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The Unsung Evolutionist: Charles Rau's Swiss Lake Dwelling Collection at the Smithsonian Institution

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THE UNSUNG EVOLUTIONIST:
CHARLES RAU'S SWISS LAKE DWELLING
COLLECTION AT THE SMITHSONIAN INSTITUTION

by

Liam Murphy

A Thesis Submitted in
Partial Fulfillment of the
Requirements for the Degree of

Master of Science
in Anthropology

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May 2016

ABSTRACT

THE UNSUNG EVOLUTIONIST: CHARLES RAU'S SWISS LAKE DWELLING COLLECTION AT THE SMITHSONIAN INSTITUTION

by

Liam Murphy

The University of Wisconsin-Milwaukee, 2016
Under the Supervision of Professor Bettina Arnold

During the second half of the nineteenth century, museums and collectors around the world engaged in a collecting frenzy focused on objects from the Swiss Alpine sites known as *Pfahlbauten*. Romantic reconstructions of these sites captured the antiquarian imagination and resulted in an artifact diaspora. Charles (Carl) Rau, a German-American archaeologist who became the first Curator of Antiquities at the Smithsonian Institution (SI), collected several hundred Neolithic and Bronze Age artifacts from the lake dwelling sites of Robenhausen and Auvernier, donating this material as well as his library to the SI upon his death in 1886. This thesis investigates the effect of Rau's political and social evolutionary beliefs on his collecting habits. A detailed object-based investigation in the larger context of the Swiss lake dwelling phenomenon is combined with a close analysis of Rau's published materials and personal letters held at the National Anthropological Archives (NAA) and Smithsonian Institutional Archives (SIA) to assess his contributions to the development of American archaeology. Similar collections in the United States and Switzerland are compared to the Rau Swiss lake dwelling material to evaluate the impact of individual agency on the development of the SI collection.

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LIST OF ABBREVIATIONS

BAE	Bureau of American Ethnology
NAA	National Anthropological Archives
NMNH	National Museum of Natural History
MSC	Museum Support Center
SI	Smithsonian Institution
SIA	Smithsonian Institutional Archives
USNM	United States National Museum

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therapist and 6th man throughout this whole process. Last but not least, thanks to Charles Rau, a brilliant man whose contributions to archaeology have been largely overlooked. I hope he finds his vindication within our field.

Chapter 1: Introduction and Background

1.1 Introduction

Archaeological excavation techniques and research priorities have changed drastically since the mid-nineteenth century, the period of time when it can be reasonably argued that archaeology as we know it today began to take shape. Archaeological sites first discovered in and around the Alpine lakes of Switzerland in the 1850s would come to contribute a great deal to the development of the field (Arnold 2013; Menotti 2010). The low oxygen conditions in these high altitude lakes resulted in extremely high levels of preservation of organic materials, and the wooden posts found along the shores of Swiss lakes were correctly interpreted as the remains of raised platforms on which wooden structures rested that had been built by much earlier populations (Arnold 2013; Menotti 2010). These raised platform structures, or *Pfahlbauten*, captured the global imagination, and museums and collectors from around the world raced to acquire objects from what quickly became known as the “Swiss Lake Dweller Culture”, a phenomenon that historians of archaeology have referred to as “*Pfahlbaufieber*” (literally a feverish collecting of all things lake dwelling)(Altorfer 2004).

The nineteenth-century clamor for these artifacts led to what Arnold (2013) has described as an artifact diaspora, where thousands of objects from a relatively small number of sites were spread around the world with little coordination as to location or content. Pre-modern excavation techniques and provenience information – as well as the fact that many of these sites were looted without recording context, or before systematic recording had been universally introduced – have further compromised the research potential of these diasporic artifacts. This makes contemporary interpretations of these

archaeological sites difficult, as the original contexts of many of the objects are very hard or impossible to track down. Recently a number of projects have sought to provide a richer context for these diasporic collections, especially objects from the site of Robenhausen (Altorfer 2010; Johnson 2006; Lillis 2005; Maxwell 2013; Menotti 2001, 2004; Ross 2011). The 2011 inscription of the *Prehistoric Pile Dwellings around the Alps (Switzerland / Austria / France / Germany / Italy / Slovenia)* as a UNESCO World Heritage site complex, as well as a resurgence of interest in these Alpine sites and artifacts, makes an analysis of Carl Rau's Smithsonian (SI) lake dwelling collection a particularly timely addition to these efforts.

A large collection of lacustrine artifacts is located at the National Museum of Natural History (NMNH) in Washington, D.C., much of which was originally part of the personal collection of Charles Rau (also often referred to as Carl Rau, both by his contemporaries and historians). The NMNH is part of the Smithsonian Institution (SI). It was founded in 1910 in order to curate and display the natural history collections from the SI. Prior to the founding of the NMNH, Rau's collections would have been located at the SI National Museum, which was in the Smithsonian castle on the National Mall in Washington D.C.

Rau's collection of artifacts was largely compiled through purchase, especially from Jakob Messikommer (1828-1917), the excavator of the site of Robenhausen about 25 km east of Zürich (Altorfer 2010). Rau had amassed an extensive collection of European archaeological artifacts, totaling 474 objects according to his personal catalog, of which this Swiss material is only a part. In this collection, 285 objects are from prehistoric Switzerland, 212 from Robenhausen, and 67 from sites near Lake Neuchâtel in Western Switzerland acquired from Professor Édouard Desor (1811-1882), primarily from the site of Auvèrnier (Figure 1.1 and Table 1.1). Five objects were from the site of Mörigen on Lake

Bienne and one object was from the vicinity of Lake Constance in northeastern Switzerland near the border of Germany. Fifteen of these objects are no longer present within the collection at the SI, presumably exchanged or misplaced.

Table 1.1 Rau's Swiss Lake Dwelling Collection	
Location	Number of Objects
Total European collection	484
Total Swiss lake dwelling collection	285
Robenhausen	212
Auvernier	67
Mörigen	5
Lake Constance	1

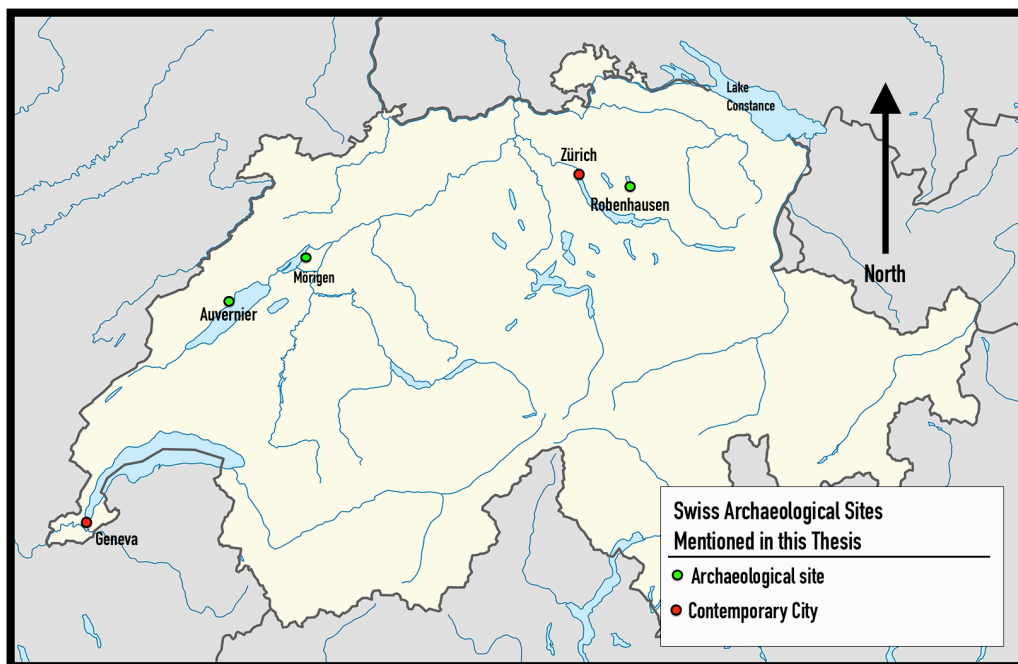


Figure 1.1 Locations of Robenhausen, Auvernier, Mörigen and Lake Constance in modern-day Switzerland.

At his death in 1887, Rau's collection and archives were donated to the Smithsonian Institution where they have remained until the present. One of the goals of this study was to analyze the composition of Rau's collection of Swiss lacustrine material with respect to the proportions of particular artifact categories in order to compare it to other, similar collections of material from Robenhausen, at the NMNH (Maxwell 2013) as well as other museums. Special attention has been paid to how Rau's personal motivations and biography may have affected his collecting habits. Rau as a prehistorian is discussed in the larger context of the developing discipline of archaeology based on this collection as well as through the analysis of his published works.

The first objective of this project was to provide a better context for Rau's collection within the broader framework of similar collections from Robenhausen. The initial step in that process was to create a refined catalog of objects in the collection based on a comparison of Rau's handwritten catalog and the existing museum inventory: what objects are still present? Are there any missing? Where are they located? What condition are they in? The online catalog at the SI provides an excellent starting place for these questions, but much of the information is incomplete, and some of the objects listed in Rau's personal catalog were missing from the inventory. During the last week of July in 2015, each of the 270 prehistoric Swiss objects present in Rau's collection in the NMNH storage facility in Suitland, Maryland was photographed, basic condition information was recorded, and any information associated with the objects was recorded alongside the information provided in Rau's personal catalog. Any discontinuities found between the locations of the objects

were corrected, and additional problems were noted. Each photograph included the object itself, the object label and a scale (Figure 1.2).



Figure 1.2 Example of photographs taken of Rau's collection.

The second objective of this thesis was to provide more information about Carl Rau himself, an important figure in the development of American archaeology whose early contributions to the field have been largely overlooked. John Kelly's article on Rau provides an excellent biographical sketch but focuses mainly on his contributions to Midwestern archaeology (Kelly 2002). Publications about the history of the SI (Hinsley 1994:36; Petraglia and Potts 2004) mention his activities but do not include detailed information about his European collections. I suggest in this thesis that Rau's trans-Atlantic contacts made him an important conduit for the flow of ideas between both Europe and North America in the late nineteenth century, and that but for a missed publishing opportunity he would probably have become a household name in early American anthropological

research. He published work on both continents and in two languages, German and English. His contributions to *Harper's* magazine in 1875, which were later compiled in a single monograph entitled *Early Man in Europe*, helped to popularize the Pfahlbau phenomenon in the United States (1876).

This project seeks to place Rau's European collection within the broader context of his personal history as well. Several unpublished works by Rau located in the NAA provide important insights into Rau's ideological underpinnings and intellectual stance with regard to human cultural evolution. How did Rau's philosophical and political beliefs influence his collecting practices when compared to contemporary collectors? Is the composition of the collection different as a result of Rau's personal background? How does it differ from other lake dwelling collections, in particular that of Thomas Wilson, who succeeded Rau as SI curator (Maxwell 2013)? How did the institutional practices of the SI affect the collections, and Rau's impact on the field? This thesis seeks to answer these questions while broadening access to and awareness of this material for a larger audience.

This study provides a qualitative assessment of Rau's collection in order to place it within a particular museological and historical context. For a variety of reasons, the collection at this point provides little useful archaeological data. In order for that to change, context information must be restored. A complete inventory of all the SI lake dwelling material would need to be carried out to virtually reassemble the material from the better-known lake dwelling localities. However, by improving the visibility of and access to the collection, future researchers may be able to make use of this collection in a more archaeological and less historiographical way. There is a total of 1,379 objects listed in the SI database from Swiss lake dwelling sites (Maxwell 2013:70). Rau's donation of 285

objects of this period represents about 20% of the total Swiss lake dwelling material at the SI. Of the 285 total, 206 objects come from Robenhausen, compared with 108 objects in Thomas Wilson’s Robenhausen collections (Maxwell 2013) (Table 1.2).

By using Maxwell’s (2013) study on Thomas Wilson’s collection at the SI as a comparative sample, this study seeks to investigate how these specific personalities affected the composition of the SI European archaeology collection. A cursory comparison of the two Robenhausen collections (Table 1.2) shows a number of clear differences between them.

Table 1.2 Object Types in the Rau and Wilson SI Robenhausen Collections		
Type of Artifact	Number of Objects (%) in Rau’s Robenhausen Collection	Number of Objects (%) in Wilson’s Robenhausen Collection (Maxwell 2013)
Botanical specimens	71 (34%)	60 (63%)
Chipped Stone/ Flint	37 (18)	1 (1)
Ceramic Vessels	29 (14)	5 (5)
Ground Stone	17 (8)	2 (2)
Worked Bone	17 (8)	4 (4)
Textiles, Matting and Fibers	15 (7)	9 (10)
Antler	7 (3)	0
Other Faunal	5 (2)	3(3)
Wood	4 (2)	5 (5)
Other	3 (1)	4 (4)
Other Stone	0	3 (3)
Total	206	108

Wilson and Rau came from distinctly different backgrounds but worked side by side for a period, with Wilson succeeding Rau as curator of European Archaeology after Rau’s death (Petraglia and Potts 2004: 18). Comparing their life histories and collecting practices demonstrates how personal history, agency and specific events impacted the foundations of the SI’s European archaeology collection and will add to our historical understanding of

an important period in the development of both the SI as an institution and archaeology in the United States in the nineteenth century. Rau's biography also contains much of interest to other fields, especially historians. Following the widespread European revolutions of 1848, many Germans emigrated to the United States, Carl Rau among them. The immigrant experience of the "forty-eighters" in the mid-nineteenth century was important in the development of American intellectualism as well as the abolition and labor movements (Wittke 1948).

1.2 Background

This section will introduce some of the important background information necessary to understand the context of Rau's collection of Swiss material at the NMNH. First, a summary of the history of lake dwelling archaeological sites, from their mid-nineteenth century interpretation to more recent research, is provided. The thesis also provides a more in-depth examination of the site of Robenhausen and a brief discussion of the Bronze Age site at Auvernier, the two localities that account for over 90% of Rau's lake dwelling collection at the SI. This section also provides an overview of the beginnings of anthropology at the SI, and concludes with a biographical sketch of Carl Rau.

1.3 Pfahlbauten Discovered!

The winter of 1853-1854 followed a particularly dry summer, resulting in a drastic lowering of lake levels in the Alpine lakes of Switzerland. At Lake Zürich, in the town of Ober-Meilen, local residents took this opportunity to patrol the lakeshores for artifacts they could sell to supplement their incomes. A local schoolteacher took note of numerous large piles emerging from the lake at several locations and reported them to Ferdinand Keller (1800-1881), the head and founder of the Antiquarian Society in Zürich (Arnold 2013:

877). In 1854, Keller published the first report on the site, concluding that these piles had supported platforms above the lake upon which the inhabitants had built their houses. This image of houses on stilts and platforms captured the popular imagination in Europe and quickly became a major cultural phenomenon. An American book documenting the *History of Switzerland* (Hug and Stead 1890) published in 1890 begins its account with a discussion of the Swiss Lake Dwellers. The introduction emphasizes the universal awareness of the lake dwelling culture: “Every schoolboy has heard of the wonderful discoveries made on the shores of the beautiful Swiss lakes during the last few years, and the same schoolboy even understands, if somewhat hazily, the importance attaching to these discoveries” (Hug and Stead 1890: 2). This contrasts starkly with the virtually total ignorance of this period of European prehistory in the US today, even in museums with extensive holdings of lake dwelling material.

The lake dwellings, or “Pfahlbauten”, are found throughout the Alpine lakes of Switzerland, France, Italy, Germany, Austria and Slovenia. Especially ubiquitous in Switzerland, these sites have served as a unifying archaeological record for a heterogeneous polyglot nation (Arnold 2013). Early interpretations, often referred to by later archaeologists as the “Lake Dwelling Myth”, imagined a singular civilization that built these villages (Kaeser 2013). The interpretation seemed tailor-made to provide a shared national identity for the new Swiss Republic. Artwork mirrored this romantic view of the lake dwellers, as can be seen in in this exhibit mural from the Milwaukee Public Museum painted by WPA artist Albert O. Tiemann (Figure 1.3).



Figure 1.3 Romantic reconstruction of lake dwelling (Photo by B. Arnold).

Local enthusiasts began excavating intensively and a large market grew around the trade of artifacts found at these sites. A large number of so called “fishers” would patrol the lake shores and wetlands around these Alpine lakes, collecting any artifacts they found in order to sell them to wealthy collectors. However, this subsistence looting was not the only type of collecting that was happening at the time. Menotti states, “In this embryonic state, archaeological research was far from scientific. In fact, sadly enough, the main purpose of the lake-dwelling ‘rush’ was purely lucrative. Hundreds of improvised ‘antiquarians’ made their fortune by selling illegally collected lacustrine artifacts to private collectors all over the world” (2003: 1).

Contemporary archaeological interpretation indicates that these lake dwelling sites were first occupied in the late fifth millennium BC and were discontinuously occupied until around the seventh century BC (Menotti 2004). Whether the structures were built on platforms above the lake’s surface, partly above the lake, in marshes or wetlands, or on the dry land around the shores of the lakes remained a highly contentious issue in the archaeology of the area for generations. This debate has been referred to as the “*Pfalbauproblem*” (Menotti 2001: 319). Keller’s theory about the construction of villages on

platforms above the lake remained the dominant paradigm until well into the twentieth century. His reconstruction was first seriously challenged in the 1920s by Hans Reinerth (1900-1990), who argued that the pile dwellings were not supporting settlements permanently above the water level, but that these settlements existed near the shores of lakes, and the piles protected the settlements from seasonal flooding (Menotti 2001: 322). Later archaeologists, including Oskar Paret (1889-1972), argued that these settlements existed entirely on terra firma (Menotti 2001: 322). By the 1960s, there was a general consensus that these buildings were mainly built on dry land or marshy areas, with some exceptions (Menotti 2001: 323) (Figure 1.4).

