

## CAMEL ROCK SECTION

Location: Camel Rock Sand Creek, Sec. 23, T. 12 N., R. 75 W.

Drift.

Chugwater:

No. 74 Red shaly sandstone. The lower portion of this member is covered with a drift of fine red sand. Numerous aragonite crystals are scattered over the surface of the lower 6 feet..... 62'

Forelle:

No. 73 Fine grained gray limestone containing an abundance of red chert nodules, the limestone weathering into small rectangular blocks. The chert breaks up into small angular pieces an inch or two in length with an occasional large spherical mass measuring a foot or more in diameter..... 5'

No. 72 A siliceous limestone composed of broken fragments of molds and casts of pelecypods (gen. Schizodus, Deltopecten) and a small gastropod. This formation is variable in thickness. In one instance noted it increased from 2' 6" to 5' in a distance of 500 feet. Maximum thickness noted..... 5'

Casper-Fountain:

No. 71 Soft light buff to cream colored thinly bedded sandstone. The contact surface between this member and the overlying fossiliferous bed is marked by numerous intersecting trails. These trails consist of a series of smooth ramifications, elliptical in cross-section, their shorter diameters being in the

	horizontal place. The material filling the trails is similar to that which composed the overlying bed, while the spaces between are filled with soft buff sandstone. The trails range from 10 to 25 mm in diameter.....	5'
No. 70	Soft, massive to thinly bedded red sandstone. Ripple marked surfaces and clay galls are prominent features. A 4' band 25' from the top exhibits cross-bedding of the eolian type. The lower 20' of this member is covered with a fine red sand drift.....	125'
No. 69	Gray fine grained sandstone.....	1'
No. 68	Red shale with a thin streak of gray sandstone near the middle.....	4'
No. 67	Gray shaly sandstone, containing numerous irregular red patches giving the bed a mottled appearance....	8"
No. 66	Soft red shale.....	6'
No. 65	Very hard, fine-grained grayish red sandstone.....	10"
No. 64	Red sandy shale with one 2" gray streak.....	13'
No. 63	Gray shaly sandstone containing numerous red clay galls.....	1'
No. 62	Red shale containing two 2" gray streaks.....	5'
No. 61	Soft gray sandstone.....	1'
No. 60.	Red shale containing three thin gray streaks the upper of which is 5" thick and sandy in character..	10'
No. 59	Gray to light reddish brown fine grained sandstone, strongly cross-bedded. This bed has a strong speckled appearance on weathered surfaces due to small spots of limonitic material.....	5'

No. 58	Soft red shale.....	3' 6"
No. 57	Irregularly bedded gray sandstone, shaly in the upper two-thirds. The central portion is slightly tinged with red.....	7' 6"
No. 56	Red shale with several thin gray streaks of sandy material in upper six inches.....	4'
No. 55	Hard, fine-grained gray sandstone uniformly bedded and extensively ripple-marked.....	4'
No. 54	Soft red sandstone and sandy shale, with four inches of gray sandy shale at top. The repetition of a thin gray shaly sand capping a red shale and followed by a gray sandstone is quite striking.....	9' 4"
No. 53	Hard gray sandstone. The color of this member is essentially gray, but running thru it are small irregular patches of red.....	1' 4"
No. 52	Bright red shale the upper 3" of which are white...	4'
No. 51	Gray sandstone, the lower portion is shaly becoming more massive in the upper part.....	6' 6"
No. 49	Fine grained gray sandstone.....	10"
No. 48	Soft red to greenish gray sandy shale.....	1' 4"
No. 47	Massive to shaly red sandstone. The more massive members are confined to the lower 5' while the upper five feet are thinly laminated giving the rock a shaly appearance. Seven feet from the base is a bed of light-gray sandstone 3" thick. Ripple-marked surfaces are conspicuous.....	11' 6"
No. 46	Massive orange red "Monumental" sandstone. This member is extremely uniform in lithologic character.	

Cross-bedding of the eolian type is developed to a remarkable degree, the maximum angle to which the bedding planes are tilted being 25 degrees. It is this member that gives rise to the wonderful mushroom and grotto erosion effects along both sides of Sand Creek 80'

- No. 45 Dark gray wavy limestone. This bed thins progressively and dies out both to the north and the south in a total distance of half a mile. The rock is predominantly gray in color but numerous thin reddish streaks are characteristic. It splits, upon weathering, into angular slabs and flakes..... 2' 6"
- No. 44 Massive, finegrained, red sandstone. Upon fresh surface this bed breaks into blocks 1 to 2 feet thick and 3 to 6 feet long. It is more resistant than either the under- or over-lying members and it gives rise to the prominent shoulder on Camel Rock..... 15'
- No. 43 Red arkose..... 10'
- No. 42 Fine grained red sandstone. When traced for a distance of 500' laterally this member is seen to exhibit a most striking variation in thickness. This thickening and thinning is due to channeling..... 2' 3"
- No. 41 Red arkose grit containing an occasional irregular limestone nodule..... 3' 7"
- No. 40 Massive brick red sandstone. The upper 6' contain numerous masses of irregular nodules of gray limestone, the largest of which measure four feet thick. This bed is one of the few sandstones to exhibit the the type of torrential cross-bedding characterized

