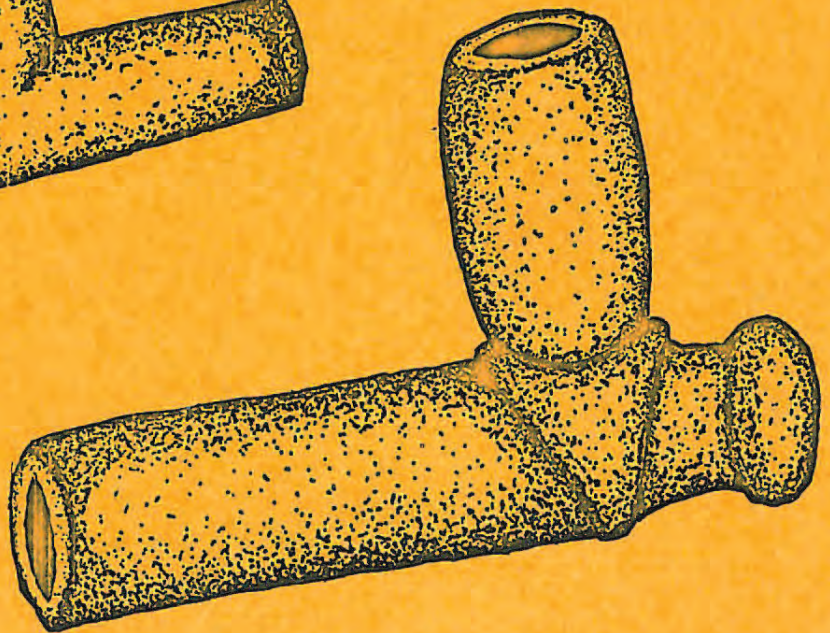
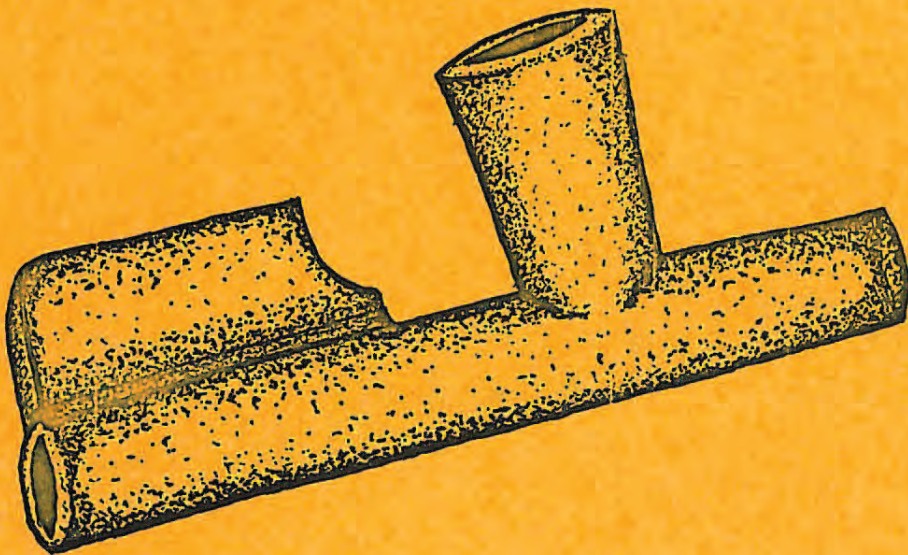


WYOMING  
ARCHAEOLOGICAL  
SOCIETY

THE  
WYOMING  
ARCHAEOLOGIST



SUMMER 1965  
VOL. VIII NO. 2

## PRESIDENT'S LETTER

The summer meeting held at Fort Laramie and at Hell Gap was very well attended. The President wished to thank Mr. Charles Sharp, Mr. Robert Murray and their staff at the Fort Laramie National Historical Site for the meeting space and for the very interesting program; Mr. George Agogineo, Henry Irwin, and the Hell Gap staff for their slide program and the program at the Hell Gap Site; and Mr. Paul Edwards of the State Historical Department and the employees at the Guernsey museum for the use of their beautiful building; and last but not least, the Cheyenne Chapter for making the meeting possible.

All the chapters were represented together with members from Rock Springs and North Platte areas. It is hoped that these members will soon form chapters of their own.

Your attention is invited to the minutes of the summer meeting in this issue. It is felt that the committees appointed are very important ones and it is urged that all interested members submit their recommendations to the committee chairman at their earliest opportunity.

We again wish to thank all who participated in the summer meeting; it was a very interesting and successful meeting in a very interesting area.

We most heartily welcome our newest chapter the "Fremont County Flintstones". Charter presentation having been made at the summer meeting.

President, Jim Adams

Corresponding Secretary, Irene Morgan, 245 Washington  
Lander, Wyoming

HERNY W. LLOYD  
PRESIDENT

WYOMING ARCHAEOLOGICAL SOCIETY  
SUMMER MEETING  
FORT LARAMIE NATIONAL HISTORIC SITE  
AUGUST 7-8, 1965

The Annual Summer Meeting of the Wyoming Archaeological Society was held on the second floor of "Old Bedlam" at the Fort Laramie National Historic Site on August 7<sup>th</sup>, 1965.

The meeting was called to order by the President, Henry Lloyd at 1:50 P.M. There were 49 members and guests present. The reading of the minutes of the annual meeting at Casper were dispensed since they were published in the "Archaeologist" and every one should have been familiar with them.

A financial report was given by the Executive Secretary. Due to increasing costs of "The Wyoming Archaeologist" for publication, some additional financing will be necessary if the quality of the publication is to be maintained. A committee was appointed by the president to study ways and means of raising funds to continue the present standards of the publication. The committee: Dave Baskett, Chairman, Harry Farlow, Mrs. Margaret Powers, Fred Stratton, Jr, and Lou Steege. This committee was requested to report its finding to the President by October 31, 1965. The President requested that this committee remain as a standing committee to assist the Editor and the executive group.

Other items mentioned regarding the publication---

1. Chapters will be billed for any publications at cost which they may require for resale or gifts.
2. Institutions, Universities and Libraries and persons ordering back issues of the publication will be billed in accordance with the new price schedule prepared by the Executive Secretary, effective July 31, 1965.
3. Dues for out of State members not expressing a chapter affiliation will be applied in full to the State Society to help finance the publication.
4. Any person having a concrete idea regarding the financing of the publication please communicate with members of the Financial Committee.

A committee was appointed to study ways and means of increasing memberships and for soliciting donations for the William Mulloy Scholarship Fund. This committee was also requested to study the possibility of continuing the present rate of dues. It is the opinion of the present Executive Committee that the dues should not be raised in January 1966 as voted upon at the Annual Meeting in Casper, 1965.

The committee, Florence Castle, chairman, Helen Bryant, Hila Gilbert, Irene Morgen, and Bee Steege was requested to have their report ready for the Annual Business Meeting to be held in Casper in April, 1966.

It is extremely important that the State Society have in its files the site surveys and reports of areas known within the State of Wyoming. If we are to sell our program of State Archaeologist to the Legislature, we must have proof to present that such an office is necessary. The compiling of site surveys, site numbers and reports is a means toward this goal. A committee composed of the following persons was appointed by the president: Bart Rea, Chairman, Jim Goodwin, Harry Palmer, Bob Edgar and Jim K. Adams. This committee is to report their recommendations for the filing of surveys, reports and site numbers--- to whom these reports should become available, which sites should be reported, who should file these reports, and all other information they deem necessary. This report shall be given at the Annual Business Meeting to be held in Casper in April 1966.

A charter, presented to the Fremont County Flintstones, was accepted by Mrs. Irene Morgan corresponding secretary of the newly affiliated chapter. We now have five active chapters in Wyoming.

The guest speaker for the afternoon was Robert Murray, Historian at Fort Laramie. His topic, "Historic Archaeology at Fort Laramie", was extremely interesting. Mr. Murray pointed out many examples of how the sites of early buildings had been located through the medium of archaeology. He also gave a detailed history of Fort Laramie from its founding in 1834 to the present time. Following the close of this session, coffee and cookies were served by members of the Cheyenne chapter, after which the membership in attendance were taken on a guided tour of the buildings and grounds of the Fort.

The evening session started with a no-host picnic near the museum building at Lake Guernsey. At dusk a meeting in the museum building was called to order by the President and the guest speaker for the evening, Mr. Henry Irwin, of Peabody Museum, Harvard University was introduced. (Mr. Irwin was in charge of the 1965 investigations at the Hell Gap Site). An interesting program was presented by Mr. Irwin on "Western U. S. Archaeology". He illustrated his talk with colored slides. The evening session closed with a demonstration of flaking techniques by Mr. Irwin and Lou Steege with the former employing the percussion method and the latter employing the pressure method. Samples of artifacts were made by both methods. Members of the Wyoming Archaeological Society enjoyed the balance of the evening as guests of the NCO Club of the Wyoming National Guard at Camp Guernsey.

On Sunday morning, August 8<sup>th</sup>, members and guests of the Wyoming Archaeological Society met at the Hell Gap Site where they were given a conducted tour of all the excavations made during the 1965 season. The group was led by Henry Irwin who pointed out the various cultural levels and features at each site. The group was able to see several artifacts "in situ" along with bones and flakes which littered the floor of the camps used by the early inhabitants of the valley many hundreds of years ago.

The meeting adjourned at noon.

Louis C. Steege,  
Executive Secretary

## SUMMER ISSUE

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### EDITORS NOTES

The pipe sketches on the front cover were done by Lou Steege. They are actual size and were sketched from specimens in his collection. All are made of red catlinite. Top specimen was found southwest of Wheatland, Wyoming in 1930 and is of Shoshonean origin. The center specimen was given to Lou by a Cheyenne Indian in 1963. The pipe and wooden stem was made and used by "Little Wolf" a southern Cheyenne. The bottom specimen is of Sioux origin and was found in a packrat's nest near Newcastle, Wyoming in 1962.

Our thanks go to Mike and Donna McLaughlin for typing this "Indian" Summer Issue.

We are indeed indebted to the Minnesota Archaeological Society for permission to reprint the two fine articles by Robert Murray. We are anxiously awaiting another article from this very busy man concerning the early rifle and cannon components as have been discovered in our area.

## F O R E W O R D

Inevitably, in every field of archaeology study, the process of research merges into the known historical. Ancient pipes are of intense interest and the study of pipes carried one step forward into the historical era is equally intriguing.

This issue presents a detailed discussion on pipes of various materials and of the northern Plains Indians by Robert A. Murray. Since large amounts of information on pipes and smoking customs is widely scattered through the literature of history and ethnology, the author surveys and compiles these many extensive quotations into one definite paper, confined to the specific geographical area of the northern Plains.

Mr. Murray, originally a Nebraskan, is Curator of Fort Laramie National Monument, Fort Laramie, Wyoming. He was formerly Park Historian, Pipestone National Monument, Pipestone, Minnesota, a teacher at Crow Agency, Montana, in the heart of the Crow Indian Reservation and seasonal ranger-historian at Custer Battlefield National Monument. We are fortunate to secure this orderly compendium of facts, many from literary sources not readily available to our readers.

Also in this issue is a short historical review of the known earliest Indian inhabitants and white visitors at the Minnesota Pipestone Quarries. This source of stone is commonly overemphasized since so many other stones have been used for pipe-making by the many Indian tribes of other areas. This paper is more specific in dating the series of events in this locality than is sometimes noted.

A BRIEF SURVEY OF THE PIPES AND SMOKING CUSTOMS  
OF THE INDIANS OF THE NORTHERN PLAINS

by Robert A. Murray

\* The Minnesota Archaeologist  
Volume XXIV                      Number 1

INTRODUCTION

Few of the material impedimenta of the historic Plains Indians have had so great an appeal to the popular mind as the ceremonial pipe, particularly in its somewhat over-emphasized role as a "peace-pipe." For all its popularity and the importance of the broad range of ceremonies involving its use, the pipe has received little really detailed or specialized treatment. The studies of McGuire and of West are broad in scope, but their treatment of the Plains is rather sketchy. This was brought home forcefully to the writer after his placement in a situation which required the almost constant attention to the problem of accurately interpreting the story of the pipe and its function in Plains cultures.

Large amounts of information on pipes and smoking customs of the various peoples of the plains does exist, widely scattered through the literature of history and ethnology. It is as an attempt at surveying the materials that have come to light in order to prepare a convenient interpretive set of tools that this paper was originally prepared.

It is hoped that work now in progress will lead to the eventual completion of a definitive work on the subject. This paper is not, nor is it intended to be, more than an exploratory study of a field that each day's work seems to prove more extensive and complex.