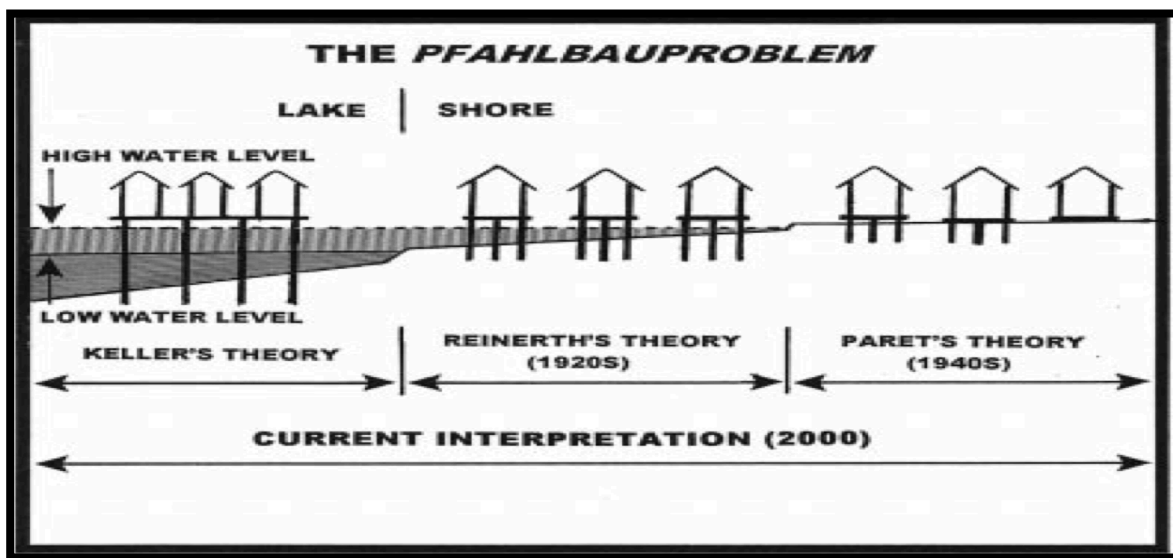


Figure 1.4 Current interpretation of the *Pfahlbauproblem* (Menotti 2000 based on Schlichtherle 1997).

Archaeological evidence does not support the early notion that there was a monolithic lake-dweller civilization that spread over the whole of the Alps; rather, these sites were the result of a complicated series of occupations and abandonments over the course of several thousand years (Kaeser 2004; Menotti 2000). This interpretation as a monolithic culture seems to have come into being partly as a political tool useful in the

construction of a national mythology for the nascent Swiss constitutional state (Arnold 2013; Kaeser 2004). Rather than a singular cultural movement, the lacustrine village is an archaeological phenomenon, an adaptation to a particular environment similar to the tell sites of the Middle East or Mesolithic shell-middens. The earliest occupation of these Alpine lakeside villages occurred during the Neolithic and they have provided us with an unprecedented amount of detail regarding perishable technologies ordinarily not preserved in later periods, when settlements moved away from the anaerobic lakeshore contexts.

1.4 Robenhausen and Auvernier

Robenhausen is a multicomponent settlement site near the shore of Lake Pfäffikon, about 25 km east of Zürich (Lillis 2005). The site was occupied intermittently between the Neolithic and the Late Bronze Age. The two settlement areas are separated by the Aa River, which flows into Lake Pfäffikon at the southwest corner of the lake. The site was first excavated in 1858, shortly after the onset of “Swiss Lake Fever”. Robenhausen was investigated for over three decades by local farmer Jakob Messikommer and his son Heinrich (Altorfer 2000, 2010; Lillis 2005). Messikommer conducted thorough and systematic excavations and he was well regarded by his contemporaries for his keen observations about the archaeological deposits he uncovered (Altorfer 2000; Munro 1888: 112). The site would become one of the most important of the lacustrine settlements in Switzerland and lent its name to an entire phase of the European Neolithic in the early classificatory scheme put forward by Gabriel de Mortillet (1821-1898)(Kaeser 2004: 85).

A roughly contemporary account by Scottish prehistorian Robert Munro (1835-1920) of Messikommer’s work provides a useful picture: “As the excavations progressed,

Messikommer made the important observation that the piles could be distinguished into three sets, corresponding with so many relic-beds" (Munro 1888: 112). Messikommer's keen observations about the stratigraphy of the site led to a remarkably accurate interpretation of the various occupations. While recent investigations by Altorfer (2000, 2004, 2010) have identified five occupation strata as opposed to Messikommer's three, the original chronology remains useful today (Messikommer 1890).

Messikommer labeled the three occupation layers at Robenhausen R1, R2, and R3 (Lillis 2005: 70). The earliest occupation, R1, was attributed to the Neolithic Pfyn culture. Within this stratum, Messikommer uncovered a variety of artifacts. Lithics included serpentine axe heads, diorite, lancelets, knife points, arrow points, spear points, and grindstones. Preserved apples and charred grains were also found in this deposit, as well as remarkably well preserved textiles and linens (Lillis 2005: 70). The second occupation of the site, R2, has been attributed to the Horgen phase of the Neolithic. This occupation marks the first appearance of copper implements at Robenhausen, as well as lithic and well-preserved organic material. R2 seems to have been abandoned after a fire (Lillis 2005: 71). The final occupation proposed by Messikommer, R3, was attributed to the Early Bronze Age. The Early Bronze Age occupation was less extensive, and a large gap between the occupation layers seems to indicate there had been a period of abandonment between R2 and R3 (Lillis 2005: 71).

Altorfer's (2000, 2010) interpretation of the settlement at Robenhausen, based on coring and limited re-excavation, identifies five distinct occupation layers at Robenhausen (Figure 1.5). In Altorfer's reinterpretation of the stratigraphy of Robenhausen, R1 remains a single occupation layer dated to the Pfyn Neolithic culture. Messikommer's R2 actually

contains occupation layers from three distinct phases, the first of which is an extension of the Pfyn material from R1. It also contains a later Horgen Neolithic deposit, and a Schnurkeramik occupation layer. R3 is divided into an Early Bronze Age occupation as well as a Late Bronze Age layer (Altorfer 2000).

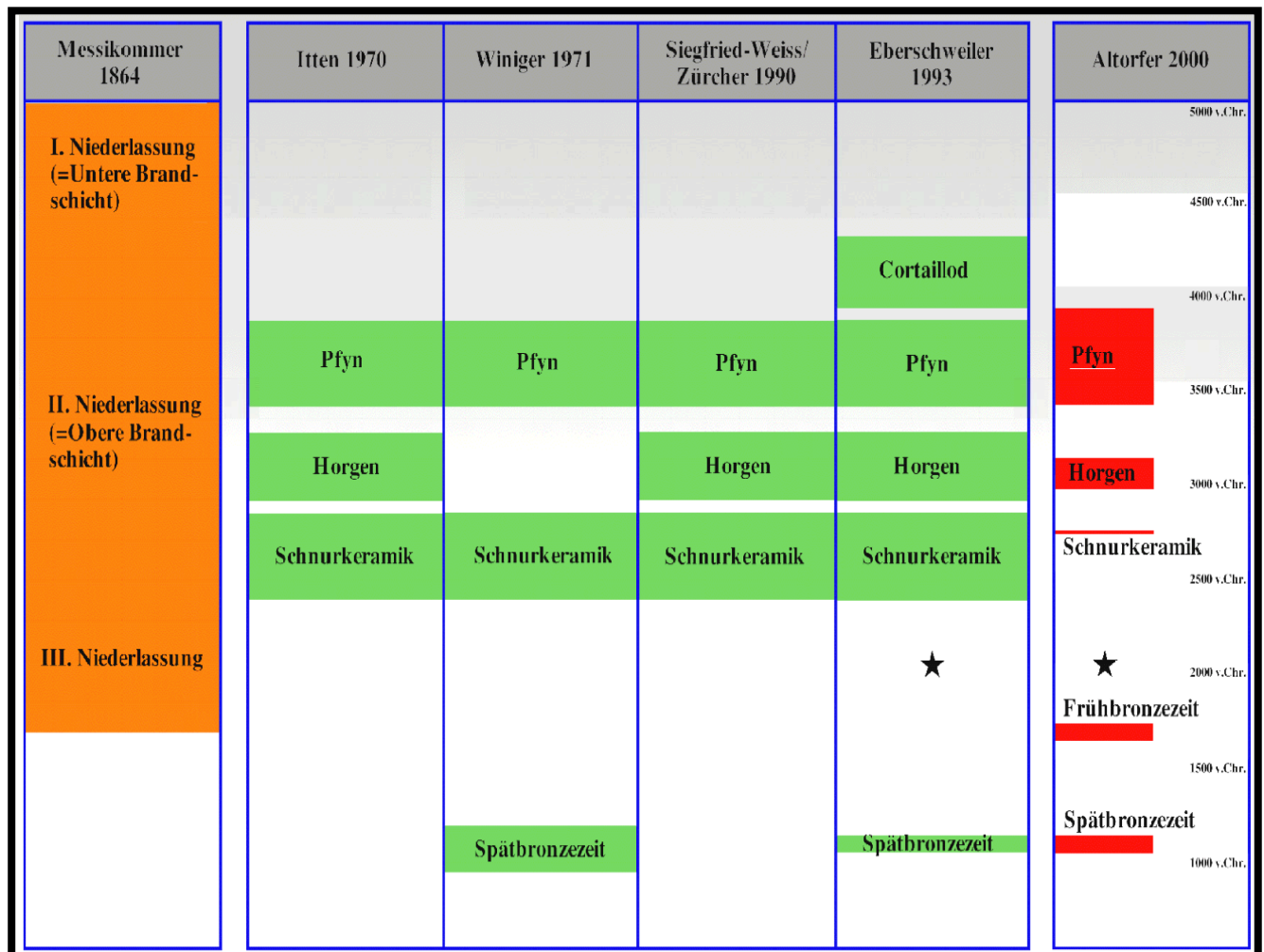


Figure 1.5 Development of Robenhausen chronology from Messikommer to Altorfer (Altorfer 2000).

Messikommer’s excavations were extensive, as was his acumen as a seller of antiquities from this site. Messikommer positioned Robenhausen, and himself, as a central distribution point in the mid-nineteenth collecting phenomenon referred to as “Swiss Lake Fever” (Arnold 2013). The site became an important stop for major antiquaries of the day

travelling in Europe. Messikommer would invite individuals to come and excavate at Robenhausen, often selling them objects they had uncovered. Luminaries like Charles Lyell, Heinrich Schliemann, and Thomas Wilson all visited the site and bought artifacts (Altorfer 2000; Arnold 2013). Munro notes that by the late nineteenth century most major European museums had acquired Robenhausen material (1888: 111). Artifacts from the site are found around the world in both Europe and the United States (Arnold 2013). Katherine Leckie (2011) conducted an extensive analysis of lake dwelling collections in Britain for her dissertation at the University of Cambridge. She was able to document 405 objects ostensibly from Robenhausen in the course of her project (Leckie 2011: Appendix A). This dispersal of artifacts from Robenhausen and many other lacustrine sites during the nineteenth century has remained a serious problem for interpreting the sites, since the spectrum of excavated material has yet to be fully documented. Several studies over the past ten years have attempted to help solve this problem by tracking down artifacts from this “diaspora” in the US and Britain, gradually creating a database of lacustrine artifacts (Johnson 2006; Leckie 2011; Lillis 2005; Maxwell 2013; Ross 2011) and bringing them together in a virtual context.

Auvernier

Auvernier is a village site on the shores of Lake Neuchâtel. It is located at about the half waypoint on the northern shoreline of the lake (see Figure 1.1). Several pile-dwelling sites are located near the town ranging from Late Cortaillod in the Neolithic to the Late Bronze Age (UNESCO World Heritage Prehistoric Pile Dwellings around the Alps). Excavations began early in the area, with Keller describing the sites in his initial lake dwelling report (Keller 1854). Édouard Desor (1811-1882), from whom Rau received his

Auvernier material, authored an article about recent finds at Auvernier in the *SI Annual Report* for 1865 (Desor 1866). Rau does not indicate from which locality the objects from Auvernier in his possession came, although there may be more specific information in his personal papers that I was not able to read due to orthographic and linguistic limitations.

Rau's relationship with Desor is an important one. Desor was one of the key figures in the development of nineteenth century prehistoric archaeology (Kaeser 2002, 2004). A German-born, French-educated, Swiss national natural historian, Desor was a student and assistant of Louis Agassiz, whom he accompanied to the US in the 1840s (Kaeser 2002). Desor had a serious falling out with Agassiz before returning to Europe (Lurie 1988: 160), where he would play a major role in the study of Swiss lake dwellings (Desor 1866). While I did not find any letters between Rau and Desor, Rau received dozens of artifacts from Desor (Table 1.1), suggesting a relationship between the two must have existed. Rau's catalog contains several references to Desor's interpretations of particular objects, indicating that they must have corresponded at least on that topic. At this point, it is hard to discern how much of an effect Desor's thoughts had on Rau's conception of cultural evolution, but future researchers could find more connections between the two.

1.5 Nineteenth Century Archaeology at the SI

On August 10, 1846, James Polk signed into law an Act of Congress establishing the Smithsonian Institution (Smithsonian Institution Archives). This Act of Congress (9 Statute 102) was the result of a protracted debate as to how best to use a \$500,000 bequest left to the United States by an English gentleman named John Smithson. Smithson died in 1829 and famously left this gift to the US in order to create an institution that would "increase the diffusion of knowledge among men." The bequest was followed by many years of

vigorous debate over the disposition of the monies donated by Smithson. The enabling act established a broad mission for the SI, which was charged with creating a museum, scientific research laboratories, an observatory, and a library and copyright depository.

Joseph Henry (1797-1878) became the first secretary of the SI in 1846 and developed a program that advocated for an increase in original scientific research in the US. Henry, born in Albany, NY in 1797, had been a scientist and teacher at the Albany Academy, as well as a lecturer at the College of New Jersey, now Princeton University. Although trained as a physicist, Henry believed that ethnography was a field with growth potential, albeit one he felt was largely speculative (Hinsley 1994:35). One of the large-scale research projects the SI would support during his term was Squier and Davis' *Ancient Monuments of the Mississippi Valley* (1848), which became the first volume of the Smithsonian "Contributions to Knowledge" series, for which Rau would produce four works. Henry continued to support anthropology throughout his time as Secretary, providing substantial support and encouragement for Rau over the course of his career at the SI (see Chapter 4).

For the 1876 Centennial Exposition in Philadelphia, Henry commissioned an exhibit of American Ethnography, which was arranged by Otis Mason (1838-1908) and Charles Rau. Rau was brought on to the project in order to document the archaeological material in the SI's collection. Mason was an ethnologist and professor at Columbian University (now George Washington University) who worked at the SI as an unpaid collaborator from 1872 until 1884, when he became the SI's first curator of ethnography (Coen 1983).

After Henry's death in 1878, Spencer Baird (1823-1887) became the second Secretary of the SI. Baird was a naturalist born in Reading, PA who worked as Joseph Henry's assistant for several decades. Baird continued Henry's support of field sciences and

the development of Anthropology as a field more generally. He also oversaw the creation of the Department of Anthropology at the SI, as well as the founding of the Bureau of American Ethnography (Smithsonian Institution). The later part of Rau's career at the SI would be spent under the leadership of Baird.

1.6 Carl Rau

In the United States, Swiss lake fever did not pick up seriously until after the American Civil War (Arnold 2013: 869); the first American visitors to Robenhausen appear in Messikommer's guest book beginning at the end of the conflict, after the 1866 publication of the English-language translation by Lee of Keller's classic book on the lake dwellers (Altorfer 2010: 52-53; Keller 1866). One of the first mentions of the phenomenon in the United States was in a series of articles written by Carl Rau for *Harper's* magazine in 1875. Rau was a Belgian-born German immigrant who had studied geology at the University of Heidelberg before emigrating to the United States, where he worked as a schoolteacher in St. Louis and New York City before being employed as a Curator at the SI (Kelly 2002) (Table 1.3). Rau is described as one of the pre-eminent archaeologists in America in *Stoddart's Encyclopedia Americana* (1889). Hough called him "The first in America to recognize the importance of the study of aboriginal technology, he had great and beneficial influence on pioneer anthropology" (Hough 1935: 389). Rau is known among North American archaeologists today mainly for his early documentation of the archaeological record of the area around St. Louis, Missouri, especially Mississippian sites associated with the famous mound center of Cahokia (Kelly 2002).

Rau never excavated in Switzerland, but he corresponded with Jakob Messikommer, who sent him several crate loads of artifacts (Arnold 2013), and he eventually acquired

over two hundred artifacts from Robenhausen. Rau’s scholarly work was focused on comparing the cultural adaptations of the European Stone Age and prehistoric North America. His unpublished manuscript “On the Parallelism of Development in Mankind”, which he began working on in the late 1860s, explicitly explored these connections and examined these material remains from this comparative perspective.

Table 1.3 Chronology of Important Events in Rau’s Life	
Year	Event
1826	Born in Verviers, Belgium (Day 1976)
1839	Left his studies and home in Heidelberg to enter into an apprenticeship in the iron industry in Siegen, Germany (Day 1976)
1848	In October, emigrated to the United States; first to New Orleans and then to work as a language teacher in Bellesville, Illinois (Day 1976)
1860-1861?	Trip back to Europe? (A close reading of several of Rau’s written works indicates that he took a trip to Northern Europe at some point after he had become familiar with North American archaeology. Rau mentions this encounter as being the first time he noticed the similarities between Old and New World archaeological artifacts.)
1862	Living in New York teaching school children
1863	First publication in the SI Annual Report
1875	Hired by SI to prepare collections for the Centennial Exposition in Philadelphia. Moves to Washington, D.C.
1875	Publication of “Early Man in Europe” in <i>Harper’s Magazine</i>
1876	Hired to document SI archaeology collection
1881	Becomes curator of the Department of Archaeology at the SI
1882	Receives Honorary Ph.D. from the University of Freiburg in Baden
1884	Publication of <i>Prehistoric Fishing</i>
1887	Death in Philadelphia

There has been very little scholarship on the life of Rau up to this point. Several eulogies and obituaries written shortly after his death in 1887 indicate the prominent position he had attained within the anthropological community by the late 1800s (Hough 1935). In the 1888 SI Annual report, Thomas Wilson—Rau’s successor at the SI, and the creator of the lake dwelling collection used as a comparison in this thesis—extolled Rau’s contributions to archaeology, noting that “almost the entire life of Dr. Rau was spent in

archaeological studies. He was faithful, zealous, and devoted to his science” (Wilson 1890: 122) (Figure 1.6).

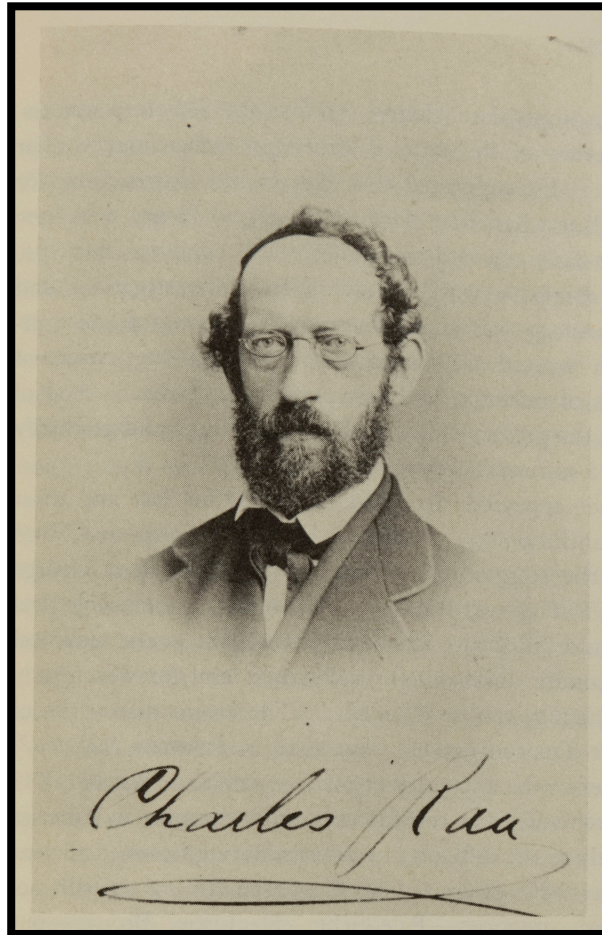


Figure 1.6 Photographic portrait of Rau (Hinsley 1994: 43).

