ARCHAEOLOGY AND THE DENVER
NATURAL HISTORY MUSEUM
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The focus of this thesis is on those systematic archaeological collections held in the Denver Museum of Natural History which were collected in Colorado and associated environs over the last sixty years.

Of the over twenty collections described in this thesis six are composed of Paleo-Indian site materials including those from Dent, Folsom and Lindenmeier. Seven are from Archaic Period locations on the Western Slope and two are multicomponent sites located on the Eastern Slope. Materials from two Peripheral Pueblo areas and two Protohistoric/Historic collections are discussed, along with two Life Collections, one comprised of artifacts from the eastern plains and mountain areas and the other of items from the Buena Vista area and other locales in Colorado and Wyoming. Each collection is considered for its historical importance, content and potential for future research.

It is argued that all systematic archaeological collections, whether provenienced or unprovenienced, are important but often neglected sources for current and future research by archaeologists and other
scientific disciplines. However, these collections are valuable resources only if they have been properly documented, conserved, organized and made accessible by the museums in which they are held, in such a manner that their research value has been maintained.

The value of systematic archaeology collections, both privately and publicly owned, will only increase as the emphasis on excavation decreases. Therefore, it is necessary that both the researcher and the holder of these collections become more involved in their care and support.

The potential problems involved in researching any museum collection and the techniques and methods which have been used by others in this exercise are also addressed in hopes that they will enlighten and encourage interested investigators in systematic collections everywhere and in those held at the Denver Museum of Natural History particularly.
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CHAPTER I

INTRODUCTION

The primary purpose of this thesis is to describe the systematic collections of archaeological materials available in the Denver Museum of Natural History (DMNH) for study, research and exhibit. A systematic archaeological collection is defined by Ford (1977: 5) as being unified by a central theme which gives it internal cohesiveness. A systematic research collection has intrinsic potential for [archaeological] research based on the objects themselves, the documentation of the object [and] the history of circumstances which created the collections. . . . The scientific value of these collections transcends the original basis for its assemblage and permits a range of research objectives to be pursued.

Consequently, not only those systematic collections held at the DMNH, but collections everywhere have definite scientific importance and the potential to yield as much information as the researcher is willing to extract given the proper training, a knowledge of the new techniques and methods available and a problem oriented approach combined with an open mind and a creative imagination.

Second, this report delineates the problems involved in researching systematic collections in museums generally and in the DMNH particularly. It also
discusses the various techniques and methods which not only can be used for research on the DNHM collections but which are applicable to collections in museums everywhere.

Only those systematic collections that were recovered in Colorado and its immediate environs through direct excavation or survey by personnel employed by the Museum or those donated by avocational or professional archaeologists are discussed here. These I call primary source materials.

This study does not cover the vast category of archaeological items purchased by or donated to the DMNH which were not directly excavated or found by the collectors or donors themselves but instead were acquired through sources other than direct survey or excavation such as purchases or trade. These I call secondary source materials.

This does not intend to say that these collections are not important. There is also much information inherent in these but their potential is more limited than the primary source materials but the same techniques and methods described in this thesis can be applied to them with good expectation of results.
Organization

This thesis is separated into six major topics. The first is a historical synopsis of archaeology and its long-term interdependence with museums. The second is a discussion of the problems encountered in most museums when researching both provenienced and unprovenienced collections. The third topic considers the possibilities and potentials existing in the study of all archaeological collections. The fourth describes, in general terms, the archaeological history of the DMNH. The fifth contains descriptions of the systematic archaeological collections held in the Museum, and the final topic concerns the future of archaeology at the DMNH.

This report is not intended to include detailed analyses of the artifacts contained in each assemblage. When specific tool types are mentioned, it is within the general terminology only and is not meant as a definitive typological classification. Further, if artifacts have been listed and described by the collector in available reports or publications, details of these are not included to avoid redundancy. The reports or publications will be cited in the body of this thesis and in the references.
Goals

It is hoped that this study will interest and enlighten those researchers, both professional and avocational, who might hold a legitimate, scientific interest in the archaeological holdings in the DMNH and that it will encourage use of and research in these materials, both in and out of house. It is further hoped that with the evaluations of the problems and potentials involved in working with these collections and of the strengths and weakness inherent in the materials themselves and in the Museum as a whole, the way will have been eased somewhat for that research and further light might be shed on the numerous questions still being asked about Colorado's past.
CHAPTER II

THE HISTORY OF THE INTERDEPENDENCY OF ARCHAEOLOGY AND MUSEUMS

Introduction

"A vast amount of data awaits anthropological research in the huge, tangled puzzles of museum collections . . ." (Sturtevant 1973: 49).

Archaeological material collections in museums are rich, varied and too often untapped sources of valuable information on the past. These collections become more important and more valuable as the realization increases that archaeological sites are limited resources to be conserved, that financial backing is limited and that the one-site-one-graduate student mentality of universities lessens (Thomas 1981). Without this material, much of what there is to learn about many cultures would be lost. Museums are the repositories, the "warehouses" if you will, of our material cultural past. Through this material, archaeologists read of the adaptations, the successes and failures, the evolution and devolutions of cultures and societies over time and of the processes that affected them.
General Historical Relationships

In a sense, archaeology and museums have always gone together, although this association may not have been recognized as such in today's terms. The apparent habit of collecting unusual, interesting and rare objects dates back to the beginning of human curiosity. Along with this habit goes the desire for learning and appreciation of these objects which continues to bring the public flocking to museums (Encyclopaedia Britannica, 1968).

Historical Relationships in the United States

In the United States before the late 1800s archaeology was mostly a pastime for the rich or armchair archaeologists who collected relics for their curio cabinets (Encyclopedia Britannica 1968; Thomas 1979). These private curio cabinets slowly evolved into commercial enterprises available to the public for their amusement and instruction (Osgoode 1979). Perhaps the most famous of these operations was that of P. T. Barnum who had a large collection of anthropological materials. It was not until his museum burned for the second time in 1868 that he turned to circuses as a means of making money and entertaining the public (Osgoode 1979).
In the late nineteenth and early twentieth centuries, the time Willey and Sabloff (1974) call the Speculative Period in American archaeology, archaeology arose as a professional scientific discipline (Thomas 1979). This was a time when the emphasis was on extensive exploration, excavation and collection, especially that which involved vanishing cultures (Thomas 1979). There was a realization that much important information concerning these cultures would soon be lost because of advancing civilization and consequent contact. It was assumed that by extracting all possible information from the dying cultures, threads would then lead to those that had already disappeared. The concern was with obtaining large quantities of material, but little time was spent on scientifically documenting these collections (Matthews 1981).

As a consequence, museums were created and expanded to handle and store this vast amount of material that was pouring in from everywhere. With this, their function ideally changed from one of entertainment to research and education (Osgoode 1981), and the anthropologist and the archaeologist moved into the museums along with their collections (Ford 1977).

This frantic search and gathering of data did not stop in the next stage Willey and Sabloff (1974) label
the Classificatory-Historical Period. This was a time dominated by Franz Boas and his students (Harris 1968). Using the Direct Historical Approach, their goal was a complete description of the materials with a grouping and classification of these artifacts into different typological categories (Woodall 1972). They recognized the particular history of an object—that it would appear, increase in popularity and die—but their analysis was taken no further (Harris 1968; Willey and Sabloff 1974; Woodall 1972). Evolutionary theory was ignored by these historical particularists. Their interests, at least in the first part of this period, focused on developing a cultural chronology and synthesis of specific materials within a culture area and of a particular culture itself, but they did not look into the cultural processes that might be affecting and producing these changes (Willey and Sabloff 1974; Harris 1968).

In the decades before World War II, more and more sites were discovered and a large amount of data were generated as the western part of the United States became more populated and the climate dried. The Dust Bowl effect in the west led to the uncovering of heretofore unknown sites and artifacts; transportation facilities improved and the search for sites and artifacts by
professionals and amateurs alike increased. The Great Depression caused the channeling of federal monies into archaeological projects and enormous amounts of material were collected (Thomas 1979). Some of this material was studied according to the principles of the times, and either sold to private collectors or placed in museums, many of whom immediately put it on exhibit or in storage unresearched and uncatalogued (Cantwell et al. 1981).

However, in the period after World War II, the emphasis in anthropology turned to theories of diffusion, cultural context and function (Willey and Sabloff 1974) and the importance that had been placed on the artifacts themselves decreased (Ford 1977). The end of the fifties left us with a great deal of data and reports filled with descriptions and analysis of the data, but with little cohesiveness or collation of these data into explanatory conclusions (Thomas 1979).

The museums turned inward with a focus on exhibition of these collections and the construction of facilities in which to show them (Ford 1977). This led to better curation and recording practices, but consequently, it also led to a loss in appeal for employment in museums for the archaeologist (Bourque et al. 1980; Thomas 1979). Instead, he went flocking to the universities and to the field as salvage and contract archaeology rose in importance in the following decades.
The period since 1960, the Explanatory Period in Willey and Sabloff's (1974) classification, evidenced a return to scientific investigations with the goals of cultural chronologies, the explanation of past lifeways and cultural process uppermost (Thomas 1979; Woodall 1972). With this new and evolving emphasis on evolutionary, environmental and systems theories, a consequent loss of interest in the cultural materials for themselves alone occurred (Freed 1977). However, in this age of diminishing resources, inflation, new federal laws, the death of the energy boom and the recognized need to save something for future archaeologists to excavate with advanced technologies, methodologies and theories, archaeologists are coming in out of the field. The place to go is into the archives and basements of museums, many of which are not adequately prepared for such an invasion (Bourque et al. 1980).

Museums have been pretty much ignored by scholars, students and professionals over the last twenty years, "reinforcing a subtle, negative attitude on the museums' value of anthropology and diminishing the whole field" (Kane 1985: 52).

Museums today have developed a profession of their own called Museology. This discipline seems more concerned with administration and curatorial practices
which has left them too little time for the study and research of the objects of which they are primarily in charge. Archaeology has taken a back seat to ethnological concerns; but due to changing conditions on both fronts, the archaeologist and the museologist must cooperate in order to benefit both.
CHAPTER III

PROBLEMS IN RESEARCHING SYSTEMATIC
ARCHAEOLOGICAL COLLECTIONS IN
MUSEUMS

Introduction

There are many problems that present themselves to the researcher when setting out to study systematic collections in museums. He may face any or all of these obstacles and should be aware of and alert to these hurdles before beginning if he wishes to make his project a successful one. Many of these are problems that I experienced while researching the collections for this thesis, but they apply throughout the museum world and will be discussed as such here. "Without a doubt, there is a crisis in curation" of systematic collections in museums (Marquardt et al. 1982: 411).

Problems From the Field

In researching some of the collections that were recovered prior to the 1960s, the scholar will find that many of the problems started in the field. In most of the early archaeological work there was little or no real collection strategy, and certainly no research
design outlining techniques or methodologies to be followed by the archaeologist. Collecting was often selective and biased, emphasizing the unusual or spectacular site or artifact (Thomas 1979). There were no real scientific "random" collection policies practiced (with the possible of Spier's at Zuni, see below) so often whatever information was collected was biased. Seemingly unimportant materials were overlooked or unrecognized and left in the field or thrown away. Stratigraphic controls were almost non-existent before the twenties and elemental up through the fifties (Thomas 1979). Locations for many objects often were general only (state, county or even site if one is lucky), but as for exact provenience on or in the site itself, the documentation was often lacking.

Many times the scholar will find a lack of other supporting evidence for these collections as these were not recovered as routinely as they are now (Ford 1977). Remains such as charcoal, wood for tree-ring dating, soil samples, hearth or firepit materials, floral categories such as seeds, nuts or pollen and faunal remains are often overlooked as the value of these data was not yet perceived (Woodall 1979).

There was often poor documentation in the form of fieldnotes, maps, profiles, geologic and environmental
descriptions and final reports. Photography was non-existent in the early days and poorly used later on, and analyses of the materials were often spotty or wrong. Some or all of this documentation may or may not be kept at one institution. Even excellently and methodically documented notes may be difficult for the student to decipher due to bad handwriting or the use of personal shorthand and abbreviations. Wilmsen (1979), for example, had a very difficult time following Roberts' fieldnotes from Lindenmeier and it took him over a year before he finally figured out most of the transcriptions and references contained in them. I had the same trouble in matching the Huschers' designations for their sites with those in the collection.

Without doubt, the systematically collected materials of the last few decades will be easier to research when approached with new hypotheses, but the older collections, whether collected by professionals or amateurs, provenieneced or not, will also prove just as valuable for the information inherent in them (Cantwell et al. 1981).

Problems in the Museums

Once a collection reached a museum, many of the above problems were compounded and recently have been.
exacerbated by the sheer volume of collections that has been generated by government funded projects (Marquardt et al. 1982). There has always been little interest by the collector in following up his collection once it reached the museum and usually there was no communication between the museum staff and the archaeologist either before, during or after the project (Bourque et al. 1980). Funds were set aside for fieldwork and analysis but hardly ever for curation. Consequently, museums were left responsible for a vast array of materials without input or funding from the outside.

Without doubt, the biggest and most difficult problem museums have always confronted has been inadequate funding for the care, storage and research or collections, or for the staff required to process and care for them (Cantwell et al. 1981; Osgoode 1979). Without adequate financing, many curation practices have been mismanaged, left undone or done inappropriately.

Many museums were constructed years ago, and provided with little and/or overcrowded storage space, allowing for limited and difficult access to artifacts which may be stored incorrectly, a situation leading to damage (Ford 1977; Osgoode 1979). Ventilation, lighting, temperature, humidity and insect-proofing may be deficient; again, situations that may be harmful to
collections. Physical security may sometimes be insufficient, allowing for the theft of artifacts and rare documentation (Ford 1977; Osgoode 1977). In addition, it is likely there may be no appropriate facilities in which to carry out this research. Tables may have to be cleared, only to be reclaimed before the project is terminated. People may be in and out constantly, squeezing past or stopping to chat, lighting may be poor and equipment needed to carry out certain aspects of this research non-existent.