Geographically this discussion will be limited generally on the north and east by the forests of Canada and Minnesota, on the east by the general eastern limits of the Missouri River drainage of western Iowa, on the south-east by the wooded highlands of the Southern Uplifts, on the south by the Kansas River and on the west by the main ranges of the Rockies. The migrations of peoples and the movement of trade within historic times will, of course, necessitate discussing marginal areas of the surrounding country at times.

Sources available contain no specific information on the pipes of the early dwellers of the western plains.<sup>1</sup> Dwellers of the river valleys of the plains, however, during the period 1000 to 1700 AD, left abundant archeological evidence of their occupation, including numerous pipes. Remnants of elbow pipes<sup>2</sup> and incised pottery tube pipes<sup>3</sup> have been found at Dismal River in southwestern Nebraska, and from sites of the Great Bend Aspect (extending as late as the early white-contact period) have come a variety of elbow and disc pipes.<sup>4</sup> In the Kansas City area, Hopewellian sites give us some of the earliest pipes to come to light thus far in the Plains. These are "platform" or "monitor" pipes and some of these also occur in the Plains-Woodland sites of the Lower Kansas and Republican River valleys.<sup>5</sup>

Elbow pipes of the Middle Missouri area, and Oneota disc pipes in moderate numbers would seem to indicate that smoking had become well-established among the sedentary and semi-sedentary peoples of the moist eastern plains and the river valleys extending out into the drier regions by the beginning of historic times. The elbow pipe is apparently more common in the river valley areas,<sup>6</sup> with disc pipes becoming more numerous as one moves farther east toward the woodland areas where they were relatively numerous.<sup>7</sup>

Elbow pipes of the area were found to be made of clay, catlinite and other stones. Notably these elbow pipes are of relatively small size, with bowls but 20mm to 30mm high, and stem-ends 20mm up to 73mm long.<sup>8</sup> Some specimens have a perforated dorsal projection on the stem-end,<sup>9</sup> and some have been noted with a projecting prow in front of the bowl.

Dwelling in the plains area in historic times, and probably linked culturally with the above sites were the Pawnee, Arikara and Mandans.<sup>10</sup> Various sites of the pre-white-contact period have yielded articles of European origin which testify to a penetration of the country by European goods far in advance of European traders.<sup>11</sup>

Thruout most of historic times, white contact was with these "river tribes" and with the many relatively late-comers to the plains from the woodland-prairie margins to the east and from the northern Rockies. A few other tribes were in the southwestern borders of the area under discussion in early historic times, and of course the extreme southeastern corner of the region was long dominated by peoples recently removed from the adjacent woodlands to the east. The rapidity with which the acquisition of the horse and of other goods of European source changed the cultures of these peoples has been widely noted.<sup>12</sup>

Though the "horse-Indian" culture phase was of brief duration, it blossomed and thrived during the early years of white contact, held out during a long series of wars with the whites, and was only extinguished by being both militarily and economically over-run by the whites. This at once makes it better documented historically and anthropologically than previous cultures in the plains, and the subject of reams of fiction and near-fiction. This place in relation to white history, and in American fiction, makes it stand out above nearly all other Indian cultures in its impact on the modern American mind.

In an interpretation of this nature, then, one deals with two basic groups of peoples: 1. A set of semi-sedentary tribes dwelling along the rivers in the eastern portions of the plains. These tribes had already-developed smoking customs and utensils, but were continually subject to the influence of their mobile neighbors and to the contacts incident to increased trade and to the early contact with whites occasioned by their accessible river valley locations; 2. A larger set of highly mobile equestrian tribes who brought smoking customs and utensils with them from older semi-sedentary homes and whose cultures were subject to modification by the demands of their new mobility, their new physical environment, and by contact with river tribes, with their fellow nomads, and with the whites. One might



characterize this, then, as an area and a period when change itself was the most consistent fact.

#### DESIGN OF PIPE BOWLS

Little research of a detailed nature has heretofore been done on pipe designs associated with each tribe, and comments on tribal association of designs in this paper must be taken as rather general and tentative, pending the completion of more extensive research than present sources permit.

#### Tube Pipes

A possible antecedent of the more conventional pipes used by the plains tribes, and one which has certainly paralleled them in ceremonial use on the western plains, is the tube pipe, usually of bone or stone, and most frequently without separate stem.

We have already noted Wedel's reference to early pottery tube pipes.<sup>1</sup> He also mentions "well-made tubular catlinite pipes" from the later houses of the long-rectangular house sites of the Middle Missouri,<sup>13</sup> and describes others from the mounds of the Dakotas and Saskatchewan: "Ground and polished stone includes tubular catlinite pipes, some slender and thin-walled, others heavier and shaped like a modern cigar holder;"<sup>14</sup>

Wallace and Hoebel comment on the design and use of Comanche bone pipes of historic times:

"Comanche pipes were made of bone, stone or wood by both men and women. Many of the early pipes were straight tubes made of bone from the shank of a deer or an antelope, cut off at either end, the marrow punched out, and the mouth end pared down and smoothed. Before being used, such a pipe was commonly wrapped with the ligament from the back of a buffalo bull's neck, and this when dried, made so complete a reinforcement of the bone that the pipe might last a long time." (15).

McGuire illustrates and describes several such pipes, and comments upon them and others:

"The writer is informed by Capt. H. L. Scott, of the U. S. Army, that the pipe used in the medicine dance by the Kiowas which is held in the summer, is in the custody of the medicine keeper and descended to this tribe from the Arapahoes, who in turn received it from the Crows in the far north. It is straight and made of black stone. The sacred pipe of the Arapahoes, which has an antiquity, according to their tradition, as great as the tribe itself and which is valued beyond price by them, is a straight tube made of black stone, and is at present in possession of the northern division of the tribe, which is in Wyoming." (16).

McGuire also refers to a pipe used in a treaty between the Sioux and the Winnebagos as being made of "the shin-bone of an elk", and cites Maximilian in reference to the use of the tube pipes in the upper Missouri area by the Assiniboine and other tribes.<sup>17</sup> The writer obtained in March of 1961, a recently-made tube pipe of deer-leg-bone wrapped with sinew. This specimen was made by Dallas Little Head of the Northern Cheyenne, and is now on display at Pipestone National Monument.

Linton illustrates and identifies as a "Cheyenne Sun Dance pipe" a pipe with a straight tubular stone bowl and a long, straight, round wood stem.<sup>18</sup>

A straight catlinite tube pipe is apparently still in use as one of the most highly regarded ceremonial objects of the Northern Cheyenne.<sup>19</sup>

Recently brought from Montana by Mr. Dennis Loose of Pipestone, Minnesota, and placed in the Pipestone National Monument collection is an interesting stone tube pipe with a separate wood stem.

#### Pipes With Angular Bores

Though the tube pipe apparently entered the plains in prehistoric times and has continued in use, it is not the type most often associated with the Plains tribes in historic literature. Other pipes of the plains through most of historic times have usually shared the characteristics of a bowl-bore intersecting the stem-bore at an angle (frequently a near right-angle), a bowl of stone, and a separate wood stem.

The disc pipe survived into and through historic times in small numbers, particularly as specially sacred pipes associate with the medicine-bundles of the Iowa and Osage tribes.<sup>20</sup>

The elbow pipe had a wide distribution in prehistoric times, extending as previously noted, at least into the river valleys of the plains. It continued in use in various forms throughout historic times.<sup>21</sup> West illustrates many elbow pipes (plates 192-201, West. op. cit.) from the northern plains area and its eastern margins.

The Algonkian tribes who occupied the forest areas northeast of the plains and pushed out into the northern fringe of the plains seem to have shared the pipe-style known as the micmac pipe, deriving the name from the tribe among whom it was first observed in eastern Canada. The micmac is described by West as follows:

"The Micmac pipe usually has an inverted acorn-shaped bowl attached to a base by a narrow neck, or separated from it by a deep encircling groove. The base is either cylindrical, round, square or keelshaped in form, often terraced and subject to many modifications. Its base frequently has one or more perforations to which were probably attached ornaments or thongs by which it could be tied to the stem....." (22).

McGuire discusses the micmac mostly in its association with the Indians of the northeastern United States, but does cite material linking it to the Blackfoot tribes, the Cree and the Chippewa.<sup>23</sup> West states that at the time of his writing, the micmac style was in use by Chippewa Indians in Wisconsin.<sup>24</sup> He calls attention to its use by the Blackfoot tribes.<sup>25</sup> Lowie illustrates Blackfoot pipes, showing them to be of micmac style.<sup>26</sup> Mandelbaum describes an 1860 illustration of Cree pipes by Hind, indicating that the micmac style was in use in the mid-19th century, though he himself mentions designs closer related to the plains pipe as being in common use.<sup>27</sup>

Wallace and Hoebel note a special type of bowl as being in use among the

Comanche: "The Comanche stone pipe bowl was made with a vertical cylinder on a flat base that projected forward and back from the bowl."<sup>28</sup> A pipe of this style is on exhibit at Pipestone National Monument, though it was not obtained directly from the Comanche.

Very little descriptive writing of great detail by early travelers has come to light. From the number of elbow pipes of both historic and archeological background that West illustrated from the Wisconsin and Minnesota area, they must have been in wide use by the tribes of that region and at least some of those that later migrated westward into the grasslands. Whether the type of bowl referred to by McGuire and West as "Siouan" or "Sioux" with its forward projecting point evolved from the elbow pipe or was a separate parallel development has not as yet been established. The large numbers in various collections indicate that both saw extensive use throughout much of the historic period. Certainly the "Sioux" or "Siouan" type described by McGuire and West was used by other neighboring tribes of the Dakota, and cannot be associated with them alone, either in origin or in use. West illustrates many pipes of this type, but throughout his text he is apparently using the ambiguous term "Siouan Calumet" to refer to these as well as to the "plains" type.<sup>29</sup>

Both the elbow pipe and the "Sioux" pipe are frequently found with a long dorsal projection or "comb" running along the top of the stem-end of the bowl. Often this is perforated transversely. These holes may be decorative in nature, but it is also possible that they served as a point for securing a thong to fasten the bowl to the stem somewhat in the manner common with the micmac pipe.<sup>30</sup>

The staff of the St. Paul Science Museum have used the term "Plains Pipe" to refer to many pipes of the same style that West calls "Siouan" and McGuire calls "Sioux" in some places and "Siouan" in others. Basing their study on items in the museum collections they put forward the idea that most of the "plains" pipes are the result of efforts to make production more efficient during an era when trading companies marketed many pipes.<sup>31</sup> Though it is unquestionably correct that many pipes and pipe-blanks were marketed through commercial channels it is equally correct that the pipe-stone trade was old long before whites entered the area in numbers. It would seem that the techniques described in their study could have been worked out quite as easily by Indian workmen and would have been dictated more by changes in work techniques attendant to the introduction of metal tools, and to the rise in the salability and hence market value of the catlinite pipe. The same styles will be observed in pipes of many kinds of stone not marketed on a commercial scale. Dominance of these styles over most of the plains in historic times was probably due to the diffusion of cultural ideas accompanying increased mobility and the expansion of intertribal trade. Trade in stone and in pipes will be taken up at a later point in this study.

#### MATERIALS

Pipe bowls of stone were most widely used within the period of direct white contact with the Plains tribes, though other materials were in use, and will be noted. In discussing pipes of the region and period, one must emphasize that many kinds of stone were used. Lack of knowledge of geology, difficulty of identifying worked and polished stone, and a general confusion of terminology limits the effectiveness of the descriptions of many early observers.

Red stone would seem to have been the most popular. Here are some comments by early travelers and Indians:

"His pipe, which was ingeniously carved out of the red steatite (or pipestone)". (32)

"Their pipe-bowls are made of a red stone of close grain and susceptible of a high polish." (33)

"Grandmother's-knife said that while the Shoshoni and Arapaho used pipes of black stone he could not remember any but catlinite pipes among the Crow"....."It is interesting to note that even in Maximillian's day a tribe so far to the west as the Blackfoot had secured in trade the highly prized Dakota pipes, though in addition they had steatite and blackstone pipes." (34)

Many other references could be cited, but most are no more detailed than those above. One must remember that not all red stone pipes, even on the plains, are sure to be Minnesota catlinite, though widespread traffic in this easily worked material made it the most widely used red stone of the northern plains area in historic times. Some of the well-known Wisconsin red pipestone may have entered the plains, and Denig and others have referred often to deposits in the northern fringe of the Canadian plains which were used for pipemaking.<sup>35</sup>

Black stone of various types and stones capable of being easily blackened seem to have found favor with certain tribes, and in some districts were no doubt more popular than red stone. Sometimes green stone was blackened, and sometimes it was left in its natural state. Many comments may be found on green stone, black stone and blackened stone:

"Pipes were commonly of stone, especially catlinite....However, other materials were also used; the Arapaho had black stone pipes as well, and the Blackfoot shaped their pipe bowls of a dark greenish stone...." (36).

