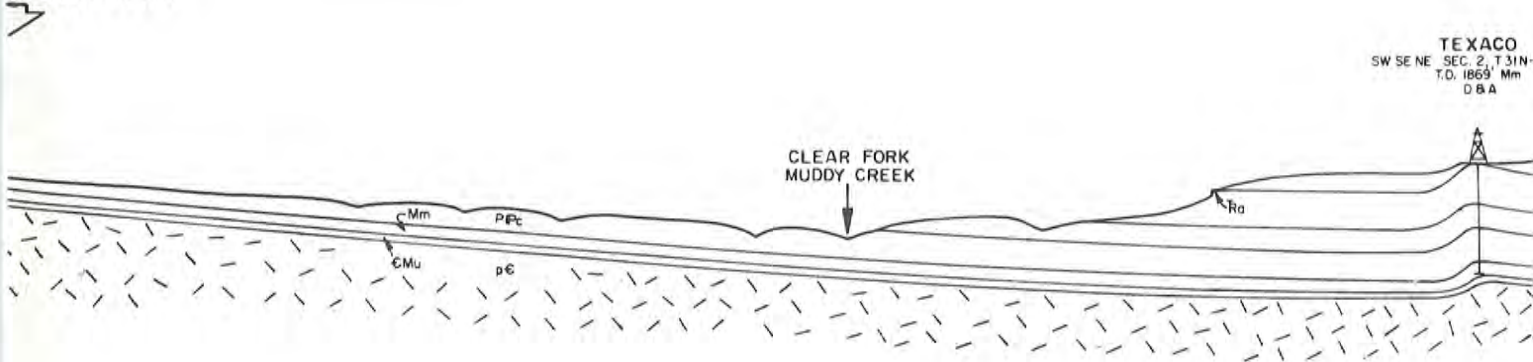
The east end of Casper Mountain (right foreground), the Hat Six Hogback, and the Smith Creek area. The Clear Fork of Muddy Creek flows north in the foreground. Blackmore Road crosses the lower left (NE) portion of the photo.



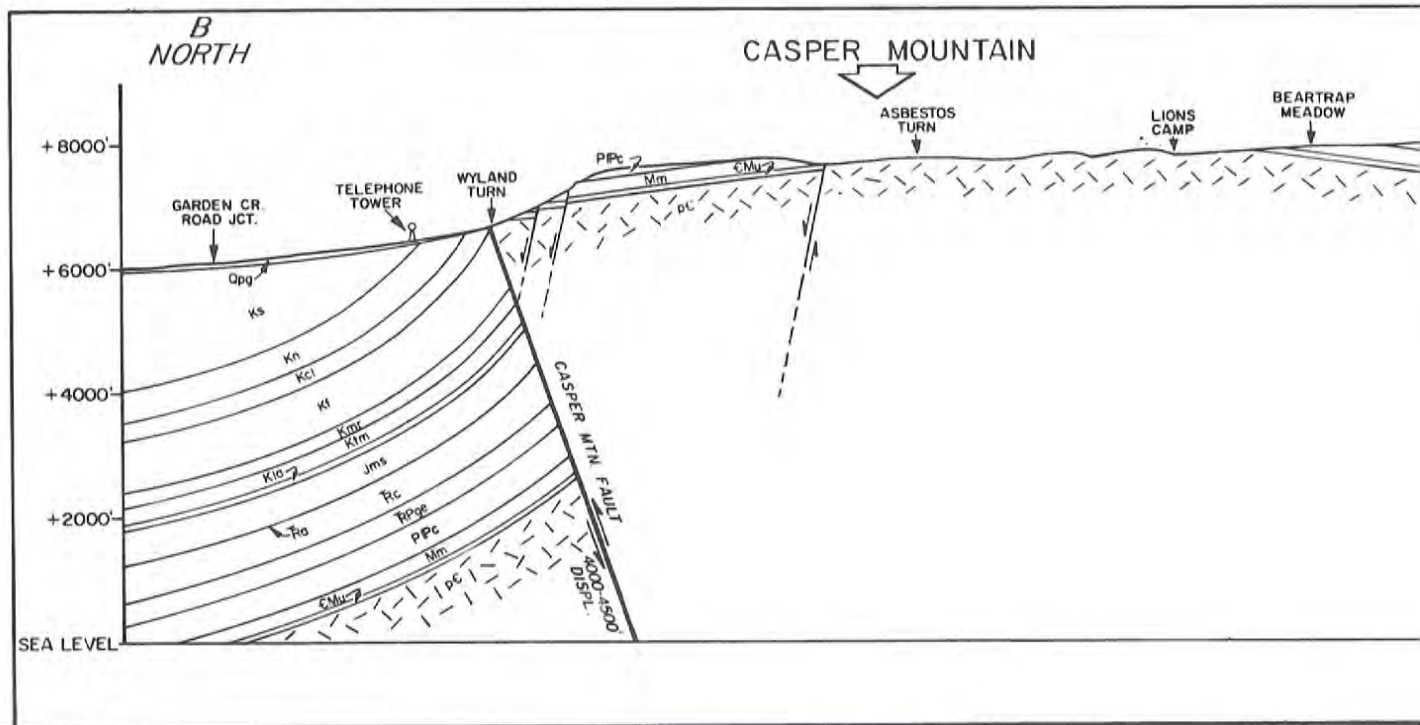
This area of the face of Casper Mountain burned in 1975. Muddy Mountain can be seen in the background.