New problems may be encountered with the record keeping practices in many museums. Frequently, artifacts may not be accessioned or catalogued and may still remain in their original packing crates, old boxes or bags in some dark basement or unknown location. If they have been catalogued, the information may be misleading or not specific enough for the data one might require, necessitating an investigation into the whole collection to pinpoint exactly what may be available (Matthews 1981).

Many items may be misclassified or not classified at all due to ignorance or error by the recorder or the collector himself. Some specimens may have become mixed in with other collections or even accessioned with them leading to loss or confusion in information. (For
example, portions of the material from one of the Huschers' sites from the Uncompahgre Plateau were numbered and catalogued with their Apex/Magic Mountain material). Still others may be accessioned and specifically catalogued, but may be on permanent loan elsewhere or on exhibit and consequently, may not be available for study. Other collections may be lost altogether. Even small, local museums have an obligation, not necessarily for research, but for proper curation, cataloguing, recording and preservation of local artifacts in their care.

Not all museums may have documented their materials with photographs, a time-saver for the researcher who wishes to get a general idea of a collection or the typological holdings available, or who is dealing with hundreds or thousands of the same type of artifact from many different institutions and needs to make comparisons of these materials (Matthews 1981). Even if photographs are in existence, they may be of poor quality or not of enough detail to be useful, or so poorly documented as to be worthless (Freed 1981).

Different museums may have curated their material in different ways, an important point depending on what category the researcher is interested in. Ford (1979: 5-14) has outlined this very succinctly.
Items may be catalogued as a single culture unit, those objects that were recovered from the same site or similar sites. Most archaeological collections are organized this way (Matthews 1981). They may be catalogued according to culture area, such as Northwest Coast or Plains. They may be classified by typology: those of similar materials, form or function. Life collections are comprised of all items from one collection whether from a single site, area, culture or a mixture thereof. The Easterday of Hutchinson Collections at the DMNH are examples (see below). However, if there are no cross-reference files to correlate all these components, exhaustive drawer-to-drawer or box-to-box searches may ensue by both museum personnel and researcher resulting in valuable time lost (Matthews 1981).

Documentation of these collections may not be catalogued or accessioned along with the artifacts and may be stored in other areas or not at the museum at all. Proper curation procedures may not have been used and ink and pictures may be faded and the paper yellowed and aged (Freed 1981). Often, laborious searches for written materials relevant to the study may be necessary.

Inadequate or harmful conservation of materials has always been a major source of concern for curators
(Osgoode 1979). Ideas on cleaning and restoration have changed over the years as new techniques and methods have been developed. Although cleaning may be necessary to help protect certain objects from deterioration, it may lead to the obliteration of certain other information that may be valuable to the student. Information such as pollen and food residue, color or pigmentation, wear patterns, manufacturing techniques, soil types, blood, wrappings and even evidence or provenience (as some artifacts can leave traces on other artifacts if they have been lying on or next to each other), may be obliterated (Freed 1981; Pringle 1985). Some cleaning methods may even destroy certain objects such as textiles, wood or basketry, although new techniques and ideas have improved these processes (Bourque et al. 1981; Freed 1981).

Preservation and restoration may also bias data. Although many articles need some sort of preparation before they are stored or exhibited, the less done, both in the field and in the museum, the better for the artifact and the less information destroyed. The integrity of many collections may have been harmed by the various methods employed by curators to improve them for public exhibit (Freed 1981).
Restoration may lead to the modification of an artifact, a serious problem for the researcher. As Freed (1981) points out, the repair or replacement of missing parts or surface manipulations by some well-meaning restorer may transform the original specimen so that it may not be recognizable to the original manufacturer or user, which again may lead to disinformation. It is the obligation of the archaeologist and the curator to take precautions when preparing to modify the condition of an article. Who knows what new interpretative procedures may be developed in the future that will be worthless for obtaining information due to mistaken curation?

Deaccessioning

Over time, many museum collections may have become separated, divided up, sold, loaned, traded, lost, stolen, mixed up or simply thrown away. Museums have different policies on what can be done with unwanted or unneeded material. The DMNH has a policy that nothing can be deaccessioned unless by complete authorization of the Board of Directors (Herold 1983). However, deaccessioning is encouraged by some and outlawed by others (Osgoode 1979). Many museums may have gaps in their inventories that need to be filled; consequently, whole
or parts of some collections may have been traded, sold or put on permanent loan in exchange for necessary materials. If complete records are not kept updated, many of these transactions may have become lost, again, with resultant loss in data. As times change and museums grow and staff leaves, unwritten agreements may be forgotten and poorly written ones misunderstood or ignored. Proper care may not have been taken when returning items to their regular storage place after they have been removed, and they may be stored with other materials.

The significance of existing collections, no matter what their history or documentation, will only increase as the emphasis on field work diminishes (Brown 1981; Ford 1977). Museum collections will become the laboratory for many future archaeologists and museums have a professional obligation to these collections, to the researcher and to themselves. If it becomes absolutely necessary to exchange or sell collections, they should go to an institution which already has part of that collection or which specializes in that culture or area from which the collection derives, and then only if the collection is redundant to the original holding museum.
Conclusion

There is much that can be done by museums and collectors alike to remedy many of these situations. Most curators are aware of the problems extant in their own departments and are working on solutions. However, without sufficient financing, modernized buildings and updated record keeping procedures, many of the shortcomings will continue.
CHAPTER IV

RESEARCH POTENTIALS OF MUSEUM COLLECTIONS

Introduction

The man who comes after and carries on the work of the excavator in recovering data on the past is followed by others who come after and improve on the earlier studies . . . bringing new problems, new techniques . . . (Cantwell 1981: 8).

In spite of the seemingly insurmountable obstacles outlined in the preceding chapter, there are abundant research opportunities or restudy projects which have been or can be done utilizing museum materials. Kintigh (1981) did a restudy of Spier's randomly collected ceramics from various Zuni sites and discovered them still to be a valuable source of information. In fact, he relates (1981: 468) "For a variety of reasons, Spier's collection turned out to be the most valuable . . . for my research, significantly more useful than even my own collections."

Museum collections are not only used by archaeologists, but by anthropologists, art historians, geologists, botanists, historians, sociologists and others, and by students of all these disciplines.
Often museum collections are the only source of information on many sites and the major source for others which have been destroyed (Greben, Davis and DuFresne 1981) due to erosion, urbanization, excavation or vandalism (Kintigh 1981). Museums often contain information and collections from certain areas that have not been professionally surveyed, excavated or researched in regions little known for their archaeological potentials.

Technological Developments

Recent developments in technology, methodology and theory have opened new doors for innovative research of archaeological collections unimagined by their collectors. For instance, Clarence B. Moore, one of the principle collectors of burial furniture from Moundville in the early 1900s, would be amazed at the information recovered from his materials. Even though his collections are scattered in museums throughout the United States, recent researchers have developed a specific chronology for Moundville, have recognized exchange networks, identified two local ceramic traditions and determined settlement patterns within and without the site; and the research has just begun (Peebles et al. 1981).
Perhaps the most spectacular advances in the last twenty years have been made in the technological and methodological fields which have updated and revolutionized techniques in dating, identification of materials and their origins, functions and manufacturing techniques, just to name a few (Wilson 1974). In turn they have enabled us to come closer to answering questions posed by new theoretical concepts. All these techniques have aided in the identification of chronological placement, materials and their sources, trade routes, geographical distribution, diffusion and even the recognition of new cultures and traditions (Cantwell et al. 1981; Wilson 1974). The possibilities are almost boundless on what information can be retrieved using these techniques.

Dendrochronology has been used for absolute and cross-dating of many sites and associative artifacts, and for identification of climatic changes and environments in the prehistoric Southwest (Wilson 1974). Since 1929, some investigators collected wood samples for this and other purposes as the Huschers (1939) did for the Ute sites. Many new researchers have returned to the field in order to acquire samples as an adjunct to their research.
Radiocarbon dating, first used in 1949 but not fully accepted until the sixties (Wilson 1974), has been used extensively for dating older collections of bone, shell, wood and carbon samples with excellent results (Griffin 1981; Wilson 1974). Haynes and Agogino (1960) tested bone from the Lindenmeier site and accurately dated the period of occupation of that site.

Trace element and spectroscopic analyses have been used on copper, obsidian, galena and pottery found in many collections to trace the origin of these materials (Day 1984; Wilson 1974). Such studies have been done by Griffin (1981) when he traced obsidian found in sites in the eastern United States to Yellowstone. Neutron activation resolved the questions of the origin of Maya Fine Orange Ware when it was found that Kixpec was the center of manufacture

... and that the samples found at Piedras Negras and elsewhere must have been imported from Kixpec, because the undoubted local pottery of Piedras Negras had quite a different composition in terms of trace elements (Wilson 1974: 203).

Many studies have been done utilizing electron-spin resonance or thermoluminescence for identification of proveniences of certain ceramics, flint, calcite and mollusks (Day 1984; Griffin 1981; Wilson 1974). Other techniques that have been used for identification purposes of types and origins include x-ray defraction,
petrographic and geologic analyses (Anderson, Haynes and Agogino 1974; Griffin 1981; Wilson 1974). For instance, Haynes (1980) did an analysis of Clovis points and found they were made of high quality lithic source materials frequently obtained over great distances from where the points had been found, although some local sources were used as well. Yet 78 percent of Folsom points studied by Briolo (1971) in Blackwater Draw were made of material from a single source of Edwards Plateau chert which was along the route of the bison that were being hunted by the Folsom people.

**Skeletal Materials**

There have been numerous research projects that have focused on human and animal skeletal materials that were collected in association with artifacts or by themselves and which were packed away in boxes gathering dust (Shipman 1981; Wilson 1974). The information that these studies have given us is phenomenal, as long as the materials have not been ground up for bone meal and put on the Chairman's lawn, as was done with one collection (Griffin 1981).

Bones have been analyzed for tooth marks and cut marks made by stone and metal, and for spiral fractures which are studied to determine if they occurred due
to natural causes or human action (Stanford 1982); skeletal remains have also been analyzed for signs of burning, weathering, abrasion or digestion (Shipman 1981; Wilson 1974).

Demographic and health questions have been answered using skeletal material which have identified the age, sex, weight, height, toxicology, disease, nutrition and age at which death occurred (Brown 1981). These studies have elucidated issues of social stratification and status associated with differential access to food. One such research project was conducted by Blakely and Buck (1981: 428) in Etowah where they discovered through trace element analysis that "social structure included a dual hierarchical ranking" but that status was more commonly achieved than ascribed.

Trace carbon isotope studies have been used on bone to determine the arrival of corn or other classes of cultigens in certain areas (Brown 1981). Skeletal and dentition studies have also traced immigration and migration patterns, changes in cooking utensils, different dietary patterns and nutritional stress (Brown 1981; Shipman 1981; Wilson 1974).

The Computer

Perhaps one of the most important technological advances has been the invention of the computer.
Many innovative studies have been conducted using this new tool, and new ways to put it to use are turning up daily (IBM 1985; Wilson 1974; Woodall 1974). The uses of the computer in the field, lab and the museum by the researcher are just now being realized. It is now used in almost all research projects to collate data in a way that was impossible even ten years ago, allowing for the retrieval of information that might never have been attempted before (Wilson 1974; Woodall 1974).

Computers have been used for the time-consuming chores of filing and sorting and for studies that include large quantities of data which need to be collated rapidly (Wilson 1974). Projects that involve complicated mathematical techniques have been simplified by the use of the computer. Long lists of attributes or of certain classes of data have been fed into the computer. Then comparisons have been punched in from other representative samples from various collections for comparative purposes (Wilson 1974).

Identification of signature characteristics have been computerized facilitating the incorporation of old and poorly documented collections into usable data (Brown 1981).

Multivariate factor analysis, principal components analysis and cluster analysis, to name a few, have
been certain computer methods applied to collections in order to discover what particular types of objects are concentrated in association with other types of artifacts; or if, instead, they are scattered at random throughout the site (Wilson 1974). Neustupny, as described in Wilson (1974) learned of the social relationships and sexual division of labor among the Cord-Ward peoples of Bohemia by feeding in data on the pottery located in their burials. Even fragments of the same object located in different museums or private collections have been reassembled using these methods (Brown 1981; Matthews 1981).

Many different kinds of ceramic studies have been completed using the computer to analyze data. Feldman and Rowlett (1981: 340) have devised a computer program which analyzes the curved fracture lines of pot sherds in order to complete a ceramic study with the proper profiles of vessels produced in each of the different wares [from a Late-Iron-Age fort in Luxembourg] using fracture texture, thickness, fine-lines, grit, decor and other attributable dimensions. Puniello (1981), sorting Woodland sherds according to their different attributes of body surface finish and using statistical analysis, has been able to develop a chronology for these wares along the Upper Delaware River Valley.
Lithic analyses have been done, using museum collections and the computer, that were impossible before (Wilson 1974). As Feldman and Rowlett (1981: 340) explain

... refitting of broken materials or finished artifacts with the manufacturing debris ... is often done in Europe. Refitting of unknown provenience or stray-find flaked ... tools with their manufacturing debris, and other artifacts from the same core can restore the innumerable [lithic] and arrowhead collections so often arriving in Museums with weak documentation.

Many "orphans" with little or no provenience have been traced and placed in their right context (Gramly 1980). Such projects have led to the identification of nomadic groups and their temporary camps, migration routes and the identification of resource and area use (Feldman and Rowlett 1981; Gramly 1980; Wilson 1974).

Waste debris has been used to determine prehistoric technology and ecology (Gramly 1980). Identification of lithic tools, caches and raw materials through their debris has been traced back to original quarry sites such as Weigand's tracking of turquoise sources in the Southwest and Renfrew's discovery of Middle Eastern obsidian origins all discussed in Wilson (1974). As he points out (1974: 204), such techniques have helped us distinguish various exchange networks and population movements within and without specific culture areas.
There are even studies going on now that are attempting to identify different manufacturers' "signatures" on specific tools and ceramic materials, a concept with enormous potential for proveniencing of artifacts (Gramly 1980; Griffin 1981).

Another notable discovery mentioned in Pringle (1985: 16) was that of Tom Loy of the British Columbia Provincial Museum who has developed a technique that detects traces of "... ancient blood, tissue and hair on 98 percent of the Stone Age tools and weapons" he has studied. This development may allow future scholars to gain insights into diseases and their introduction into an area. It also may provide information on the diets, prey and hunting patterns of prehistoric peoples and perhaps even trace their genetic evolutions.