"Soapstone, limestone, black slate, sandstone, greenish-gray steatite (artificially blackened with soot from pot bottoms), lava, granite, hematite, argillite, serpentinous rock and pipestone have all been used by the Ojibwa for making pipe bowls." (37)

Kinietz illustrates a Chippewa pipe of black stone with red stone and lead inlays, of "Sioux" pattern.<sup>38</sup> Mandelbaum says of the Plains Cree: "Pipes were made of a soft black stone taken out of the bed of the Battle River," and goes on to describe a method of blackening other stones.<sup>39</sup> West illustrates many black pipes of soapstone, chlorite, shale and other stones.<sup>40</sup> Long mentions "A soft, grayish rock, similar to the red pipestone found in Minnesota, was made into pipes."<sup>41</sup> In the same passages he describes the blackening of this stone. Wedel notes a "soft, whitish to pink limestone....used by Upper Republican people for pipe-making,"<sup>42</sup> and the use of pumice as a pipe making material.<sup>43</sup> Wallace and Hoebel note the Comanche use of red sandstone.<sup>44</sup>

Wedel's numerous citations would indicate a much wider use of clay pipes by early plains dwellers than has been popularly known.<sup>45</sup>

Wooden pipe bowls were sometimes used. The Pipestone National Monument collection contains two such pipes. One is a sort of "Sioux" to "Plains" transitional type in appearance. W. G. Tilton, from whom the pipe was purchased, states that it is over 100 years old, and of Sauk & Fox origin. The bowl is of walnut burl, heavily inlaid with lead. The other pipe bowl of wood fits Lyford's description of the Chippewa wood pipe bowls: "The wooden pipe bowl, made from the knot of a tree was sometimes decorated with an incised or carved design, or lined with metal...."<sup>46</sup> Wallace and Hoebel mention the Comanche use of wood as a substitute for stone in pipe bowls.<sup>47</sup>

McGuire and West both mention and illustrate metal pipe bowls, but these were not extremely plentiful on the Plains.<sup>48</sup>

#### MANUFACTURE

Until additional data are collected, it will be difficult to make truly precise statements on pipe sizes associated with particular styles and periods. From an examination of specimens in many museums and private collections, from data in the West study and other sources, the writer ventures to state that pipes of the historic period on the plains generally range upward in size from the ones of prehistoric archeological finds noted. Bowls which have clearly been worked with metal tools tend to be somewhat larger than earlier ones of the plains, and those of the late trade period and of reservation days still larger. Thus it would seem that the acquisition of better tools may have accounted for an increase in pipe size within limits of convenience and available stone size.

One of West's most valuable contributions is his discussion of aboriginal stone-working methods as applied to pipe-making. His own experiments and those of others cited by him eliminate much of the "mystery" surrounding the work of the primitive pipe maker.<sup>49</sup> The drills, files and saws of the present day worker all had their relatively efficient counterparts in early times. Changes incident to the introduction of metal tools were probably small at first, the result being largely an acceleration of the work, and a general facilitation of the working of slightly larger pieces of stone. The techniques of drilling a small hole and then enlarging it by reaming, described by West,<sup>50</sup> was probably carried over into the days when metal tools predominated (and indeed, experiment will prove to the most doubting that this is the most efficient means of working catlinite, where economy of stone is to be considered a major aim, and risk of breakage avoided) since most specimens from the plains known to have been made in tribal times have the flared bore, frequently eccentric, which is characteristic of hand drilling and reaming techniques.

The use of deep-hole drills and of simple lathes was probably not made until the period of definite white utilization of stone, beginning in the mid-1860's.<sup>51</sup> The writer has not yet encountered pipes with clear-cut evidence of machine work known to have been made previous to that time. Many pipes of the reservation period, especially those of about 1880-1940 are ornately wrought in the manner of late-Victorian furniture, and are quite obviously of white manufacture or made by Indians for the tourist trade according to white design themes. There is little possibility of confusing these with Indian-made pipes of an earlier time.

The final finish of bowls was generally a result of rubbing with one or another sort of greasy substance. Availability of fat, tallow or beeswax was probably the determining factor in choice of materials. Variations in exact appearance of many old specimens may be due to polishing materials used. Perhaps one may attribute the fine, high polish of some of the older specimens to generations of constant handling by greasy hands and to years of transporting in soft leather pipe bags.

Finishing of pipe bowls to the black color desired by some tribes sometimes involved special procedures. Lyford's comment on blackening steatite<sup>52</sup> has been mentioned. Wallace & Hoebel note the dyeing of soapstone to a black with walnut juice (or red with pokeberry juice!).<sup>53</sup> Several writers have noted the techniques of the Blackfoot (Ewers), Assiniboine (Long), and the Plains Cree (Mandelbaum), in blackening the lighter colored stones of their districts. Mandelbaum's description of pipe-making by the Plains Cree follows:

"A block of stone was hewn out with knives and two holes were bored in it to form a right angle. The stone around the holes was cut away until the finished pipe was produced. While being worked, the stone was kept wet. After being dried in the sun, the pipe was rubbed with fat throughout, and gently heated over a fire. The melted fat was rubbed off with grass. The stone was then greased once more and polished with buffalo hair." (54)

#### PIPESTEMS

The pipestem had sufficient importance both as a functional part of the pipe and as the central instrument of many ceremonies that its design and manufacture warrant special attention.

Early observers on and in the areas just east of the plains noted the ceremonial importance of the pipestem, and in so doing frequently gave more detailed descriptions of stems than of the bowls. While authorship of the Marquette account has been questioned, it is probably traceable at least to Jesuit observers of Indian customs, and the descriptive material may have some value:

"...the stem, which is a baton two feet long, as large as an ordinary cane, and pierced thru the center. It is embellished with the head and neck of various birds of handsome plumage; and they add thereto great plumes, red, green or of other colors, in fans and pendants." (55)

Another early account is summed up:

"From Charlevoix (1721) it is learned that the calumet is strictly the stem or shaft of what is commonly called the calumet pipe; that in those designed for public ceremonial purposes this shaft is very long, and "is of light wood, painted with different colors, and adorned with the heads, tails, wings and feathers of the most beautiful birds" which he believed were 'only for ornament' rather than for symbolic expression." (56)

Writing more specifically, and at a later time, from unquestionably direct experience, Catlin says:

"...the stem of which was three feet long and two inches wide, made from the stalk of the young ash; about half its length was wound with delicate braids of porcupine quills, so ingeniously wrought as to represent the figures of men and animals upon it. It was also ornamented with the skins and beaks of wood-pecker's heads, and the hair of the white buffalo's tail. The lower half of the stem was painted red, and on its edges it bore the notches he had recorded for the snows (or years) of his life." (57)

Writing of his observations in 1851, Mayer says: "The stems are of wood highly ornamented with porcupine quills, feathers and horse hair..."<sup>58</sup> and: "A soldier's pipe is adorned with eagle plumes and the pipe smoked on a war party has the stem stained black or red".<sup>59</sup>

Much attention has been given to the pipestems used in the calumet ceremonies in and to the east of the Great Lakes region. Generally somewhat less attention has been paid to pipestems used in the possibly related ceremonies of the plains tribes. Relative to those used by the Dakota in the Hunka (a brotherhood, or adoption ceremony), Wissler says: "A symbolic pipestem is now used, not perforated so that it can be used with a pipe bowl, decorated with feathers and tufts of horsehair"....."two symbolic pipestems are used, often spoken of as 'horsetails', because they bear tufts of horsehair, but otherwise remind one of the calumet stem."<sup>60</sup> Speaking of the same ceremony, Schulenberg describes ornamentation of the stems: "two pipestems, with or without bowls, ornamented with eagle feathers, woodpecker heads and duck heads."<sup>61</sup> In describing illustrations of pipes used as tipi decorations, Laubin states: "The pipes on the tipi at the left are the ceremonial wands, or calumets, used in the Hunkayapi, or adoption ceremony. The tipi owner evidently belonged to this society. Such pipes were not smoked....."<sup>62</sup>

The Blackfeet and other tribes along the northern fringe of the plains had a medicine-pipe ceremony in which specialized pipestems played an important part. Wissler describes these stems briefly: "...of wood, usually thirty or more inches long, decorated with a kind of fan of eagle feathers, heads of water birds, and sometimes a tuft or horsehair."<sup>63</sup> Ewers elaborates somewhat: "The most sacred object in each bundle was a long wooden pipestem elaborately ornamented with plumes and such other decorations as eagle feathers, hair or weasel skin pendants, trade beads, bells or ribbons."<sup>64</sup> and says of the "Children's Pipe": "Its stem, less than eighteen inches in length, was much shorter than that of most other medicine pipes. It was decorated with pendant feathers, trade beads and an obsidian arrowhead".<sup>65</sup>

The same general sort of ceremony was common to the Plains Cree, and Mandelbaum has described their pipestems:

"The bundle contained a pipestem three or four feet long, elaborately decorated with quills, beads, fur and feathers. ...The pipestem had no bowl; in fact, the stem was not used for smoking. Some sacred pipestems were not perforated through their length." (66).

And of another pipestem:

"The stem itself was about four feet long, completely covered with blue

beads and with red and white feathers. Weasel skins hung from each end and at the center a row of four feathers was suspended." (67)

Personal examination of typical pipestems of historic times also reveals that it is those pipestems of ceremonial importance in themselves which tend to be the largest, and that sizes grade downward through the 24 to 12 inch stems of the functional ceremonial pipes, with many "personal pipes" having stems near the shorter end of that size range.

Stems are, if anything, more individualized in design than the bowls of a given period. Most stems are straight. There seem to be two principal types or classes of stems. Extending along the northern edge of the plains and southward along the Rockies for some distance in historic times, the tribes seem to have favored the round, straight stem, with both bowl-end and mouthpiece also round, but reduced in size to about 3/8 to 1/2 inch diameter. Over much of the plains area, the flat stem was in vogue. Most samples of this type of stem examined are from 1/2 to 5/8 inch thick, 1 1/2 to 3 inches wide, usually decorated with bands of porcupine quills, streamers of hair, ribbon, and with slotting through the wood, or with patterns of brass tacks.

Smoke channels through the stems seem to have been produced by two basic methods, both covered by West.<sup>68</sup> One of these is the burning out of the pith from the core of a shaft of ash, sumac or other similar wood by the use of a hot wire or a burning stick. The other (and possible older) method used extensively was the splitting of a piece of wood, grooving and glueing back together. Both methods are still in use. Mandelbaum gives an interesting account of the stem making methods used by the Plains Cree:

"Pipestems were made from a straight saskatoon berry shoot. A suitable rod was split and longitudinal grooves cut down both halves. The two pieces were fitted together and bound with sinew. Aqueous matter from buffalo eyes was applied over the whole stem." (69)

Linton has outlined a third method of stem drilling, though it sounds rather improbable, involving as it does the cooperation of a wood-boring grub of unidentified species.<sup>70</sup>

As with bowls, more research is needed to facilitate a detailed discussion of stem styles, design and manufacture.

#### PIPES AND STONE AS TRADE ITEMS

Research in the question of the movement of stone and of finished pipes as trade items on the plains has only begun. The catlinite archeological finds of the river village sites have yet to be thoroughly examined and photographed for research files. Much new material from the accounts of early traders and travelers must be consulted in order to build up a complete picture of the trade.