Walter Hough (1859-1935) wrote a brief biography of Rau for *The Dictionary of American Biography* in 1895. Hough was an SI anthropologist who had begun work as a copyist in the Department of Ethnology in 1886 (Judd 1936: 38) and would eventually become the head curator of Anthropology at the SI in the 1920s. Hough also began his career as a schoolteacher in Illinois (Judd 1936: 39) and spent the early part of his tenure at the SI helping to catalog collections donated to the museum during the Centennial Exposition by foreign governments (Judd 1936: 39). Hough’s brief biography provides

limited information on Rau's life, noting that "details of his family and early life are lacking" (Hough 1935: 388). Hough then highlights Rau's experiences as a schoolteacher in Illinois and New York before recounting a few of his publications and his career at the SI as a curator. Hough wrote of Rau: "His analytical and orderly mind grasped readily and completely the subject of aboriginal technology, he had a great and beneficial influence on pioneer anthropology" (Hough 1935:289).

Curtis Hinsley provides a brief biographical treatment of Rau in his history of the SI (Hinsley 1994: 42-47), using Rau to highlight the evolutionary and comparative focus of archaeology during the 1860s, 70s, and 80s. Hinsley paints the portrait of a man who struggled to find success in a field that he desperately felt he deserved to be a part of (Hinsley 1994: 42-47). Archaeology at this time was an area of scholarship dominated by wealthy dilettants, and Rau, coming from a background of modest means, was unable to fund his own excavations even while he was able to amass a sizable archaeological collection during this period. Rau struggled to find a position more rewarding than that of a schoolteacher and felt that anti-foreign sentiment was partly responsible for his lack of success (Hinsley 1994:43).

Kelly (2002) also provides a brief biographical treatment of Rau, noting his birth in Verviers, Belgium in 1826 and education in Heidelberg. At least two of his uncles were prominent German scholars: Gerhard Rath Rau was a professor of Natural Economy at the University of Heidelberg and well-known economist Karl Heinrich Rau was clearly another uncle (Kelly 2002: 122). In Carl Rau's catalog at the SI, artifact number 243 is labeled as an "Urn from an Ancient German Grave" and "Sent by Professor K. H. Rau of Heidelberg", indicating that a relationship with this famous scholar continued across the Atlantic (Figure

1.7). Rau describes Professor K. H. Rau as his uncle in so many words in a letter to Joseph Henry in 1869 (Rau to Henry, Dec 16, 1869).

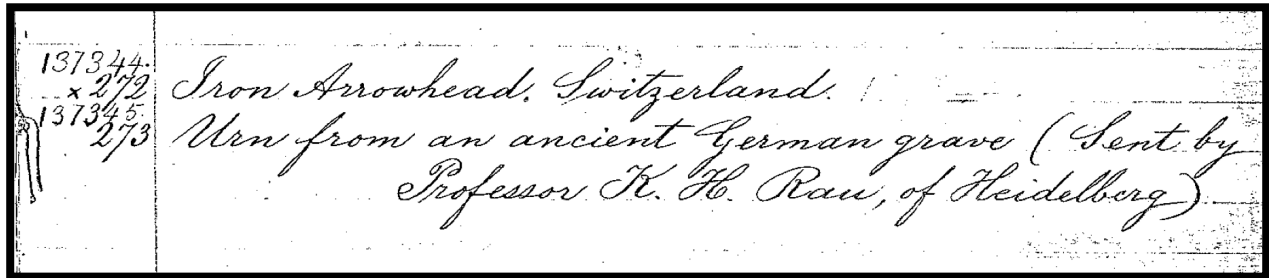


Figure 1.7 Entry in Rau catalog that mentions K. H. Rau.

Rau seems to have studied geology at the University of Heidelberg before leaving to apprentice in the iron industry in northern Germany (Kelly 2002: 122). He came to the United States in 1848, several years before Keller (1854) published the German edition of his famous Pfahlbauten monograph. Rau's immigration could have been related to the revolutions of 1848, a series of political uprisings that took place across Europe in 1848 and 1849 (Wittke 1948: 711). Young intellectuals and labor movements played an important role in the propagation of this revolutionary fervor (Wittke 1948: 711). Rau's progressive ideas about human cultural development can probably be traced to his involvement in this movement. Édouard Desor and Jean de Mortillet, early prehistorians and contemporaries of Rau, adopted a similar internationalist comparative paradigm that argued for a universal and evolutionary conception of human development (Kaeser 2002: 173-175). The National Anthropological Archives (NAA) at the SI contain a large number of letters written to/by Rau in Germany before he emigrated. A more in-depth examination by a native German speaker with the necessary orthographic skills would provide useful insights into both Rau's life and the role of the general historical context of the revolution in his development as an intellectual.

Rau initially settled outside St. Louis where he taught at several schools in the city and surrounding area (Kelly 2002). It was during this period that he seems to have begun collecting prehistoric artifacts although his educational background in geology suggests this interest may have begun while he was still a student in Germany. He obtained objects brought to him by his students, seemingly by both persuasion and coercion (Kelly 2002: 122-123). During his tenure in St Louis, Rau dedicated himself to the study of the prehistoric material culture of the area. This is where he began to write scholarly articles, publishing his first piece in the German journal *Die Natur* in 1859. Rau would continue to publish extensively over the course of his life in both German and English.

Sometime in the early 1860s, Rau moved to New York City, where he taught in the local Irish community (Hinsley 1994: 42). Rau apparently felt this position beneath him, writing that he was teaching “brutish, half-savage, actually *lousy* Irish boys” ... “by the grace of a few illiterate Irishmen” (Rau to Henry, 1869 cited in Hinsley 1994: 42). In 1863, he published an anonymous piece in the *New Yorker Staats-Zeitung* entitled “Negeremancipation in Jamaika”, described by the USNM as arguing “against the sudden emancipation of New York’s negroes” (*Proceedings of the United States National Museum* 1881: 455). Rau continued to teach in New York, publishing extensively on a broad range of subjects, until 1875. During this time he developed an ongoing interest in comparing the prehistoric material records of Europe and North America.

In 1875, Rau took a temporary job at the SI to help prepare for the Centennial exposition. Rau was employed as a full-time curator at the Smithsonian Institution in 1881, a position he held until his death in Philadelphia on July 25, 1887, when his personal collection and library were donated to the SI. The library that Rau donated to the SI

consisted of 715 bound volumes and 1,722 unbound volumes (Wilson 1888: 123), a collection that would form the nucleus of the SI Archaeological Library, known initially as the Rau Library of Archaeology (Lane and Bolton 1892: 69).

Rau’s death was reported widely in scholarly journals and societies. In *Stoddart’s Encyclopedia Americana*, he is listed as an eminent archaeologist. His death was announced in the *Proceedings of the American Philosophical Society*. *Appletons’ Annual Cyclopaedia and Register of Important Events* (1888: 607) states “these papers gained for him a world-wide authority and he ranked high among the pioneers of American archaeology. It is said he was better known in Europe than any other American scholar devoted to the subject”.

Rau accumulated a significant collection of prehistoric materials over the course of his career. Wilson (1888) states that Rau donated 2,000 ethnological and archaeological specimens. Over 10% of these specimens were from Swiss lake dwelling sites. The remaining collection is mostly from North America, with less than ten objects from South and Central America, and is composed of a wide assortment of objects (Table 1.4).

Table 1.4 Rau’s collection at the NMNH, Accession 019931	
European objects listed in Rau’s catalog	474 (27%)
Swiss lake dwelling objects recorded during this project	270 (16%)
Total objects in SI Database	1,731

A preliminary examination of Rau’s catalog at the SI revealed that he acquired 202 lacustrine artifacts from Jacob Messikommer, all apparently from Robenhausen, as well as 72 artifacts from Professor E. Desor from around the area of Lake Neuchâtel. An introductory letter from Rau to Jakob Messikommer in 1868 (Arnold 2013: 870-871)

indicates that the bulk of Rau's collecting must have taken place between 1868 and his hiring at the Smithsonian in 1875. The chronology of Messikommer's labels, which are known to correspond to specific dates of collection, can be compared to Rau's divesture of his personal collection. Altorfer (2000, 2010) created a seriation of Messikommer's various labels (Figure 1.8).



Figure 1.8 Image of Messikommer's various labels (from Altorfer 2000: 78).

This seriation was used effectively by Maxwell (2013) to examine the Robenhausen collections of Rau's successor at the Smithsonian, Thomas Wilson, as well as the collection of Carl Doerflinger at the Milwaukee Public Museum.

Rau was also apparently very thrifty. In the same article quoted in the above paragraph, Rau is described as too "parsimonious" to pay for the artifacts that he procured. The following 1868 letter, which Rau wrote to Messikommer (cited in Arnold 2013), emphasizes Rau's parsimonious character:

"Given the awakening interest of Americans in prehistory I can be more helpful to you with respect to my many acquaintances here than anyone else in the United States. For example, an anthropological publication is about to appear here for which I have only to write an article to immediately direct the attention of all archaeologists in this country toward your antiquities business." [Letter from C. Rau, New York, to Jakob Messikommer (1828-

1917), dated 4.6.1868 (National Museum Zürich, Korr. Mess. Nr. 131); trans. B. Arnold].

However, Hough notes that Rau “concealed great kindness and benevolence behind a gruff exterior” (Hough 1935: 389), and given Rau was not independently wealthy, in contrast to many of his contemporaries including Thomas Wilson (Maxwell 2013), his thrifty attitude is more than understandable. Making a living as a teacher, Rau did not have the luxury of large amounts of disposable capital. In the same letter to Messikommer, Rau states the following: “My situation does not allow me to sacrifice so much money to my recreational interests, for although I enjoy a good reputation as an archaeologist among the Americans, as a teacher I do not have an especially exalted social position and must husband my resources according to my means. Scholars in America are typically not particularly well-paid, as you may perhaps be aware.” [Letter from C. Rau, New York, to Jakob Messikommer (1828-1917), dates 4.6.1868 (National Museum Zürich, Korr. Mess. Nr. 131); trans. B. Arnold].

A drawing of Rau (Figure 1.9) by SI anthropologist Frank Cushing (1857-1900) also shows a lighter side of Rau. The fact that he sat for Cushing (see page 73 of this thesis for another glimpse of the relationship between the two) indicates the presence of a sense of humor.

How much did Rau’s personal interests influence his collecting preferences in regard to the Swiss lake dwelling material? A closer examination of his collection at the National Museum of Natural History should help answer that question. Based on his catalog, Rau’s interest in the lacustrine artifacts seems to have focused mainly on the Neolithic period in the Alps, which is consistent with his broader mission of developing a comparative analysis of the Stone Age in Europe and prehistoric North America.

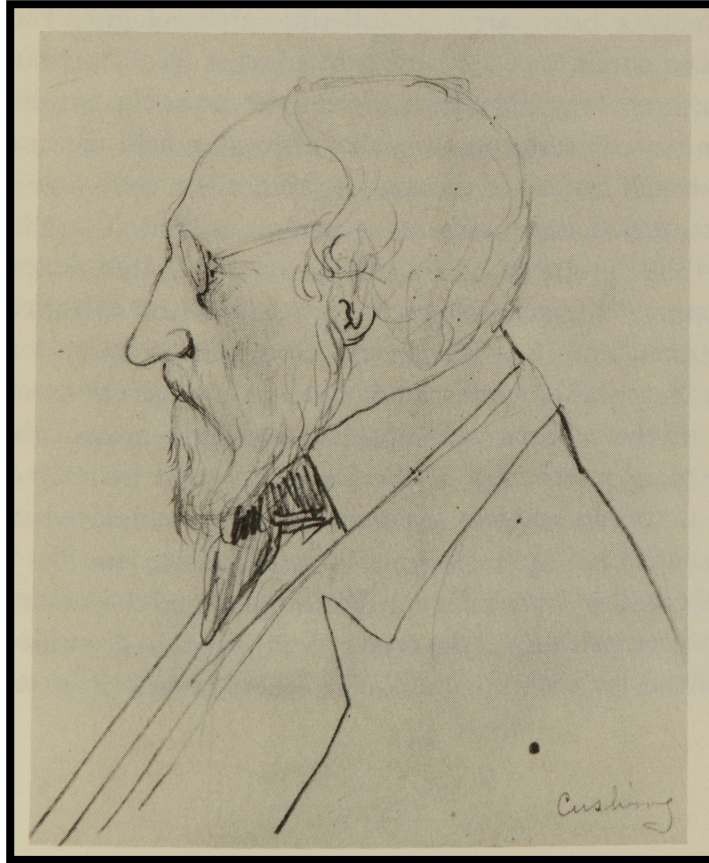


Figure 1.9 Portrait of Rau by Frank Cushing (Hinsley 1994: 43).

Kelly (2002: 128) notes that Rau was likely greatly influenced by Gabriel de Mortillet, who held that prehistory demonstrated that human progress was a universal law (de Mortillet 1885). Rau corresponded with de Mortillet regarding his ideas about creating a large-scale monograph documenting the parallels between North American and European prehistory. Rau never finished this work, but the unfinished manuscript remains in the SI's NAA collection. His other writings also focused on the similarity between Old and New World adaptations in technology. Kelly (2002: 127) notes that Rau's publications often follow a certain pattern, first describing the material he is examining and then providing a discussion of its use, usually by offering parallels to European examples and ethnographic analogs.

Rau's focus on the comparative analysis of North American and European cultures may have motivated him to collect more extensively from Neolithic Europe than from later periods in European prehistory, when bronze and iron technology, which are not found in North America prior to contact, dominate the material record. Interest in evolutionary similarities between disparate regions could have been one reason Rau emphasized European periods with more reliance on lithic technologies, as metal use (excepting native copper and meteoric iron in some places) was rare in North America. Corroborating evidence could be found in the German language materials at the NAA and SIA . Future research into Rau's correspondence and the SI collection itself might provide additional valuable insights.

Chapter 2: Theoretical and Methodological Approaches

2.1 Introduction

In this section, I provide a summary of the theoretical considerations that guided this project, focusing on the importance of material culture, museum collections, and the idea of Normal Science (Kuhn 2012 ed). I then provide a summary of the methods that were used in analyzing the literary record, archival record and SI collections. This section also provides a list of Rau's publications as well as a summary of the objects that were included in the analysis. The chapter concludes with a justification of the use of biographical and micro-historical methods to study Rau's place within the development of archaeology.

2.2 Theoretical Perspective

Two basic theoretical suppositions guided this research project. The first of these was taken broadly from the interdisciplinary field of material culture studies and consists of the idea that objects play an important role in the social life of human beings. Woodward describes material culture studies as a "recent nomenclature that incorporates a range of scholarly inquiry into human-object relations", explaining further that "The term 'material culture' emphasises [sic] how apparently inanimate things within the environment act on people, and are acted upon by people, for the purposes of carrying out social functions, regulating social relations and giving symbolic meaning to human activity" (Woodward 2007:3). In material culture studies, objects are studied as more than just "things"; they become the means by which individual actors "establish and negotiate their own meanings and incorporate such objects into their personal cultural and behavioral repertoires" (Woodward 2007:3). Archaeologists have made important contributions to this field

(Gosden and Marshall 2001; Hodder 2012; MacGregor 2001; Turgeon 1997) making it one of the most fertile areas of interaction between socio-cultural anthropologists and archaeologists.

The second supposition relates to the history of science and the creation of archaeological knowledge. It holds that scientific knowledge is socially constructed, and understanding the history of its development helps us to understand how scientific knowledge is created today. In *The Structure of Scientific Revolutions*, Kuhn (2012) demonstrated that scientific knowledge is not a slow revelation of preordained facts about which the scientist accumulates knowledge. Rather, science is created as part of a social process whereby a series of rules – which Kuhn referred to as a paradigm – are generated and scientists work within this paradigm to solve certain puzzles created by those rules. Kuhn called this process “normal science” (Kuhn 2012: 24). The paradigm not only dictates what questions are asked, but also what methods can be used to address them. When a problem arises within the paradigm that cannot be solved by the given rules, the anomaly is either ignored, attributed to bad science, or in some cases can cause a scientific revolution, leading to the adoption of a new paradigm (Kuhn 2012: 92).

While knowledge is undoubtedly socially constructed, Kuhn’s ideas do not necessarily lead to a wholesale relativistic abandonment of the scientific method. A group of people can argue that a potato is an apple, but their argument will be severely limited by the reality that it is a potato. Leckie paraphrases Wylie thusly: “so, while accepting that narrative frames can ‘determine what can be recognised [sic] as a fact of the record,’ the archaeological record has the ‘capacity to challenge even deeply held foundational

narrative facts' and in practice, 'proves not to be infinitely susceptible of invention" (Wylie 2011: 318 cited in Leckie 2011: 63).

This dichotomy between positivistic scientific facts and more relativistic positions portraying science as purely social, and therefore purely arbitrary, has been questioned. The longstanding arguments between positivists and anti-positivists, highlighted within archaeology in the debate between processual and post-processual archaeology, have been traded for a more nuanced view of scientific knowledge. Leckie (2011:317) applies Bruno Latour's (2005, 2009) work on the nature of science to archaeology specifically. Data that used to be held to be independent of the methods used to analyze them cannot be separated from the methods and processes that were used to create these data.

Given these two suppositions, with an understanding that scientific knowledge is socially constructed, and human social lives are mediated by the material world with which we interact, museums—as repositories of objects, and as sites for the inscription processes discussed by Latour—play an important role in how archaeological knowledge is created today, as well as how it was created in the past.

Another important source for theoretical engagement can be found in the museological literature of the past few decades. The "new museology" of the 1980s introduced critical perspectives and attitudes into the museum community. Influenced by social and critical theory developed by figures like Bourdieu and Foucault and material culture theory pioneered by researchers like Daniel Miller, a critical engagement with the institution of museums became more common. The ability of the museum to legitimize contemporary power structures, and the role that they can play in the formation of identity, was highlighted during this period (Bennett 1995). Museums are not simply passive

repositories for the collection of culturally important objects, but are always actively engaged in processes of identity formation and legitimization; they are an important location where these definitions are contested. Harraway (1984) describes museums as a “visual technology”. She states that the museum “works through desire for communion, not separation” (1984:52). As a technology, the museum is often employed with objectives in reinforcing specific ideologies.