Through computer use, other notable advances have been made in the techniques for determining functions of certain classes of prehistoric lithic artifacts. Winters (1981) did a study on Woodland copper celts/axes/gouges from different unprovenienced collections and found that contrary to their classification, these objects were not utilitarian at all but were ritual items placed in burials and caches of wealth for those of certain status in the society.
Winters (1981) also did a computer assisted study of Mississippian hoes and not only discovered their sources, but that there had been hoe "factories" exporting ready-made implements to Mississippian populations. He also recognized patterns in trade and land use through these studies.

**Comparative Procedures**

Cross-cultural and intra-cultural comparative studies with both well provenienced and unprovenienced artifacts have been essential in most research projects that use collections. They have been valuable tools for dating different ceramic and lithic tool types and intersite and intrasite contacts (Ford 1981). Functional studies have been carried out with implements from many collections and the evolution of various technologies have been followed. For example, Boast (1983) determined that the Lindenmeier and other Folsom gravers probably were used to cut the tendons of the game animals that were hunted and not, as was once surmised, used for engraving bone (Wormington 1949). By using comparative methods with specific type or untyped collections, new periods, phases, subcultures and cultures have been recognized and dated (Griffin 1981). These methods have also been
used in the analysis and interpretation of new data (Cantwell et al. 1981; Griffin 1974).

Comparative analysis has been useful in identifying artifacts that were not previously known to occur in a culture, such as Griffin's (1981) identification of pottery in Adena sites, a culture previously thought to be non-ceramic. He accomplished this by matching different wares in various museums and typing and proveniencing them into Adena sites.

Inter- and intraregional style patterns and their variability in design and/or structure on ceramics, engraved tools or ornamentation have been recognized using both whole specimens and fragments with cross comparative techniques (Conkey 1981). Traditions and their evolution or disappearance have been identified through design structures studies using the comparative method (Conkey 1981).

Brown (1981) traced provenienced and unprovenienced and whole and fragmentary pieces of engraved marine shell from Spiro Mound through museums and private collections. He not only identified them as coming from Spiro, but discovered that most had been broken before burial and pieces from the same specimens were interred in different graves. "This circumstance, which is very illuminating of the social contexts of
use and ownership of valued objects, is an important means for reassembling the Great Mortuary inventory (Brown 1981: 69). By comparing these articles he discovered traces of marine shell dust, green glauconite clay smears and textile fibers which also identified their provenience.

Another favored, but controversial, method of comparative analysis is ethnographic analogy. Often, researchers will go to the present to learn about the past by looking at objects extant in the ethnographic literature and extrapolating back in time to compare these in form and function, with those materials found during their investigations (Thomas 1979). Ethnographic analogies have been used to generate hypotheses to be tested with archaeological data and is taking the place of inferential analogy.

Art historians have often done stylistic and iconographic research utilizing archaeological collections and cross comparative methods. Matthews (1981) states:

Objects that have been archaeologically excavated can provide a framework for the use of poorly recorded material. Working first with objects from controlled sites, certain patterns become clear and many of the other pieces can be included in analyses of chronology and distribution . . . as more objects from controlled excavations become available the clearer our picture of context will become (172).
Obviously, the larger and more complete the available sample, the more information obtained; this has assisted both the historian and the archaeologist. One can begin to perceive differing developments through the study and comparisons of attributes and types, such as changes in contact and how this affected the ideology of the culture; different characteristics of various groups have become clearer and defined movements and influences. This information can be cross-checked with linguistic, ethnohistorical and archaeological data.

The exposure of fakes also has been an important outcome of the comparative method. Most, if not all, museums include fakes and erroneous documentation in their collections, although these usually have come with donated or purchased materials (Perino 1985). Restoration of an object may have changed it in such a way as to make it a completely different specimen (Freed 1981). Many talented artisans have increased their incomes substantially by manufacturing fakes in lithic and ceramic materials, and often have fooled all but the most knowledgeable experts (Perino 1985). But by comparing the original techniques and materials used in their manufacture, and by comparing signature characteristics, most can be culled from the collections.
Multidisciplinary Approach

Perhaps one of the more sensible procedures encouraged by the "new" archaeology has been the use of the multidisciplinary approach in archaeological research and this has carried over into collections research as well (Day 1984; Bourque et al. 1980; Thomas 1979; Williams 1981). Many of the examples cited above used disciplines outside their own to augment their studies. Chemists provided the expertise for many of the new techniques used; computer experts and statisticians wrote and interpreted programs to be used in this research.

Ethnobotanists, paleontologists and zoologists have studied the flora and fauna found in and around sites and have identified different species, their evolution and disappearance, their uses and whether they were wild or domesticated (Ford 1981; Shipman 1981; Wilson 1974). Geologists and climatologists have revealed the various environmental conditions under which prehistoric peoples lived and the changes that occurred in these environments over time. Conditions such as climatic change, earthquakes, volcanic activity and changes in permanent and temporary water sources have all been determined by these associated disciplines.
They have also aided in the identification of lithic and clay materials and their sources (Cantwell et al. 1981; Wilson 1974).

There is no limit to the assistance these and other professions can offer archaeologists and their advice and help should be utilized whenever possible.

**Summation**

The examples cited above are just a few of the studies that have been conducted utilizing systematic archaeological collections in museums and private collections. Some were studies done on well documented collections but many of these projects used poorly provenienced and documented materials and these too yielded substantive and theoretical information.

It is hoped that these examples will serve as models for prospective researchers and will encourage the preservation of both old and new collections as they contain considerable potential for many different kinds of research. By investigating the various methods and techniques addressed here, it is further hoped that interested parties will focus their attentions on some, if not all, of the collections held in the DMNH which are described in Chapter VI.
CHAPTER V

HISTORY OF ARCHAEOLOGICAL TRADITIONS
AT THE DENVER MUSEUM OF NATURAL
HISTORY

General History

The Colorado Museum of Natural History (CMNH) was founded after a naturalist, Edwin Carter, offered to sell his collection of specimens of birds and mammals to the highest bidder (Dolan 1980). According to Dolan, who wrote a synopsis of the Museum's history in 1980, a group of businessmen got together in 1897 and proposed that a fireproof museum be built to house Mr. Carter's collection, and that he be appointed Curator for life (Mr. Carter died in 1900). The proposal was agreed on and the collection was stored temporarily in the basement of the State Capitol until suitable housing could be found. With further pledges from two other collectors, a contract was entered into with the City of Denver to donate one quarter of a mill tax from one year's revenues to finance a museum.

On December 6, 1900, the CMNH was incorporated and construction of a building started in Denver's City Park. The Museum officially opened to the public in
July, 1908 with over 3,400 articles under its roof. Since then, the Museum has grown enormously in both its physical size and in the number of its collections. In 1949, the name was changed from the Colorado Museum of Natural History to the Denver Museum of Natural History as Denver provided the majority of the funding for the Museum.

Paleontology Department

Although there were many natural science departments organized after the founding of the CMNH, no archaeological or anthropological departments were established until 1932. Consequently, all the early systematic archaeological collections currently held at the Museum are attributable to the discoveries of the Paleontology Department. Field trips for study and the acquisition of samples for exhibition were common practices for the Paleontology Department in the first thirty years of its history, and it was through these expeditions that evidence of Early Man in America was first recognized.

In 1910, Jesse D. Figgins, a paleontologist and staff member of the American Museum of Natural History (AMNH), was named the Director of the CMNH and he became involved in many of these paleontological
excursions as the search for fossil samples intensified in the first quarter of this century.

In 1923-24, while on a paleontological field trip for the Museum, an employee, H. D. Boyes, uncovered two projectile points in association with extinct bison in Lone Wolf Creek, Colorado City, Texas. Although this evidence was not accepted as proof of early man by renowned scholars (Wormington 1949), this discovery intrigued Figgins and he increased the efforts to find evidence of the association of man with extinct fauna. In less than two years this proof was confirmed by the discoveries outside Folsom, New Mexico; and in less than ten years was further verified by the discovery of Clovis points in association with mammoth in Dent, Colorado. The Paleontology Department participated in both those finds.

In 1929 Figgins sent Dr. E. Renaud to survey caves in New Mexico and Oklahoma in hopes of finding further evidence of prehistoric man. In 1930 Figgins (1930) reported that the CMNH, the Smithsonian and the University of Denver were jointly financing archaeological surveys of eastern Colorado and fossils were collected near, or in association with, human artifacts near Colorado City, Texas.
A. M. Brooking of the Hastings, Nebraska Museum, excavated a site in 1931 which had the remains of an articulated mammoth and recovered a fluted point with the skeleton (Figgins, 1931). J. D. Figgins obtained this point and confirmed it as a Folsom. However, subsequent investigations revealed that the geologic deposits containing the mammoth remains were far too early for human artifacts, and, according to Wormington:

The point itself has always been somewhat of an anomaly, for it is much cruder and thicker than most similar specimens, and it is possible that it was made from a piece of stone which was already grooved. It seems possible that it was a forgery, deliberately introduced into the deposits by some unknown individual (Wormington 1949: 43).

The point is still held in the archaeological storage room as a curiosity.

Archaeology Department

For the first time, a Division of Prehistoric artifacts was established at the CMNH in 1932. "The importance that now attaches to the Museum's discoveries of prehistoric artifacts, plus the result of fieldwork and contributions made a necessary betterment of this phase . . ." (Figgins, 1932: 23).

In 1933 the CMNH participated in the excavation of the Dent Site and in 1934 one of the Dent mammoths and a Folsom bison were given to the Carnegie Museum in
exchange for a skeleton of Diplodocus and one of Ana-
tosaurus (Figgins 1934).

The year 1935 was a very important one for
archaeology at the CMNH. John Cotter and a small crew
from the Museum joined Frank Roberts of the Smithsonian
in the field at Lindenmeier. The Department of Arche-
ology was founded in October of that year. Marie Worming-
ton was hired as an archaeologist and photographer
(Figgins 1935), and in December investigations were
begun at the Moore Shelter in the Uncompahgre Plateau
(Wormington 1935). J. D. Figgins retired in 1936 and
Alfred Bailey, an ornithologist, took over as Director
of the Museum.

From 1935 to 1967, H. Marie Wormington remained
as Curator of Archaeology and became one of the world's
foremost experts on Paleo-Indian studies combined with a
broad interest in other areas of prehistoric archaeology.
She "... expanded the Museum's regional and temporal
specializations in archaeology" (Herold 1983: 5). She
encouraged and co-sponsored the Huschers' surveys of
1939-1941 in the foothills areas in Colorado and led her
own excavations at the Moore-Casebier Sites during 1935-
1939 and the Turner-Look Fremont Sites between 1939-1948.
She also excavated the Taylor-Alva Sites in 1950-52 and
collected an expedition to Alberta, Canada which was funded
by the Glenbow Foundations in 1955-56. She published widely in the Denver Museum of Natural History Proceeding Series and in other journals. She encouraged young archaeologists such as Cynthia Irwin-Williams and her brother Henry Irwin who excavated the LoDaisKa Site in 1957 and the Magic Mountain Site in 1959-60. In 1966-67, Marie Wormington excavated the Frazier Site in northern Colorado which was to be her last excavation with the DMNH. She left the Museum in 1967 and the Department of Archaeology was discontinued.

In 1962 there was a disastrous fire in Phipps Auditorium and the archaeology office and storage area were badly affected by it (Akerly, 1985). Many items sustained heavy smoke damage and a number of them were covered with tar which had melted down on them from the roof.

**Anthropology Department**

From 1967 to the present the emphasis shifted from archaeology to ethnology, especially with the addition of the Crane Collection consisting of over 11,000 items of both ethnographic and archaeological significance collected by the Cranes during their lifetime (Herold, 1983). Very little archaeological work was done during the late sixties and seventies. Richard
Stucky led a survey to the Lowry Bombing Range in 1976. In 1976-77 he conducted a reconnaissance survey on the Sand Wash Basin in northeastern Colorado on which he wrote his Master's thesis for the University of Colorado at Denver. Robin Boast also wrote a Master's thesis for the same institution in 1983 on the micro-wear patterns of the Lindenmeier gravers and he excavated the Gregory Allen Burial in 1984.

**Summary**

The evolution of the archaeological tradition at the DMNH parallels, to a great extent, the history of archaeology and museums nationally. The twenties and the thirties were years of discovery and collection centered around the search for man's antiquity in the New World. In the period just following World War II, the concentration was mainly on the projects on the Western Slope where a continuum was sought between the Early Man sites, the Pueblo culture and possible early Ute. DMNH publications remained on the descriptive level with typologies, functional analysis and trait lists predominating.

In the fifties the Museum cut down somewhat on field work conducted by its staff, and began to concentrate on the exhibition of its holdings and much work
went into the construction of showrooms and the design of
these exhibits.

The sixties saw a gradual but definitive change
in the emphasis from archaeology to ethnology and after
1967 archaeology as a discipline was no longer repre-
sented. In 1968 anthropology gained a department of its
own.

The eighties have brought a renewed interest
in archaeology to the Museum as it is understood in
America to be part of the anthropological framework.
With the appointment of Dr. Jane S. Day as Curator of
Archaeology in 1985, a new step forward has been taken.
CHAPTER VI

SYSTEMATIC COLLECTIONS IN THE DENVER MUSEUM OF NATURAL HISTORY

Paleo-Indian Sites

It was not until the verification of the Folsom discoveries that many believed in the great antiquity of early man in the New World (Wormington 1949). Prior to this time, most scholars followed the lead of Alex Hrdlicka, a physical anthropologist, who loudly critiqued any mention of this possibility. Consequently, many archaeologists and paleontologists ignored the Paleo-Indian field (Cassells 1983).

Lone Wolf Creek

In 1923-24, the first recorded evidence of man in association with extinct Pleistocene fauna was uncovered on Lone Wolf Creek, Colorado City, Texas by H. D. Boyes, an employee of the CMNH Paleontology Department (Figgins 1924). This occurred on a field expedition from the CMNH which was seeking extinct mammals to be placed on exhibition at the Museum; while Boyes and his crew were excavating a deposit of extinct bison, Boyes found "... two arrowheads associated with the
material, one immediately beneath a series of cervical vertebrae and the other below a femur" (Figgins 1924: 17).