The prevalence of pipes and other catlinite articles in use among the plains tribes in historic times and the numerous finds at protohistoric village



sites attest to a widespread general trade between the tribes on the plains. It is difficult at this point to assess the volume of this trade and particularly its proportion of the total trade picture. Jablow has discussed this point effectively, noting the impermanence of many items which no doubt were a part of the trade picture as compared to stone artifacts.<sup>71</sup>

Speaking of trade in early historic times, Ewers cites Tabeau, and says:

"We know, for example, that catlinite pipes were traded to the Teton by the Eastern Dakota tribes at the James River rendezvous. The appearance of these pipes in protohistoric but not aboriginal village sites of the Arikara would suggest that the Teton introduced these pipes to the Arikara through trade." (72)

Illustrative of the extreme westward movement of catlinite and of the eastward flow of other pipes in historic times is Tiet's statement regarding the Coeur d'Alene:

"The plains tribes also desired arrows and bows of horn and wood, which they considered better than their own; also shells, certain kinds of beads, necklaces peculiar to the west, and greenstone pipes. ....Catlinite and catlinite pipes were also often bought from the plains tribes." (73)

Lowie has mentioned the use of catlinite pipes among the Crow.<sup>74</sup> Mandelbaum says of the Cree: "Red catlinite, obtained in trade, was also used for pipes."<sup>75</sup>

The first specific mention of the quarrying of stone by whites for probable use in trade is in the description of the quarry and of quarrying and pipe-making by the party of Philander Prescott in 1831.<sup>76</sup>

Writing of an incident in the autumn of 1846, Parkman gives information on the value of a particularly fine pipe: "Such a pipe among the Ogillallah is valued at the price of a horse."<sup>77</sup>

William G. Johnston observed the sale of catlinite pipe-blanks at Ft. Bridger in 1849:

"Other store rooms were nearly bare of goods. In one was a keg of whiskey, a jar of tobacco, a box of clay pipes, and but little else. I should mention, however, some large pipes made of a red stone called 'St. Peter's Rock', said to have been brought from the upper Mississippi, and highly esteemed by Indians. The price at which they are sold too - five dollars each - would indicate that they are accounted valuable, while Mr. Bridger informed me that there is a very ready sale for them. They are not even bored out, but simply shaped as pipe bowls are, and thus sold." (78)

Hayden<sup>79</sup> and Holmes<sup>80</sup> both inferred the activity of trading companies in the pipestone trade. Correspondence from the archivist of Hudson's Bay Company to Mr. Francis Taunton of London indicates that no information on the subject has as yet come to light in company records.<sup>81</sup> Two pre-settlement days incidents may have been responsible for these stories. James Boyd Hubbell (of

Hubbell and Hawley and of the Northwestern Fur Company of St. Paul) gives this account of his activities in the pipestone trade:

"....I venture to say that the residents of Pipestone city and that beautiful section are not aware of the fact that a large quantity of the pipestone was hauled to Lake Shetek and manufactured into Indian pipes and other things by machinery. It was not considered safe for the men to work at the quarry, hence the vacant houses at Lake Shetek, which were deserted by the settlers during the outbreak, were utilized. The owners that had escaped had not at that time ventured to return. Gen. Sully had expected to be ordered to make a treaty with the Sioux, and, as the red stone pipes were prized highly by them, he engaged with me for 5,000 pipes at \$5 apiece, I employed men to make them under the supervision of A. B. Smith, one of the earliest settlers of Dakota.

Gen. Sully did not make the treaty as expected, but the pipes were no loss, as we traded them to good advantage with the Indians all along the Missouri, receiving a well dressed buffalo robe or its equivalent in other skins for a pipe. Robes at that time were worth over \$10 on an average." (82)

In 1871, Frank Forde, Cash Coates, Lewis Hulitt and an Indian named Big Eagle engaged in a project of quarrying of stone and the making of some 600 pipe-blanks. These they took to Ft. Thompson (Crow Creek Agency) Dakota, but there they were stopped from trading and their goods confiscated by irate Indians, who claimed ownership of the pipestone.

Certainly the movement of pipe making materials in trade is one of the most interesting phases of the story of the pipe, and much research is needed to give a complete picture of this trade.

#### TOBACCO AND OTHER SMOKING MATERIALS

The use of tobacco as an important smoking material was widespread in the plains by the time of early white contacts:

"In general all Plains Indians regarded tobacco smoke as being pleasing to the supernatural powers, to whom they offered it with prayer and elaborate ceremony. The use of the pipe at peacemaking ceremonies is well-known. All the tribes on the Missouri raised tobacco for ceremonial smoking." (84)

Tobacco was widely, but not universally grown; as Wissler says: "It was extensively grown in the south, and its cultivation carried as far north as climate permitted."<sup>85</sup> Lowie notes the growth of tobacco by the various plains tribes:

"Though probably all tribes smoked tobacco, by no means all grew it. The Cree in the north obtained theirs from traders and mixed it with dried bearberry leaves; the Comanche were dependent for their supply on the Mexicans. In their agricultural state the Cheyenne raised the plant as late as 1802, but later they relied on the Arikara and White traders.

About a hundred years ago Denig knew only the villagers of the Upper Missouri and the Crow as cultivators of tobacco in the northern section of our area. Certainly neither the Arapho nor the Gros Ventre have any tradition of raising the plant themselves. On the other hand, three nomadic tribes - Blackfoot, the Crow and the Sarsi - planted tobacco ceremonially as their only crop....." (86)

Pond says of the Dakota in 1834: "They had smoked from time immemorial, and when first discovered by white men, raised their own tobacco."<sup>87</sup>

Varieties of tobacco raised and in use with the various tribes were: The Crow planted nicotiana multivalvis as their ceremonial tobacco,<sup>88</sup> but smoked nicotiana quadrivalvis, which they obtained from the Hidatsa.<sup>89</sup> The Blackfeet and the Sarsi planted nicotiana attenuata.<sup>90</sup> The Hidatsa, Mandan and Arikara planted nicotiana quadrivalvis.<sup>91</sup> In the same work, Lowie also obtained their supply of nicotiana quadrivalvis from the Arikara.<sup>92</sup>

The Hidatsa apparently raised not<sup>93</sup> only enough tobacco for their own use, but a surplus for trade as well.<sup>93</sup> Several descriptions are available of Hidatsa tobacco culture, the most complete of which follows:

"There, though women grew other crops, only the old men raised tobacco, women merely assisting in the harvest. The implements employed included a hoe and a rake, respectively for softening and leveling the soil, and a buffalo rib for hilling up the earth around each plant. The seeds were inserted early in the spring, at the same time as sunflower seeds, but in separate fenced gardens averaging 21 by 18 feet. About the middle of June the blossoms were picked and dried indoors; they were prized more highly than the stems and leaves, which were plucked just before the frosts, the stems furnishing the greater part of the tobacco smoked. Both crops were oiled with buffalo fat before being stowed away in a pouch for future use. Seeds were set aside, but without selection." (94)

Tobacco culture among the Crow took on a ceremonial importance of its own as a central theme of the Tobacco Society. The activities of this organization have been dealt with in a sizeable paper by Lowie,<sup>95</sup> and also described by McGuire.<sup>96</sup>

Though tobacco was an important smoking material, it was by no means the sole such material:

"There are many weeds and leaves, and barks of trees, which are narcotics, and of spontaneous growth in their countries, which the Indians dry and pulverise, and smoke to great excess - and which in several of the languages, when thus prepared, is called k'nick-k'neck." (97)

The following substances were often mentioned as being used in lieu of or mixed with tobacco: redosier dogwood bark (Cornus stolonifera Michx), bearberry leaves (Arctostaphylus uva-ursi), red willow (Cornus Amomum Mill), western dogwood (Cornus Sericea), sumac (Rhus Glabra), and wild rose bark.<sup>98</sup> Belden has described a sort of vine used by the Crow for this purpose; but

re-examination of the description reveals it to probably be bearberry.<sup>99</sup> The name k'nick-k'nick (in many spellings)<sup>100</sup> seems to have been common among the Algonquian peoples of the northern edge of the plains, while the Siouan name is chan-sha'sha.<sup>101</sup>

#### SMOKING ACCESSORIES

If not as widely known, certainly the pipe-bag of the plains tribes is as colorful and interesting an item as the pipe. West and McGuire have generally ignored the pipe-bag. The earliest reference to a tobacco-bag is that of Catlin:

"His tobacco-sack was made of the skin of an otter, and tastefully garnished with quills of the porcupine; in it was carried his k'nick-k'nick (the bark of the red willow, which is smoked as a substitute for tobacco), it contained also his flint and steel and spunk for lighting..." (102)

Animal skin bags of many kinds are found to this day among the western plains tribes. In most areas of the plains, however, they were supplanted as pipe or smoking accessory bags at some time in the past by the rectangular hide bag with quilled or beaded decorations. From indirect statements in the works cited in this section, and from personal observation, the bag has been used at times as a pipe-bag, at times as a tobacco-bag, and sometimes for both these and other articles. Occasionally the tobacco mixture is carried in small hide bags within the pipe-bag.

These bags are as characteristic an article of the late plains culture as the hide shield or the parfleche case. Lyford describes the pipe-bag as follows, and provides illustrations:

"A soft bag a foot or more long by about six inches wide, heavily fringed at the bottom. Used by every family head to hold his ceremonial pipe, and kept on the floor at the back of the tipi, below his magic bundle." (103)

Lowie illustrates several pipe-bags,<sup>104</sup> and Mandelbaum describes similar bags used by the Cree:

"Tobacco pouches were of tanned hide, about two feet long and six inches wide. A solid block of bead or quill-work covered the lower six inches of the bag on both sides. The rest of the bag was wrapped around this stiffened section. The opening was scalloped and had a line of beads around the edge. A four inch fringe was attached to the lower end of the bag." (105)

Lyford describes the bags used by the Chippewa, but notes: "The Ojibwa pipe-bag was not so large nor so elaborately decorated as were the pipe-bags of the Sioux."<sup>106</sup> Winchell illustrates a particularly fine bag belonging to Smoke-Maker of the Lower Brule, and gives an extremely careful and detailed description of it, too lengthy to quote here.<sup>107</sup> Wallace & Hoebel mention similar bags of the Comanche, but note: "Some of these bags were decorated with beadwork after the arrival of the white traders, but informants insist that porcupine-quill embroidery was unusual among the Comanches."<sup>108</sup>

Some other accessories were associated with smoking. The Pipestone National Monument collection contains a replica of a catlinite "tobacco-cutting board" the original of which is in the collection of the Nebraska State Historical society. Information from Museum Director Kivett indicates that the original was collected from the Otoes in Nebraska and that the board was used in special ceremonies. It was regarded as valuable and ponies had been offered for it, and that it was very old.<sup>109</sup> Mandelbaum describes the tobacco-cutting boards of the Plains Cree: "They were ten-inch squares, studded with brass-headed tacks."<sup>110</sup> Kehoe mentions "the wooden tobacco boards on which Kinnikinnick was usually prepared," in reference to the Blackfeet.<sup>111</sup> The North Dakota Historical Society collection contains a tobacco cutting board made of a section of Moose-antler.

Special sticks were apparently used for tamping and cleaning pipes. Two Arapaho "pipe-stokers" are on display at Pipestone National Monument. They are 12 and 16 inches long respectively, tapered, slim, and made of hard wood. Mandelbaum observed that among the Plains Cree: "Pipe tamps were pointed sticks, about a foot long, ornamented with quill and beadwork."<sup>112</sup> Lowie gives illustrations of similar sticks, and says:

"For cleaning the pipebowl, a stick of iptsi'tsixaxe (pipe ?) wood was used. The same kind of wood was used as a point for firedrills and to mount porcupine tails for brushes." (113)

#### GENERAL SMOKING CUSTOMS AND USAGES

Smoking seems to have been practiced principally, but not exclusively, by the adult male Indians.<sup>114</sup> Pond notes of the Dakota "Few of the young women smoked, and boys generally did not smoke until grown-up."<sup>115</sup> Smoking by women has been noted by Mandelbaum,<sup>116</sup> and again by Lowie:

"According to Wissler, Blackfoot women smoke from small pipes of somewhat specialized type. I have definite recollections of Cree women with little pipes in the corner of the mouth. The practice may thus have a definitely northwestern distribution so far as the plains are concerned." (117)

but not seen by Dodge:

"In all my experience with numbers of tribes of Indians I have never yet seen a squaw smoke. She is never permitted to take active part in any religious ceremony, and the most ordinary smoke is so intimately connected with the mysteries of medicine that she cannot indulge in it." (118)

The widespread importance of smoking on the plains, and the observance of rituals and customs associated with it, deeply impressed white observers:

"Smoking is always a ceremony. The pipe among the Indians seems to be a somewhat universal symbol, nothing of importance being done without it. Every council, conference, religious ceremony, gambling bout, dance, or ordinary talk, is opened with a smoke, but though excessively, even passionately fond of smoking, I have never yet seen an Indian smoke a pipe alone, as a white man does." (119)

"For different occasions or ceremonies they have different pipes. .... Each is sacred to its own purpose....." (120)

"War is seldom concluded upon, or even a campaign undertaken without a general council, in which all the chiefs and most distinguished braves and sages assemble. After all are seated in a circle, the pipe is passed around until their brains are sufficiently soothed to enable them to consult the Great Spirit, and take freely into advisement the important matters under consideration" (121)

And attention to details of proper form has often been noted:

"Acts that are purely matter-of-fact with us are often matters of ceremony with the Indian, who may insist on tedious sequences prescribed by ritualistic etiquette, as in the routine for important events on a war party, in doctoring the sick, or even in smoking. It was proper, Gray Bull told me, to point a pipe first upward, then to the ground, next to the four quarters of the globe; and in so doing he himself would pray to the winds of the cardinal directions." (122)