Archaeological theories and museums have been used in the past in both explicit and implicit ways to promote political and social agendas. In the words of Zack de la Rocha of Rage Against the Machine: “Who controls the past now controls the future, who controls the present now controls the past.” The political ramifications and motivations of archaeological work have been, and continue to be, an important area of study. The manipulation of the archaeological record by Nazi Germany provides an important case study of why the history of archaeology is socially relevant (Arnold 1990). Christenson (1989) argues that the historiographical work happens for a number of reasons: the need to learn from past mistakes, to gain useful material for application in contemporary settings, and to use intellectual ancestors as a source of legitimization for current perspectives (Christenson 1989).

Kirschenblatt-Gimblett’s work on ethnographic material culture delves into the process by which museums and ethnographers transform material things into museum pieces. Ethnographic objects that enter museums are alienated from their original contexts and redefined as “objects of ethnography”, an identity they only acquire when they are brought into an anthropological interpretative context (Kirschenblatt-Gimblett 1998).

Archaeological artifacts are subject to a similar process. When an archaeological artifact is

excavated, it is transformed into a new type of object. That identity is projected onto the object through the processes of excavation, documentation, curation, and publication. Kopytoff (1986) showed that objects do not have static identities, but are subject to change as they move through time and social contexts. In this way, objects have a certain social life. Kopytoff goes as far as to suggest the use of “object biographies” to illuminate the important social relationships inherent in the object. This method has been used effectively by several archaeologists to recontextualize artifacts as products of archaeology as well as data (MacGregor 2001; Turgeon 1997). MacGregor (2001) portrays the archaeologist as a Necromancer, arguing that an artifact goes through a social death when it is deposited, and that archaeologists attempt to revive these dead objects by literally breathing new life into them through excavation and interpretation.

Recently in museums there has been a debate over whether the maintenance of vast and expensive museum collections can be justified (Keene 2005). A substantial number of the objects in museum collections come from historic archaeological investigations. Without an understanding of the history of the field, these objects – often lacking contemporarily appropriate provenience – lose much of their utility. As several recent studies have shown (Gosden and Larson 2009; Leckie 2011; Lillis 2005; Maxwell 2013), however, an engagement with such collections can be very productive.

Many museum collections are enormous, and most members of the public would find it hard to justify the expense of keeping so many objects in storage. Kurt Vonnegut, in one of his many masterworks, *The Sirens of Titan*, briefly describes a fictitious account from ten million years in the future, where the surface of the Earth has been overwhelmed by museums. Literally, in order to make room, millions of years of history have to be

condensed into the following sentence: “Following the death of Jesus Christ, there was a period of readjustment that lasted for approximately one million years” (Vonnegut 2009 ed: 46). Do we have the space and resources to maintain, and even expand, collections as we have in the past?

Keene (2005) argues that museums are nothing if not collections, and describes over the course of the book the various ways in which museum collections can be used. If collections are not used, it becomes harder to justify the expense, especially in an increasingly skeptical funding environment. The recent closure of the Illinois State Museum provides a terrifying warning (Cosier 2015). Closures and funding cuts in archaeology and in museums are not exclusively American phenomena. Local and national governments have cut funding to archaeological museums and projects throughout Europe (Arnold 2015). The material nature of archaeology necessarily produces large quantities of things, which take up space. Storage for these collections is becoming a major issue, and around the world archaeologists are facing the effects of what has been called a “curation crisis” (Kersel 2015).

All of these theoretical issues informed my work with Carl Rau’s collection at the NMNH, which provides an important window into the collecting practices of the mid-to late-nineteenth century, a time of unprecedented innovation and technological transformation when the idea that newly built museums like the SI could ever be filled to excess was the farthest thing from the minds of curators and collectors, exemplified by the mission statement of the SI as formulated in John Smithson’s bequest. Rau’s particular paradigm can be firmly situated in the evolutionist thinking of the period. This paradigm, held by many early prehistorians (Kaeser 2002), maintained that human social evolution

followed a unilinear progression, and as a universal paradigm it was as applicable to human behavioral evolution in the same way that biological evolution was applicable to all of life.

Having access not only to Rau's writings but also to the physical collection that he acquired provides valuable insights into how his opinions were formed. That these objects were acquired for personal research rather than for display also grants them increased value for assessing the personal motivations and ideological perspective of their collector. As part of my argument, I contend that Rau was conducting work almost exactly in the vein of what Kuhn would call normal science, but that the paradigm shift this approach might have generated never occurred, due to various historical forces, including two world wars and increasing American isolationism from Europe.

Using the collection in this manner, as a primary historical document to study the collector and not necessarily for its archaeological utility, serves to further contextualize this collection. It offers a productive lens through which scholars can view historic museum collections, which in turn provides an important justification for the maintenance of museum collections such as this one.

2.3 Methods

Archival Research

Several archival sources were examined as a part of this project in order to gain a better idea of Rau's particular intellectual perspective. Rau's archive was acquired by the SI at the time of his death and is currently housed at the NAA, in the SI Museum Support Center in Suitland, Maryland. The SIA, located just off the National Mall in Washington D.C.,

contains .01 linear meters of materials related to Rau, including letters to Joseph Henry and Spencer Baird (Table 2.1).

Table 2.1 Contents of Charles Rau Papers at the SIA		
Box	Folder	Contents
1	1	A
"	2	Spencer F. Baird, 1868-1880
"	3	Bo - G
"	4	Joseph Henry, 1850 - 1865
"	5	Joseph Henry, 1866 - 1870
"	6	Joseph Henry, 1871 - 1876
"	7	K - P
"	8	R - W
"	10	Memorandum of Agreement
"	11	Statutes
"	12	Miscellaneous
Oversized Materials	Oversize Materials	Certificates, a pencil drawing, and two Asian documents

Preliminary research conducted by Bettina Arnold in 2012 uncovered a number of the materials accessed by this project, including Rau's personal, hand-written catalog of his collection of European materials, which proved to be invaluable (Figure 2.1).

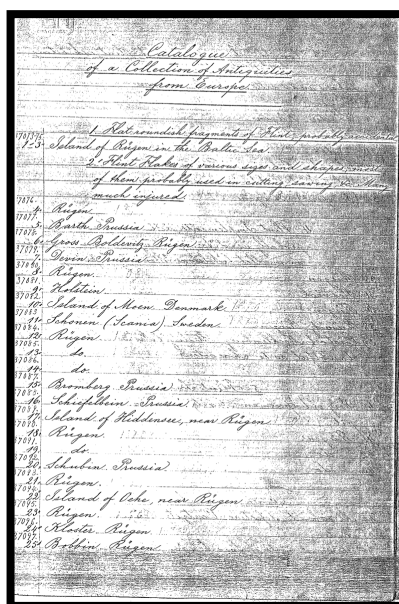


Figure 2.1 First page of Rau's catalog.

The catalog contains a list of every object that Rau collected, organized by location and acquisition source. The catalog lists 474 objects, 285 (60%) of which are from prehistoric Switzerland. This catalog was used to construct a list of lake dwelling objects acquired by Rau in the SI's collections (Table 2.2).

Box	Series	Folder	Contents
1	1-Incoming Letters	1	1839-1846 – Wishman, Deutgen, Hexamer, Dunkes, Castendyck, Wagner, Koster, Beckmann, Korthos, Wiessen, Midy, Menzlev
“	“	2	1847, 1848 – Schlickum, Houtbourg, Clouth, Neuhoff
“	“	3	1850 - --- Merker, Rau, Mollhausen, Lommell
“	2-Letters to Carl Hermann Berendt	1	1869-1872
“	“	2	1873, 1876
“	3-Writings	1	Brooklyn Lecture
“	“	2	Fire and Sun Workshop, Cave Researches, etc.
“	“	3	<i>The Happy Age</i> , Lecture before the New York Liberal Club
“	“	4	<i>On the Parallelism in the Development of Mankind</i>
“	“	5	<i>Petrifications as Prehistoric Ornaments</i>
“	“	6, 7, 8, 9	<i>Prehistoric Fishing in Europe</i>
“	“	10	<i>Stone Age in Europe</i>
2	4-Miscellaneous Materials Collected by Rau	1	Jone, Charles. <i>Silver Cross</i>
“	“	2	Keller, Ferdinand. <i>Über die Anfertigung von Steinbeilen</i>
“	“	3	Pim, Bedford & Seeman, Berthold. <i>Seeman in Dottings by the Roadside in Panama</i> (selections)
“	“	4	Vatcutins, Phillip. <i>Vorcolumbische Besiedlung Americas durch Africanische Stämme</i>
“	“	5	<i>Verzeichnis von 454 auf die Ethnologie</i> . (Bibliography)

“	“	6	Wanner, Atreud. <i>Relics of an Indian Hunting Ground</i>
“	“	7	Squier, Ephraim George and Davis, Edwin Hamilton. <i>Ancient Monuments of the Mississippi Valley</i>
“	5	1	Invitations to International Congresses
“	“	2	Newspaper Clippings
“	“	3	Notes: <i>Game of Chung-kee</i>
“	“	4	Notes: <i>Index to Archaeological Topics in the [Smithsonian Institution] Annual Report, 1847-1875. A-B</i>
“	“	5	Notes: <i>Index... (con't) C-Georgia</i>

The NAA contains two boxes of archival material from Rau's personal archive. The majority of the documents are written in German script. According to the SI's catalog document (Day 1976), of the 60 letters, only eight were written after Rau's emigration to America (Day 1976). Many letters are addressed to Dr. Carl Hermann Berendt (1817-1878), a German political refugee and Central American anthropologist. These are concerned mainly with personal matters but also contain comments on the American political scene and small talk regarding the contemporary world of anthropology. Included is some rather frank professional criticism of other scholars and of the SI hierarchy. This correspondence is in German and for the most part in German script, as are the earlier letters (Day 1976). There are also two letters from Heinrich Balduin Möllhausen (1825-1905), a German artist, to Rau. The correspondence in the SI archive in English consists of letters exchanged between Rau, Joseph Henry, and Spencer Baird, mostly dealing with institutional concerns at the SI.

Another important source, located and translated by Bettina Arnold, is the correspondence exchanged between Rau and Jakob Messikommer regarding Rau's

purchases of artifacts; these documents are located in the archives of the National Museum of Zürich, access to which was provided by Swiss archaeologist and Robenhausen specialist Kurt Altorfer (Altorfer 2010; Arnold 2013).

Primary Documentary Research

One of the most important sources of information related to Rau's attitude toward the past is the published material both by and about him. This study has therefore made use of this resource, which includes material published by some of his contemporaries, as well as several obituaries of Rau and an interview with Henry Raab – a teaching colleague of Rau's who would eventually become the Superintendent of Illinois schools – that discusses Rau's teaching career in Belleville, Illinois.

Over the course of his career, Rau published dozens of articles in both English and German. These articles cover a wide range of topics, including ethnohistory, Mesoamerican archaeology, North American archaeology, and European archaeology. For the purposes of this thesis, attention is focused on Rau's work on Swiss lake dwelling material, as well as comparative analyses of Old World and New World material culture. Rau published extensively on a wide range of subjects in scholarly periodicals as well as popular magazines. The breadth of Rau's research interests is clear evidence of both the relatively open nature of the field of prehistory at the time and the universalism that characterized the theoretical orientation of nineteenth century prehistorians (Kaeser 2004). Table 2.3 is adapted from a list of Rau's publications reproduced in an SI report from 1882. The list does not include Rau's last major work *Prehistoric Fishing in Europe and North America*, which was published in 1884 as part of the SI "Contributions to Knowledge". The table provides the year of publication, title, where the item was published, and a description if

one was provided. Several of Rau's publications were translated into other languages; information about these translations is provided in footnotes.

Table 2.3 List of Rau's Publications (adapted from a list of Rau's publications reproduced in an SI report from 1882)			
Year	Title	Journal/ Magazine/ Report	Notes
1859	Die Gräber von Panama	<i>Die Natur</i> , herausgegeben von Dr. Otto Ule and Dr. Kand Karl Müller von Halle. Vol. VII, Halle, 1859, p. 372	Relating to the discovery of gold figures in Chiriqui
1862	Amerikanische Alterthümer	<i>Die Natur</i> , Vol. XI, 1862	Twelve illustrated articles
1862	Negeremancipation in Jamaika (anonymous)	<i>New-Yorker Staatszeitung</i> , June 14, 1862	Against the sudden emancipation of negro slaves
1863 and 1864	An account of the Aboriginal Inhabitants of the California Peninsula, as given by Jacob Baegert, a German Jesuit Missionary, who lived there Seventeen Years during the Second Half of the Last Century	<i>Smithsonian Reports</i> for 1863 and 1864, pp. 352 and 378 respectively	Translated and arranged for the Smithsonian Institution by Charles Rau
1863	Agricultural Implements of the North American Stone Period	<i>Smithsonian Report</i> for 1863, p. 379.	Illustrated
1863	Archäologisches aus der alten and neuen Welt	<i>Die Natur</i> , Vol XII, 1863, p. 110	Relating to pile-dwellings and artificial shell-deposits
1863	Altindianische Industrie	<i>Die Natur</i> , Vol XII, 1863	Ten illustrated articles
1864	Artificial Shell-deposits in New Jersey	<i>Smithsonian Report</i> for 1864, p. 370	Illustrated
1866	Indian Pottery	<i>Smithsonian Report</i> for 1866, p. 346.	Illustrated. Reprinted in: <i>Flint Chips</i> , by E. T. Steven; London, 1870, p. 245; without illustrations
1866	Remarks on the Stone Age	<i>The Historical Magazine</i> , New York, April, 1866, p. 97	
1867	Notes on the Anthropological Congress at Paris	<i>The Historical Magazine</i> , Morrisania, NY, October, 1867, P. 210	(Many typographical errors)
1867	Über künstliche Muschelbetten in Amerika	<i>Archiv für Anthropologie</i> , Vol. II, Braunschweig, 1867, p. 321	Illustrated
1868	Drilling in Stone without Metal	<i>Smithsonian Report</i> for 1868, p. 392	Illustrated

1868	A Deposit of Agricultural Flint Implements in Southern Illinois	<i>Smithsonian Report</i> for 1868, p. 401	Illustrated
1868	Die Thongefässe der nordamerikanischen Indianer	<i>Archiv für Anthropologie</i> , Vol. III, 1868, p. 187	Illustrated
1868	Die durchbohrten Geräte der Steinperiode	<i>Archiv für Anthropologie</i> , Vol. III, 1868, p. 19	Illustrated
1869	Memoir of C. F. P. von Martius	<i>Smithsonian Report</i> for 1869, p. 169	Partly ethnological in character
1870	Steinerne Ackerbaugeräte der nordamerikanischen Indianer	<i>Archiv für Anthropologie</i> , Vol. IV, 187-. P. 1	Illustrated
1871	Über das Vorkommen der <i>Coscinopora globularis</i> auf der Insel Rügen	<i>Korrespondenz-blatt der deutschen Gesellschaft für Anthropologie, Ethnologie and Urgeschichte</i> , April, 1871 (No. 4), p. 31	
1871/ 1872	Von Martius on Some Points of South American Ethnology	<i>Journal of the Anthropological Institute of New York</i> , Vol. I, New York, 1871 - '72, p. 43	
1872	Die Tauschverhältnisse der Eingeborenen Nordamerikas	<i>Archiv für Anthropologie</i> , Vol. V, 1872, p. 1	Illustrated
1872	Ancient Aboriginal Trade in North America	<i>Smithsonian Report</i> for 1872, p. 348	
1872	North American Stone Implements	<i>Smithsonian Report</i> for 1872, p. 359	
1872	Indianische Netzsenker und Hammersteine	<i>Archiv für Anthropologie</i> , Vol. V, 1872, p. 260	Illustrated
1873	Review of "The Ancient Stone Implements, Weapons, and Ornaments of Great Britain," by John Evans, F. R. S., F. S. A.; New York, D. Appleton and Company, 1872 (anonymous)	<i>North American Review</i> , Vol. CXVI, Boston 1873, P. 213	
1873	Review of "Antiquities of the Southern Indians, particularly of the Georgia Tribes," by Charles C. Jones, Jr.; New York, D. Appleton and Company, 1873 (anonymous)	<i>North American Review</i> , Vol. CXVI, Boston 1873, p.468	
1873	Amerikanische Gesichtsvasen	<i>Archiv für Anthropologie</i> , Vol. VI, 1873, p. 163	Illustrated

1873	Steinzeit (anonymous)	<i>Deutsh-amerkanisches Konversations-lexicon</i> , bearbeitet von Prof. Alexander J. Schem, Vol. X, New York, 1873, p. 474.	
1874	Auszug aus einem Briefe an Dr. A. von Frantzius	<i>Korrespondenz-blatt der deutschen Gesellschaft für Anthropologie</i> , etc., January, 1874 (No. 1), p. 8	Relates to the predilection for green stones among the “uncivilized races”
1874	Über ein in Deutschland gefundenes Steinwerkzeug	<i>Korrespondenz-blatt der deutschen Gesellschaft für Anthropologie</i> , etc., February, 1874 (No. 2), p. 13	Illustrated
1875	The Stone Age in Europe	<i>Harper's New Monthly Magazine</i> ; April, May, June, July, August, and September, 1875	Six illustrated articles
1876	<i>Early Man in Europe</i>	Published by: New York, Harpers & Brothers, 1876	The Stone Age in Europe (monograph)
1876	The Archaeological Collection of the United States National Museums, in charge of the Smithsonian Institution, Washington, D.C.	<i>Smithsonian Contributions to Knowledge</i> , No. 287 (in Vol. XXII); Washington City, published by the Smithsonian Institution, 1876. Large 40, pp. XIV, 104	341 illustrations in the text
1876	The Prehistoric Antiquities of Hungary (Translation) An address delivered by Prof. F. F. Romer at the Opening of the International Anthropological Congress, held at Budapaest, September 1876. From the “Matériaux pour l’Histoire primitive et Naturelle de l’Homme.” Translated for the Smithsonian Institution by Charles Rau	<i>Smithsonian Report for 1876</i> , p. 394	
1877	The Stock-in-trade of an Aboriginal Lapidary	<i>Smithsonian Report for 1877</i> , p. 291	Illustrated
1877	Observations on a Gold Ornament from a Mound in Florida	<i>Smithsonian Report for 1877</i> , p. 298	Illustrated
1878	Observations on the Dighton Rock Inscription	<i>The Magazine of American History</i> , Vol. II, New York and Chicago, 1878, p. 82. Reprinted in : <i>The American Antiquarian</i> , Vol. I, Cleveland, Ohio, 1878, p. 38	

1878	Der Nachfolger des Onondaga-Riesen	<i>Archiv für Anthropologie</i> , Vol. X, 1878, p. 418	Illustrated
1879	The Palenque Tablet in the United States National Museum, Washington, D.C.	<i>Smithsonian Contributions to Knowledge</i> , no. 331 (In Vol. XXII); Washington City, published by the Smithsonian Institution, 1879. Large 40, pp. X, 81	2 plates and 17 illustrations in the text
1879	The Dighton Rock Inscription	<i>The Magazine of American History</i> , Vol. III, New York and Chicago, 1879, p. 236	An opinion of a Danish archaeologist
1880	Review (illustrated) of "Archéologie Américaine. Déchiffrement des Écritures Calculiformes ou Mayas. Le Bas-relief de las Croix de Palenqué et le Manuscrit Troana." Par M. le Cle H. de Charencey, Alençon, 1879	<i>The American Art Review</i> , Vol. II, 1880, p. 32	
1881	Aboriginal Stone-Drilling	<i>The American Naturalist</i> , July, 1881, p. 536	Illustrated
1881	Observations on Cup-shaped and other Lapidarian Sculptures in the Old World and in America	<i>Contributions to North American Ethnology</i> , Vol. V (U. S. Geographical and Geological Survey of the Rocky Mountain Region, J. W. Powell in Charge). Washington, Government Printing Office 1881. 4°, pp. 102	61 illustrations on 35 plates
1882?	Die Jadeitgegenstände des National-Museums zu Washington	<i>Archiv für Anthropologie</i> , Vol. XIV	Illustrated
1882	Articles on Anthropological Subjects Contributed to the Annual Reports of the Smithsonian Institution from 1863 to 1877	<i>Smithsonian Contributions to Knowledge</i> Washington, published by the Smithsonian Institution, 1882. 8°, pp. X, 169 (No. 440 of Smithsonian Publications)	

As this list of publications indicates, Rau was a prolific writer and certainly an important thinker; however, it is necessary to place his writings within the context of late nineteenth century antiquarian scholarship in order to assess his impact. A brief examination of contemporary texts provides an important framework for the evolutionary perspective that Rau espoused. The eclectic nature of Rau's writings is indicative of the broad nature of anthropology during the nineteenth century. It also shows the universality of Rau's evolutionism; his interests are not confined to a single region or even subject area, but are diffuse in their nature. Especially striking similarities can be found between Rau's work and the writings of Henry Lewis Morgan, E.B. Tylor, Thomas Wilson, and Ferdinand Keller. These sources were surveyed to situate Rau's theoretical perspective within the broader context of nineteenth century prehistories.