Remarking on the fine workmanship displayed in the manufacture of these "arrowheads," Figgins (1924: 17) recognized that "... a stage of culture unlike that found in specimens picked up on the surface ..." was represented.

However, these two projectile points, one a Plainview and the other a Milnesand, were not regarded as evidence of man's association with prehistoric bison due to the uncontrolled conditions under which they were found (Wormington 1949). These artifacts are listed in the Accession Catalogue as items one and two: "Two flint arrowheads found with fossil bison at Colorado City, Texas, donated by H. D. Boyes and Nelson Vaughn" (Herold 1983: 46). They are still held in the department.

The Folsom Site

In early 1908, George McJunkin, a black cowboy, was riding along Wild Horse Creek, a tributary of the Cimarron River (Figures 1 and 2) when he noticed bones eroding out of the deep wall in a box canyon near Folsom, New Mexico (Cassells 1983; Folsom and Agogino 1968; Wormington 1949). McJunkin, primarily a self-educated man and the son of slaves, was interested in a variety
Figure 1. General Map: Sites/Collections Mentioned in Text
Figure 2. Paleo-Indian Sites
of subjects and fascinated with old rocks and bones; Folsom and Agogino (1968) state that after trying to dig some of the bones out of the wall and having them crumble, McJunkin devised a formula for preserving bones and those he eventually preserved survived on his mantle for many years.

Folsom and Agogino (1968) go on to say that over the next few years, McJunkin tried to interest others in his discovery as he realized the bones on his mantle that eroded out of the canyon were not modern bison or cow bones. Eventually, he related his findings to a blacksmith and amateur paleontologist, Carl Schwachheim and later to a Raton, New Mexico banker, Fred Howarth. But it was not until 1922, when, with three others, these two amateur enthusiasts saw the site for the first time. One of these men contacted Figgins at the CMNH and Figgins and Harold Cook, a paleontologist at the Museum, visited the site in April, 1926 (Figgins 1927). That summer, Figgins' son, Frank, assisted by Schwachheim and Cook, began the actual excavation of this site, located on the Crowfoot Ranch, eight miles from Folsom, New Mexico. On July 14, 1926, Schwachheim wrote in his diary:

Found part of a broken spear or large arrowhead near the base of the fifth spine taken out. It is about two inches long and is of a dark-amber-colored agate and of very fine workmanship. It is broken off nearly square and we may find the rest
of it. I sure hope so. It is a question which
skeleton it was in but from the position of them
it must have been the skeleton of the smaller one
and just inside the cavity of the body near the
back (Folsom and Agogino 1968: 7).

This statement documents the first Folsom point recovered
in direct association with extinct bison in Pleistocene
soils (Wormington 1949); shortly after the missing
section was found.

Figgins, after much soul searching, wrote Barnum
Brown of the AMNH and told him of the discovery. Figgins
was worried that the news would not be believed by
Hrdlicka and his disciples, especially after the reception
he received when he announced the Lone Wolf Creek finds
(Tolsom and Agogino 1968). But before he decided on a
course of action, another point was discovered. Again,
from Schwachheim's diary, are the words relating this
find:

I found an arrow point this morning. It is
of clear colored agate or jaspar. It is not exposed
the full length but it is hollow on the sides and
. . . was near a rib in the matrix. One barb is
broken off (Folsom and Agogino 1968: 7).

Several more points were found during the first
season, but the second one, in its matrix, was removed to
the CMNH and finally Figgins had the proof he needed to
proclaim to the world that man was living in the Americas
during the time of fauna now known to be extinct. This
announcement was made in the winter of 1927, but few
believed it; most were sure the points were intrusive (Cassells 1983; Figgins 1927).

Work resumed in the summer of 1927 under the direction of Cook and five more points were discovered; the fifth one was also recovered in its original matrix (Cassells 1983; Figgins 1927; Folsom and Agogino 1968). With this, Figgins sent telegrams to Barnum Brown, Dr. Frank Roberts, Jr. of the Smithsonian and to A. V. Kidder of the Peabody Museum, Andover, Massachusetts (Cassells 1983). These three experts traveled to the Folsom Site and confirmed the findings and the link of humans with extinct bison was secured (Cassells 1983; Folsom and Agogino 1968; Wormington 1949).

The AMNH joined the DMNH in the field in the third season and more bones and points were discovered which reinforced the evidence and the acceptance. It was this discovery and its accreditation by learned scientists that initiated Paleo-Indian studies (Cassells 1983; Wormington 1949).

It is ironic that George McJunkin never learned of the great importance of his discovery; it is reported that he had died of dropsy around 1922 (Folsom and Agogino 1968).

Another irony associated with the Folsom discovery concerns Alex Hrdlicka. He refused to believe
that evidence of ancient man would ever appear in the New World and categorically rejected the Folsom discovery.

Folsom and Agogino (1968) pointedly write:

As late as 1939 he continued to deny that there was acceptable evidence of really ancient man in America. Hrdlicka equally rejected racial equality . . . claiming the inherent inferiority of Negros and urging segregation of the two races . . . to avoid danger to the superior white race. It is indeed irony that a black man . . . was instrumental in the discovery of the first accepted Paleo-Indian site . . . (1968: 8).

It appears there was one other person who was not completely pleased with the announcement. Harold Cook, who published the first geological interpretation of the site in 1927, in letters written to Dr. Bailey, Dr. Wormington and others, decries the fact that Figgins received all the credit for the discovery and subsequent dig as he was the actual one in charge of the general project. There is a quantity of correspondence concerning this subject in the files at the DMNH, and most reflect the feeling that since Figgins was the Director of the Museum and one of the instigators of the project, he was the one to receive the credit.

Contained in the museum collection are the two original Folsom points with the bison bones still in the original matrices and three other loose points from the site. Figgins (1928) mentions that sixteen points were located overall. Wormington (1949) says there were
nineteen. Six are recorded in the Accession Book. However, according to correspondence in the Museum's files, seven incomplete points were shipped to the University of Pennsylvania in 1941 on temporary loan. In a letter from Edgar Howard of that institution to Dr. Bailey written on November 28, 1941, Mr. Howard requests that they be allowed to keep one of the Folsom tips sent to them as they had recovered the base to that tip on a reconnaissance trip to Folsom. Dr. Bailey granted this request. It is assumed that the remaining points are in the AMNH, but so far have not been traced.

There is also confusion as to the actual number of bison uncovered at the Folsom Site. Wormington (1949) says there were twenty-three. These were originally classified as sub-species *Bison taylori* and were later named *Bison antiquus figginsi* (Wormington 1949) but are now just called *Bison antiquus*. When they were uncovered at the site, most of these bison skeletons were missing their tail bones which suggests to most experts they had been skinned (Wormington 1949).

Cassells (1983) says that between 25-50 bison were located. Some of these are on exhibit at the DMNH but there is a question about how many are still held at the Museum (Akerly 1985).
There are many documents in the Archives pertaining to the Folsom discovery including the original photographs of the site and the excavation and the three experts verifying the association of man and bison.

Publication was originally done by Figgins in 1927 and by Hay and Cook in 1930 and references to the site can be found in any book which discusses Paleo-Indian traditions. Recent studies done on the material include the biography of McJunkin by Folsom and Agogino (1968), a restudy of the geochronology by Anderson, Frazier and Haynes (1976) in which they propose that the Folsom Site was a locale where bison were trapped in a narrow headcut in the arroyo and then quickly dispatched by the Folsom hunters. They also report collagen dates from bones recovered in 1970-71 of 10,260 ± 110 B.P.

The Folsom Site has become the type site for all locations in which the distinctive grooved points are found. Needless to say, it is probably one of the most important discoveries ever made in North America.

The Dent Site

In 1932, after a heavy cloudburst and subsequent flash flood, bones were observed eroding out of the sands and gravel of a gully near a railroad siding in Dent, Colorado by Frank Garner, a railroad foreman (Cassells
1983; Wormington 1949) (Figures 1 and 2). Dent is a small railroad town located on the eastern plains by an intermittent stream that emerges from a sandstone bluff to join the Platte River.

Garner reported his find to the Dent Depot Manager whose son was a student at Regis College in Denver (Wormington 1949). Michael Ryan, Jr. informed his professor, Father Conrad Bilgery, of these bones and Regis undertook an excavation of the site in the fall of that year (Cassells 1983; Wormington 1949). It was on November 5, 1932 that Father Bilgery and his students uncovered the first fluted point resting under the pelvis of a mammoth (Cassells 1983; Wormington 1949). The following summer, the CMNH:

... through the liberality of Father Conrad Bilgery ... took over the work of excavating the remainder of the mammoth remains from the quarry near Dent, Co. In addition, Father Bilgery delivered to the Museum all skeletal parts he had taken from the location during the preceding period (Figgins, 1933: 13).

Figgins joined Bilgery in the field and a second fluted point was discovered on July 7, 1933 still embedded in the matrix (Cassells 1983; Figgins 1933). Still and motion pictures were taken of the find and are in the Archives at the DMNH. Figgins (1933) recognized that both points resembled Folsom points, but that they were larger and cruder in workmanship.
The original point that was uncovered by Bilgery was held by Regis and has since been lost. However, the DMNH has a cast of that point. A third point was picked up by Mr. Garner in 1932, but was not reported until 1955 (Akerly 1985). It, too, is now at the Museum along with the second one that was located in 1933.

Figgins published the results of the excavation in 1933 and in this article he announced that one adult male and eleven immature female mammoth had been recovered along with the two points and several "bowlders." (None of these "bowlders" measured more than six inches in diameter.) (Cassells 1983). He went on to say that these "bowlders," not common to the area, might have been used as weapons or tools.

Father Bilgery (1935) on the other hand, thought the whole assemblage had been redeposited, an observation that has been strengthened by recent researchers, Frank Frazier and Linda Spikerd (Cassells 1983). Due to the lack of any butchering evidence on the bones, they feel the whole site may have washed down from a higher, earlier terrace (Cassells 1983). Haynes (1960) says the Dent Site is a place where animals who had sustained non-mortal wounds died and the hunters never benefitted from their efforts.
The mammoths from the Dent Site, with the exception of the one traded to the Carnegie Museum, are held at the DMNH. One is on permanent display.

Subsequent studies done on the Dent Site and its material include Harold E. Malde's examination of the geology and stratigraphy in 1954 and Agogino's radiocarbon dating of bone from the site. This he did in 1968; but before he could subject the bone to the tests he first had to experiment with a process to remove the preservation material applied to the bone by Figgins. The study by Spikerd and Frazier is still unfinished and unpublished (Wormington 1985).

The discovery at the Dent Site held real meaning at that time for it "... provided the first acceptable proof of the contemporanity of man and mammoth in America ... and pushed back the antiquity of man in North America by thousands of years" (Wormington 1949: 3).

Regretfully, neither Father Bilgery nor Figgins gave a name to these large fluted points and it was left to John Cotter, excavating a similar site in Blackwater Draw near Clovis, New Mexico, to name them.

The Lindenmeier Site

The discovery of the Folsom Site increased efforts to locate a site that could be accurately dated
geographically and which might give a more complete and
detailed picture of the culture that developed and manu-
factured the Folsom point. This search ended in 1934
when Dr. Frank H. H. Roberts, Jr. of the Smithsonian
Institution began excavating the Lindenmeier Site, twenty-
three miles north of Fort Collins, Colorado (Cassells
1983; Wormington 1949) (Figures 1 and 2).

The original discovery of the Lindenmeier Site
occurred in the summer of 1924 when Judge Claude Coffin,
his son A. Lynn Coffin and C. K. Collins found "several
odd, similarly shaped artifacts from the surface in a
small area on the so-called 'chalk' formation . . ." (Coffin 1957: 5) just south of the Wyoming State line.
During this time, the Coffins, accompanied by Judge
Coffin's brother, Major Roy Coffin, a geology professor
at Colorado State University, returned three times to the
area and collected a total of thirty-four specimens
(Coffin 1937).

This collecting continued for six more years when
in the summer of 1930, Dr. E. B. Renaud inspected their
collection and recognized the "odd-shaped" articles as
Folsom points (Coffin 1937). In 1931, Renaud visited
the site where he found two Folsom point fragments; with
this, he borrowed the collection and it was subsequently
displayed at the DMNH (Coffin 1937; Figgins 1932).
Eventually, Major Coffin reported the site to the United States Geological Survey on February 26, 1934 (Cassells 1983; Coffin 1937). A response was received from Dr. John E. Resides, Jr. in which he stated "... you have found a Folsom Culture site ... you have something very much worth publication" (Coffin 1937: 11). As a result, he forwarded the reports to the Bureau of American Ethnology and the Smithsonian sent Dr. Roberts to investigate (Coffin 1937).

The site itself is located on a terrace in the remnants of a valley above a small tributary of the Cache La Poudre River on a horse ranch once owned by William Lindenmeier (Figures 1 and 2) (Coffin 1937; Wormington 1947). The Coffins had received permission from him to dig on his land, and later leased that portion of the ranch from him (Coffin 1937). The Smithsonian, and later the CMNH, took over part of that lease (Figgins 1935).

After his first day in the field, Roberts wrote that he was "... not sanguine over the prospects for getting more information beyond that already obtained ..." (Roberts 1935: 3). At the end of the second day, however, Roberts' opinion had changed radically for he had located a concentration of buried bone and artifacts deep in the arroyo which cuts through the Lindenmeier Site
Roberts was to continue to excavate Lindenmeier until it was backfilled in 1940 (Wilmsen 1978). The Coffins also worked on the site, independent of, but next to, the Smithsonian party until 1938 (Cassells 1983; Wormington 1949).

In 1935, a small team from the CMNH composed of John Cotter, Harley Goettshe and Robert Landberg joined the other two groups at Lindenmeier where they worked from June 14 to September 1 (Cotter 1935; Figgins 1935).

This crew put down numerous test pits in two separate areas of the site and located a few artifacts (Finnings 1935) (Figure 3). However, in a location just west of Roberts' west trench, Hole 13 revealed a cultural level twenty-one inches thick beginning at a depth of five feet; it was selected for more intensive excavation and three more holes were sunk to delineate the area (Cotter 1935; Figgins 1935).