Wissler has noted in some detail the gravity and formality with which a pipe-lighter carried out his appointed task.<sup>123</sup> Dodge notes a prime point of smoking etiquette:

"In former times it was regarded as a great breach of decorum, so near as insult as to require explanation, for any man in the circle to fail to take his turn at the pipe. Within the last few years, however, they have met so many white men who either did not smoke, or who declined to put his mouth to a stem common to many and such filthy mouths, that they now take no notice of it, though they do not like it." (124)

Lowie has outlined some general and some special rules for pipe handling:

"Pipes were handled and passed according to definite tribal rules. A Blackfoot host handed a pipe to his vis-a-vis or to his left-hand neighbor, who puffed it several times, then passed it on to the left, and this continued until the end of the line was reached. Then the end man either returned the pipe to the host or, more generally, sent it back toward the right, no one who passed it along taking a puff until the last man got it and returned it to the host, who smoked and sent it on a second round as before. Many tribes offered a pipe to the cardinal directions before smoking. In addition to such stereotyped tribal rules there was an infinitude of individual usages. Shoshone doctors removed their moccasins when smoking while treating a patient, and Lewis and Clark were requested to take off theirs among people before accepting a pipe. Some Blackfoot would not smoke while an old pair of moccasins was hanging up; others had to put the pipe on a slice of meat or a buffalo tongue. Presumably such taboos were those imposed by supernatural beings." (125)

Dodge mentions the same general set of forms observed by groups when smoking, and in addition comments that the circular seating arrangement with its set

pattern of pipe passing was in his observation invariably adhered to, even in the open.<sup>126</sup> The Laubins have commented on the same cycle of the smoking of a pipe, and further state:

"In some ceremonies, if the pipe went out before getting all the way around, it had to be returned to the head man for relighting. When the host finally cleaned his pipe and laid it aside, that was a signal that the meeting was over and everyone was expected to get up and go home. The ashes from the pipe were reverently placed on the altar in a neat little pile. It was considered bad luck to sprinkle the ashes about." (127)

Long has noted practices similar to the foregoing for the Assiniboine<sup>128</sup> and Wallace & Hoebel have outlined similar Comanche practices in some detail.<sup>129</sup> Gregg notes a rather special practice:

"If a council be preparatory to a campaign, the warriors sometimes catch the tobacco smoke in the hand, anointing their bodies with it; which they fancy renders them, if not invulnerable, at least far more secure from the darts of their enemies." (130)

In connection with one ceremony, Lowie points out a special procedure following the emptying of the pipe:

"When the pipe had been emptied, the Lighter held it out, saying 'Take your pipe'. Both men then held it, the owner with his left hand first brushing down the Lighter's shoulder to his hand before he took the pipe away, while the Lighter prayed that they might live until such a season." (131)

Individual smoking technique of the Indian also differed from contemporary white practice:

"The Dakota used much less tobacco than white men who smoke, but did not like to be long without their pipes, and when a company were together pipes were passed around frequently. The bowls of the pipes were not very large, but a single pipeful served for ten or fifteen to smoke, though in a company of men, especially of old men, the pipe was passed around at very short intervals. Their pipes were commonly lighted by lighting a small piece of touch wood with flint and steel; and they were so accustomed to this that I have seen them light their pipes in that manner while sitting by the fire." (132)

Writing somewhat later, Dodge says:

"Nor does the Indian smoke like an American. After a few strong pulls to get the pipe well started, and of which the smoke is naturally ejected, he takes several long sucks, carrying the smoke into his lungs. When his whole system is saturated with smoke, he passes the pipe, and for a minute or more, lets the smoke issue lazily from his mouth and nose." (133)

## SPECIAL PIPE AND SMOKING CEREMONIES

Specialized ceremonies in which smoking played a key part have been noted by many writers. West's account<sup>134</sup> contains many important references but he makes little attempt to differentiate the smoking from non-smoking uses of the pipe or to separate the pipe-stem ceremonies from those involving the whole pipe. An attempt will be made here to examine smoking ceremonies, non smoking uses of the pipe, and the various pipestem ceremonies.

The use of the pipe as a symbolic instrument in peace negotiations, with smoking signifying either the agreement to discuss matters, and thus a prelude to negotiations, or as a "seal" to a bargain, is the most popularly recognized of the ceremonial functions of smoking. Many references to "peace pipe" ceremonies exist, fitting one or the other of these patterns. Carver's account from the 1760's<sup>135</sup> and Gregg's account from the southern plains at a much later date<sup>136</sup> are fairly typical examples, respectively.

Intertribal use of a "peace pipe" was probably quite infrequent as compared with its use in settling disputes between individuals of the same tribe or band. Lowie relates an incident late in the tribal days of the Crow, in which a peace-pipe was used to avert the attempts of the father of a slain youth to arouse his clan to vengeance upon the murderer.<sup>137</sup> Lewellyn and Hoebel have devoted an aggregate of many pages to incidents of this and related types of use of the pipe in their study of Cheyenne law ways.<sup>138</sup>

While not as widely understood, the use of the pipe in relation to warfare has often been mentioned. Alexander has neatly summarized the main functions of, and additional reasons for recognizing the pipe as a frequent symbol of war:

"The Kiowa, for example, employed a red pipe as a symbol for enlistment in a war-party: the organizer of the expedition sent this pipe to the several war societies, and while no man need accept it, to take and smoke it was the pledge of participation. Pipes of war and peace are mentioned from early times onward, so that it is clearly in the part of a misunderstanding to name the ceremonial pipe the 'pipe of peace'. In many uses it was so, and it is possible that this was its first and widest employment; but the mere fact that the pipe and its smoking, and in the main the cultivation of tobacco, were in the hands of men and warriors, with the women excluded, indicates that it was from early times much more than a symbol of peaceful pledges or intentions." (139)

As in other functions, individual tribal usages of the pipe by war-parties varied considerably, as may be noted by comparing the practices of the Comanche described by Wallace & Hoebel in the following passage with that of the Cheyenne outlined by Lewellyn & Hoebel in the next one:

Comanche:

"The leader carried a sacred pipe. When the evening meal was over, the pipe was formally filled, lighted and, after the usual offerings to the spiritual powers, passed to each warrior in turn. Then the leader talked to his men, telling them of the country, the best routes, and the safest places of retreat, giving them advice and telling them how they should



act. Sometimes they sang. Perhaps before going to sleep the leader sang a spiritual song - a prayer to the guardian spirits for help and wisdom. Occasionally the leader might carry the pipe and have the man dance at night along the route. Ishatai carried the pipe around and had each society dance every night while on the way to Adobe Walls in 1874." (140)

Cheyenne:

"The leader's pipe was always filled before they left camp, but it was not smoked until the enemy was seen or their tracks reported." (141)

Literature of the period has many references to "sending the pipe around" to secure aid in warfare. Lowie gives a good illustration by describing the use of the pipe to secure a pledge to participate in a vengeance raid on another tribe.<sup>142</sup>

The connection of the pipe with the preparation for raids left its mark on the customs, language and art of the plains tribes as is illustrated by these examples: "Being the pipe-owner (i'ptse-ake') or raid-planner (akdu' xigyutsgye) was the fourth deed that counted toward the chieftainship;"<sup>143</sup> "Naturally, symbolic expressions appear again and again that are transparent to any Crow, but presuppose knowledge of native custom. Thus 'returning with blackened face' means triumph, 'having one's moccasins made' indicates getting ready for a raid, 'carrying the pipe' is equivalent to being captain of a party."<sup>144</sup> Referring to tipi decoration Laubin indicates: "smoking pipes on that on the right. They show that the owner has 'carried the pipe', meaning that he has been the leader of war parties."<sup>145</sup>

The pipe figured prominently in the activities of the men's societies. Lowie mentions the use of the pipe in cementing an alliance between the Foxes and the Muddyhands (both Crow societies) in about 1865 to 1870.<sup>146</sup> Within a society, it was noted that "If a member failed to attend a club meeting, the bu'ptsake all went to his lodge and stood there until his father came out and mollified them with a pipe or a gift of food."<sup>147</sup> In the spring reorganization of the societies "old men offered a pipe to various young men, and those who smoked it were pledged to special bravery."<sup>148</sup> Lowie describes in other passages the use of the pipe to pledge a man to the duties of offices of the societies.<sup>149</sup>

Mandelbaum says that: "Tobacco was sent with every invitation or important message. Smoking the tobacco signified acceptance of the invitation or assent to the proposition stated in the message."<sup>150</sup>

Dodge describes the use of smoking in the function of casting lots to select a man for some special duty: "The pipe is filled, lighted, and passed from hand to hand with a certain regularity. The man in whose hands it goes out is the person indicated by the medicine for the service."<sup>151</sup>

Laubin observed the use of certain smoking ceremonies as a part of a sweat-lodge ceremony.<sup>152</sup>

Among the non-smoking functions of the pipe, Alexander mentions the bearing

of a pipe by the watcher in the Sun Dance.<sup>153</sup> Jablow, quoting from Henry and McKenzie, describes the use of the pipe in trade ceremonies on the upper Missouri. The pipe was placed between the trading parties, and the trade goods were placed beneath or near it.<sup>154</sup> Lowie mentions the use of the pipe in several Crow ceremonies,<sup>155</sup> and gives this description of the use of the pipe by the Crow in a sense as an instrument of magic:

(from Grandmother's-knife's narrative): "We were going to kill an enemy, but no one left the hostile camp. A man named Cuts-the-bear's-ear made medicine, using his pipe. He was going to hook an enemy with his pipe and bring him out. He sang a song, made a motion with his pipe, made a drawing of a man on the ground, and laid his pipe on it. 'Someone will come out', he said. They looked for a while, then a man came toward the mountains riding a sorrel horse. 'There's one man coming.' He got to the foot of the mountains. We chased the man toward camp and killed him." (156)

Keating, writing in the 1820's noted the use of the pipe in a child-naming ceremony by some of the eastern Dakota.<sup>157</sup>

#### THE PIPESTEM IN CEREMONY

The calumet ceremony of the tribes immediately around the Great Lakes and extending down the St. Lawrence and over into the Ohio valley is outside the scope of this paper. However, the various descriptions of the calumets and their accompanying rituals lead one to believe that there may have been some mutual antecedent for this ceremony and the pipestem ceremonies of the central plains tribes.<sup>158</sup>

Typical of the pipestem ceremonies of the central plains is the "adoption" ceremony described in the following passages:

"A ceremony known in some form by all the tribes in North Dakota in historic times is related to smoking; this is the 'medicine-pipe' rite, called Pirishkuni by the Arikara, Hako by the Pawnee, and Hunka by the Dakota. This ceremony employed.....two pipestems, with or without bowls, ornamented with eagle feathers, woodpecker heads, and duck heads. Forms of this rite were used for adoption, for conferring honor upon a beloved child, and for cementing intertribal friendships, especially for the purpose of trade." (159)

Alexander comments on the same set of ceremonies,<sup>160</sup> and Wissler adds the Omaha and Osage to the tribes using them.<sup>161</sup> As mentioned earlier in this paper, Laubin was careful to differentiate the non-functional adoption ceremony pipestems from the functional smoking pipestems.<sup>162</sup>

On the northern plains from early historic times, there were other ceremonies in vogue. Wissler says:

"...among some of the Cree and the Blackfoot, a more realistic ceremonial pipe is still venerated. The white people call it a medicine pipe. These pipestems are kept in bundles, formerly of nicely tanned skins but now of fine cloth, with a number of ceremonial objects to

serve as accessories in the demonstration of the ritual associated with the pipe. Curiously enough, a pipe bowl is rarely found in the bundle, but when it is to be unwrapped a stone pipe bowl of suitable size is brought in for the occasion. This pipe is really smoked at the appropriate point of the ritual. Nevertheless, it is the stem that is symbolic and in that sense sacred. ....These pipes are used neither in councils, feasts, nor in making peace; an ordinary large decorated pipe is considered sufficient for such occasions. Again, the power symbolized in these medicine pipes is believed to guard the welfare of the people, particularly its keeper, his household and everyone who prays to it. In the few rituals concerning which we have information, the basic idea seems to be that the Thunder gave these pipes as a pledge that he would spare and otherwise protect those associated with them."(163)

And further:

"A system of transfer had been evolved according to which bundles and rituals could be passed on to another person in return for gifts of property in horses, clothing, etc." (164)

and Ewers elaborated on the function of and the ceremonies surrounding these pipestem bundles:

