

Camden -- Mound Springs and Split Rock Creek

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These three parks are located in the southwestern corner of Minnesota in the drier prairies where natural recreational areas are not as common as in most other parts of the State.

Camden consists of about 470 acres and is 7 miles southwest of Marshall or one mile southwest of Lynd in Lyon County. It has been called "an oasis in the western prairies" because of its heavily wooded area along the Redwood River and its spring-fed tributaries.

Mound Springs is located about 6 miles northeast of Luverne in Rock County. It contains about 195 acres including two artificial lakelets along a small tributary of Rock River.

Split Rock Creek consists of about 228 acres located 7 miles southwest of Pipestone or one mile south of Ihlen in Pipestone County. About half of its area is water—an artificial lake having been formed by a dam across Split Rock Creek.

A prominent geographical feature of southwestern Minnesota is a broad, high land ridge called Coteau des Prairies (hill on the prairies) which rises gently to 700-800 feet above the surrounding plains. It extends from northeastern South Dakota in

a southeastwardly direction across the corner of Minnesota into northern Iowa. Its highest portions in Minnesota rise to more than 1900 feet above sea level in northeastern Pipestone County. The ridge has a bedrock base heavily overlain by glacial drift. The relatively high bedrock base apparently was able to split the most recent glacier that advanced from the northwest, deflecting a portion toward the east as it moved southward as far as Des Moines, Iowa, while the other portion was directed nearly southward along the present valley of the James river in South Dakota. The margin of the Des Moines lobe did ride up onto the edge of the rock base and its broad end moraines form the crest of the Goteau des Prairies in many places. The crest constitutes a divide between the drainage basin of the Minnesota river to the northeast and that of the Missouri river to the southwest. In the watershed of the Minnesota are the Lac Qui Parle, Yellow Medicine, Redwood and Cottonwood rivers, while the Missouri basin claims Flandreau and Split Rock Creeks, the Rock and Little Rock rivers.

Camden State Park is located on the Redwood river on the northeastern slope from the Coteau while Split Rock Creek area on Split Rock creek,

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and Mound Springs area, on a small tributary of the Rock river, are on the opposite, or southwestern slope.

The bedrock just beneath the glacial drift, and occasionally showing through it, at Split Rock Creek and Mound Springs is known as the Sioux quartzite, a very hard, resistant, generally reddish rock that was once a sandstone. It is believed to be very ancient, belonging to the Precambrian Era—an era in earth history when evidence of life is all but lacking. Precambrian rocks, though very much in evidence in northern, and especially northeastern, Minnesota, are not often seen in the southern part of the State. Along the Minnesota river and southwest of it, however, Precambrian granites as well as the Sioux quartzite are found just beneath the glacial drift. The contact between these very early rocks is covered first by sandstones and shales of the Cretaceous Period, the most recent marine sedimentary rocks in the State, and finally by several layers of glacial drift. Since the contact between the granites and the quartzite is not exposed at the surface the relative ages of these rocks would remain uncertain, but for a well at Butterfield, Minnesota which shows the quartzite to be somewhat younger than the granites—though both are very old.

The areas referred to above, where the older rocks occur just beneath the glacial drift, probably were small land masses or islands when the Cretaceous sea invaded this portion of the State. Sediments eroded from these islands, and deposited in layers slop-

ing gently away from them, later were consolidated to become the Cretaceous sandstones and shales. There are many artesian wells, some of them overflowing, in the area near Marshall. Some of them may be explained in terms of sloping layers of sand, gravel and clay in the glacial drift but most of the deeper ones derive their pressure from the inclined layers of Cretaceous sediments just described.

At Camden State Park there are two overflowing wells about a quarter of a mile apart. The older one, drilled in 1934 to a depth of 240 feet, and completely cased, has given considerable trouble in the past. The original casing was 6 inches in diameter. After some years it collapsed and a 4-inch one was put in. It still remains but there is ample evidence that it is rapidly deteriorating. Water issues from around the casing and from fissures in the ground several feet away. In February 1955 while the well was being cleaned a quantity of clay came out and with it a shell and a piece of wood. These were identified at the University of Minnesota.