According to Figgins' 1935 report, three stratigraphic levels were located and designated A, B, C, respectively. Each artifact was labeled with three

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*Note: A copy of John Cotter's free-hand drawn diagram of the CMNH excavation (Figure 3) is included in order to show the relationship between the CMNH's test areas and those of the Smithsonian's. This map was included in a letter from Cotter to Figgins (1935) and is the only known original diagram of the CMNH excavations.*
Figure 3. Cotter's Sketch of CMNH Excavation at Lindenmeier
different provenience codes: hole number, section letter and level letter. In that one summer, the CMNH uncovered 227 artifacts including 55 points or point fragments, flakes, scrapers, knives, channel flakes and a large number of gravers (Figgins 1935). Five bone tools or fragments were recovered along with a piece of a circular, graved bone ornament or gaming piece. No polished stone tools were discovered, but some small rubbing stones with red pigment residue and pieces of hematite and limonite were found.

Near the camp site itself the crews uncovered a large pile of bones of nine (plus) bison that had been killed and partially butchered there (Figgins 1935; Wormington 1949). Other bison bones were located in surrounding areas along with camel bones, which may or may not belong to this horizon (Wilmsen 1979). Mammoth remains also were found, but there is no clear cut association with humans. Other animal remains indicate that these early people also hunted rabbit, fox, wolf, coyote, pronghorn and turtle (Cassells 1983; Wilmsen 1978).

More than 6,000 stone implements were catalogued from Lindenmeier, not including waste flakes and chips (Wilmsen 1979). The majority of these are stored at the Smithsonian; those found by the CMNH are in Denver, and
portions of the Coffins' collection are in the Pioneer Museum in Fort Collins, although reportedly some has been sold.

According to Wilmsen (1979) who did a complete restudy of the site, its artifacts and documents, Lindenmeier was the location of periodic seasonal camps of the Pleistocene Big Game hunters who followed the migratory herds and set up their camps above or near water sources. Lindenmeier was probably occupied by "... two geographically distinct but interacting groups..." (Wilmsen 1979: 86) who lived in small bands or extended families. These two groups shared the same social and game procurement systems but their differences are evidenced by a stylistic variation in the finishing of their projectile points (Cassells 1983; Wilmsen 1979).

As has been mentioned above, many restudies of the Lindenmeier materials have been done. Those that were done either through the DMNH or with its collections include Vance Haynes' (1960) radiocarbon tests in which he got two dates of 11,200 ± 400 and 10,780 ± 375 years ago, J. Jeffrey Flenniken's (1978) study of manufacturing techniques of Folsom points and the aforementioned micro-wear analysis of the gravers by Robin Boast (1983).

Documentation in the DMNH Archives includes all the above mentioned studies and photographs of the
excavation from 1934-1938. Also there are copies of Roberts' fieldnotes, Figgins and Cotter's correspondence and Cotter's fieldnotes.

Along with the artifacts and *Bison antiquus* bones, there is an original stratigraphic profile taken from the site itself by Cotter and Figgins which shows the dark, rich Folsom occupation level.

The great significance of Lindenmeier lies in the fact that it was a combination kill and habitation/camp site (Cassells 1983; Coffin 1937; Figgins 1935; Wilmsen 1979; Wormington 1949). Here, various man-made objects of the Big Game Hunting tradition were found in direct association with extinct bison revealing information about the daily living patterns as well as the hunting traditions of the groups that manufactured the grooved and ungrooved Folsom points.

**The Frazier Site**

In July of 1965, Frank Frazier, then a geology student and surveyor from Greeley, set out to located the Powars Folsom Site in northeastern Colorado; he did not find it, but instead happened upon another, unknown site on which bison bones, Agate Basin points and other stone tools were lying on the surface over a considerable area (Wormington n.d.; 1966).
Dr. Wormington surveyed the area after Mr. Frazier reported his discovery to the DMNH, and, in early August, borrowed a crew from Harvard that was working on the Hell Gap Site under the auspices of George Agogino and Cynthia Irwin (Wormington 1966). As Dr. Wormington relates (1966) this crew worked for a week at the Frazier site before they were forced to return to Wyoming. The site was reopened in October of that year with volunteers from the DMNH and this persistence paid off when a section of an Agate Basin point was located in situ with bison bones.

Dr. Wormington continued to conduct full-scale investigations during the 1966 and 1967 field seasons and altogether 124 five foot squares were excavated (Wormington n.d.; 1967). Dr. Wormington kindly allowed me to examine the Frazier materials and there were ten whole or fragmentary points from this site including one with a long narrow flute on one face and another with a short flute on one face. There were also "... fourteen end scrapers, twenty side scrapers and five scraping tools worked on all edges. Knives are represented by two thin broken bifaces . . ." (Wormington n.d.) and two multi-purpose tools with graver tips.

These tools were concentrated over three different flaking areas and most of the scrapers were found in
one specific locality in the site which was probably where hide working activities were carried out (Wormington, 1967). No skulls or horn cores were found and the bison were strewn randomly over the site, mostly composed of hindquarters. Wormington (n.d.) notes that

The kill site and primary butchering area was not found, although it must not have been too far away, for it is unlikely that heavy bison quarters would be carried any great distance. There are no cliffs in the area over which the animals could have been stampeded . . . .

With the exception of two grant proposals and a preliminary report, all other material relating to the excavation, including the artifacts, field notes, etc., are still in Dr. Wormington's possession while she concludes her examination of them and publishes the results in a new book. These will be returned to the DMNH and will go into the archaeological storage facilities after they are accessioned and catalogued.

The Frazier Site was the first single component Agate Basin site to be excavated and subsequent dating by Vance Haynes has produced dates of 9,550 ± 130 years and another at 9,650 ± 130 years B.P. (Wormington n.d.). According to Wormington (n.d.) the time of occupation was somewhat earlier as those dates were only minimum dates.
Mathieson Site

On March 9, 1959, Marie Wormington received a letter from J. P. Mathieson (on file DMNH) informing her of some sites located on his ranch near Las Vegas, New Mexico (Figures 1 and 2). In this letter he described some of the sites and apparently also sent her samples of artifacts located at these various sites. Whether these were returned or not is unknown, but they are not recorded at the Museum.

However, Dr. Wormington did investigate some of these sites in 1959 with Haynes, Agogino and the Irwins. In the 1959 Annual Report she describes one site which produced a number of Scottsbluff points and one Cody Knife. The Cody knife was found by her on August 31, 1957 on the east side of an arroyo in square 37 (Fieldnote 1957) and is the only known artifact in the Museum collection from this particular site. Dr. Wormington thinks the rest went either with Mr. Agogino to the University of Northern New Mexico or were kept by the Mathiesons (Wormington 1985).

Archaic Sites

"Basketmaker" Cave Sites

In 1929, flush from its success with the Folsom Site, the CMNH broadened its interest in prehistoric man
and named Etienne Renaud, Professor of Anthropology at the University of Denver, Field Work Supervisor for "... an expedition organized by the CMNH, Department of Paleontology. The purpose of this expedition was to search for the remains of the body, dwellings and culture of Folsom Man ... " (Figgins 1929: 19) in the areas of northeastern New Mexico and western Oklahoma. The field crew consisted of Nelson Vaughn, Carl Schwachheim, Paul Bearbieu and a Mr. Taotoa (Figgins 1929). This expedition surveyed caves in the regions and "... pictures, notes and artifacts were collected" (Figgins 1929: 19). I have not been able to find either the notes or the pictures from this trip; perhaps they are among Dr. Renaud's private papers.

There are some articles from this project in archaeology storage which were turned over to the Anthropology Department by the Paleontology Department in 1981. However, although each item was carefully wrapped in paper toweling, most of the provenience notations were mixed up, so it is difficult to tell in most cases from where or from which cave the artifacts were collected.

This collection is composed almost completely of lithic materials with the exception of one polished bone bead and an unpolished turquoise fragment. The most diagnostic artifacts, besides a few possible early point
fragments, are a type of flaked tool with a crescent-shaped concavity on one side and possibly a graver tip on the top of some of these. These concavities are worn smooth and would appear to have been used as shaft smoothers. Three tools from a cave near Tucumcari, New Mexico collected by Vaughn in 1930 are made of Alibates chert; these are comprised of one large, rectangular-shaped biface and two large, curved blades, one of which is heavily worn.

There are no ceramics included in this collection and they are labeled "Basketmaker" Caves because this was what Figgins (1933) called them in the Annual Report. Whether or not they are from Basketmakers is problematic but I have placed them under the Archaic label due to the negative ceramic evidence. It would be a good project for some student to trace Renaud's notes and see if there is any mention of these sites and what artifacts were listed as having been found.

The Huscher Collection

One of the largest and least well-known of the collections in the DMNH is that of Harold and Betty H. Huscher. Mrs. Huscher was an assistant to Marie Wormington at the CMNH from 1937 to 1942 and Mr. Huscher volunteered his services during the Moore-Casebier
excavations in 1938 (Wormington 1939). During the field seasons of 1939 through 1941, Mr. and Mrs. Huscher conducted a survey of open foothill sites in Colorado, partially funded by the CMNH (Huscher and Huscher 1939). These surveys were carried out in the Saguache-La Garita mountain areas in Saguache County and in the Uncompahgre Plateau, mainly in Mesa and Montrose Counties (Figure 1). (They also surveyed and tested the Apex/Magic Mountain Site in 1941, which will be discussed separately).

The purpose of this survey was to locate sites which might shed some light on the various distinct cultural groups that had either lived in, hunted in or passed through Colorado over time (Huscher and Huscher 1942; 1939). Along with this it was hoped to establish a basic chronology for these different groups.

Because the central massif of the Colorado Rockies presented a barrier which must have been skirted by any great north-south or east-west movements of Early Man. [The foothills] would be the place to look for traces of successive occupations (Huscher and Huscher 1939: 1).

Indeed, during these three summers the Huschers found a great deal of evidence for many different nomadic cultures in the foothills area ranging from the Archaic Period to Historic Ute. Many of the earlier sites were tentatively dated by geological methods and it was hoped to make comparative studies of these artifacts with
well-provenienced and dated material from other collections and excavations which would confirm the geologic evidence (Huscher and Huscher 1943; 1939). The later sites were also tentatively dated using ethnographic, comparative and diagnostic materials (Huscher and Huscher 1939).

There were ten sites located by the Huschers in 1939 which they considered to be of great antiquity and these will be discussed here. The majority of the information on them comes from the Huschers' 1939 Fieldnotes which are in the DMNH Archives. There are no fieldnotes from the 1940-41 surveys in the Museum, but these are stored in Mr. Huscher's basement (1985). Unless otherwise indicated, the descriptions of the sites discussed below derive from the 1939 fieldnotes.

Of these ten sites, the DMNH has the materials from three: Tracy Canyon (HT in the Huschers' labeling system), the Captain H. H. Smith Spring (HES) and Cactus Park (HC). None of the specimens from these sites is listed in the old Accession Book but were located while I was sorting through the collection. According to the Huschers' notes, no artifacts were discovered in association with the other seven sites, although informants and amateur collectors related to the Huschers some of the various different types of artifacts that had been seen
and/or picked up on and around these sites, and through these accounts and the physical evidence the Huschers determined the antiquity of these seven sites.

**Tracy Canyon.** The Tracy Canyon site lies in the open near a spring, ten miles south of Saguache at approximately 8,800 feet (Figure 1). It is composed of slab-lined cists and rock-lined hearths which were not exposed until 1934 after a heavy storm. It was surveyed in 1939 and one test pit was sunk. In 1940 and 1941 the Huschers returned and sank more test trenches (Huscher and Huscher 1940a, 1941). They felt a stratigraphic sequence could be obtained from the site with further investigation. As it was, three to four occupational levels were identified (Huscher and Huscher 1941).

There are numerous artifacts from this site in the collection which encompass tools from one-metal arrow point to crude, percussion flaked choppers. Although all artifacts have field numbers on them, there are no indications in these numbers or in the notes to designate from which levels they were found, although it is supposed that those with the same numbers came from the same levels. According to the 1940 Museum Annual Report, modern potsherds and metal and stone points were found on the surface and were categorized as recent Ute. The
lowest stratum contained charcoal, bones and the crude, percussion flaked tools. Of the numerous artifacts held in storage, perhaps the most diagnostic might be two Archaic-type points and five corner-notched points with bifurcated bases, probably Pinto type points similar to those that have been dated elsewhere ca. 3000 B.C. (Cassells 1983). There are also various corner-notched points and two small lanceolate points.

Also included are at least sixteen gravers, numerous scrapers, including snub-nosed, core and keel varieties. There are flakes, both with retouch and without. Many worked bone tools were recovered which are comprised of awls, two bone saws, fleshers, and one ground bone point and burned bone fragments. Ground stone implements consist of two axes/choppers, pecked manos, eight small handstones, two metate fragments and one narrow, anvil-like metate.

There are also numerous soil samples which the Huschers collected from this site, presumably from the different strata that were encountered. As far as is known, however, none of these has been tested.

Taking into consideration the thinking of the times, the Huschers (1934; 1940a; 1941) were inclined to classify this camp as a Basketmaker-type camp and hoped it might prove to be the forerunner to Basketmaker
II. Through geographical estimates they dated it as old as 4000 B.C. (1939; 1941).

The Huschers urged further and immediate excavation of this site but the war intervened and they never returned to it. I could not discover if this, or any of these sites, has since been recorded in the ensuing years.

**Captain H. H. Smith Spring.** This site is located 5.5 miles from Dry Escalante Ford in the Uncompahgre Plateau in Mesa County (Figure 4). It lies on an alluvial cone and is comprised of a series of small, deep bowl-shaped fireplaces. A test trench was started and evidence of occupation was found at six to six and one half feet below the surface where numerous overlapping fireplaces, most carefully rock-lined, were encountered. "From three to six feet down narrow, corner-notched points and ovate blades of quartzite and chalcedony were the predominant artifact type" (Huscher and Huscher 1939: 16). There are twenty-three points, one a triangular side-notched point of quartzite, and thirty-six large, ovate blades in the collection. According to the Huschers (1940) the blades were concentrated below the points, but whether this was a cache is not made clear.
Figure 4. Archaic Sites on the Uncompahgre Plateau
Other artifacts uncovered were large knives, two gravers, crude choppers, scrapers, utilized flakes, charcoal fragments and two small pot lids.