"Each year thereafter, the medicine pipe was opened shortly after the first thunder was heard in the spring. In his ritual the medicine pipe man carried his sacred pipe out of the lodge, raised it toward the sky, and prayed for the welfare of his people and that no one in his camp would be killed by thunder (lightning) that year. The pipe bundle was also opened when a camp member in fulfillment of a vow to have the ritual performed should a dear one recover from sickness or survive dangers on the warpath, made a payment of valuable possessions to the medicine pipe man. It was opened when the tobacco in the bundle was renewed and when it was transferred to a new owner. The highly respected medicine pipe men were easily recognized by their peculiar hair dress. Each let his hair grow long and wore it gathered in a large forward projecting coil over his forehead. These men played an important role in camp movements, always leading the moving camp. Their pipes had a unique function in oath taking. A Blackfoot Indian who swore upon the medicine pipe made as solemn a pledge of speaking the truth as the Christian who swore upon the Bible in a court of law. These Indians believed that any man who violated his oath taken upon the medicine pipe would surely die. There were nearly a score of medicine pipe bundles among the three Blackfoot tribes." (165)

Mandelbaum has observed the use of similar bundles among the Plains Cree,<sup>166</sup> Schulenberg mentions a Dakota pipe bundle,<sup>167</sup> and Lowie described one which was an important tribal possession of the Arapaho, being linked with the tribal origin myth.<sup>168</sup>

The piestem was also used among the Crow as an instrument in the treatment of diseases and injuries. Lowie gives a number of accounts of this:

"Bull-all-the-time gained a doctor's powers while asleep in his tipi. He saw a horse fastened to a rope, which was lengthened up to him, and simultaneously heard a person sing. He was told to treat the sick; an old man with a pipestem was standing over a recumbent patient and blew over him through the pipe; the sick man rose and my informant saw all the sickness come out of the patient's blood. He showed me the pipestem thus revealed to him. The horse stood for the horses he was to get as fees." (169)

He goes on to describe a number of applications of Bull-all-the-time's power:

"...In a third case he sucked at a woman's swollen leg with his pipe and made the swelling go down. He could cure spider bites, but not wounds or snake-poisoning. ...Goes-Ahead's technique was similar. In one case of pneumonia he drew out some of the patient's blood with his pipestem and spat it out. Such suction left no mark in the place where the blood was extracted. ...Rheumatism was treated by snake or mole visionaries, who either used suction with a pipe, or burnt incense and rubbed on some tallow." (170)

West cites Schoolcraft on the similar use of a horn tube by the Dakota.<sup>171</sup>

#### CEREMONIAL USES OF TOBACCO OTHER THAN SMOKING

Perhaps the most complex ceremonial non-smoking use of tobacco by any of the Plains tribes was the Tobacco Society of the Crow. Membership in the society was obtained by "adoption" (usually paid for), and it was customary for a man and his wife to become members at the same time. Both men and women participated in the complex rituals of preparation, planting and harvesting. A special variety of tobacco (Nicotiana Multivalvis) was planted by the society. This tobacco was not smoked, but seed was saved for the next planting, and the leaves and stems were cut up and thrown into a creek.<sup>172</sup> Lowie has written a lengthy monograph dealing with this society.<sup>173</sup> Ceremonial tobacco planting by the Blackfoot and the Sarsi has been previously noted.<sup>174</sup>

The use of tobacco for offerings was widespread,<sup>175</sup> with special importance to the Chippewa,<sup>176</sup> and early visitors to the pipestone quarries noted the use of tobacco offerings by Indians engaged in quarrying.<sup>177</sup>

#### USE OF INCENSE

In addition to the smoking of pipes, other uses were made of ceremonial smoke. Wissler says "The burning of incense, including the highly original use of tobacco, was almost universal."<sup>178</sup> Schulenberg states that "In many rituals smoke was produced by sprinkling sweet-grass, sage, or juniper on live coals as incense."<sup>179</sup> Mandelbaum details the use of incense by the Plains Cree:

"The sweetgrass smudge was a universal component of all ceremonial practices, except the mite wiwin. The grass (Savastana odorata) was gathered when long and plaited into braids. Before and at frequent intervals during every ritual, a bit of dried grass was broken off

onto live coals. The resultant aromatic smoke was regarded as a purifying agent, as a means of dispelling mundane atmosphere and substituting an odor pleasing to super-naturals. Pipes which were to be offered were held over the smoke. All ceremonial accessories had to be passed through the incense. If a sacred bundle were to be handled, those who were to touch it washed their hands in the smoke and drew it over their bodies. Pine needles and the stalks of a variety of grass called 'raven stick' were also burned for this purpose. Special altars for the smudge were not made." (180)

Kehoe has noted the burning of sweet pine and other aromatics in special clay vessels before a medicine bundle when preparing to open it.<sup>181</sup>

#### SUMMARY

Numerous evidences have been found of pipe smoking by late prehistoric dwellers of the eastern plains. When the equestrian "buffalo hunters" of historic times entered the plains taking up this new way of life, they brought with them smoking customs and ceremonies and the material accessories thereof.

A gradual change in pipe styles seems to have accompanied changes in methods of manufacture and the growth of trade. Throughout the historic period, the "Siouan" and "Plains Pipe" styles seem to have dominated the plains except in the extreme north where the micmac type of pipe was popular with the Blackfoot and the Cree. Throughout the entire period the primitive tube pipe seems to have continued in use for certain ceremonies among most of the western plains dwellers. The elbow pipe also saw widespread use. Pipe bowls were made of many materials, but red or black stone were favored, and a trade in these commodities grew up.

The pipe had a broad set of uses, with smoking a part of or a prelude to most important social and ceremonial functions.

Principal non-smoking uses of the pipe were the pipestem centered adoption-ceremonies of the central plains and some of the pipestem bundle ceremonies of the northern plains. There was a good deal of blending of ceremonials along the "border areas" of usage.

Tobacco culture and trade in tobacco and other smoking materials was widespread. Among certain tribes special ceremonial tobacco planting was done.

Both pipes and tobacco figured notably in medical and magical practices.

Pipes and smoking and related articles and ceremonies are so thoroughly interwoven with plains Indian cultures that much further detailed research is necessary if one is to be able to adequately interpret these subjects.

## NOTES

1. George E. Hyde, Indians of the High Plains, and Waldo R. Wedel, Pre-historic Man on the Great Plains, both associate many of these peoples with later Apache tribes.
2. Jesse D. Jennings, The Archeology of the Plains, p. 58-59.
3. Wedel, op. cit., p. 113.
4. Jennings, op. cit., p. 58-59 and Wedel, op. cit. p. 106
5. Wedel, op. cit., p. 89-92.
6. Wedel, op. cit., p. 176, and Donald J. Lehmer, "Archeological Investigations in the Oahe Dam Area, South Dakota, 1950-51" River Basin Surveys Papers #7, pp. 108, 128, 153, 156, 146.
7. George A. West, Tobacco, Pipes and Smoking Customs of American Indians pp. 205-216.
8. Lehmer, op. cit.
9. Carlyle S. Smith and Roger T. Grange, Jr., "A Winter Village in Fort Randall Reservoir, South Dakota, the Spain Site," River Basin Surveys Papers #11, p. 109.
10. Wedel, op. cit., p. 222.
11. Jennings, op. cit.
12. Wedel and Hyde in the works cited above have given an ample discussion of this.
13. Wedel, op. cit., p. 222.
14. Wedel, op. cit., p. 222.
15. Ernest Wallace and E. Adamson Hoebel, The Comanches, p. 98.
16. Joseph D. McGuire, Pipes and Smoking Customs of the American Aborigines, pp. 383-384.
17. McGuire, op. cit., p. 483-484.
18. Ralph Linton, Use of Tobacco Among North American Indians, p. 12-13.
19. Correspondence with Margot Liberty, Crow Agency, Montana, May-Sept., 1961.
20. West, op. cit., pp. 212-216.
21. West, op. cit., p. 278.
22. West, op. cit. 227.
23. McGuire, op. cit., pp. 483-484.
24. West, op. cit., p. 315.
25. *ibid.*
26. Robert H. Lowie, Indians of the Plains, pp. 28-29.
27. David G. Mandelbaum, The Plains Cree, p. 216.
28. Wallace & Hoebel, op. cit., p. 98.
29. West, op. cit., pp. 268-270, 278-279, 285, 288, 327.
30. West, op. cit., pp. 281-282, and McGuire, op. cit., pp. 579-580.
31. The Science Museum of St. Paul, Pipes and Pipestone, Indian Leaflets #11 and 12.
32. George Catlin, North American Indians, p. 165.
33. Frank B. Mayer, With Pen and Pencil on the Frontier in 1851, p. 124.
34. Robert H. Lowie, The Material Culture of the Crow Indians, p. 233.
35. Edwin T. Denig, Five Indian Tribes of the Upper Missouri, p. 127.
36. Robert H. Lowie, Indians of the Plains, p. 57.
37. Carrie A. Lyford, Ojibwa Crafts, pp. 39-40.
38. W. Vernon Kinietz, Chippewa Village, p. 222.
39. Mandelbaum, op. cit., p. 216.
40. West, op. cit., part II.
41. James L. Long, The Assiniboines, p. 92.

42. Wedel, op. cit., p. 129.
43. Wedel, op. cit., p. 189.
44. Wallace & Hoebel, op. cit., p. 98.
45. Wedel, op. cit., p. 96, 140, 146, 147.
46. Carrie A. Lyford, Ojibwa Crafts, p. 39-40.
47. Wallace & Hoebel, Comanches, p. 98.
48. West, op. cit., pp. 246 and 325-326.
49. West, op. cit., pp. 333-352 and pp. 249-251.
50. ibid.
51. James Boyd Hubbell, "Notes by Judge Hubbell," The Dakotan, May, 1902, p. 15-16.
52. Lyford, Ojibwa Crafts, p. 39.
53. Wallace & Hoebel, op. cit., p. 98.
54. Mandelbaum, op. cit., p. 216.
55. Marquette, quoted in Alexander, The World's Rim, p. 6.
56. J.N.B. Hewitt, writing in Handbook of American Indians, p. 194, and referring to the Charlevoix journal of 1761.
57. Catlin, op. cit., V.I., p. 165-166.
58. Mayer, op. cit., p. 124.
59. ibid.
60. Clark Wissler, Indians of the United States, p. 46-48.
61. Raymond F. Schulenberg, "Indians of North Dakota" reprint from North Dakota History, v. 23 #3 & 4, p. 53.
62. Reginald and Gladys Laubin, The Indian Tipi, p. 148, fig. 31.
63. Wissler, Indians of the United States, p. 46-47.
64. John C. Ewers, The Blackfeet, p. 173.
65. ibid.
66. Mandelbaum, op. cit., p. 259.
67. ibid.
68. West, op. cit., p. 265-267.
69. Mandelbaum, op. cit., p. 216.
70. Linton, op. cit., p. 19.
71. Joseph Jablow, The Cheyenne in Plains Indian Trade Relations 1795-1840, p. 82.
72. John C. Ewers, "Indian Trade of the Upper Missouri Before Lewis and Clark" Missouri Historical Society Bulletin, v. X, #4, p. 440.
73. Teit, James A., "The Salishan Tribes of the Western Plateaus," p. 23-396, 45th Annual Report, BAE, quoted in Jablow, op. cit., p. 13.
74. Lowie, Material Culture of the Crow Indians, p. 233-234.
75. Mandelbaum, op. cit., p. 216.
76. See extracts from Prescott's manuscript in the Report of an Archeological Reconnaissance at Pipestone National Monument by Paul Beaubien, Region 2 NPS Archeologist, PNM files.
77. Francis Parkman, Journal, as quoted in Exploring the Northern Plains, McGarling.
78. William G. Johnston, Experiences of a Forty-Niner, p. 165.
79. West, op. cit., p. 227-338.
80. Holmes, op. cit., p. 263.
81. Letter from Alice M. Johnson, Archivist, Hudson's Bay Company to Mr. F. B. Taunton, London, dated 28 April 1961.
82. Hubbell, op. cit.
83. History of Minnehaha County South Dakota, p. 307-309.
84. Schulenberg, op. cit., p. 53.
85. Clark Wissler, The American Indian, p. 13.