The shell, about two inches in diameter, was a fossil ammonite of the Cretaceous period which ended about 60 million years ago. It may have come from the Cretaceous rocks at the bottom of the well or it may have entered the perforated casing at some higher level from the glacial drift, since glaciers coming from the northwest had an opportunity to scoop up Cretaceous sediments en route. The piece of wood was of more than ordinary interest. While its level of

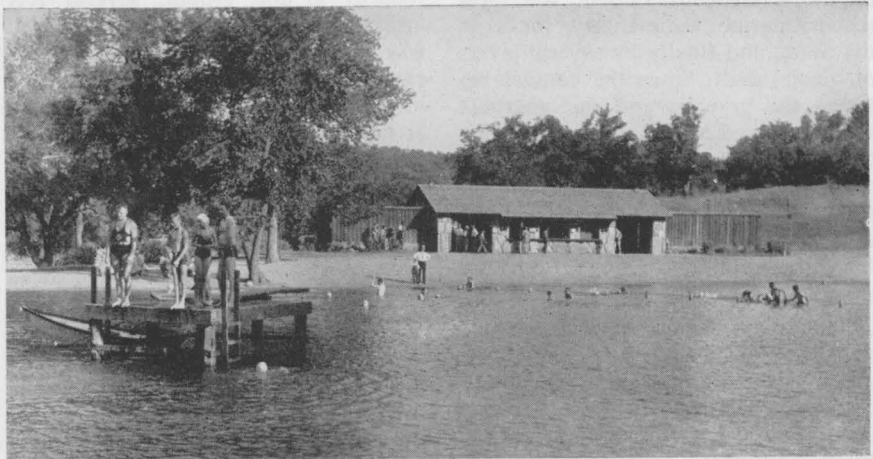
entry into the well is also unknown, it is almost certainly of Pleistocene (glacial) age and probably considerably less than one million years old. It was identified as American beech, a tree not found in Minnesota, nor closer than eastern Wisconsin, today. This speaks of a different, and probably warmer, climate in Minnesota during the interglacial period when it grew. The writer has been unable to learn of any other reports of finding American beech in glacial deposits of the State.

In 1950 another well, drilled at park headquarters, overflowed spectacularly for some time. At first it spouted 14 or 15 feet above the casing and was capped with considerable difficulty. This well was about the same depth as the one described above, but was cased only through the glacial drift, a depth of about 165 feet. It was not long, however,

until the casing began to deteriorate and the pressure fell markedly. By the summer of 1956 water issued from several fissures around the well and the overflow at a height of two and one half feet was a mere trickle.

A spring-fed brook is the source of supply for a swimming pool located in a picturesque setting near park headquarters. Several foot trails originate near here and follow along the crest of the winding Redwood river valley cut 150 feet or more below the surrounding terrain. A terrace level about 50 feet above the river is evident near the middle of the park. The glacial drift here is evidently heavily laden with lime as shown by the heavy incrustation on rocks and boulders and by the gradual formation of travertine in the brooks. Heavy iron staining is also very pronounced in some places.

At Mound Springs an outstanding



Bath house and bathing beach at Camden State Park, southwest of Marshall.

subject of geologic interest is the Sioux quartzite found in outcrops along the small creek that flows through the Park. These outcrops, together with an even more spectacular cliff just outside the present park boundary to the southeast, afford one of the best opportunities to study this ancient rock of any in the State. The larger outcrops in this locality constitute an essentially north-south, east-facing escarpment from 40 to 60 feet high beginning about 5 miles north of Luverne and continuing north to approximately the County line. It roughly parallels the Rock river which flows just to the east of it. The quartzite layers dip gently to the west or slightly northwest and erosion is causing the escarpment to recede in the same direction. Consequently the cliffs will diminish in height as time goes on. This quartzite is a part of the same formation seen in outcrops or quarries in and near Pipestone, Ihlen, Jasper and at Split Rock Creek Park. Buildings and foundations have been constructed of this rock to a considerable extent in this corner of the State. Inter-bedded between some of its near-surface layers at Pipestone are found thin layers of catlinite, a compact red shale commonly called "pipestone", used by the Indians in making pipes and other artifacts.

Whereas the rock itself is generally too dense to contain much water, cracks and fractures in it do, and many wells of relatively soft water in this region are from this source. The direction and slope of these cracks, and possibly of some of the more

porous layers of the rock itself, occasionally provide some artesian pressure. At Mound Springs Park a well drilled to a depth of about 200 feet has a static level about 15 feet below the surface and about the same distance above a nearby creek level.

The quartzite exposures frequently exhibit an interesting feature called "ripple marks". Their appearance is the same as that seen in sand or mud under shallow water along lakes or streams today, and they are believed to have been formed in the very same way. The ripple marks on these quartzite surfaces speak of shallow-water conditions in a sea in this corner of Minnesota hundreds of millions of years before the Cretaceous sea mentioned earlier. Another kind of marking frequently displayed on the quartzite surfaces are parallel, or nearly parallel, scratches made by the glaciers as they rode over it. Presumably the scratches seen today were made by the most recent glacier that visited the area. These striations are easily found on the exposures near the Pipestone National Monument headquarters but even more prominently on top of the high ridge previously mentioned just outside Mound Springs Park.

The facilities and attractions at Camden are: swimming, picnicing, foot trails, group camping, refectory and an opportunity to study a lush vegetation. At Mound Springs one finds a picnic grounds, camping, boating and a refectory. Split Rock Creek has picnic grounds and boating.