	by alternate layers of angular and parallel beds...	12' 6"
No. 39	Red arkose grit, the upper two feet of which contain long irregular streaks of fine red sand and an occasional limestone fragment. One of these fragments measured 1' x 8" and its bedding planes were tipped at an angle of 45 degrees.....	6' 6"
No. 38	Fine-grained red sandstone containing irregular bands of spherical and cylindrical limestone masses in its upper two-thirds.....	4' 6"
No. 37	Red arkose grit. Near the middle of this bed occurs a series of sandstone blocks the bases of which lie in the same bedding plane. The largest of these blocks measured 2' 6" thick and 10' long.....	17'
No. 36	Fine-grained red sandstone. The red color is marked with large irregular patches of gray, which is most predominant in the upper third of the member. The change from red to gray is both gradual and abrupt.	21'
No. 35	Red and gray arkose. Two large blocks of red sandstone occur six feet from the base of the member. The largest of these blocks measured 26' long and 3' thick. They represent the erosional remnants of a once continuous sandstone member, the greater part of which was removed previous to or during the deposition of the arkose. Thin limestone lenses and nodules are numerous. The arkosic material is characterized by cut and fill structure.....	22' 6"
No. 34	Fine-grained red and gray sandstone extremely irregular 100 feet. Limestone nodules are abundant	0'10"

No. 33	Alternating bands of red and gray arkose grit.....	12'
No. 32	Massive fine-grained red sandstone. This member forms the first conspicuous ledge at the base of Camel Rock. A complex mingling of fine sand and conglomeratic material on the contact with the underlying bed was note. Torrential cross-bedding conspicuous.....	7'
No. 31	Red arkose with a pronounced development of limestone lenses in the lower portion. These lenses attain a maximum thickness of 4' and they extend laterally for a distance of 10'.....	44' 10"
No. 30	Soft red and gray sandstone irregularly bedded with indefinite markings on bedding surfaces.....	2'
No. 29	Coarse arkose grit, the pebbles of which vary greatly both as to kind and size. The largest attain a demension of from 6 to 8" in their greatest diameter. Quartz, feldspar, granite, schists and limestone constitute the most important varieties. Cross-bedding is prominent in the finer grained bands. The prevailing color is red but the characteristic gray streaks are prominent.....	21' 6"
No. 28	Fine-grained, torrentially cross-bedded, white sandstone.....	1' 2"
No. 27	Gray and red arkose.....	13'
No. 26	Pink to red sandstone. The greater portion of which is composed of fine-grained red sand, scattered thru which in roughly paralld layers, are much larger quartz grains.....	2' 8"

No. 25	Soft deep red sandy shale.....	10'
No. 24	Alternating bands of red and gray arkose.....	6' 10"
No. 23	Fine-grained bright red sandstone.....	10"
No. 22	Coarse conglomerate. This member is composed of a great variety of pebbles which are chiefly metamorphic and igneous in character, and which attain maximum size of 10" in diameter. An interesting stratigraphical feature presented by this member is the presence of a number of fine-grained red sandstone blocks in bedded in the conglomerate. The largest of these blocks measured 7' 6" by 3' 8". Thirty of these blocks, the smallest of which measured 1 foot in diameter, occur in a distance of 200' along the outcrop. These blocks occupy a position close to the base of the member and their bedding planes are tipped at various angles.....	34'
No. 21	Red and gray arkose. This member is locally absent and the above conglomerate comes in contact with the underlying sandstone.....	0' 2"
No. 20	Fine-grained red sandstone.....	3' 6"
No. 19	Arkose grit. The color and texture of the bed vary extremely. The color ranges from light gray to deep red. Pebbles measuring 4 to 5 inches are not uncommon	44'
No. 18	Soft red shale.....	9'
No. 17	Soft purplish red sandstone containing gray streaks and patches.....	1' 10"
No. 16	Soft pink sandstone with numerous white streaks and patches.....	1' 10"
No. 15	Soft red and gray shaly sandstone containing numerous coarse sand grains.....	5'

No. 14	Light gray to purplish red arkose.....	1' 4"
No. 13	Red shale carrying an abundance of limestone nodules 2 inches or less in diameter.....	1' 4"
No. 12	Fine-grained mottled red and gray sandstone and interbedded red shale. The mottled appearance of this rock is a striking feature. Gray spherical patches, ranging from $\frac{1}{4}$ " to $1\frac{1}{2}$ " in diameter, and averaging approximately eighty to a square foot, produce the mottled appearance.....	3' 2"
No. 11	Soft, red, gray, and green shale. Coarse feldspar and quartz grains are scattered in great numbers thruout the shale.....	23' 4"
No. 10	Arkose grit, reddish purple gradually grading into gray.....	13' 8"
No. 9	Light gray arkose grit.....	3' 4"
No. 8	Reddish purple arkose grit.....	6"
No. 7	Soft purplish red shale.....	5'
No. 6	Fine grained red and gray sandstone.....	3' 2"
No. 5	Soft red and gray sand and sandy shale.....	1' 6"
No. 4	Arkose grit, light gray to pink.....	20' 6"
No. 3	Dark gray limestone containing irregular aggregates and bands of chalcedony. No evidence of fossils...	9' 4"
No. 2	Coarse arkose sand, varying in color from light gray to red, and carrying numerous pebbles and thick lenses of limestone. One lens, 2' thick, was traced for a distance of 20'. The pebbles range from an inch or smaller to 12" in diameter.....	16' 6"



No. 1 Irregular band of limestone, prevailingly gray in color with an occasional red streak. The individual nodules which constitute this bed contain numerous grains of quartz and feldspar..... 0' 2"

Pre-Cambrian:

Coarse-grained hornblende, biotite granite, cut by dike of fine-grained granite.