Database Research

Before engaging in in-person collections research, a preliminary assessment of the SI's online database was undertaken in order to provide a reasonable estimate of the amount and nature of material in the collection. Some discrepancies between the SI database and Rau's personal catalog came to light during this research project that allowed several objects to be located that might otherwise have continued to be excluded from the online catalog of Rau's SI collection of lake dwelling artifacts.

USNM Collection

Once a preliminary list of objects had been compiled, I undertook an in-person collections research review of Rau's collection at the SI Museum Support Center in Suitland, Maryland. My research was conducted under the supervision of collections specialist James Krakker between July 20 and 24 2015. I identified objects that had been donated by Rau,

provided a description of each piece and took photographs of each object, with very few exceptions that will be discussed in more detail below.

Rau had created a personal numbering system for cataloging his collection of European objects, affixing a label with his personal catalog number to each container or artifact in his collection. This number corresponded to a description in his personal catalog (Figure 2.2 and 2.3).

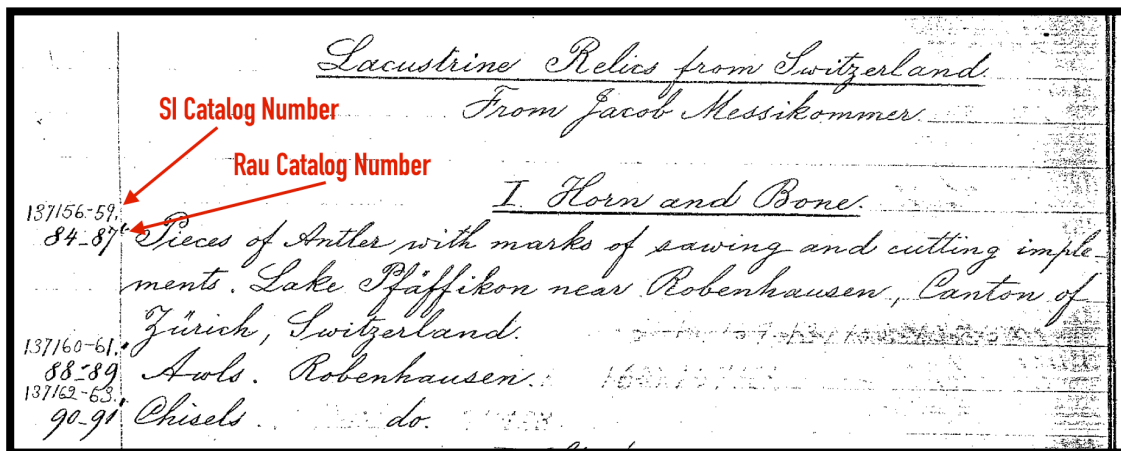


Figure 2.2 Example of entry from Rau's hand-written catalog with significant features labeled.



Figure 2.3 Example of photograph from collection research with significant features labeled.

Presumably sometime after Rau's death and the subsequent donation of the collection to the SI, the corresponding SI catalog numbers were added to Rau's personal catalog. This dual numbering system made it possible to double-check Rau's catalog against the SI database and provided the means for locating several misplaced or mislabeled objects.

In the case of most lithics, ceramics, and other more singular objects, the label with Rau's number was fixed directly to the artifact. Many of the faunal and botanical samples were sent to Rau in Messikommer's glass vials, and are still contained within these vials, or the vial has been stored with the rehoused material. In these cases the label was affixed to the glass vial (Figure 2.3). The botanical samples that were on display as part of the Hall of Civilizations exhibit at the NMNH until 2010 (Maxwell 2013: 120) were separated from their original containers with Rau's numbering at that time, making it more difficult to locate and match these items to entries in Rau's catalog.

While the focus of this study was on Rau's collection of material from the site of Robenhausen, especially as it relates to other similar collections studied and published recently (Altorfer 2010; Maxwell 2013), all the Swiss lake dwelling material in the Rau collection was recorded in order to generate a more complete analysis of Rau's collecting practices. Table 2.4 provides a summary list of Rau's collection of Swiss lake dwelling material organized by type of article (Figure 2.4). Artifact types were adapted from Altorfer (2010), and were counted as they appeared in Rau's catalog. Botanical samples were counted as one object. For example, a bottle of 34 flax seeds is counted as one object. The collection is housed in Storage Pod 2 of the MSC facility in Suitland, MD. James Krakker provided a list of drawers containing objects from Rau's collections, which is spread across a large number of cabinets containing other Swiss material. With the exception of three

complete ceramic vessels from Mörigen, objects were stored in close proximity to one another within the 42B shelving prefix.

Table 2.4 Rau's Collection of Swiss Lacustrine Material by Type	
Type	Artifact Count
Botanical Specimen	71 (26%)
Ceramic Vessels	41 (15%)
Chipped Stone	37 (14%)
Bronze	20 (8%)
Ground Stone	20 (8%)
Worked Bone	20 (7%)
Antler	17 (6%)
Textile, Matting, and Fibres	16 (6%)
Other Ceramics	11 (4%)
Other Faunal	6 (2%)
Other	5 (2%)
Wood	5 (2%)
Compound	1 (0%)

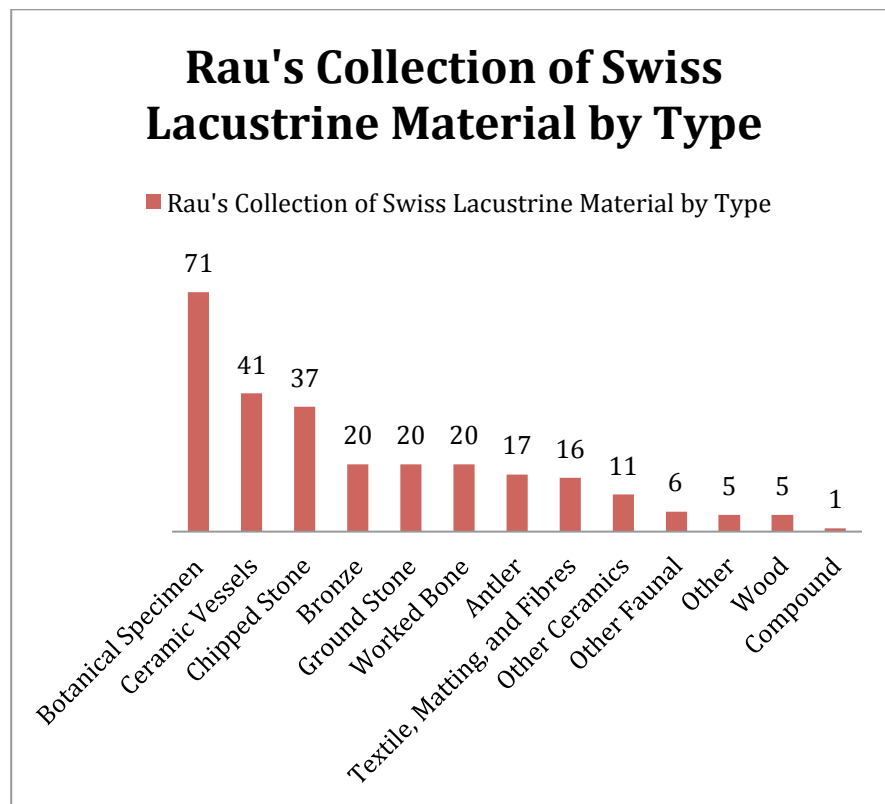


Figure 2.4 Rau's collection of Swiss lacustrine material by type.

I conducted my research one drawer at a time. A small workspace was set aside in the Anthropology collections lab in the MSC. Using the list provided by James Krakker, each object was checked against the information provided in both the SI database and Rau's personal catalog. Any discrepancies between what was listed and what was present were noted, using Rau's catalog number to make sure that the object matched the original description. A spreadsheet was created to keep track of each object, including the SI catalog number, Rau's catalog number, the drawer location, the SI database description, Rau's description (both on the artifact and in Rau's catalog), and the Messikommer label type.

At least one photograph was taken of each object using a Lumix camera. Each photograph was taken in the raw. A portable copy stand photography station was used. Each photo included a size scale, as well as a label with the object's catalog number. When possible, clear photographs of both Messikommer's and Rau's labels were taken. In order to make the photo database compatible with Maxwell (2013), the same naming and metadata conventions were used (photographer and contact information, date, location, Smithsonian copyright). Each digital photo was designated as follows: "Museum Catalog Number_Photo Number" (conventions based on Maxwell [2013]). The images can be found in Appendix C.

Analysis of Artifact Types

One of the questions posed by this study was how representative Rau's NMNH Robenhausen collection is compared to other collections known to be from the same location. Previous work by Altorfer (2010) has shown the distribution of artifact types in several museum collections across Europe, while Arnold has identified Robenhausen material at the following US institutions in addition to the SI: Harvard Peabody Museum, Yale Peabody Museum, Field Museum of Chicago, University of Pennsylvania Museum, and

various small institutions in Cincinnati, Kansas City, Milwaukee and Madison, WI (Arnold 2013 and pers. comm. 2016). Maxwell (2013) analyzed Thomas Wilson's collection of Robenhausen material at the NMNH for her Master's thesis project, comparing it to another similar collection of Robenhausen material located at the MPM that was acquired by Charles Dörflinger in the late nineteenth century. This thesis compares the distribution of artifact types found in these sources with those in Rau's SI collection in order to identify similarities as well as differences that might shed light on Rau's personal and intellectual history.

2.4 Methodology

The biographical method can be an important resource for the historiographical study of archaeology (Kaeser 2013). Microhistorical investigations allow for a more holistic understanding of historical events and their real time effects on the people of the day. One of the most important sources for these biographical studies is represented by the archives of material produced by archaeologists in the course of their careers. The investigation of personal papers, notes, correspondence, and diaries of these archaeologists allows us a way of exposing motivations that might be absent or less clearly defined in the subject's published works (Kaeser 2013: 102). It also allows for a consideration of personal agency as viewed through the lens of broader historical trends. As Kaeser states: "Making use of private archives is certainly the most practical way to grasp the social context independently of present categories and to free the historiography of science from social determinism" (2013: 106).

From this perspective, understanding the utility of biographical approaches to the study of the development of archaeology, an investigation of the individuals who

participated in the Swiss lake dwelling diaspora should allow us to generate a more complete picture of the personal relationships and motivations that drove such an important, and immense, movement of objects in the early history of archaeology. Recent publications and theses have focused on this issue (Altorfer 2010; Arnold 2013; Leckie 2010) and this study builds on their conclusions.

By aligning the methods utilized in this project as much as possible with those used by Maxwell (2013), this project will enable future in-depth comparative analyses between the two collections to be carried out. This standardization of both methods and data collection will also allow for the expansion of a database of the Swiss lake dwelling collections at the NMNH. The expansion of this database is one of the most important outcomes of this project, providing future researchers with a more comprehensive resource for accessing Swiss Neolithic collections around the country and enabling more quantitative work to be conducted on these collections in the future.

Meltzer (1989: 18) agrees with Hinslet (1986: 17 cited in Meltzer 1989) that the history of archaeology should not be left to the archaeologist. Meltzer cleverly reasons that if it were, the history of archaeology would not be written. Archaeologists need to have an understanding of the development of the field of archaeology to produce more effective justifications for contemporary research, however, as this project demonstrates.

Chapter 3: Analysis

3.1 Introduction

Chapter 3 presents an analysis of the information gathered as a part of this thesis project. It begins with an analysis of primary literary sources, summarizing many of Rau's American publications and identifying Rau's theoretical paradigm over the course of his career. The chapter then goes on to analyze a selection of Rau's personal letters in two locations: the SIA and the NAA. These letters provide glimpses into Rau's ideas and motivations, especially in the years leading up to his hiring at the SI. Thirdly, a close look at an unpublished manuscript Rau had intended to complete in the late 1860s, his personal letters relating to the project, and Joseph Henry's ultimate dismissal of the publication provides a means of assessing Rau's intellectual scope and potential as a scholar. Lastly, I present a summary of the object research in which I engaged at the NMNH and compare Rau's Robenhausen collection to Wilson's collection analyzed by Maxwell (2013) and collections from 11 Swiss museums investigated by Altorfer (2010). The analysis of these sources provides a means of contextualizing Rau's collecting habits and his evolutionary approach to interpreting prehistoric cultural adaptation.

3.2 Primary Literary Analysis of Published Works

One of the most readily accessible windows into Rau's ways of thinking and those of his contemporaries can be found in their published works. While these sources do not necessarily provide insights into more private motivations, they do illuminate the production of archaeological knowledge in the past. Rau's citations are incredibly useful in demonstrating his connections with other archaeologists, and he often hints at personal relationships in footnotes. For example, he might mention that he was invited to examine a

specific object, or that he had learned of a site through personal communications with a particular author or scholar.

Publications by Rau's contemporaries also provide important insights into the general paradigm within which Rau was working. Cultural evolutionary thought dominated archaeological thinking in the late nineteenth century and similar lines of thinking can be found in the work of Rau's predecessors, contemporaries, and successors in both Europe and America, eg. Gabriel de Mortillet, Ferdinand Keller, Henry Lewis Morgan, William Beauchamp, and Thomas Wilson. Another line of thinking that can be found throughout Rau's works is based on environmental determinism. He often notes that cultures at a similar level of development, in a similar environment, will behave similarly and produce similar artifacts. This insight seems to have influenced some of his collecting decisions, especially with respect to stone tools, and it is repeatedly mentioned in his literary output.

Recent developments in the fields of information sciences and library studies have made access to historical sources much easier than in the past. While there is a significant amount of debate within material culture studies as to the effects of digitization on the research utility and preservation of texts (Burns 2014), for the research involved in this study the instantaneous, and often text searchable, access to nineteenth century archaeological documents was incredibly useful. Resources like Google Books, Hathi Trust, Project Gutenberg, and the SI's own digitization efforts have made these sources easier to find, search, and download from a personal computer.

Rau's Writing as a Reflection of Evolutionary Theory

Rau published extensively in later life. Between 1851 and 1882, he is credited with producing 28 publications on topics ranging from Mesoamerica and North America to

Europe, as well as ethnohistorical translations, opinion pieces, and book reviews. His writings include investigations of specific artifacts (Rau 1877; 1879), surveys of the collections at the SI (Rau 1876a), and broad surveys of prehistory (Rau 1873; 1876b). Rau published in both German and English, producing 17 works in German, and 11 in English (most of the latter after his SI appointment).

The analysis presented here focuses on Rau's overarching theoretical positions, specifically his cultural evolutionism and how it is expressed in his writings. This theoretical position was informed by, and helped to shape, Rau's observations of similarities in archaeological artifacts from the European Neolithic and North American prehistory. To be tested is the proposition that Rau's collecting practices were influenced by his theoretical underpinnings and that his collections were acquired mainly for research purposes.

To put this into terms used by Trigger (2001), Rau worked under High Level, Middle Level, and Low Level theories as defined in archaeological research. Rau's high level theory involved a broad ideological placement of archaeological phenomena framed in cultural evolutionary terms. Cultural evolutionary theory holds that human societies develop along a predictable track, moving from one stage to another (Carneiro 2003). Someone who follows this line of thinking might apply middle level theory in demonstrating that societies that are at the same level of development could be expected to produce similar material culture, which should be visible in the archaeological record. This middle level theory would then be supported by low level theories of archaeological excavation and museum typological practices.

It is important at this point to distinguish between nineteenth century unilineal cultural evolution and the multi-lineal evolutionary models of the twentieth century. Unilineal evolutionary theories, like those held by Rau and Morgan, propose a single path of development through which all humans progress. Shortly after the turn of the twentieth century, Franz Boas (1858-1942) rejected this approach to evolutionary theory, preferring instead a more historical study of anthropology (Carneiro 2003: 75). Boas' antievolutionary influence may have played a role in the erasing of Rau's place in the development of anthropology in the US. During the mid-twentieth century, Berkeley trained anthropologist Julian Steward (1902-1972) developed a new type of evolutionary theory that allowed for a more varied evolutionary path that took into account ecological factors and allowed for multiple lines of progress. This multilineal view of human cultural evolution also searched for developmental sequences, but made limited parallels between cultures (Carneiro 2003: 114). In this thesis, when I refer to cultural evolutionism, I am referring to the nineteenth century unilineal evolution of Morgan; Rau's approach was both unilineal and prefigured some aspects of later multi-lineal evolution as proposed by Steward.