MOUNTAIN

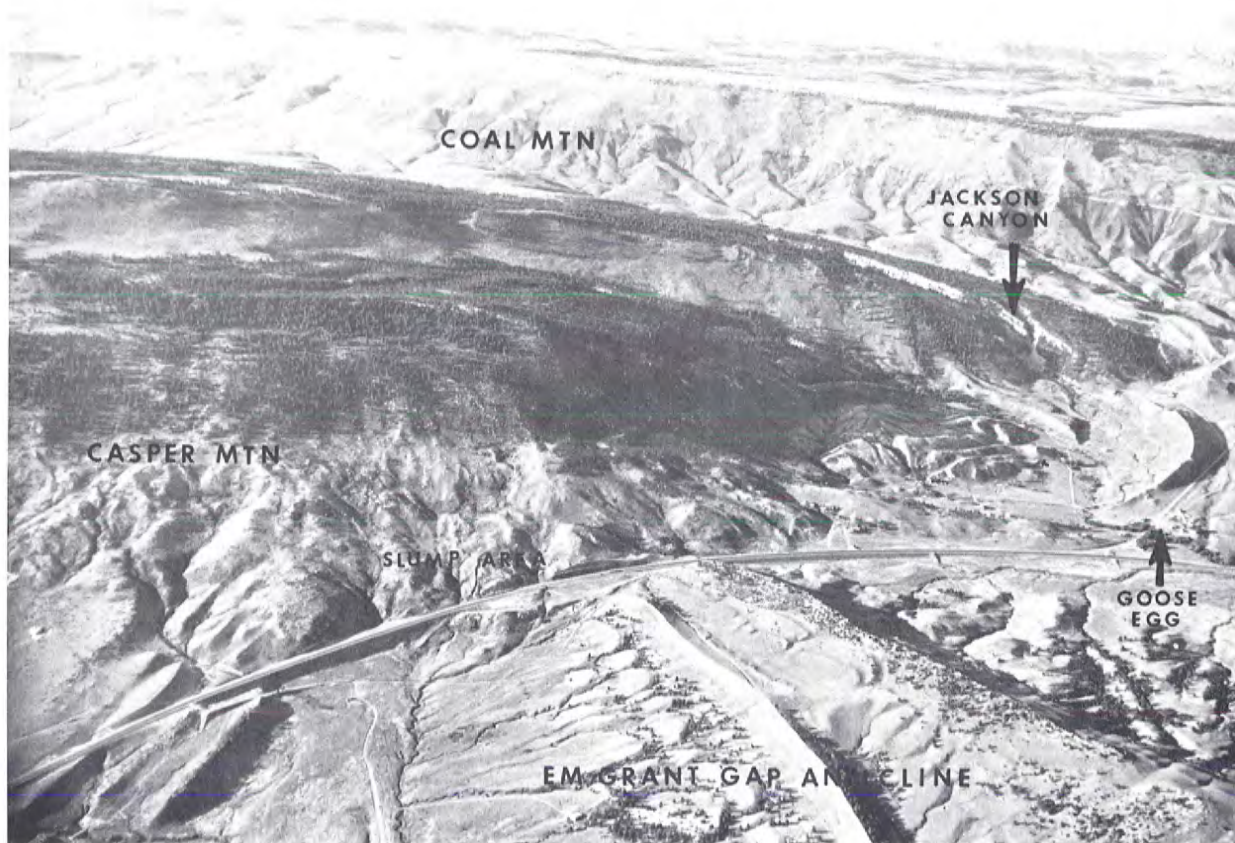


TEXACO
SW SE NE SEC. 2, T.31N
T.O. 1869' Mm
D & A





This photo shows the highway up the north face of Casper Mountain. Elkhorn Canyon is on the left (E) side of the photo and the East Fork of Garden Creek on the right.



The west end of Casper Mountain. Coal Mountain is in the background. There is a large slump area where Emigrant Gap Anticline meets Casper Mountain.