86. Lowie, Indians of the Plains, p. 26.
87. Rev. Samuel W. Pond, "The Dakotas or Sioux in Minnesota as they were in 1834," Collections, Minnesota State Historical Society, 1908, Vol. XII, p. 438.
88. Lowie, Indians of the Plains, pp. 26-27.
- 89-92. *ibid.*
93. *ibid.*
94. *ibid.*
95. Robert H. Lowie, The Tobacco Society of the Crow Indians.
96. J. D. McGuire, "Tobacco" in Handbook of American Indians (ed. F. W. Hodge), pp. 768-769.
97. Catlin, *op. cit.*, p. 263.
98. Schulenberg, *op. cit.*, p. 53, Mandelbaum, *op. cit.*, 216, Handbook of American Indians, *op. cit.*, p. 768; and Lowie, Material Culture of the Crow Indians, p. 234.
99. Lowie, Material Culture of the Crow Indians, p. 234.
100. Handbook of American Indians, p. 768, this and most translations of the term approximate "that which is mixed by hand."
101. Information obtained in conversation with Harvey Derby, PNM laborer, (Sioux) at Pipestone National Monument, 20 May 1961.
102. Catlin, *op. cit.*, p. 165.
103. Carrie A. Lyford, Quill and Beadwork of the Western Sioux, p. 26.
104. Lowie, Indians of the Plains, p. 146.
105. Mandelbaum, *op. cit.*, p. 216.
106. Lyford, Ojibwa Crafts, p. 103.
107. N. H. Winchell, Aborigines of Minnesota, pp. 488-489.
108. Wallace & Hoebel, *op. cit.*, p. 96.
109. See Pipestone National Monument, Museum Catalog file C-90.
110. Mandelbaum, *op. cit.*, p. 216.
111. Thomas F. Kehoe and Alice B. Kehoe, "A Probable Late Blackfoot Clay Vessel" Plains Anthropologist, v. 6 #11, pp. 43-44.
112. Mandelbaum, *op. cit.*, p. 216.
113. Lowie, Material Culture of the Crow, p. 234.
114. Lowie, Indians of the Plains, pp. 27-28.
115. Pond, *op. cit.*, p. 439.
116. Mandelbaum, *op. cit.*, p. 216.
117. Lowie, Material Culture of the Crow Indians, p. 234.
118. Col. Richard I. Dodge, 33 Years Among Our Wild Indians, pp. 129, 130.
119. *ibid.*
120. *ibid.*
121. Josiah Gregg, Commerce of the Prairies, p. 413.
122. Lowie, The Crow Indians, p. 256.
123. Wissler, Indians of the United States, p. 271-272.
124. Dodge, *op. cit.*, p. 130.
125. Lowie, Indians of the Plains, pp. 28-29.
126. Dodge, *op. cit.*
127. Laubin, *op. cit.*, p. 93.
128. James L. Long, The Assiniboine, p. 57-58.
129. Wallace & Hoebel, The Comanches, p. 180.
130. Gregg, *op. cit.*, p. 414.
131. Lowie, The Crow Indians, pp. 11-12.
132. Pond, *op. cit.*, p. 439.
133. Dodge, *op. cit.*, p. 130.



134. West, op. cit., pp. 231-263.
135. Carver, op. cit., pp. 281-282
136. Gregg, op. cit., pp. 415-416.
137. Lowie, The Crow Indians, pp. 11-12.
138. Llewellyn and Hoebel, The Cheyenne Way, pp. 7, 8, 1, 11, 47, 135, 136, 190-193, 201-202, 320-321, 339.
139. Alexander, op. cit., p. 22.
140. Wallace & Hoebel, op. cit. pp. 255-256.
141. Llewellyn & Hoebel, op. cit., p. 14
142. Lowie, The Crow Indians, p. 223.
143. ibid., p. 216.
144. ibid., p. 118.
145. Laubin, op. cit., p. 164.
146. Lowie, The Crow Indians, p. 200.
147. Lowie, The Crow Indians, p. 204.
148. Lowie, The Crow Indians, p. 194.
149. Lowie, The Crow Indians, pp. 175-177 and 185.
150. Mandelbaum, op. cit., p. 288.
151. Dodge, op. cit., p. 130-131.
152. Laubin, op. cit., pp. 108-109.
153. Alexander, op. cit., p. 24.
154. Jablow, op. cit., pp. 46-48.
155. Lowie, The Crow Indians, pp. 281 and 317.
156. Lowie, The Material Culture of the Crow Indians, p. 257.
157. Wm. H. Keating, Narrative of an Expedition, p. 421.
158. West, op. cit., pp. 231-263, and Wissler, Indians of the United States, pp. 45-46.
159. Schulenberg, op. cit., p. 53.
160. Alexander, op. cit., p. 101.
161. Wissler, Indians of the United States, pp. 45-48.
162. Laubin, op. cit., p. 148.
163. Wissler, Indians of the United States, pp. 46-47.
164. Ibid. 105-106.
165. Ewers, The Blackfeet, pp. 172-173.
166. Mandelbaum, op. cit., p. 259.
167. Schulenberg, op. cit., p. 52.
168. Lowie, Indians of the Plains, pp. 171-172.
169. Lowie, Crow Indians, p. 246.
170. Lowie, Crow Indians, p. 64
171. West, op. cit., p. 147.
172. Lowie, Indians of the Plains, pp. 172-177.
173. Lowie, The Tobacco Society of the Crow Indians, p. 148.
174. see p. 22.
175. Wissler, The American Indian, p. 215.
176. Kineitz, op. cit., pp. 107-108.
177. Catlin, op. cit., p. 230, v. II.
178. Wissler, The American Indian, p. 215.
179. Schulenberg, op. cit., p. 53.
180. Mandelbaum, op. cit., p. 292.
181. Kehoe, op. cit., p. 43-44.

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## THE MINNESOTA PIPESTONE QUARRIES

Lying astride the valley of Pipestone Creek, a tributary of the Big Sioux River, in southwestern Minnesota, are the noted Pipestone Quarries. Here, sandwiched between layers of hard Sioux quartzite is exposed a roughly foot-thick deposit of relatively soft, easily worked red stone, so widely popular on the northern plains in historic times for the making of ceremonial pipe bowls. The catlinite as the stone is commonly called, was probably metamorphosed from an ancient clay deposit at the same time the adjacent sandstone beds were changed to quartzite. It is probably that when initially discovered by aboriginal workmen, the catlinite (which with the associated quartzite layers slopes downward toward the east from its point of exposure in the quarries) was exposed at or near the ground surface for nearly the entire length of the now mile-long quarry line.

The earliest occurrence of catlinite in reasonable quantity in archeological finds of the upper midwest seems to be in Oneota sites (Iowa and Oto tribes), frequently those associated with some of the earliest white trade-goods. This and the limited amount of archeological evidence directly obtained from the quarry area tends to point to a beginning of quarrying in the area in the period roughly around AD 1600.

With the domination of a vast area of the surrounding prairies by the Sioux sometime after 1650, quarrying of and trade in stone apparently increased, it being an important commercial item of intertribal trade during the period 1750-1860.

It seems probable that fur traders visited the area as early as the second quarter of the eighteenth century but no historical proof of visits is available. The two earliest visitors of record are the noted trader, Philander Prescott, in 1831 and 1832, and of course George Catlin in 1836. More important was the visit of the first official representatives of the U. S. in the persons of J. N. Nicollet, John C. Fremont and part in 1838. In 1849, stone was procured from the quarry to be sent as Minnesota Territory's contribution to the state and territorial representative stones of the Washington Monument.

Attendant to the disturbances arising out of settler-Indian friction on the eastern plains, the quarries were visited by captives, refugees and by numerous military parties in the period 1857-1865.

While the Sioux continued to dominate the pipestone trade up to the beginning of actual settlement in the area, several sizeable ventures in pipestone quarrying by whites occurred in the period 1864-1871.

Reserved to the Yankton Sioux in the treaty of 1858, the quarries became the subject of frequent litigation involving settlers, railroads, government and of course the Indians. At one point in 1887, troops were used to remove squatters from Pipestone Reservation.

With the building of an Indian School within the reservation limits in the early 1890's the area was brought under Indian Bureau control and administration although title to the land itself did not belong to the government.

Negotiations and litigation over the quarry title extended intermittently from 1893 through 1929, when the Yankton claims were paid off by the title to the quarries passed to the Government, thus effectively abrogating the 1858 treaty.

A considerable amount of quarrying was apparently done by the Yanktons up through about 1898, with only occasional visits by small groups of that tribe after that time.

Most of the quarrying during the present century has been by persons who were members of or related to the group of Christian Sioux settlers of various tribes in the Flandreau area of South Dakota, some of whom are now settled in the town of Pipestone. These people did some quarrying in the 1890's, but actually quarried without the right to do so until the act establishing Pipestone National Monument in 1937 opened up quarrying to all Indian tribes.

Following the acquisition of the land title by the Government, considerable local interest was aroused, resulting in the eventual Congressional action to establish a portion of the quarry area as a National Monument in August, 1937.

From 1940 through 1947 the area was manned seasonally by the National Park Service. In 1948, the first full-time NPS employee was assigned to the area, and a continual program of development of visitor facilities, and expansion of visitor services has followed, highlighted by the opening of a visitor center including museum exhibits and an audio-visual program in 1958.

With the closing of the Indian School in 1953, additional lands including portions of the quarries were finally transferred to the monument in early 1957.

SOME NOTES ON PIPE-MAKING STONE AND PLACE NAMES IN AND NEAR THE PLAINS

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The eminence of the pipe in Indian ceremony, and the propensity of Anglo-Americans for assigning place-names of at least supposed aboriginal derivation have worked together to leave a number of pipe associated names on the maps of the northern plains and surrounding territory.

Brought to prominence by widespread trade in catlinite over the plains in historic times, and also by the writings of Catlin,<sup>1</sup> Longfellow,<sup>2</sup> White,<sup>3</sup> and Hayden,<sup>4</sup> through the latter two-thirds of the 19th century were the Pipestone Quarries of southwestern Minnesota. With the intensive settlement of the surrounding farm lands, the name Pipestone was widely used, being attached to the creek flowing through the quarry area, to the county surrounding the reservation,<sup>5</sup> to the nearby "Pipestone City" (now simply Pipestone),<sup>6</sup> and the usual host of associated institutions.

George A. West<sup>6</sup> and S. A. Barrett<sup>7</sup> brought the attention of geologists and ethnologists to the extensive "Pipestone Quarries" of Barron County, Wisconsin. Probably of greater importance than the limited publicity they have received would indicate, these quarries are located in a region sparsely settled following logging operations.<sup>8</sup> They yield a stone somewhat similar (when in a finished state) to catlinite.<sup>9</sup>

These, however, are not the only places or place-names associated with aboriginal pipe-making.

South Central Canada is well supplied with such place names.

The eastern end of Rainy Lake received the waters of a small stream called Pipestone Creek. The bed of this stream has been stated to be the source of a very soft, blue-gray stone (probably a shale), locally thought to have been used for pipe-making by Indians of the district.<sup>10</sup> A Pipestone Creek rises in Saskatchewan and flows generally southeastward emptying into Oak Lake in Manitoba and the town of Pipestone, Manitoba is named after this stream. Two possibilities for the origin of this place-name have come to light. It was said by Palliser to have been so named by Indians who had come from the Pipestone region of Minnesota.<sup>11</sup> This stream flows through a region of Pierre shales of the Cretaceous period.<sup>12</sup> It would seem that the name may have risen from this connection, since many pipe-bowls from all across the plains were made of light colored shale. An occasional one of these is seen in its original color, but most were blackened by greasing them and heating over a fire.<sup>13</sup> Joshua Wetsit (First-to-Fly), an Assiniboine informant from Wolf-Point, Montana, states that he has made such pipe-bowls in recent times.<sup>14</sup>

A Pipestone Lake lies along the Nelson River in Manitoba but no associated information is available on the place-name.<sup>15</sup>

Recently reported is a Pipestone Island in the Nipigon River, Ontario. The basis for this name has not yet been determined.<sup>16</sup>

Montana has a number of pipe-related place-names.

A few miles southeast of Butte there is a stream called Pipestone Creek. It has a small tributary called Little Pipestone Creek. In the same general area is a place called Pipestone Springs. These places reputedly have their name-origin in aboriginal quarries located near the head of the main branch of Pipestone Creek.<sup>17</sup> This stream drains into the Jefferson River.

Pipe Creek, a tributary of the Kutenai River near Libby, Montana, is definitely named because of extensive deposits of a banded siliceous argillite quarried there up to recent years by the Kutenai Indians, and used for the making of pipe-bowls.<sup>18</sup>

In South Dakota, a stream called Black Pipe Creek rises in the northwestern part of the Rosebud Indian Reservation (Brule Sioux), and flows north to join the White River. Informants in the area state that deposits of Pierre shale were quarried there by the Sioux for making many of their black (actually blackened) pipes.<sup>19</sup>

One of the tributaries of the James River in North Dakota is called the Pipestem River. It was formerly called Pipestem Creek.<sup>20</sup> One source also says that the name originated from the shape of the stream when viewed on a map.<sup>21</sup> This same source states that Indians once quarried an unidentified type of stone from its banks in the vicinity of Jamestown. It occurs to the writer that the name may derive from the use of ash, willow or other wood from along its course for the making of pipestems.