Again, the Huschers advocated a more thorough excavation which might give a valid, chronological sequence for this site and establish it as possibly pre-Basketmaker. Certainly, radiocarbon dates might still be obtained from the charcoal if it has not been contaminated.

Cactus Park. A third "early site" was the Cactus Park open site which is located nine miles south of Whitewater in Mesa County (Figure 4). This site contains twenty (plus) pentagonal, slab-lined cists. In the 1939 Fieldnotes the Huschers refer to it as having possible Basketmaker II affiliations due to the presence of the cists. One cist was excavated and no artifacts were found in association with it. Yet many artifacts were found nearby consisting of five corner-notched points and one Shoshonean three-notched point, one laurel-leaf shaped blade, one large knife, four drills, two gravers, one core, twelve scrapers and flakes, and one small handstone with a notch on one side. (In the 1939 notes the Huschers specifically state that although numerous stone artifacts were discovered in and near the site, it
was a non-ceramic site. Nevertheless, there were eight Pueblo sherds in the box containing the Cactus Park items; however, there are no field numbers on these sherds and they may have become mixed in with the Cactus Park artifacts by some unknown means.)

Whether these sites are as old as the Huschers supposed can only be determined by further investigation, a careful analysis and cross comparative approach, perhaps starting with the Uncompahgre Plateau sites excavated by Wormington (1956), with some of the Magic Mountain materials and, moving southwest, to San Jose sites. A return to these sites for further testing, archaeomagnetic dating and a collection of radiocarbon samples might also augment any research study.

The Moore-Casebier Sites

In Archaeological Investigations on the Uncompahgre Plateau, Wormington and Lister (1956) reported on various sites that had been investigated by them in the Uncompahgre Plateau off and on between 1937-1952 (Figure 4). Wormington excavated the Moore and Casebier sites in 1937-39 and the Taylor Site in 1951 and 1952. Lister worked on the Alva Site in 1952.

The Moore-Casebier Sites, named after their discoverers, usually are discussed together due to their
close proximity and similarities (Cassells 1983; Wormington and Lister 1956). After reporting the existence of the Moore shelter in 1936 to Wormington, Harold Huscher joined her and Betty Holmes (Huscher) for a survey of the site (Wormington 1937). Excavations were officially begun in 1938 and continued into the 1939 field season. The Casebier rock shelter was found and less extensive work was started on this site (Wormington and Lister 1956).

Both sites are located in Roubideau Canyon on the Uncompahgre Plateau and both sites contained hearths while petroglyphs lined the walls of the Moore Shelter (Wormington and Lister 1956).

Implements recovered included sixty projectile points, knives, numerous retouched and utilized flakes, six drills/perforators, choppers and hammerstones. Many scrapers were located, including two keeled, end scrapers and others that were distinctive enough that Wormington (1956) felt were diagnostic of the area and these she labeled Uncompahgre scrapers. These were large, triangular to rectangular shaped tools "... one edge being flaked only on one face, while one or more edges are normally flaked on both faces" (Wormington and Lister 1956: 18). All these artifacts are held in the Museum.
Documentation includes site reports with photographs recording each portion of the excavation, an artifact list with catalogue numbers and proveniences and copies of the book.

**Taylor Alva Sites**

"In 1950, Al Look discovered two rock shelters on East Creek in Mesa County, Colorado. He and Warren Bush put down a test in one of these and Mr. Look brought the specimens he had obtained to the DMNH" (Wormington and Lister 1956: 1). The site (Figure 4), its features and cultural material were very similar to those located in the Moore-Casebier Sites, including an Uncompahgre scraper. Consequently, Wormington and a crew started excavations on this site (Wormington and Lister 1956). In 1952 they were joined by Dr. Robert Lister from the University of Colorado who worked on the Alva Site.

The Taylor Site was by far the most prolific of all the Uncompahgre sites and allowed for the first well controlled projectile point sequence in the area (Cassells 1983).

From these four sites, the Moore-Casebier and Taylor Alva Shelters, Wormington and Lister defined the "Uncompahgre Complex" based in many respects on the distinctive scrapers associated with these sites the
adze-like scrapers and the large polished objects found in a cache at the Taylor Site (Wormington and Lister 1956: 78).

From the descriptions and partial viewing of the artifacts from the Moore-Casebier Sites by the author, it would seem likely that they belong in the Mid-to-Late Archaic Period of the Great Basin Culture; Buckles (1971) and Cassells (1983) agree. Buckles feels that the cultures represented deserve being designated as the "Uncompahgre Complex," but does not feel that the scrapers found merit a separate category (Buckles 1971; Cassells 1983).

There are no artifacts from the Taylor-Alva Sites currently held at the DMNH. These were turned over to the Museum of Western Colorado in Grand Junction and are on display there.

The Sand Wash Basin Sites

In partial fulfillment of his Master's degree at the University of Colorado at Denver, Richard Stucky conducted a reconnaissance survey of the San Wash Basin area in Moffat County, Colorado (Figure 1). He was partly supported in this endeavor by NSF grants and the DMNH; consequently, all material that was recovered is held at the Museum.
Stucky's main purpose in this study was to outline the historical sequences of this little known area, to delineate the adaptive strategies of the nomadic groups who were utilizing it and to develop and test various hypotheses concerning these groups (Stucky 1976).

All in all twenty-three different archaeological sites were located and these were classified into four different types: nineteen open camp sites, one cache, two architectural sites and two lithic manufacturing sites. A total of 2,257 chipped stone implements were recovered including 89 projectile points which were classified into different categories, 125 scrapers, utilized flakes and bifaces and a large quantity ofdebitage. Ground or pecked stone tools consisted of thirteen items comprised of three hammerstones, six manos, two metates and two other fragments. Miscellaneous tools recovered were one bone chopper, one copper blade and one unidentified pot sherd (Stucky 1976).

Stucky (1976) determined that there were three different periods of occupation of the Sand Wash Basin Sites which extended from 8,500 B.P. up through the Late Prehistoric/Historic periods using Mulloy's chronological scheme. The first phase encompassed some Paleo-Indian period tools but these graded into the Great Basin-Desert Culture Archaic and lasted until circa
1250 B.C. The next manifestation was that of the Great Basin-Plains cultures of the Late Archaic and Late Prehistoric occupation periods; and the third was that of the Late Prehistoric-Historic Plains groups.

Included in the Museum are all the artifacts from the Sand Wash Basin survey, the preliminary report, maps and artifact sketches, site locations and descriptions and the bound thesis.

This survey and report have important and relevant information on what was occurring in the northwest Colorado area through time and have great potential for supplying much more. A study of the known lithic sources in the area or outside the area could be done using the lithics recorded from this survey. A comparative study of the projectile points and other tools could be conducted and updated by analyzing them and others from surrounding regions to distinguish associations and cultural groups. Trading sources, contact, migration and immigration studies could be done utilizing this material along with the methods and ideas described in Chapter III.

Eastern Slope: Multicomponent Sites

Introduction

Included in this section are the descriptions of the LoDai'ska and the Apex/Magic Mountain Sites which
are located on the Eastern Slope, west of Denver, Colorado. Both these sites were excavated by Cynthia and Henry Irwin in the fifties and were published in the *Museum Proceedings Series*. None of the materials from these excavations is represented in the Museum's collections at the moment. However, material recovered by amateur collectors and the Huschers from the Apex site are included in the Museum's collections. Currently, steps are being taken to initiate the return of the materials from these sites to the DMNH. Consequently, they are discussed in this thesis.

Both the LoDaisKa and Apex/Magic Mountain Sites, are multicomponent sites that include levels of occupation from the Archaic Period, Peripheral Pueblo Cultures, Woodland peoples and Historic groups. They are discussed in their temporal entirety here.

The LoDaisKa Site

Physically, the LoDaisKa Site is located in a rock shelter one mile south of Morrison, Colorado on a privately owned ranch (Figure 1); geographically and ecologically it is located between three different cultural areas, the Great Basin, the Plains and the Southwest (Irwin 1959). This area is in the Hogback region west of Denver which was first surveyed by Renaud
in 1930-31 and remained relatively untouched by amateur collectors (Figgins 1931; Irwin 1959).

The site was discovered by LoDaisKa Bethel and brought to the attention of Cynthia and Henry Irwin by Marie Wormington in the mid-1950s (Wormington 1985) and excavated by them in 1955-56 (Irwin 1959).

The site itself contained five levels of occupation, the first three pre-ceramic, and extended to a depth of fifteen feet with varying degrees of overlap (Irwin and Irwin 1959). According to the Irwins (1959) the lowest stratum which they designated Level E, contained a few early lithics from the Plains. Level D materials were classified as belonging to a phase of the Great Basin/Desert Culture. Radiocarbon samples gave a date of 2880 B.C. from this level. Level C was identified as belonging to a Middle Archaic Plains McKean Complex dated between 1440 B.C. and 1190 B.C. The next level, B, was comparative to Zone A at the Magic Mountain Site and contained a manifestation of Plains Woodland cultures, a ceramic phase dating ca. A.D. 700-1000. Level A probably was an extension of B, but showed evidence of Fremont contacts as it contained gaming pieces similar to those found in Fremont sites accompanied by Dent variety corn.
I have not had an opportunity to view the materials from the LoDaisKa Site as they were returned to the owner after they were analyzed (Irwin and Irwin 1959). It is hoped the artifacts can be traced and will be donated to the Museum.

The Apex/Magic Mountain Site

The Apex/Magic Mountain Site lies on a low ridge in the foothills area west of Denver, in Jefferson County between Golden and Morrison (Figure 1). (The name was changed from the Apex Site to the Magic Mountain Site at the request of the owner when the Irwins began their investigations.) It will be referred to as Magic Mountain throughout this report.

At the time of the Irwin's excavations of Magic Mountain in 1959-60, little scientifically was known of the archaeology of the area, although it had been a ripe location for amateur collectors since 1925 and by the 1940s, what had once been an extensive Woodland cemetery, was completely looted (Irwin and Irwin 1966). Several surface sites in this region were seen by Renaud in 1930-31 during his reconnaissance of eastern Colorado, but it is not clear if this site was one of those seen (Irwin and Irwin 1966).

In 1939-40, Jack Putnam and Bob Akerly carried out some collecting on the site and donated these finds
to the CMNH (Akerly 1985). Among these items is a shaft wrench with two drilled holes and engraved line markings on it, bone awls and fleshers, stone blades of different shapes, scrapers, a chopper and a groundstone mano and one cordmarked sherd.

It was this collection that prompted the investigation of the site by the Huschers in 1941 (Akerly 1985; Irwin and Irwin 1966). According to the Huschers' account (1941), three different stratigraphic levels all containing artifactual materials were recognized. A burial was uncovered of parts of a semi-flexed individual located under a cairn; only the long bones and skull remained, and "... with sandstone slabs including utilized slab metates ... piled around and over the body. Stone and bone artifacts were found along the left arm, none of the artifacts was definitive" (Huscher and Huscher 1941: 226-27). The burial was probably from the Apex Complex, Zone C (Irwin and Irwin 1966). These materials are in the DMNH and are generally similar to the Akerly-Putnam collection.

It was also Akerly (1985) who, in the fifties, informed Wormington of the Magic Mountain Site and subsequently, they encouraged the Irwins to begin initial investigations. These were carried out in 1956 (Irwin and Irwin 1966).
As the Irwins (1966) recount, they undertook this project with four problems in mind: to confirm and extend the regional and local sequences found at the LoDaisKa Site; to obtain a clearer definition of the complexes in the region; to acquire a correlation of the archaeological materials with the geological and ethno-botanical evidence; and last, to determine the relationships of the Foothills region to adjacent cultural areas over time.

Indeed, the Foothills Region lies in the border area between three different culture areas, the High Plains to the east, the Rocky Mountain-Great Basin to the west, and the Southwest culture area.

The Irwins (1966) found six stratigraphic levels which they labeled Zones A-F and these zones represented four complexes. Portions of the lower three zones, F, D, C, contained artifacts from the Magic Mountain Complex, an early Archaic Stage local manifestation with possible ultimate ties to the northwest. Zone E was comparable in time to Level D at LoDaisKa, yet the cultures were not comparable.

The second Complex identified by the Irwins was one they called the Apex Complex which composed the materials from Zone C and parts of D and E and suggested
parallels to aspects of the Desert Culture and was dated from 3000 B.C. to 1000-800 B.C. (Irwin and Irwin 1966).

Zone B held few artifacts and it was difficult to determine with which Complex they should be correlated, but the Irwins felt they were probably late manifestations of Zone C. Zone A was comprised of material from the High Plains Woodland Culture accompanied by Fremont trade wares and the distinctive "Dent" type maize associated with this culture (Cassells 1983).

The overwhelming majority of lithic material was of local origin from two known quarry sites and were of every general type (Irwin and Irwin 1966). The Irwins broke down the projectile point types into thirty-nine different classes.

The ceramics, all from Zone A, were of four types: Fremont, thick cordmarked, thin cordmarked, and crossed cordmarked.

As was stated earlier, none of the artifacts and associative material from the Irwins' excavation is currently held at the DMNH, but is at the Peabody Museum at Harvard who funded the project.

In a comparison of the Magic Mountain Complexes and those identified at LoDaisKa, the Irwins (1966), surprisingly, found little comparable material even though the sites are only six miles apart and seemingly
were occupied over the same period of time. Evidence of their economic subsistence base was similar but artifacts indicated there were two or more distinct groups over time.

Peripheral Pueblo Area Sites

Huschers' Stone Circle or "Hogan" Sites

During their surveys between 1939-41 (see above) the Huschers discovered a certain class of site that is still poorly understood today. These sites have been included with the Fremont Sites excavated by Wormington as they lie between the Pueblo Culture area and the Fremont Culture area, and may have been occupied during portions of the time that these cultures were thriving.