Cultural evolutionism was a popular ideology in early anthropology. The theory holds that human societies develop in a predetermined trajectory, from more simple to more complex. This form of social evolutionism can be traced far back in European thought. The term evolution was first used in English in the seventeenth century to describe any orderly sequence of changes but especially a sequence that contains its outcome from the start (Carneiro 2003: 1). The metaphor of a "germ" was common, even used by Immanuel Kant (1724-1804) in the eighteenth century to describe the progression through successive stages of development (Carneiro 2003: 1). The nineteenth century also ushered in a new

conception of prehistory as an extended period of time. The development of the Three Age System of archaeology by Scandinavian archaeologists provided a chronological framework for the study of prehistory (Schnapp 1997: 303). This period coincided with the European colonial age, and increased contact with groups of people considered primitive by Europeans provided a comparative sample of groups at a similar evolutionary stage as prehistoric European ancestors (Schnapp 1997: 303). M. Díaz Andreu's book *A World History of Nineteenth-Century Archaeology* provides an excellent political contextualization for the development of archaeology in the nineteenth century, particularly her discussion of evolution and positivism between 1860 and 1900 (Díaz-Andreu 2007: 368-408).

The most prominent American cultural evolutionist of this period was Henry Lewis Morgan, a Rochester, NY based sociologist who became famous for his work with the Iroquois (Morgan 1851). Morgan's theories about evolution coincide closely with Rau's, and his typology of evolutionary stages—from savage to civilized—also coincide closely with Rau's typology as expressed in his unpublished manuscript *On the Parallelism of Mankind*. Rau cites Morgan extensively in this manuscript, which he was working on in the late 1860s, around the time Morgan and Tylor—the famous English evolutionist—were refining their theories (Morgan 1871, 1877; Tylor 1867, 1871, 1881).

The analysis presented here examines a selection of publications from throughout Rau's career. In order to track how his evolutionary ideas changed over time, the analysis proceeds chronologically. Rau's first two publications in English appeared in the Smithsonian Annual Report in 1863. *An Account of the Aboriginal Inhabitants of the California Peninsula, as Given by Jacob Baegert, a German Jesuit Missionary, Who Lived There Seventeen Years during the Second Half of the Last Century* (Rau 1864a) is a translation of a

German Jesuit's travels in California. While this work provides little information directly relevant to the Swiss lacustrine collection Rau would eventually accumulate, it does offer some insights into the breadth of Rau's interests. It is also telling that in the Foreword to the translation, Rau makes a special note of his discomfort with Catholics. Rau claims that despite their Catholicism, the Jesuits as a whole provided a large amount of useful ethnological information: "Whatever we may think, as Protestants, of the tendencies of that order, we cannot but admit that those of its members who came as missionaries to America deserve great credit for their zeal in propagating a knowledge of the countries and nations they visited in the New World" (Rau 1864a: 356).

Rau's second piece in the 1863 Annual Report, *Agricultural Implements of the North American Stone Period*, is a short discussion of several stone tools that Rau contends are hoes (Rau 1864b: 378). One artifact in his collection was excavated near Belleville, IL "in sight of the celebrated temple-mound of Cahokia" (Rau 1864b: 378). The other was uncovered in St. Louis "while earthworks were built by order of General Fremont for the protection of the city against an apprehended attack of the Southern secessionists" (Rau 1864b: 379). The article includes a brief discussion of agriculture in North America more generally. "From these and other facts, which need not be cited in this place, we learn that the North American Indians generally, though warriors by disposition and hunters by necessity, had, nevertheless, already made some steps towards an agricultural state. But the events that happened after the arrival of the whites, instead of adding to their improvement, served only to lower their condition, and reduced them, finally, to the position of strangers in their own land" (Rau 1864b). This passage offers another glimpse

into Rau's progressive ideology, which viewed the natural evolution to an agricultural state as interrupted and disrupted by the arrival of Europeans in the New World.

In the 1864 *SI Annual Report*, the SI published the second half of Rau's translation of Jacob Baegerts work, as well as an article entitled "Artificial Shell-Deposits in New Jersey". The article details Rau's exploration of several shell deposits in the vicinity of Keyport, New Jersey. A recent Masters thesis at Monmouth University in New Jersey explores Rau's investigation there in more depth (McHugh 2009). The Rau piece begins with a mention of two important prehistoric discoveries in Europe, including the Danish *Kjoekkenmoeddings*, or shell-middens, and the "*lacustrine villages* of Switzerland, Italy, and Germany" (Rau 1865: 370). This is Rau's first mention of the Pfahlbauten in any published context, and while he does not elaborate, the brief reference shows that the sites were already on his mind. Rau does, however, use the *Kjoekkenmoeddings* to frame his discussion of the explorations of the shell middens in New Jersey (Rau 1865: 370). The next several pages of the article are devoted to Rau's survey of the mounds near Keyport, the most extensive of which he describes more thoroughly, calling it a "kjoekkenmoedding in the real sense of the word" (Rau 1865: 373) and providing a small map (Figure 3.1).

Rau surveyed the landscape around the midden and conducted a superficial excavation and examination of the mounds and surrounding fields that uncovered "more than three-hundred specimens of Indian manufacture" (Rau 1865: 374). Rau then briefly discusses other accounts of shell-deposits in the Americas, including an ethnohistorical account by Fr. Isaac Jogues, Charles Lyell's description of a shell-deposit in Georgia, and an account of Charles Darwin's from Terra del Fuego (Rau 1865: 374-375).

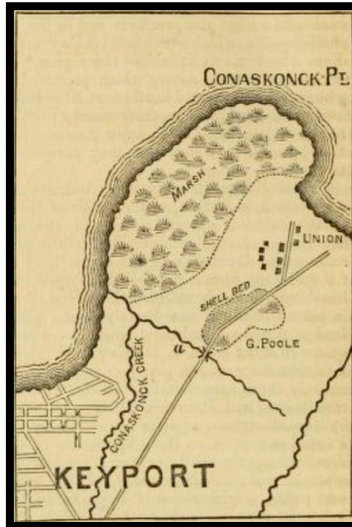


Figure 3.1 Rau's map of midden explorations in New Jersey (Rau 1865: 374).

Rau concludes the article with a paragraph that again highlights his universalist perspective on prehistory:

“The occurrence of the Danish refuse-heaps, whose age is lost in the dawn of history, and of similar comparatively recent deposits in America, shows that the conditions of existence of the Baltic islanders and the American coast inhabitants were essentially the same, and furnishes a striking illustration of the similarity in the development of man in both hemispheres. A thorough investigation of the American shell-mounds will not only enable us to compare them more minutely with the corresponding remains of Europe, but may, possibly, disclose important facts relative to the former condition of the American race, and thus enlarge our stock of ethnological knowledge” (Rau 1865).

Rau's insistence on this similarity is in stark contrast to the article on the next page of the same publication entitled “The Intermixture of Races” by George Gibbs, which is not even certain about the “question of the unity of the human family” (Gibbs 1865: 376).

In the 1866 *SI Annual Report*, Rau's article “Indian Pottery” describes a very informal excavation he undertook at Cahokia. The theme of cultural evolutionism that is explicitly present in almost all of his work appears again, in a comparison between pottery in Northern Europe and pottery in the Americas. Rau may have first been struck with this similarity during a trip that he had taken at some point before this date:

“Some years ago while visiting northern Europe, I had occasion to see many specimens of ancient pottery deposited in the archaeological collections of that district, and having previously become acquainted with the character of North American aboriginal pottery, it afforded me great pleasure to trace the similarity in the fictile manufactures of both continents... where the external conditions of life were similar among men, their inventive powers were necessarily exerted in a similar manner” (Rau 1867: 355).

He adds some complexity to his conception of cultural development in this article however, stating “The similarity in the manufactures of men in various climates is greatest when the art is in its very infancy among them. In the course of gradual development, the primitive forms common to mankind become more and more indistinct, and finally emerge into those varied and characteristic shapes which reflect the individuality of nations” (Rau 1867, 356): this shows that the caricature of the typical nineteenth century cultural evolutionist as assuming a direct line of development with no possible deviations is slightly overwrought. At least in Rau’s case, it probably can be traced to the philosophical perspective of the so-called Free Thinkers of the 1848 revolution. Early European prehistorians had an internationalist perspective on human development, influenced by the idea of the psychic unity of man (Kaeser 2002). Rau’s revolutionary roots, and continued contact with European radicals like Desor, could have influenced his evolutionary thinking.

“Drilling in Stone without Metal” (Rau 1869a) is one of the most interesting articles that Rau published. The article is an early work of experimental archaeology seeking to demonstrate precisely how people were able to drill holes in hard stone before metallurgy was developed. Rau sets up his premise that these holes were drilled using a stick, water, and sand. He conducts a successful experiment, drilling a hole in a piece of diorite using a bow-drill, stick, water and sand. Rau then compares the results of his experiment to

artifacts from the SI. The whole experiment (pun intended) sounds exceedingly contemporary, barring the nineteenth century language. Two years ago at the Midwest Archaeological Conference, a similar presentation demonstrated how cane could be used with water and grit to drill through stone (Kinsella 2014). Rau hypothesizes that cane would have been used in the Americas for this purpose and indicates that he intends to conduct the experiment using cane. Rau again makes explicit comparisons between Swiss lacustrine technology and prehistoric North American technology in this article. He uses North America as an experimental laboratory to generate hypotheses about European technology in much the same way that the processual archaeologists of the 1960s used ethnographic analogy.

Another Rau article published in the Smithsonian *Annual Report* is “Ancient Aboriginal Trade in North America” (1873). The essay was originally published in German, in Volume V of the *Archiv für Anthropologie* (1872), but Rau chose to translate it for publication in the US. He opens the essay with the following statement:

“Indications are not wanting that a kind of trade or traffic of some extent existed among the prehistoric inhabitants of Europe, even at a time when they stood comparatively low in the scale of human development. The same practice prevailed in North America, before that part of the new world was settled by Europeans; and as the the [sic] subject of primitive commerce is of particular interest, because it sheds additional light on the conditions of life among by-gone races, I have collected a number of data bearing on the trade-relations” (Rau 1882: 87).

Rau repeatedly focuses on an almost geological development schema for human cultures here, and again explicitly compares European and North American prehistory, using North America as a sort of analogy for prehistoric Europe. He also uses the term “germs” (Rau 1882: 126) to describe craft specialization, a term that Morgan uses

extensively in *Ancient Society* to describe the organic development of societies (Morgan 1877:6)

One of the more clearly ethnocentric quotes from this piece of writing follows: “Greater, however, than these and many other advantages were the evils which the contacts with the whites brought upon them; and in succumbing to the overwhelming power of the Caucasians, they shared the fate of every inferior race that takes up the contest with one occupying a higher rank in the family of men” (Rau 1882: 133). While this can be read as ethnocentrism, it also speaks to the results of conflict between more and less technologically advanced groups and may be seen as a sympathetic statement regarding the impact of white colonization on Native American cultures.

In 1875, Rau published a series of popular articles for *Harper’s* magazine describing recent archaeological discoveries in Europe entitled *The Stone Age in Europe* (Rau 1875). These articles were compiled the next year in a single volume entitled *Early Man in Europe* (Rau 1876b). This work will be discussed at length in the next section, but it is worth mentioning that Rau’s evolutionary theories also permeate this book, which includes an explicit reference to Rau’s personal collection of lacustrine material. While discussing the “Lacustrine Villages” of Switzerland, Rau makes specific mention of his collection in a footnote: “There are in the writer’s collection many fragments of lacustrine pottery, and some entire vessels, which the most practiced eye can hardly distinguish from the ceramic productions of the North American Indians. Material, shape, and ornamentation are almost identical” (Rau 1876b: 128). He also mentions his botanical specimens on the same page: “The writer has among his lacustrine relics flax in the shape of seed-pods, seeds, fibres and tow, and further thread, strings, and numerous plaited and woven fabrics, all found at

Robenhausen. Hemp, it appears, was not grown during the lacustrine periods.” There is also a pastoral sketch of what life would have been like when “on a fine day, the poor and industrious colonists were gathered on the platform and engaged in their various occupations” (Rau 1876b: 135), as illustrated below in Rau’s representation of the lake dweller idyll (Figure 3.2).

In 1876 after 18 years of an obviously unfulfilling teaching career (see Chapter 1), Rau finally gained employment at the SI to aid in the creation of an exhibition for the Centennial Exposition in Philadelphia. He used the information gathered in the documentation of the SI collection in order to publish *The Archaeological Collection of the United States National Museums, in Charge of the Smithsonian Institution, Washington, D. C.* (Rau 1876a) as a volume in the “Smithsonian Contributions to Knowledge”. This likely felt like a triumph for Rau and a validation of his long years of isolated toil.



Figure 3.2 Nineteenth century imagining of Swiss lake dwelling life (Rau 1876: 106).

In this volume, Rau sought to separate archaeological objects from ethnographic ones in an attempt to “exhibit, approximately at least, the aboriginal state of culture before

it had been modified by European influences” Rau (1876a: 1). The volume organizes objects by their material, method of manufacture, and then finally by type (e.g. Stone>Chipped Stone>Arrow-Head>Stemmed). Each type is illustrated and provided with a brief discussion. The chapters are divided by material, and each chapter provides a broad discussion of the artifacts. While the work presents North American objects in the SI collections, Rau discusses European objects frequently, providing analogies and discussions of similar evolutionary stages; he makes his first comparison to Europe on the third page of the publication (Rau 1876a: 3)!

Rau’s final major work before his death in 1887 was *Prehistoric Fishing in Europe and North America*, also published as a volume of the “Smithsonian Contributions to Knowledge” series. Hinsley (1994) cites it as Rau’s most original contribution to anthropology. The work is divided into two sections: one relating to Europe, the other to North America. The European section is further divided into discussions of the Paleolithic, Neolithic, and Bronze Age. The larger part of the European section is devoted to discussion of the “lake-dwellings” in both the Neolithic and Bronze Age.

Rau indicates at one point that he supports a migration theory for the onset of the Neolithic period in Europe, stating “It is highly probable, to say the least, that the Neolithic period was inaugurated in Europe by the spreading of a new population, in which some are inclined to recognize the first wave of Aryan immigration” (Rau 1884: 33). Colin Renfrew (1998) was the first to posit a similar theory for the spread of the Neolithic technological package to Europe, tracing it to a large immigration from Anatolia, and most archaeologists today would support some form of this idea, excepting the reference to Aryans. Rau

presents a general overview of the most current views on the lake-dwelling phenomenon, as well as an in-depth look into fishing tools.

One of the more fascinating examples is on page 50, where he describes a piece of wood that looks like a twirling stick (Figure 3.3). Rau argues that this object was actually a tool used to retrieve sunken fishing lines, comparing it to a “Devil’s claw grapnel” used by contemporary fishermen for the same purpose (Figure 3.4 and 3.5). He argues that it “is of great interest with respect to the history of civilization, for it proves that implements which have actually derived their origin from the highest antiquity are at the present moment used in precisely the same manner” (Rau 1884: 51).



Figure 3.3 Photograph of SI Cat# A137284.

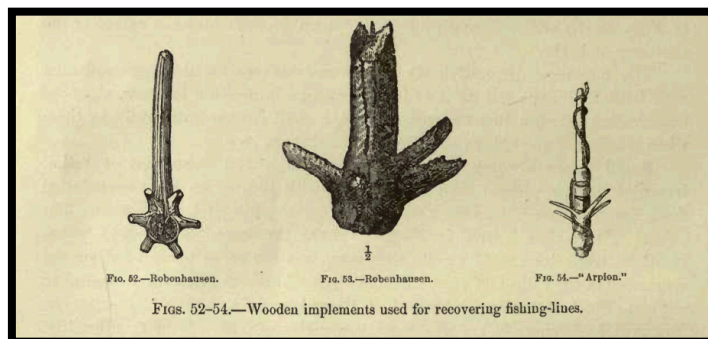


Figure 3.4 Illustration of wooden implements (Rau 1884: 51).

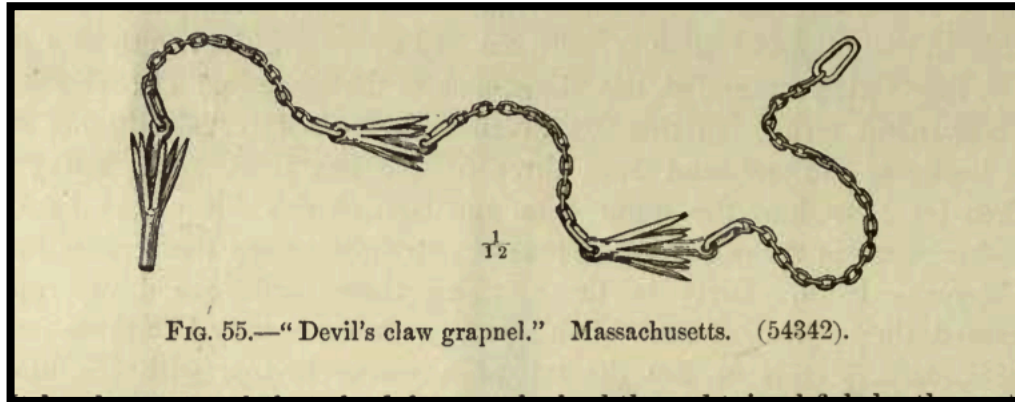


Figure 3.5 Illustration of a devil's claw grapnel (Rau 1884:51).

This artifact is labeled as a twirling stick in Rau's catalog, but it was labeled as a "fishing pole" in the SI database. The theory presented by Rau here shows that his opinion of the object changed between when it entered his collection and when he published this book. This also might explain the strange labeling in the SI database. Today we know, based on more and better preserved examples, that the interpretation as a whisk or churning device is the correct one (Altorfer 2010: Plate 59, #s 743-757).

The North American section is divided by type of tool, rather than geographically or chronologically, with the exception of a long discussion of shell-middens by state. There is also a section that provides quotes from European explorers that describe Native American fishing techniques. This reference section could still be a useful ethnohistorical resource for contact-period scholars interested in fishing techniques and technologies.

A clear picture of Rau's theoretical perspective emerges from these writings. Rau was a categorizer who took great pleasure in typology and comparative analysis. He was a staunch advocate of social evolution at the beginning of his career and remained so even in his final writings. This typological orientation and evolutionary perspective led Rau to draw constant comparisons between the European Stone Age and American prehistoric

archaeology, themes that continued to be developed at the SI under the auspices of his successor, Thomas Wilson (Maxwell 2013).

3.3 Archival Research

Together with the publications discussed in the previous section, archival sources provided a rich resource for both the contextualization of this collection as well as for its organization overall. Sources were collected from several locations, including the accession information for the collection stored on microfilm at the SI MSC, Rau's papers at the NAA, his papers at the SIA, and Rau's personal catalog, which was located by Dr. Bettina Arnold in 2012.