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THE HELL GAP SITE, WYOMING  
Geological Sketch  
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January 19, 1965

It is not known when the present dissection of the Hell Gap area began, but the natural exposures and those of subsequent excavations at the Hell Gap Site have revealed the complex sequence of alluvial and eolian deposition and erosion shown in the accompanying generalized cross section. Except for weathered alluvial gravels occupying terrace remnants standing above the present valley floor, the earliest Quaternary sediments are buried, fluvial gravels and mudstones (units A and B) that reflect more competent stream conditions than have existed there in the past 13,000 years. Deposition of these sediments on bedrock of Precambrian granite was probably coeval with the last Wisconsin glaciation of the Continent.

After an apparent period of stability and weathering, the earlier units were buried by yellow silts believed to be part alluvial (unit C) and part eolian (unit D). The loess, unit D, occurs throughout the area and was apparently deposited as a blanket some time between 11,000 and 12,000 years ago. Both mammoth remains and the fluted Clovis projectile points, although not in direct association, have been found in this unit not far from the Hell Gap Site. Tan silts (units E and F) disconformably overlying unit D are part of an eroded terrace and are believed to be derived partly from alluvial redeposition of older silts and partly from eolian deposition. Unit E contains discontinuous, superposed, carbonaceous layers associated with Midland, Agate Basin, Hell Gap, Alberta, Eden and Scottsbluff artifacts and is between 8,500 and 11,000 years old. Unit F includes Frederick artifacts suggesting deposition between 7,000 and 8,500 years ago. It also contains a gravel facies occupying the channel of a stream that has removed parts of earlier cultural horizons.

After a period of stability and weathering indicated by a paleosol developed in unit F, erosion truncated the soil and a new channel was formed in which the gravel, sand, and silt of unit G was deposited sometime after 7,000 years ago and as late as 1,000 years ago. A brown soil, developed on the unit G terrace, has been truncated by recent stream dissection which has left a low terrace standing a few feet above the modern gravel bed of the present stream. This ephemeral stream drains approximately two square miles and flows several feet deep about once every two years.

Archaeological Sketch  
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The archaeological record at Hell Gap consists of a series of industries which record the intermittent occupation of the Valley over the last 10,000

years. These industries are divided into three periods. The first of these periods consists of complexes assignable to the Paleo-Indian occupation of the Plains. Each of these complexes contains a distinctive form of projectile point, in general named for the type locality where it was first found in situ. These projectile points are lanceolate in outline, without notches or barbs, and are marked by excellent flaking of several different styles. These industries cover a period when extinct bison (Bison Antiquus and Bison Occidentalis) were hunted and which ended about 5,000 B.C. This end was more or less coincident with a climatic change, the beginning of the Altithermal.

The tool kit associated with these weapon tips includes end scrapers, side scrapers, bifacially flaked tools such as knives, notched and serrated tools, and perforators. The latter are often multiple and of diminutive dimensions. This tool kit remains largely the same through time though there are differences in the frequency of certain tool types. The latest complex of the period (Frederick) is somewhat distinct from earlier assemblages in containing certain different knife types, scraper types, and in presenting for the first time a good bone industry. Well carved bone beads are a feature of the latter. In addition, stone circles occur, outlining what was once probably some form of shelter, probably brush. That these stone circles represent habitations is suggested by the distribution of the associated hearths, flaking debris, tools and faunal remains over the living surface.

There is a shift in the choice of local materials for manufacturing artifacts through the period, from the cherts used primarily in the earliest complexes to the fine-grained quartzite employed in the Frederick industry. Some materials, particularly a highly siliceous chert, dark brown in color, was apparently traded into the area, as its nearest known sources are in North Dakota and in gravel bars along the Missouri River. This very fine material was used for a significant proportions of the artifacts, especially in the Hell Gap industry. Blanks of preforms for projectile points occur in abundance in all levels, and are similar to those found at local quarry sites.

The fauna represented at the site for this period includes many other animals besides bison. Elk, deer, rabbit, and various rodents are all represented. Undoubtedly they formed a significant portion of the diet of the inhabitants. During the period, there is a trend toward decreased dependence on bison. In addition, in the Frederick complex, determined effort was made to crush all the longbones presumably to extract marrow. This had been done only to a limited extent earlier. There is also some evidence, in the presence of mullers, that seeds and other vegetal foodstuffs were prepared at least as early as Hell Gap times.

The second period of occupation is only sparsely represented at Hell Gap in its earliest phase. However, a site covering this time is under investigation at nearby Patten Creek. The earliest industry of the group has a new tool kit, with notched projectile points, different end scrapers, side scrapers and knives. The presence of drills is noted for the first time. The bison remains are all of modern type (Bison bison). The other faunal elements, especially deer, form an increasingly large proportion of the debris recovered.

The latest part of this period sees a proliferation of projectile point forms, and the presence of numerous stone circles identified as remnants of habitations. There is a proportional increase of Bison bones in the faunal debris of the complexes assignable to the late part of the period.

The third period begins with the introduction of true arrow points, signifying the introduction of this new weapon. Slightly later, pottery is found. This period lasts between 800 A.D. and Historic times.

RESUME OF CULTURAL COMPLEXES AT THE HELL GAP SITE  
Guernsey, Wyoming  
May, 1965

Hell Gap comprises three major stations within a gently sloping valley along the eastern slope of the Haystack Mountain range of eastern Wyoming. The geographical situation and the supply of water, proximity to extensive chert quarries (part of the famous "Spanish Diggings"), and access to both the Plains and Montane biomes made this region an ideal home for Early Man. The cultural sequence both at the Hell Gap Site and within the region is as follows:

1. The earliest, as yet little known, evidence comes from a gravel underlying the major alluvial section. If geological interpretation is correct, this U-Cross Gravel should considerably pre-date 9000 B.C. At this writing, the evidence for man's occupation at this period consists of a few flakes and some charcoal.

2a. PRE-MIDLAND COMPLEX: A level was discovered the past season lying stratigraphically below the Midland Complex. We have a number of tools, but as yet no diagnostic projectile points. Until the complex is better defined, it is referred to as a pre-Midland occupation. It occurs, so far, only at Locality II where it is radiocarbon dated at  $8890 \pm 200$  B.C.

2b. THE MIDLAND COMPLEX: This most interesting complex, found only at Locality II at Hell Gap, was not investigated until 1962, and its study is still in a preliminary stage. The available evidence indicates a well-defined cultural zone with an irregular living surface and numerous stone artifacts, animal bones, and quarry objects. Points are of types that range from classic Midland or unfluted Folsom forms to Plainview varieties. Other artifacts include well-made end and side scrapers, large bifacial blanks for projectile points, and several types of knives. Two radiocarbon dates ( $8,050 \pm 200$  B.C.) from humic deposits indicate the age of Midland to be about 8,300 B.C.

3. THE AGATE BASIN COMPLEX: This complex dated by Carbon 14 between 7300 and 7900 B.C. at other sites and up to 8900 B.C. at Hell Gap Locality III, is more profusely and more completely represented at Hell Gap than at any other known site. Its stratigraphic and chronological position as well as its typology suggests affinities with the later Hell Gap Complex. Materials recovered include a very large number of bones and stone artifacts, fragments of pigment stones, an unique serrated projectile point, possibly with some ceremonial function, and concentrated refuse heaps representing living areas. Although occurring at all localities at Hell Gap, this complex has been extensively investigated only at Locality II. There it can be divided into

2 sequential phases. It is hoped that a detailed analysis of the typology will reveal evolutionary trends within the culture. More work needs to be done to achieve this aim and that of learning the layout of the living surfaces. Besides the characteristic lanceolate Agate Basin projectile points, often handsomely worked, there are numerous tools of many types, including several varieties of scrapers, shaft scrapers, triangular scraper-awl tools, knives, bone artifacts, etc.

4. THE HELL GAP COMPLEX: This complex, was first defined at Locality III in the Hell Gap Valley. A large quantity of workshop debris, animal bones, and some artifacts were removed in 1961, 1962, and 1964. Diagnostic of this complex is the Hell Gap projectile point: a lanceolate point with a convex or straight base and an elongated stem expanding gradually to a widest point well up the body. This produces an almost shouldered appearance more or less like a symmetrical Sandia point. In addition, characteristic objects of the complex include true blades, very large bifacial blanks for points, large fan-shaped scrapers, and well made end scrapers. One hematite bead and a giant grinding stone were also found. This complex has also been excavated at Locality II where a radiocarbon date indicates that it is approximately 10,000 years old (8,050 B.C.)

5a. THE ALBERTA COMPLEX: At Locality I, a rich horizon was excavated in 1964 containing a good tool assemblage, and projectile points of the Alberta type. The principle area for the distribution of these points is prairie Canada. The stratigraphic position of the complex is clear, lying between the Eden-Scottsbluff (Cody) and the Hell Gap Complex below. It is probably ancestral to the Cody Complex and dates about 7000 B.C. Hell Gap represents the only location so far known where the Alberta Complex occurs in a datable context.

5b. THE CODY COMPLEX: This complex, dated at the Hell Gap Site at 6640 B.C.  $\pm$  600 occurs at Localities I and III. It has been intensively investigated at Locality I; it is characterized by Eden and Scottsbluff points, and the distinctive Cody knife. There is evidence of a well-defined living surface with very abundant remains including numerous artifacts. The flint working of this group was truly outstanding, however, and well represents the high point of Paleo-Indian technology. Many fine examples of this work are included in the collection.

6. THE FREDERICK COMPLEX: This complex was defined at the type locality. Locality I of Hell Gap, in an attempt to clarify and replace the somewhat misleading existing term, Angostura. The Frederick horizon, occurring in two levels (the lower dating 6650  $\pm$  300 B.C.) at Locality I presents perhaps the most impressive camp ground remains yet uncovered. It includes a stone circle, no doubt the remains of a brush shelter, several well-defined hearth areas and ochreous zones, numerous artifacts of both stone and bone, refuse piles, and great quantities of workshop debris occurring in neat, visible heaps, from which it is hoped that a better understanding of Paleo-Indian technology can be obtained. Further excavations will take advantage of the prolific character of the material and the unusual opportunity for studying the layout and structure of a Paleo-Indian camp ground. The diagnostic projectile point of the Frederick Complex is a lanceolate, obliquely flaked form, with straight or expanding sides, a concave base, and well-defined

basal thinning. Other distinctive tools include medium-sized triangular knives and side scrapers. Well-made bone awls, several broken specimens of other bone tools, and two beautifully carved bone beads were found. There are grinding stones associated with the complex, giving another clue to the economic orientation.

7. Between the Frederick Horizon at Locality I and the next intensive occupation there is a gap in the sequence from which only a few flakes and sparse artifacts have been recovered. This gap represents primarily the Alithermal period, a period of climatic change which signaled the departure of the Plaeo-Indians from the Plains. However, this gap is filled by a sequence of artifact-bearing horizons at a site not far away, known as Patten Creek. Preliminary work indicates a more or less uniform development of culture during this time (4000-2000 B.C.) The site has both extensive quarry and camp ground materials. The projectile points and other tools suggest strong affinities with a newly defined cultural complex of the same age in Nebraska, the Logan Creek culture. The dates on two hearths found at Hell Gap, (3750  $\pm$  200 B.C. and 1390  $\pm$  200 B.C.) neatly delimit this period.

8. At Boxelder Creek, not far from Patten Creek, we find evidence of the next succeeding culture in the area, the McKean Complex known largely through the excavations of Professor William Mulloy of the University of Wyoming. This cultural group may well represent a return of bison hunting oriented groups to the Plains at the end of the Altithermal. The Boxelder Creek Site has only been partially excavated to date, but the McKean Complex is known to have dated about 2000 B.C.

9. Returning to the Hell Gap Valley, we find in the upper layers at Locality I a single McKean type point, followed by an occupation known to archaeologists of the area as the late Middle Horizon. Evidence recovered shows a rich occupation with numerous campground features, including hearths, stone alignments probably representing the remains of living structures, and workshop areas. A large quantity of bone, stone, and other camp waste was obtained, including numerous artifacts. This occupation yielded characteristic projectile points, T-shaped drills, large, well made triangular knives and end scrapers.

10. The best occupation of the area is found not far from Hell Gap at Whalen Cave. The testing of this site is in the preliminary stage, but promises to yield a good series of bone and stone artifacts, and perhaps some ceramic material.