The Huschers paid close attention to those sites which contained dry laid stone masonry dwellings. As they relate (1942), it was hoped to develop a time frame for these sites, identify the origins and builders, classify different types of buildings and identify their entranceways, wall heights, the type of roofing associated with them, locate and identify any features linked with them and establish a typology for the artifacts found in association with these structures. The Huschers did, in fact, write a long article on this topic
in Southwestern Lore in 1943 describing these sites and the artifacts found with them; therefore, I will not go into any great detail describing each site and the artifacts found with them as this information is all contained in the published report.

In the old Accession Book, artifacts from thirteen different so-called hogan sites are recorded but not with any specific classification. There are artifacts from one hogan site that is not recorded. Many more sites are mentioned in the 1939 Fieldnotes that either were seen by the Huschers themselves, or were described to them by informants.

The majority of these sites were located in southeast Mesa County and northwest Montrose County on the Uncompahgre Plateau (Figure 5). Others were found in Saguache County (Figure 6). Almost all of these stone circles were built on exposed locations at altitudes between 8,000 and 9,000 feet on rock ledges, often with a large boulder making up one wall. However, none of these sites was in a defensive position as there was almost always higher ground above them. Most household activities were carried on outside the dwellings, but even hearths and middens were hard to locate (Huscher and Huscher 1943) which is reminiscent of Fremont cultural sites (Cassells 1983).
Figure 5. Stone Circle Sites on the Uncompahgre Plateau
Figure 6. Stone Circle Sites in the Saguache Area
Cultural material of all types was scarce at all these sites. This could indicate a number of things: these sites were inhabited for a short time or a series of short times only; most artifacts were taken with the inhabitants when they left; or, they could have been removed by natural or human agents.

Relative dating of these sites was based, in part, on associated Pueblo sherds and traits such as corn and single-trough metates found with many of these sites on the Western Slope (1943). Whether this indicated that the hogans were occupied at the same time as the Pueblo I-II sites farther south and the ceramics represent trade wares, or they were camps or summer homes of the Pueblo themselves is not understood, although the latter is not given too much weight (Cassells 1983). Perhaps the sherds or whole pots were picked up by later nomadic groups to use as charms or as relics from the "ancestors," or for more practical purposes such as for use as temper for their own pottery. Perhaps they were Fremont camps. To my knowledge, these sherds have not been completely analyzed and it would prove an interesting project to test the sherds for signs of calcite temper, a common trait at some Fremont ceramics (Wormington 1947).
Terminal dates for these stone circles were often based on large, old trees found growing over some of these sites and which were estimated to be around 400-500 years old (Huscher and Huscher 1939; 1943). The Huschers felt that the earlier sites were the ones located on the Western Slope and could have been occupied as early as A.D. 1000. The eastern sites show a movement of the hogan dwellers from northwest to southeast and these were probably occupied up to the entrance of the Spaniards or beyond.

As to who built these stone circles, the Huschers (1944) argue for early Athabaskan affiliations due to the similarity of the stone rings with later, known Navajo sites in northern New Mexico. There is no mention of possible Fremont association, but this culture was poorly defined at the time.

These sites record the southward passage of many of several groups of Southern Athabaskans and that they represent a time range of many hundreds of years. The main mountain ranges of the western U.S., far from constituting barriers, more likely were corridors by which the Athabaskan's movements took place (Huscher and Huscher 1943: 83).

Just how correct the Huschers were would make an interesting project for some researcher. Most of these sites should be reinspected, some excavated and charcoal from the hearths and/or wood samples taken for testing,
and diagnostic artifact comparisons made. However, a thorough analysis of the artifacts from these sites relevant to new information and techniques could be very informative and could clear up some of the questions that have been raised concerning the time and cultural affiliations of these sites.

The Turner-Look Site

In 1939, Mr. Al Look, an amateur archaeologist and newspaper reporter from Grand Junction, Colorado, examined three of five sites located on the Albert J. Turner ranch near Cisco, Utah (Figure 1) and subsequently sent reports, photographs and artifacts from these sites to the CMNH (Wormington 1955). These so intrigued Marie Wormington (1955) that she gained permission to excavate these sites from Mr. Turner and for five seasons, from 1939-1941 and again in 1947-48, she and a volunteer crew from the DMNH worked at the Turner-Look Site.

The site is located 200 yards from Cottonwood Creek and is a village site consisting of nine coursed masonry stone circles or ovals with mud mortar construction, cists and fireplaces both in and outside the structures, and five "... large, upright sandstone blocks embedded in the earth..." (Wormington 1955: 12) which she called monoliths.
All but one dwelling was excavated and four burials were uncovered outside the dwellings around some cists; one burial contained the skeletons of an adult male and a child lying on the back of the adult (Wormington 1956).

Artifacts recovered from this site were numerous and included grinding tools of different types of metates and manos, some used to grind corn, choppers and hammer-stones, shaft smoothers and stone balls. Projectile points were divided into three different categories: Type A were unstemmed and basically triangular in shape, Type B were side-notched and Type C were corner-notched, but no chronological sequence could be derived from these points (Wormington 1955). Other lithic implements recovered include knives, scrapers and drills.

Bone tools consisted of awls, fleshers and serrated items, probably used as cutting or sawing implements, and one large barbed tool. One of the most intriguing categories of bone, ceramic and lithic articles, were smoothed and shaped gaming pieces, both decorated and undecorated. Ornaments of bone, shell and lithic materials were discovered along with perforated discs and spindle whorls.

Stone and ceramic pipes or "cloud-blowers" were also located along with figurines of unfired clay.
Pottery was of the typical Fremont wares (Cassells 1983) and ranged from Plain Grey to Deadman's Black-on-Red and had the peculiar calcite temper, a material not abundant in the area (Wormington 1947).

This site represents a Fremont Culture manifestation as is shown in the types of artifactual materials recovered and in the pictographs representing the shield figures found so often in association with many Fremont sites (Cassells, 1983).

The Museum retained a portion of these materials; the remainder was given to the Museum of Western History in Grand Junction, Colorado. Also contained in the DMNH is documentation relating to this project; it is composed of photographs of the excavation and crew, maps, drawings, reports, drawings and copies of the printer's proof of Wormington's (1955) book on this subject entitled *A Reappraisal of the Fremont Culture*.

**Protohistoric/Historic Sites**

**Ute Sites**

A third category of sites located by the Huschers during their 1939-1941 survey were those associated with the Utes. Most of the information about these sites is contained only in the 1939 Fieldnotes. Some information is presented in an article in Masterkey entitled
"Potsherds in a Pinon Tree" (Huscher and Huscher 1940c) and in another article in Southwestern Lore entitled "Conventional Bear-Track Petroglyphs of the Uncompahgre Plateau" (Huscher and Huscher 1940b). There are some photographs taken of an exhibition the Huschers did at the DMNH on the various artifacts and features found in association with Ute sites.

Most of the intensive work was carried out in the Lower Gunnison River Drainage which was occupied by Uncompahgre Utes prior to their removal to reservations in 1876 (Figure 7). These sites were composed of cedar-bark cists, pole and brush wickiups and tree platforms (Huscher and Huscher 1939; 1940c). According to the Huschers (1939), the vast majority of these sites contained no cultural material with the exception of rough hewn poles used for construction. All the archaeological remains of the Utes were recorded in hopes of establishing a datable upper horizon and that "actual artifactual material of definite Ute provenience would give valuable cross-checks on ethnological data" (Huscher and Huscher 1939: 88).

Much of the material collected by the Huschers concerning the Utes has disappeared from the DMNH. Dated January 27, 1949 there are records in the DMNH which show the Huschers borrowed for research purposes
Figure 7. Ute Sites Mentioned by the Hurschers on the Uncompahgre Plateau
some of the heavier stone artifacts, blades, scrapers, etc., that had been found on various Ute sites. These sites included HD 2-7, HPCW, HPCB, HPC, HLW, HMFW and HD 1. These sites are not now represented in the Museum's collection. However, Mr. Huscher (1985) states that these articles were all returned. It is hoped they will eventually be located.

There are artifacts from four other Ute sites in the Museum which include portions from HMFW, HD-8 and "Tree-Platform." HD-8 was not accessioned but was described by the Huschers (1939) as a wickiup site located on Dry Mesa, four miles east of the Escalante Post Office. The artifacts in storage at the DMNH include two dark, grey sherds, two grey sherds with fingernail impressions, one grey rim sherd with a band across the lip and one buff-colored sherd also with fingernail impressions. All have a chunky, protruding temper. Two charred corn cobs, one flake, a bone fragment and a small, side-notched point are the other artifacts from this site. The sherds correspond to Ute Pottery types described by Buckles (1971).

HMFW contained a standing wickiup and was located on Escalante Creek, Mesa County. There is one small scraper from that site in the collection. The "Tree Platform" Site, not mentioned in the Accession
Book, has one small, round handstone, one corner-notched point fragment, two scrapers and three flakes.

However, even though there is little artifactual evidence from these Ute sites, the 1939 Fieldnotes are a gold mine of information in their careful descriptions of wickiup and tree platform construction and location. Types from full-circle pole-wickiups to simple lean-tos are described. Comparisons are also made with additional wickiup types from other geographical areas. Most, if not all, of these sites have vanished due to natural decay, vandalism and the on-going push of civilization. The Fieldnotes and photographs might be the only evidence left of their existence.

The Huschers (1939) indicate that most of the tree platforms were probably hunting and/or lookout stations and not burial platforms, as was thought by many modern residents of the areas in which they were found. (However, see Hutchinson reference to burial platforms below.) These platforms were usually built over-looking game trails and/or water sources.

Other features associated with the Historic Utes were "dog houses" (brush shelters too small for human occupation), Ute game traps and Bear Paw petroglyphs of which the Huschers describe nineteen that were seen and examined by them during their survey (1939).
No rubbings or drawings are available in the Museum but the article on them is explicit.

In another section of the 1939 Fieldnotes, the Huschers characterize various cultural materials from pipes to pottery thought to be associated with the Utes which were held in private collections in the region in which the survey was conducted. In the DMNH are two Ute pots which were donated to the Museum at the Huschers' request. Catalogue number 86 is a dark grey, sub-conical based olla with mica temper, said to have been found in a pinon tree on the Uncompahgre Plateau in 1900. The other, number 87, is a reconstructed grey jar, conical based, with fingernail impressions. This was found on the surface of a Ute wickiup camp in 1940 in the same area.

Shoshoni(?) Site--Graeber Cave

Graeber Cave was excavated by Charles E. Nelson and the Colorado Archaeological Society in 1964 and the artifacts and documentary materials were given to the Museum. The cave is located one mile above Tiny Town in Jefferson County, Colorado, 22 feet west of 285 at the junction of Turkey Creek Canyon Road (Figure 1) (Nelson and Graeber 1966).

According to Graeber (1966), who used to picnic with her family around the cave, the streambed of Turkey
Creek was seven feet below the floor in the twenties and thirties; due to the construction of the bridge over 285 and the new road along North Turkey Creek, the stream bed deepened and the midden was destroyed.

After a test pit was sunk, the site was excavated in two phases, due to regulations that forbade the dumping of screened material anywhere near the site. Consequently, the left side of the site was gridded and excavated first while the screened dirt was deposited on the right side; then the left side was backfilled and the right side was excavated. The upper four feet contained fallen rock and picnic trash, including metal pop bottle caps, etc.

The final six inches, sandy fill mixed with more fallen rock, revealed an earlier occupation level which contained sherds and lithic materials (Graeber 1964). During the first phase of the excavation, a slab-lined hearth in a horseshoe-shape was encountered; this hearth contained two rocks and one probable cooking stone, but no artifacts were located. In the remainder of this section, seven artifacts were recovered which included one corner-notched point with serrated edges, one triangular-shaped point and two point fragments, one keeled scraper and two retouched flakes.
Phase two uncovered no features but pottery sherds were discovered, all made of a grey, micaceous clay with large pieces of granite visible in the matrix. It was possible to reconstruct part of a vessel using these sherds and one flat-bottomed pot appeared. The construction technique appears to be of a "patch" construction with walls of varying thickness and finger-impressed. This has been identified as a Shoshoni pot, a rare find in Colorado as the Shoshoni tended to make their home farther to the north (Nelson and Graeber 1966).

Life Collections

The Hutchinson Collection

In 1983 the DMNH received the collection of Mr. Joe Hutchinson. This collection was originally loaned to a couple who taught at Greeley at the University of Northern Colorado and who had requested the material to show to their classes (Hutchinson 1985). For reasons unexplained, this couple suddenly left town, and the collection remained at the University; it was eventually forwarded to the DMNH. In an interview conducted with Mr. Hutchinson in July 1985, the following facts were ascertained.
Mr. Hutchinson, a former United Airlines pilot and avid collector, was brought up around the Buena Vista area and remembers stories his father told him of entertaining Ute chiefs on his homestead in 1872-76. Mr. Hutchinson's mother was a student of Edgar Hewitt at the Greeley Normal School in the late 1800s and accompanied Hewitt to Espanola, New Mexico to teach school there.

In the 1920s and 1930s, Hutchinson collected artifacts from around the ranch and the Buena Vista area, regions in New Mexico, eastern Colorado where he lived for a time, and Wyoming (Figure 1). The majority of the collection was provenienced by Mr. Hutchinson and these proveniences are contained with the artifacts in the collection.

The bulk of the lithics from the Buena Vista area appear to be of Ute origin and consists of corner-notched points, scrapers, blades, drills, gravers, hammerstones, etc. There is a large, grooved maul, both sides showing heavy use, which was found on the Piedra River near Chimney Rock, along with handstones and metate fragments.

Those items from eastern Colorado and southeast Wyoming include early points, shell pendants and a large "marrow" stone which he picked up at Lindenmeier and
which Dr. Roberts told him was used to crack the bones of the bison to extract the marrow. From the Hell Gap area are hammerstones, a large quartzite knife, a scraper and a large beamer/hoe. From a fire hearth on top of an isolated butte near Chugwater, Wyoming, Hutchinson located more than twenty large, curved blades associated with charred deer bones, two small points, two scrapers, one small stove pot lid and two oval-shaped, polished shell fragments.

Other interesting items in this collection include a lithic "fire-starter" found on Gran Quivera Ruin in New Mexico, blue beads from an Indian grave near Montrose, cordmarked sherds from Sand Creek, east of Denver and a large, curved metal skinning knife with a partially decayed wooden handle which was discovered in the pinon hills on a grave/tree platform, with skeleton, near Centerville, Colorado.