The accession information for the collection is relatively straightforward. Rau's entire collection was accessioned using a single number: 019931 on Dec 10 1887. Rau's collection was left to the NMNH at his death, where the collection remains today. Rau's European collection makes up only a portion of the accession, which, according to the SI's online database, contains 1731 separate catalog numbers. The accession includes 474 objects from his European collections according to his personal catalog, 439 of which are still listed in the SI database.

Dedicated archives of Rau's papers can be found in two locations. Two boxes of material are stored at SI NAA in the MSC in Suitland, MD. This collection was sent to the NAA from the SI Library in 1976 (Day 1976). There is also one box of material at the SIA in Washington D.C.

Personal Letters

The Charles Rau papers at the NAA are interesting in that they date from the 1840s well into the 1870s. The letters are almost exclusively written in German script. I am

unable to read German, so these correspondences were largely unused in this analysis. A systematic survey of these letters could shed additional light on Rau's education, the reasons for his emigration, his early years in the USA, and other aspects of his life.

The personal correspondence includes a number of letters from fellow German American Dr. Carl Hermann Berendt, an ethnologist living in Philadelphia who mainly studied in Brazil. The finding aid for the collection (Day 1976) states that these letters discuss a wide range of issues from small talk, to politics, to frank criticisms of SI staff.

The correspondence material in the SIA is all in English, making this source more useful for this project. The Charles Rau papers at the SIA consist of three folders of correspondence from Joseph Henry—the first secretary of the SI—to Rau, one folder of correspondence from Spencer Baird—Henry's successor—and several folders of miscellaneous documents and correspondence from various historical societies and professional organizations.

Letters written by Rau to both Joseph Henry and Spencer Baird were located on microfilm in the SIA. This correspondence is spread throughout the archive, and it would be very time consuming to find. I was able to locate and photograph several dozen of these letters, but creating a more complete survey would have taken more time than I had available. A database of the location of Rau's correspondence in the microfilm collection was created in order to facilitate ease of access for future researchers based on the card catalog index of the locations (Appendix B).

Joseph Henry engaged in a long and cordial correspondence with Rau, and based on the tone of these letters, the two seemed to be very friendly. Henry was the first Secretary of the SI, serving from 1846 to his death in 1878. He was a famous advocate of the

conduction and dissemination of scientific research, stating "the worth and importance of the Institution is not to be estimated by what it accumulates within the walls of its building, but by what it sends forth to the world" (Henry 1853: 20). Henry certainly supported Rau throughout the course of his career, with one significant exception that will be discussed below.

Most of the correspondence between Henry and Rau relates to the publication of various reports and articles for the SI's *Annual Report*. Many of the letters deal with various proofs of publications, or the status of various woodcuts or other illustrations. The first correspondence dates to Sept 20, 1859 and is addressed to Rau in Belleville, IL, a clear indicator that Rau was still living there at the time (Table 3.1). The letter was sent together with a publication on archaeology and was apparently in response to an inquiry that Rau had sent to Henry relating to some of the work of Schoolcraft (Rau's side of the correspondence is not available) (Henry to Rau, Sept 20, 1859).

Table 3.1 Rau's Places of Residence between 1859 and 1880	
Date	Address
9/20/1859	Bellville, IL
11/2/1863	82 White St, New York City, NY
8/6/1866	106 Forsyth St, New York City, NY
2/9/1870	280 Broome St, New York City, NY
1880	1012 E St NW, Washington DC (City Directory)

The next letter is dated Nov 2, 1863 and is addressed to Rau at 82 White St in New York, providing a date for his move to New York (Henry to Rau, Nov 2, 1863). The letter relates to some more borrowed material that Rau used. Two letters from 1864 shed some light on Rau's first publication. Henry seems very excited about the receipt of the article because of what he calls "a growing taste for the study of ethnology in this country which

we are anxious to increase by collecting information on the subject and diffusing” (Henry to Rau, July 8, 1864).

A letter from Henry dated December 10 1864 provides insight into Rau’s early career aspirations. Henry writes that he has been interested to learn of Rau’s recent explorations of shell middens in New Jersey, which he discusses in the article mentioned above (Rau 1865). He suggests to Rau that such an article could be published as a part of the SI “Contributions to Knowledge” series, and recommends to Rau that he continue to make himself known in the scientific community by publishing and presenting his information at conferences before attempting to publish a larger ethnographic work. Henry warns Rau that this will subject his work to the scrutiny of critical examination.

Henry and Rau appear to have developed a friendship through these letters. In a letter dated July 7, 1867 Henry says “It will give me much pleasure to bear testimony to my high appreciation of your talents and ... [illegible] as an archaeologist, and to promote, in any way in my power, your welfare. From what I have learned of you from Mr. George Gibbs and your communications I have formed a very favorable opinion of your character as a man and a scholar” (Henry to Rau, July 7, 1867). The letter also suggests that they had not yet met in person. Later that year, Henry writes to what must have been a very discouraged Rau, possibly in response to a letter cited by Hinsley (1994: 43) dated 29th of November, 1867, in which Rau writes “For nearly twenty years I have been striving to obtain a respectable situation, but in vain” (Hinsley 1994: 43). Henry writes with strong words of encouragement: “I regret to learn that you have not met with more success in this country. I think that it is here as in every part of the world called civilized that modest merit is frequently overlooked while pushing [?] incompetency is chosen. I hope however

your time will yet come and it will give me pleasure at all times to exert what influence I may have in your favor” (Henry to Rau, November 30, 1867). This was not an empty declaration, as Henry would advocate for Rau strongly over the next ten years, with one exception, including recommending him for a professorship at Johns Hopkins University.

Correspondence between Rau and Henry demonstrates that Rau’s involvement in developing Swiss lake dwelling collections began many years before he became a curator at the SI. In a letter from Rau to Henry dated December 7, 1867, Rau writes in regards to a large “collection of Swiss lacustrine relics” belonging to a Dr. Hirzel, who Rau claims is a friend and who was possibly a distant relative of Jakob Messikommer (Rau to Henry, December 7, 1867). Rau goes on to describe how he personally cataloged the collection and that it is a very good collection. The composition of the collection seems to be an assortment very similar to both Rau’s and Wilson’s collections from Robenhausen:

“Implements of horn and bone, of lint and polished stone, axes set in horn, grain crushers, grinding stones, pottery, and a great variety of twisted and woven articles, the latter spread between glass plates and framed. There are also the various kinds of cereals on which the men of the lakes subsisted, and even pieces of their coarse wheat-bread, in which the grains may be plainly distinguished. Most of the relics of vegetable origin (including the tissues) are in a state of carbonization” (Rau to Henry, December 7, 1867).

During the mid-nineteenth century, collectors employed two general collecting strategies: assortments and series (Arnold 2013: 878). A series was an exhaustive collection of every type of a specific category of object (such as axes), whereas an assortment was as representative a range of object types as possible (one of every characteristic lake dwelling object). The letter directly above contains the first indication that the SI was at this point interested in acquiring such a collection of lake dwelling

material. It also shows Rau appealing to a sense of competition in Henry by mentioning that the Peabody had already acquired just such an assemblage.

Rau did not expect Henry to purchase the collection and it seems that Henry did not. In a letter dated December 20, 1867, Henry writes back to Rau that they would not be able to purchase the collection but could offer a number of Smithsonian publications of equal value for it. A letter from Henry to Rau dated January 1, 1868 indicates that they were unable to purchase, but were interested in acquiring a collection of that kind through exchange.

This would not be the last time Rau would act as middleman in connection with European materials. On Oct 7, 1869, Rau recommended that Henry get in contact with the Natural History Museum in Toulouse. He writes that he has been in communication with Émile de Cartailhac and Eugène Trutat and that they would like to exchange artifacts from the south of France for duplicate Native American artifacts at the SI. Artifacts of this period were valued mostly for their use in typological studies. Rau vouches for both scholars, declaring them “men of honor, and of scientific and literary reputation” (Rau to Henry, Oct 7 1869). Henry responds with a very appreciative letter, and mentions a similar exchange with a Mr. Lartet (Henry to Rau, October 25, 1869). Henry confirms that he has written to Trutat and de Cartailhac in a separate letter (Henry to Rau, February 9, 1870).

Rau’s correspondence with Spencer Baird is much less extensive than that with Henry, and mostly relates to publication issues. One interesting letter from Baird dated July 18, 1878 denies Rau a raise that Rau had apparently asked for. A very funny letter from Rau to Baird states that the archaeological collection at the National Museum is well protected and complaining that any mess can be blamed on the Ethnology section. Rau writes “The

disjecta membra lying on window-sills, in corners, and under the cases, belong to the ethnology department. Cushing has left this year again without putting his things in order. Last year I was engaged with Adam three or four days in removing his rubbish” (Rau to Henry, August 5, 1878).

3.4 Rau’s Unpublished Magnum Opus

As has been made evident in the preceding chapters, Rau was convinced of the unitary evolutionary trajectory of human societies as reflected by their adaptation to particular environments. This variability is reflected, he believed, in the material culture of technology (i.e. tools) most directly. Rau apparently had been struck by perceived similarities between Danish and German ceramic and lithic artifacts and the Mississippian artifacts he had become acquainted with during his long tenure in southern Illinois following a trip to Northern Europe sometime prior to 1867, when he first mentions it in print (Rau 1867: 355). I could not find any reference to this trip in Rau’s letters at the SIA, although there is an absence of letters between the years of 1858, when Rau is living in Belleville, and 1863, at which point Rau is living in New York City. Perhaps this gap corresponds to a trip to the continent. It is possible that the trip was taken before he emigrated to the United States, but he states that he was familiar with North American archaeology during the journey (Rau 1867), so this seems likely.

Rau sought to make this connection explicitly in a monograph that he felt confident could be published as a volume in the “Smithsonian Contributions to Knowledge” series (Hinsley 1994: 44). In 1868, Rau pitched the idea to Joseph Henry and at first met with an enthusiastic response (Henry to Rau, April 11 1868). However, Henry was under the impression that the work would be on a smaller scale than Rau in fact intended. Henry had

suggested the work could be published in the Smithsonian “Miscellaneous Collections” series, and envisioned it as a brief sketch of the state of the field (Henry to Rau, April 11 1868). “If you are not too much engaged we would be pleased to have you prepare a sketch of what you propose” (Henry to Rau, April 11 1868).

Rau wrote back to Henry three times to clarify his more extensive intentions for the work. In a letter dated April 28, 1868, Rau presents the outline for a proposed twelve chapter monograph stating “In order to acquaint you with the plan of my proposed work on the Stone Ages of North America and Europe, I will enumerate the contents of the chapters” (Rau to Henry, April 28 1868). Rau goes on to propose visits to Washington and to Cambridge, MA in order to study material at the SI and the Peabody Museum. He also asks to be sent the works of Lartet and Christy, being “much disappointed in regard to Lubbock’s *Prehistoric Times*” (Rau to Henry, April 28 1868), and noting that he already owned a copy of Nilsson’s work on the *Stone Age of Scandinavia*. Rau seems confident in his proposal, ending his letter “when my work is finished, you will publish it (I have no doubt) [sic] as a ‘Contribution to Knowledge’” (Rau to Henry, April 28 1868).

As the spring passed with no response from Henry, Rau started to become anxious about his project.

“Dear Sir, Not having heard from you since April 11th, though I addressed two letters to you in the meantime, I write you the third time, hoping that you will leave me no longer in uncertainty concerning my proposed work. If you have any doubts as to my capacities, or, if you shun the expenses which the publication requires, or, if any other cause prevents you from accepting my proposition, -- please, state your views in plain words. This is not a matter which can be passed over in silence. Have the kindness therefore, to let me know at once your opinion in regards to the subjects. I am, Sir, Very respectfully yours” (Rau to Henry, May 27, 1868).

This letter clearly illustrates Rau's mounting frustration and concern about the ongoing lack of response from Henry. Rau sincerely believed that the project merited a volume in the Smithsonian "Contributions to Knowledge" series, which, based on his Table of Contents (Table 3.2), would have been a major scholarly contribution.

Rau's concern is also clearly stated in a letter he wrote to George Gibbs dated May 30, 1868 just two days after writing the letter to Henry. The letter sought Gibbs' assistance in convincing Henry that the monograph project warranted more depth than a sketch. It also indicated that Rau had sent a similar letter to Spencer Baird, to which Rau received an answer suggesting he write a smaller paper, although this note is not present in the Rau Papers at the SIA. Rau cites new archaeological discoveries in Europe, including the "lake-habitations", as a reason to update European archaeological information in the United States. Rau claims "My object is not to repeat what others have said in relation to America, but to introduce new features by *comparing the aborigines of this country with the primeval people of Europe* (my emphasis). I have to enumerate, for instance all facts relating to the antiquity of man in America" (Rau to Gibbs, May 30, 1868). Rau argues that the extensive nature of the work would require at least a year's research in both Washington and Cambridge, for which he would need financial support. He continues that "If I ... [this section of the page is destroyed] the work in German, I can make money by it, but it is my ambition to give it an American character" (Rau to Gibbs, May 30, 1868). This sounds as though it may have been a negotiation tactic, but it did not bear fruit.

Also on May 30, 1868, Henry dated a letter to Rau explaining his lack of response to his previous letters. Henry had been on vacation, which suggests that if the timing of Rau's letters had been different, his appeals might have been more successful. I can imagine

Henry returning to his office from vacation to several frantic letters from Rau, who had apparently also written to Henry's coworkers. If Rau had been able to have a more direct conversation with Henry, he might have been able to plead his case more successfully. There is also a more sinister explanation for Henry's refusal to publish. Rau's conception of evolution allowed that all humans were equally capable of developing, an idea that conflicted with mid-nineteenth century scientific ideas about race (Díaz-Andreu 2007: 311) (see Gibbs 1866). Rau argues that Native Americans, if their progress had been allowed to continue unabated by European contact, would have progressed further in his evolutionary schema. This progressive view, which is further illustrated in this chapter, may have conflicted with the American colonial project in a way that could have made Henry uncomfortable.

The answer that Rau was dreading from Henry is dated June 6, 1868. In the letter, Henry expressed his doubts that the project, as proposed, would be appropriate as a full volume in the "Contributions to Knowledge" series. Henry was willing to publish a short sketch of the current state of North American archaeology with references to Europe, but the extent of the proposed project would have required more resources than the Institution could provide. "The preparation, however, of an extended work, such as you propose, is a difficult affair, involving, as it were, a large amount of original research, not in the line of printer ≠ matter, but in that of investigations, explorations, the comparison of an extended series of aboriginal implements" (Henry to Rau, June 6, 1868). Henry went on to say that the SI would support Rau as much as it could in terms of his explorations, but he could not give a "definite promise as to publication" (Henry to Rau, June 6, 1868). It seems that his biggest concern was that Rau's proposal would be more of a review than a presentation of

new research and therefore too speculative. Henry ends his letter on a positive note, praising Rau’s abilities and suggesting that he should direct his energy in more productive directions. This letter has been transcribed and published in its entirety in the *The Papers of Joseph Henry: Volume 11* (Rothenberg 2007: 193-195), with some notes on the context of the letter.

Although Rau never published the larger work he had proposed, he did begin to write a draft of the proposed monograph, which is currently in the Charles Rau papers at the NAA. The rest of this section provides a summary of the contents of this draft (Table 3.2) as well as a brief discussion of Rau’s most famous work, *Early Man in Europe* (Rau 1876), which included some of the material from this draft document.

Chapter	Rau’s Description*
Chapter I	Introduction (nearly finished), which I will send you for perusal.
Chapter II	A short synopsis of the latest archaeological discoveries in Europe (Flint Implements of the Drift; Caves; Kjoekkenmoeddings; Lacustrian [sic] Villages.
Chapter III	A more minute description of the Drift Implements of Europe, and of similar articles found in America; together with notices on the antiquity of man in America.
Chapter IV, V, VI, VII	A systematic description of North American and European Stone Articles. Representations of both.
Chapter VIII	Work performed by the Indians with Stone Implements (Canoes, Houses, etc).
Chapter IX	Articles of Bone and Horn in North America and Europe.
Chapter X	Pottery in North America and Europe.
Chapter XI	Use of Copper and Silver in North America
Chapter XII	The American Bronze Period (A condensed view).

*Note: All capitalizations retained from original

Table 3.2 provides the proposed Table of Contents for Rau’s magnum opus (Rau to Henry, April 11th, 1868). Rau’s draft includes versions of the Introduction as well as the

first chapter. Subsequent chapters made their way into both the title and the order of the sections of *Prehistoric Man in Europe* (Rau 1875).

Rau's introduction explicitly lays out his cultural evolutionary theory, and states as his goal for the work to show the following:

“at the same time in how they resembled in their conceptions, manners, and arts other families of the human race and especially certain ancient nations of the eastern hemisphere, whose conditions of existence were not very different from those of the Indians at the time of the discovery of this continent. Yet, in doing so I make no attempt to trace a relationship between the inhabitants of Americas and such foreign nations as form the subject of my comparison” (Rau 1868: 4).

The idea that the mound centers like Cahokia in Illinois had been built by some group other than the Native Americans indigenous to the United States at European contact was a common belief in the mid-to-late nineteenth century (Feder 2004: 119-140). This conception was largely based on the view that Native Americans were incapable of creating architecture on such a scale and had displaced the people who originally created these monuments, thus at least implicitly justifying the seizure of Native American lands by European settlers (Feder 2004: 119-140). Considering that Cyrus Thomas' publication advocating a Native American origin for the mounds was not published until 1894, Rau's theory was well ahead of his time in this belief, further undermining Henry's argument that Rau's work lacked originality.

Rau's most concise account of his ideas is found in this introduction, and is as follows: “There is ~~in my opinion~~ [crossed out in text] a certain law that regulates the march of civilization, and compels, as it were, the populations of different parts of the world to act, independently of each other, in a similar manner, provided there is a sufficient similarity in their external conditions of life” (Rau 1868:4).

Rau defines four categories in his evolutionary schema: “savage, barbarous, or half-civilized” as well as highly civilized, with Europe representing the final stage. While Rau’s concept of cultural evolution relies heavily on environmental conditions operating on subjects throughout history, he includes mental ability in his list of environmental constraints on cultural developments, insinuating the widely held belief in the natural superiority of Europeans. This ethnocentrism is especially clear in the following passage: “We find even at present in the connected parts of the Old World civilizations represented by a perfect scale, from the squalid Hottentot upwards to the nomadic Arab and the refined inhabitants of European cities, a diversity which existed also to a considerable extent among the American populations, when the white race first appeared on this continent” (Rau 1868: 5).