There are over 500 artifacts in this collection. Detailed maps with some of the discoveries located on them, and a letter describing the Buena Vista finds are also part of the documentation. A great deal can be learned about and from Mr. Hutchinson's collections. Specific pieces should intrigue those scholars who are interested in comparative material from specific locales and/or cultures in and around Colorado.
The Easterday Collection

In 1985 the Museum received a large collection of Mr. Robert Easterday of Longmont, Colorado which contains almost 5,000 articles from Weld and Larimer Counties (Figure 1). The author interviewed Mr. Easterday in June 1985 for the information presented below.

Mr. Easterday was brought up in Weld and Larimer Counties and since a child had been fascinated with the cultural materials that could be found scattered around on the eastern Plains of Colorado. With his parents, Mr. Easterday would go searching for "arrowheads" when he was young, and this shows in the records he kept. "Mom's" site and "Dad's" site are just two of the names given to the many sites investigated. In 1936-38 he worked on the Lindenmeier Site with Dr. Roberts and later on the San Jon Site in New Mexico in 1941. Mr. Easterday is a teacher and has worked in eastern Colorado and Alaska.

The vast majority of the Easterday Collection is comprised of lithic materials with an emphasis on projectile points which encompasses Paleo-Indian to Historic Plains cultures, including three early metal points. There are numerous blades, knives and preforms in the collection along with scrapers, some of which are keeled, others hafted, and utilized flakes. There are drills,
perforators and gravers, choppers and cores. The pecked or groundstone objects include metates and manos, or handstones, and four "beamers"; these are groundstone, rectangular stones with one side concave and polished with wear. Mr. Easterday feels these were used for rubbing hides to make buckskin.

Of the more interesting groups of artifacts contained in the assemblage are three separate caches. Cache GG I, located in the Riverside Reservoir area, is composed of 103 items of blue chalcedony, mostly large, ovoid, bi-facially flaked preforms with a few, bifacially flaked utilized choppers. One large blade was found on the surface on top of the cache.

Cache GG II, found on Chalk Bluffs, contained 140 pieces, and was found one quarter mile from bison bones. Included in this cache were large "hide" scrapers, preforms, keeled scrapers, meat processing tools, and flaked blades, with a flaking pattern similar to some prehistoric tools from England and France (as was told to Mr. Easterday by Marie Wormington).

Cache III was located near Dent in a ploughed field west of Greeley next to the radio tower and is comprised of different materials and includes long, broad flakes, scrapers and preforms.
Ceramic sherds are mostly of the Plains Woodland variety; one large rim sherd is corn-cob impressed and according to Priscilla Ellwood, who had a cursory look at it, appears to be an odd shape, with a flat bottom like a flower pot (1985). It would be interesting to compare it to the Shoshoni pot found at Graeber Cave.

Other unique pieces located by Mr. Easterday are a piece of selenite carved in the form of a shell which was picked up on Hummingbird Ruin west of Albuquerque, New Mexico, two pieces of hematite-like concretions, one of them bi-conically drilled found near Riverside Reservoir plus other drilled concretions.

All in all, this is an important collection as it encompasses over 10,000 years of occupation and use by prehistoric peoples of Weld and Larimer Counties in both the plains and mountain areas. Accompanying the collection is some documentation of provenience and Mr. Easterday is willing to return to many of the locations and pinpoint the various places that many of the items derived from. The pieces in this collection could increase our knowledge of the Plains cultures, trade and trade routes, possible lithic sources, the utilization and adaptation of plains versus mountain environments—the possibilities are many.
CHAPTER VII

THE FUTURE OF ARCHAEOLOGY AT THE DENVER MUSEUM OF NATURAL HISTORY

Introduction

As was stated previously, many of the problems outlined in Chapter IV were experienced by this writer while working with the various collections described. These problems were due to a combination of many factors. A museum serves many functions: it is a storehouse that conserves and protects rare, precious and interesting materials important to the public. It provides entertainment through its exhibits and special programs. However, education is probably its primary purpose and this cannot be accomplished without primary resource on its own collections as well as on the material it wishes to obtain. This requires the support of the public, the Board of Directors, staff and volunteers.

The difficulties encountered by me are not specific to this museum but are true throughout the museum population (Cantwell et al. 1981). Most curators are well aware of the problems existing in their own museums and would correct them if given adequate funding, space, time and support (Salwyn 1981).
Purpose

Although this is a large and complicated subject, and one in which I profess little expertise, I would like briefly to outline some recommendations and improvements that will facilitate and further advance one of the stated purposes of the Anthropology Department at the DMNH as I see it: that is the advancing of the research on the systematic archaeological collections held at the Museum. These suggestions will benefit the Museum specifically, and promote the education and the entertainment of the general public as well as the profession as a whole.

Traditions

There was a great and long tradition of archaeological investigation, collection, sponsorship and publication at the DMNH prior to 1967. The primary emphasis was on Early Man assemblages but others were represented as well. However, some materials from projects encouraged and published by the Museum were not deposited here but rather in institutions co-sponsoring them or they were returned to their original owners. These include the material from the Irwin's Magic Mountain excavations which are at the Peabody Museum at Harvard, the Taylor-Alva and part of the
Turner-Look collections which are in private hands or in the Museum of Western History in Grand Junction as well as the LoDaisKa articles which were returned to the owner. Action to trace and/or retrieve all or part of these collections is already being considered (Day 1985).

Likewise, during this period the Museum acquired exchange and loan items to supplement the collections. These included the prehistoric Southwestern artifacts that were acquired through trade with the Arizona State Museum in 1953 and the excellent collection of Pueblo pottery that came with the Crane Collection, to name a few. However, these are not primary source materials.

Deficiencies

There are some glaring deficiencies in the systematic collections which need to be corrected in order to put the Museum in the forefront as a good research institution. Chief among these is the lack of any systematic collection from the Southwestern Anasazi Tradition. Also missing are any representations of the Dismal River and Upper Republican manifestations in eastern Colorado. Most of the other collections have quantitative and qualitative gaps, both temporally and regionally, and most lack continuity.
The addition of the Frazier materials discussed above will be beneficial for augmenting the Paleo-Indian collections. The Archaic Period is represented by materials from the Sand Wash Basin, the Huscher material, the Moore-Casebier and Taylor-Alva sites, but more is needed in this area. The Fremont Culture in Western Colorado and Utah is partially represented by the specimens from the Turner-Look excavations and possible Fremont/Athabaskan evidence is contained in the Huschers' stone circle sites. Multi-component sites on the eastern slope are not as yet part of these collections, and until they are, the Archaic and Woodland cultures from this region will not be represented. The Proto-Historic period is featured by the Huschers' Ute materials and specimens from the Hutchinson Collection and possible Shoshoni forays are represented by the Graeber Cave items. Both the Hutchinson and Easterday Collections provide a continuum for portions of Colorado, but they lack depth.

All these collections need augmentation for a better understanding of the chronology, the environmental adaptations and maladaptations, the lifeways and the processes that brought about the changes and disappearances of the many groups that made Colorado their home at one time or another.
Recommendations

No museum can possibly hope to have an adequate sample of every culture at its disposal. Therefore, there is a need to emphasize certain regional areas and/or cultures. I feel the logical direction for the DMNH to head is toward the various groups and cultures that have participated in some way in the prehistory and history of Colorado and its neighboring areas and still retain its stress on Paleo-Indian collections. This does not mean limiting the collections to only these traditions and ignoring those from other regions; it should gratefully accept all donations from every area possible. But it should actively pursue those which will aid in our understanding of Colorado traditions for which it already has some foundation.

Obviously, the DMNH needs a coherent and cohesive archaeological strategy that will foster the additions to its existing collections and which, in turn, will allow for better use and research in these collections. Part of the problem has been remedied by the appointment of a new Curator of Archaeology, Dr. Jane S. Day, only the second such appointment in over fifty years. One of the greatest assets at the DMNH has been the encouragement, help and enthusiasm shown by the anthropology staff.
to researchers and students interested in the collections, and the new Curator is no different. Professional and student projects are welcomed, but this and the knowledge of what is available for study is poorly known in the academic community. It is hoped this thesis will enlighten the situation.

The Physical Plant

Another remedy will be the new addition to the Museum that is already under construction. Part of the design plans provide answers to the limited and disconnected storage problems, along with increased security and beneficial environmental conditions. There will be adequate accommodations, with a wet lab, for the student and researcher to carry on investigations of the collections (Stone 1985). Access to and care of the materials will be greatly facilitated as the new storage space becomes available.

Data Retrieval

Retrieval of data of the archaeological material is sometimes a difficult and complex task at the DMNH, resulting in lost time for both staff and investigator. The files are distressingly incomplete and often uninformative, due in part to the poor record keeping of earlier days. First and foremost a new and complete
review and re-evaluation of each and every artifact in the systematic collections is imperative. Those items that have not been accessioned and/or catalogued must be inventoried immediately, and each catalogue card should be checked and updated. Specifications such as location, identification of the artifact and the material of which it is made, its form and function, the culture area and site, collector/donor and any documentation relevant to the item and its location should be added.

Artifacts should be checked for signs of recent damage or deterioration and those that require it should be carefully inspected and repaired in ways that will not bias the information that might be retrieved from them. Records of the restoration and preservation techniques used should be kept and put on the catalogue cards. Those artifacts that have disappeared should be noted and this information kept in a different file in hopes that they can be located. Experts should be brought in when necessary to identify articles whose documentation is poor or non-existent and where identification is in question. Fakes should be separated and kept as curiosities or as eventual collectors' items themselves.

A cross-reference file and provenience card file should be maintained so that the staff and researchers can look up a subject, an area or specific location or
type of artifact in which they are interested and find various references to their topic in these catalogues.

Most importantly, all this information must be computerized so that retrieval of the data is at the finger tips of every interested person.

Ideally, photographs of each object and collection should be taken from different angles and kept in a separate, sterile and secure location that is centrally located to the research area.

Lithic and ceramic type collections from various culture areas and traditions should be assembled and made available to the staff, student and professional for reference.

Expansion of the Archaeological Holdings

Finally, and perhaps most importantly, if the DMNH wishes to retain its earlier reputation among archaeological professionals, steps must be taken to increase its systematic holdings. It must become more involved in the acquisition of primary collection materials.

Inventory. Plans are being developed to inventory the collections to determine strengths and weaknesses and "... a negative inventory will be produced to pinpoint lacks" (Herold 1983: 16).
Donations. New acquisitions from known avocational and professional archaeologists alike already are being actively solicited in various areas of Colorado in hopes of gaining donations of their collections, either now or in the future. Letters are being prepared toward that goal stating the needs and aims of the Museum. Site report and collection forms will also be enclosed enabling the collector to document his finds. In a sense, it is a way of educating the amateur enthusiast on the importance of proveniencing and documenting his collection both for his own benefit and that of future researchers. It also is informing the public of the renewed interest in archaeology by the DMNH.

Fieldwork. I also feel it will be necessary for the Museum to sponsor and/or participate in small surveys and excavations that will enhance the existing collections, fill in gaps and allow the Museum to become more actively involved in the prehistoric and historic archaeology of Colorado. A start toward this end would be a return to some of the sites surveyed by the Huschers and to certain rich areas described by Mr. Easterday and Mr. Hutchinson.

Along with this, in-depth interviews with living informants and original collectors, if possible, would
be beneficial in order to gather data on their collections and the areas in which they were found. These interviews might also lead to other collectors and collections. Informants can often give pertinent ethnographic information as well, such as Mr. Easterday's knowledge of the Dust Bowl days on the eastern plains and Mr. Hutchinson's reminiscences and memories of his father's experiences of settling in Colorado.

The Role of the DMNH

A museum of Natural History is an ideal participant in this scheme in accordance with the accepted Natural History approach which emphasizes field research, scientific collection and publication (Herold 1983). Many of the personnel necessary in a multi-disciplinary approach required in archaeological research today are employed by a museum of this type. Professionals such as archaeologists, anthropologists and ethnologists, paleontologists, botanists, zoologists and historians are available for advice and analysis and might add to their own departments as well. Moreover, amateur archaeologists, members, students and volunteers are willing and eager to participate as crew members. It also allows for the close collaboration of the conservator and the archaeologist during all phases of the
project. Most of the research and preservation of the artifacts can take place in the museum itself instead of in a temporary lab in the field.

**Repository.** With the completion of its new facilities the DMNH can also become a repository for those materials from excavated sites and surveys in and around Colorado, especially for those materials that may augment the existing holdings.

**Funding.** The Museum and the Anthropology Department should actively seek financial support for these projects through grants, donations, "pay-for-the-privilege" participants and special programs that will increase public awareness of the importance of archaeology, and awareness of the responsibilities and ethics involved in archaeological work. Classes could be offered in a variety of archaeological/anthropological subjects pertinent to the goals of the Department. Subjects such as Colorado History and Pre-history (with artifacts available for viewing and handling), different archaeological field methods and the identification of artifacts are but a few suggestions. Exhibitions of those artifacts from various systematic collections such as the DMNH did in 1985 with the three Paleo-Indian sites
would interest many. The ideas are limitless and can be expanded upon with a little imagination.

Financing for field work could be written into the budget, although I realize this has been tried before with little success; consequently, the Board of Directors must be educated in the importance of the systematic archaeological collections to the reputation of the Museum and the income that could be derived from such undertakings.

Conclusions

These suggestions are but a few that might be implemented in order to improve the facilities for researchers and to increase and improve the archaeological holdings at the Denver Museum of Natural History. If a museum wishes to improve, to grow and evolve, it must take actions to ensure these wishes.

A museum should be a participant in its community and it owes an obligation to that community to have on hand the best and the most complete inventory possible; in turn, the public owes it to the museum to become involved and to support programs that will advance the quality of that museum. One of these ways is to support and encourage the acquisition of new materials, and to assist research on these materials for the advancement
of knowledge. As was said by John Campion at the opening ceremonies for the Museum in 1908, "... A Museum of Natural History is never finished. A completed Museum is a dead Museum ... a result, of course, the people of Colorado do not want ... ."
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