There also seems to be a strong element of diffusionism in his conception of the development of Western civilization, “as it has spread from Egypt to Greece to Rome to Germany and Britain, and now to the rest of the World” (Rau 1868: 7). While nineteenth century cultural evolutionism has often been portrayed as relying exclusively on independent invention, Carneiro (2003: 34) demonstrates that the reality was more complicated. Morgan and Tylor both allowed for diffusion in their conceptions of cultural evolution, with Morgan arguing that groups on the same continent will share in the more important elements of progress (Carneiro 2003: 34).

Rau speculated as to whether Indians would have advanced through the same stages of evolution in “developing their inherent qualities to their final extent... ..had they not been interrupted by the arrival of Europeans” (Rau 1868: 6). He presents a lengthy discussion of the evolution of religions, maintaining that differences in religion, as long

they are general, should be ascribed “to the individual inventive power of the nations among whom they occur” (Rau 1868: 6). This theory is similar to his conception of the development of technologies, and fairly radical for the time.

He writes that the worship of sun and moon is as “natural a phase in the intellectual development of man, as the invention of bow and arrows, and the canoe, in the scale of practical improvement” (Rau 1868: 8). This shows that Rau considered ideological as well as technological aspects of culture in his scheme of evolutionary stages. For Rau, it is only natural that people without an understanding of the “laws that govern the universe” would worship the protective and warming powers of fire and the sun. He then engages in a serpentine discussion of sun worship as it appears in Old World Contexts, not just in ancient settings, but also in contemporary Zoroastrian followers.

Rau goes on to compare Herodotus’ discussion of Scythian sacrifices of horses to the sun to a description of the Chichamec of Anahuac (Rau’s spelling):

“I mention these two examples merely to show how the same principle was carried out by these people in two different ways, according to their respective modes of life, a dissimilarity which probably would not have existed, if the Chichamecs had been an equestrian people like the Massagetae, in which case, it is very likely, their offerings would have consisted in horses instead of flowers and herbs of the field” (Rau 1868: 12).

Rau describes “the Indian faith” as dualistic, stating that this form of dualism is “highly attractive to the uncultivated mind” (Rau 1868: 13). The “Indian mind was unable to conceive of a purely spiritual existence, but connected with it a more or less physical character” (Rau 1868: 13 margins).

Rau uses the rest of this section to relate a number of ethnohistorical comparisons between Old and New World religions. For example he compares the “happy hunting grounds” to the German conception of Valhalla. This section concludes a four-page

discussion of Iroquoian religion in which he cites H. L. Morgan extensively (Rau 1868: 16 – 20). Iroquoian religion, Rau argues, bears a striking resemblance to Zoroastrianism (Rau 1868: 20).

Rau's first chapter is on the "lingering of the Stone Age in America". In discussing Smile's (1864) comparison of ancient European lithic tools to Melanesian tools present at an exhibit in London, Rau argues the comparison between European lithic technologies and North American examples is even more striking. "North America corresponds in climate and configuration of the soil far more with middle and northern Europe than with the islands of the Pacific, a circumstance, which naturally leads to the inference that the ancient Europeans bore, in their technical performances, a greater resemblance to the natives of North America" (Rau 1868: 3). In this passage it is especially apparent how important Rau believed the environment to be in shaping the material culture of a given place. The climate is more similar in two places; therefore at similar levels of cultural development the material culture should also be similar, irrespective of "race", in the comparison cited above. Wilson would take a similar view of parallel developments in material culture (Maxwell 2013).

On page 3 of this chapter, there is confirmation that Rau returned to Europe at some point, and that this trip was foundational to the development of his comparative ideas. He also appears to have brought several objects that he collected while living near St Louis with him to compare to collections in Northern Europe. "I spent a few months in the northern part of Europe, and while I examined here the rich and well-arranged archaeological collections, I was struck with the astonishing similarities of the manufactures of different nations and ages" (Rau 1868: 3).

Rau seems to have been greatly influenced by the works of William Robertson (1721-1793), an eighteenth century English historian. Rau quotes a lengthy passage by Robertson in which he discusses similarities between the ancient people of the Danube and of the Mississippi, where he states “we should only conclude that the disposition and manners of men are formed by their situation and arise from the state of society in which they live” (Rau 1868: 4-5).

He argues that hunting life ways brings out the worst aspects of human nature (Rau 1868: 6), while agricultural life brings men into villages, and lays the foundations of regulated commonwealth. Hunting makes for constant warfare because of encroachment or raiding and revenge cycles. This interpretation almost seems the reverse of what is currently being interpreted in the archaeological record in North America where increased violence occurs coevally with an increase in agricultural sedentism (Milner et al. 1999: 108-109). Rau also argues that the fractured nature caused by hunting and warfare could have lead to the linguistic diversity of North American tribes (Rau 1868: 7).

In his discussion of agricultural tribes in the Plains, Rau describes the “Dakotahs, Blackfeet, Crows, Pawnees, and Comanchees” as equestrian hunters. Rau claims that their use of agriculture was a recent response to dwindling buffalo populations, resulting in the adoption of a more sedentary and peaceful way of life. Current thinking paints a more complicated picture (Fagan 2005: 161-163). Rau notes that eastern agricultural villages existed, citing de Soto’s account (Rau 1868: 9). He also separates eastern agricultural complexes from Plains hunters.

Rau spends several pages discussing the adoption of European metal materials, which he saw as revolutionizing the Indian way of life, and spends several pages comparing

this adoption to accounts of Captain Cook's encounters with Native Hawaiians, as well as encounters with New Zealanders.

Rau never completed this particular work. We are left with only the introduction and the first chapter, currently housed in the NAA. The introduction is mostly concerned with a rather circuitous discussion of religious practices, while the second chapter is more illustrative broadly of environmental factors in determining cultural expression, as well as speculations about different ways of life in North America.

While much of what Rau writes in this manuscript would be offensive to contemporary readers, it should be kept in mind that his ideas were of his time and largely reflective of his contemporaries' thinking. At the same time, he exhibits some unusual patterns of thought, especially with respect to the parallel between technological and ideological mechanisms of development. And while Rau alludes at several points to differences in the character of races acting as a "natural" check on social evolution, he also seems to contradict this, claiming that character is shaped by the environment. These ideas stand in contrast to contemporary and later ideas about race. Carleton Coon, an early twentieth century Harvard anthropologist, thought Neolithic technologies came to Europe in a series of invasions (Coon 1939: 78). Coon's ideas about race involve a gradation of two types, *erectus* and *sapiens*, which different races reach at different rates, with white "caucasoids" evolving into *Homo sapiens* first and then distributing *sapiens* traits to the other racial groups (Trigger 1965: 183). In Coon's conception of the Neolithic, "the people who discovered or invented this control over nature probably belonged to the purely *sapiens* branch of the white race in the larger sense" (Coon 1939:127). His view of both physical and social evolution is one where progress occurs in the white race and then

spreads into the others. Rau's evolutionary conceptions of development do not reference this type of extreme diffusionism and suggest that environment, not race, is the primary determining factor in cultural evolution.

The stages of cultural evolution put forward by Morgan must have been influential in Rau's evolutionary scheme, citing his work on the Iroquois extensively, but Rau retains ideas from his earlier life experiences, including the 1848 revolutions, that seem to set him apart from his contemporaries in the way he conceptualizes both race and culture.

Early Man in Europe (Rau 1876) was a popular science book published by Harpers, which consisted of six articles previously published in *Harpers Weekly* magazine. This book was widely distributed, and eBook versions can be found on several popular vendors today. The series of articles provided sketches of important periods of European archaeology. Sprinkled throughout the book are Rau's signature and persistent comparisons between Old and New World archaeology. Clearly, a large portion of Rau's background work on conceptualization and preliminary text for *Parallelisms* made its way into these articles, and the fact that they are still available is evidence of their continuing interest and influence.

The link between the two publications is evidenced by the order of the chapters of *Early Man in Europe*. They follow the order laid out for Chapter II of *Parallelisms* (Table 3.2): The Drift is followed by Cave Dwellings, followed by Kjoekenmoeddings, Lacustrine Villages, and finally a discussion of different types of Neolithic implements. I identified one instance where an entire passage from *Parallelisms* was reproduced in *Early Man in Europe* verbatim (Rau 1876: 158).

Rau's interest in the theme of parallel invention continued throughout the course of his career. It is this conviction that I believe partly led to his dedicated following of archaeological discoveries in Europe and influenced his personal collection of material from Switzerland. Rau's perspective on evolutionary theory, had this work been published in the form he proposed, would certainly have been a groundbreaking contribution to American anthropological theory. The publication would have appeared at roughly the same time as Morgan's *Ancient Society* (1871), and Rau's theories might have had a corresponding impact on the field.

3.5 Collections Research

Rau's Swiss Collection

In all, I recorded 270 objects from Rau's collection at the MSC. Of these objects, 205 were from Robenhausen, all purchased from Jakob Messikommer. Of the remainder, 62 are definitely from Auvernier, two are probably from Auvernier, five objects are from Möringen —all received from Dr. E. Desor— and one is from somewhere on Lake Constance, also purchased from Jakob Messikommer (Figure 3.6).

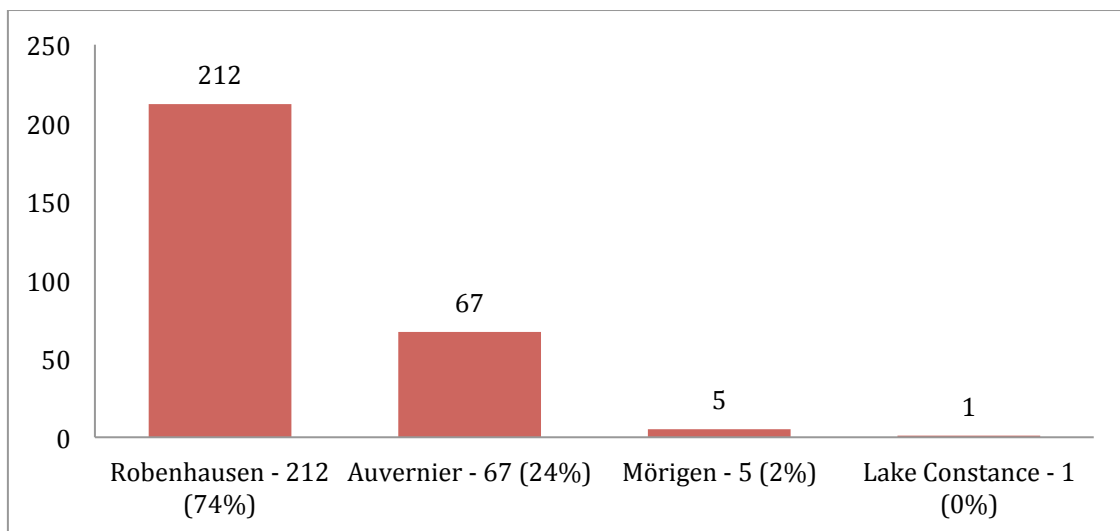


Figure 3.6 Composition of Rau's collection of Swiss lacustrine material by site.

Objects from Robenhausen dominated Rau’s collection, but the Auvernier material is also quite extensive. Fifteen objects listed in Rau’s catalog could not be located in the SI collection, bringing the total number of objects in Rau’s collection labeled as Swiss lacustrine objects to 285. Desor’s connection with Rau was particularly important.

Most of the objects retained Rau’s original labels, which made associating artifacts with their entries in the catalog fairly easy. When no label was present, it could often be deduced from the entry in the catalog, from the description in the catalog or using the SI catalog number. All 270 objects that were analyzed could be matched to entries in Rau’s catalog; however, there were several instances where objects were mislabeled in the SI’s database, and five objects are present in the collection that were not listed in the SI database at the time of investigation (Table 3.3).

Rau Catalog #	SI Catalog #	Rau Description	Current Storage Location in MSC
90-91	A137162	Chisels. Robenhausen	42B00318
164	A137236	Layer of Peat in which remains occur (Fundschrift, Culturschicht)	42B00203
359	A137431	Celt Socket (stag's horn)	42B00204
360	A137432	Millet – Bread	42B00103
365	A137437	363-366 Wrought Pieces of Stag's Horn. Station of Auvernier, Lake of Neuchâtel, Switzerland*	42B00204

*Cat #'s 363, 364, and 366 are present in the SI Collection.

Seventeen objects were listed as “Removed” in the SI database; two of these objects were actually still present in the collection. The remaining fifteen objects were present at the time of the accession and listed in Rau’s catalog but were not present in the collection

at the time of this research project (Table 3.4). Seven of the objects that are absent from the collection are from Robenhausen, seven are from Auvernier, one was an artifact that is described as being from Moeringen, near Lake Biene. Moeringen is clearly a different spelling of the town Möringen on Lake Biel/Bienne

For the most part, the collection has been kept in good condition. Apart from the exceptions noted above, and some more minor issues, the objects were located in the expected places. The MSC facility has excellent climate controls, and the objects all appear to be in stable condition, stored in archival boxes.

Rau's Catalog #	SI Catalog #	Rau Description*	Origin
153	A137225	Small Celt set in horn	Robenhausen
154	A137226	Crushing Stones	Robenhausen
180	A137252	Rock crystal from the Layer of Peat in which remains occur	Robenhausen
193	A137265	Fragments of Pottery, plain and ornamented	Robenhausen
196	A137268	Fragments of Pottery, plain and ornamented	Robenhausen
231	A137303	<i>Polyphorus igniarius</i> . Lin. Common tinder fungus	Robenhausen
236	A137308	Carbonized straw	Robenhausen
365	A137437	Wrought Pieces of Stag's Horn	Auvernier
376	A137448	Bone Implements (Awls)	Auvernier
393	A137465	Bronze. Hair and (probably) Dress Pins	Auvernier
396	A137469	Bronze. Hair and (probably) Dress Pins	Auvernier
476	A137476	Bronze. Armrings	Auvernier
406	A137478	Bronze. Wristband	Auvernier
409	A137481	Bronze. Rings of various sizes	Auvernier
413	A137485	Bronze. Point of Lance or Javelin	Moeringen [as written in Rau's Catalog]. Probably Möringen

*Capitalizations and punctuation retained from Rau's catalog

Most of the botanical samples remain in their original glass containers, some of which are sealed with an unknown substance. Many of the original containers are missing, however, and were probably discarded when the samples were on display in the NMNH Western Cultures Hall (Maxwell 2013: 120). This probably presents the biggest conservation concern. Some of the samples were stored in new twist top bottles, but others were stored in glass dishes wrapped in tissue paper and then placed in a plastic bag. These samples were not well secured in the dish and often were spread throughout the bag and in the tissue paper. Removing such samples from the bag is difficult to accomplish without spilling. Because of this, I decided not to photograph objects that were stored in this way, as removing the object presented too much of a risk.

The preserved textiles are stored in their original mounts between two plates of glass that are sealed around the edges (Figure 3.7). This system is shown in Keller's initial report (1860) as the recommended technique for treating textiles (Leckie 2011:189).

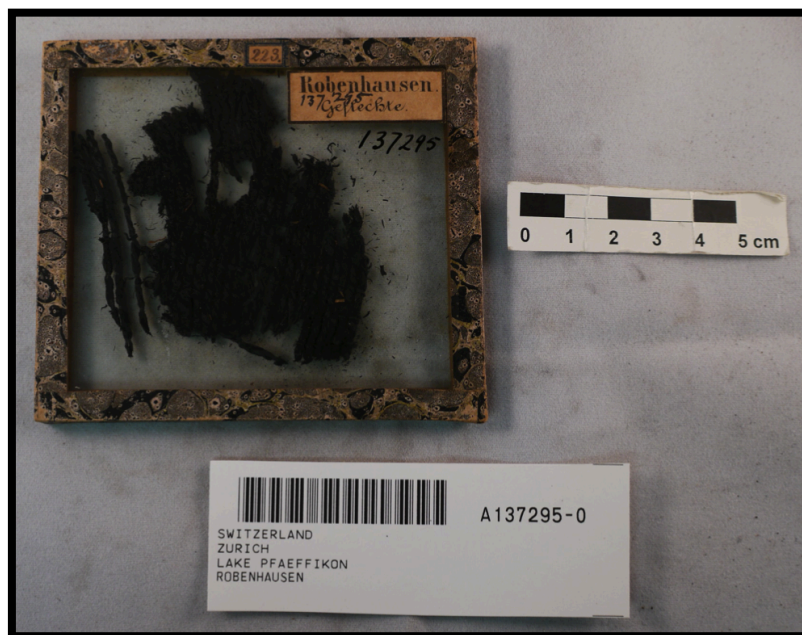


Figure 3.7 Example of textile object in Rau's collection.

Of the 205 objects from Robenhausen that were examined, 161 had their Messikommer labels intact. These labels changed over the decades in which he excavated the site, and Altorfer (2010:78) provides a seriation for determining when the objects in the collection were labeled. Most of the labels in Rau's collection belong to the type postdating 1866. A letter from Rau to Messikommer written in 1868 regarding recent purchases supports a late 1860s date for Rau's acquisition of the collection. Given the absence of later labels from Rau's collection, Rau likely ceased his personal collecting when he began his employment at the SI. Since we know Messikommer continued to provide collectors with material after this date, Rau seems to have made this decision based on some other criterion, possibly because he had achieved his goal of acquiring a lake dwelling "assortment".

Distribution of Artifact Types in Rau's Auvernier and Robenhausen Material

As evidenced in Table 3.5, the majority of the objects in Rau's lake dwelling collection are from Robenhausen; however, a quarter of the objects are from the site of Auvernier. Artifact categories were adapted from Altorfer (2010) and Maxwell (2013), to facilitate comparison with other collections, especially of Robenhausen material. These counts were made using only the objects still present in the collection.

The largest category of objects in the Robenhausen sample was botanical material (34%). The next most common artifact types were chipped stone tools (18%), ceramics (14%), worked bone (8%), ground stone (8%), and textile materials (7%). Antler (3%), wood (3%), faunal material other than antler and worked bone (3%) and other (2%) represented relatively small percentages of the total collection (Table 3.5, Figure 3.8,

Figure 3.9). This distribution will be compared to Thomas Wilson’s collection (Wilson 2013), as well as other collections from Robenhausen described in Altorfer (2010).

Type	Robenhausen (N=205)	Auvernier (N=60)
Botanical Specimens	70 (34%)	1 (2%)
Chipped Stone	37 (18%)	0 (0%)
Ceramic Vessels	28 (14%)	8 (13%)
Worked Bone	17 (8%)	3 (5%)
Ground Stone	16 (8%)	3 (5%)
Textile, Matting and Fibers	15 (7%)	1 (2%)
Antler	7 (3%)	10 (17%)
Wood	5 (3%)	0 (0%)
Other	5 (3%)	0 (0%)
Other Fauna	4 (2%)	2 (3%)
Other Ceramic	1 (1%)	11 (18%)
Bronze	0 (0%)	20 (33%)
Compound	0 (0%)	1 (2%)

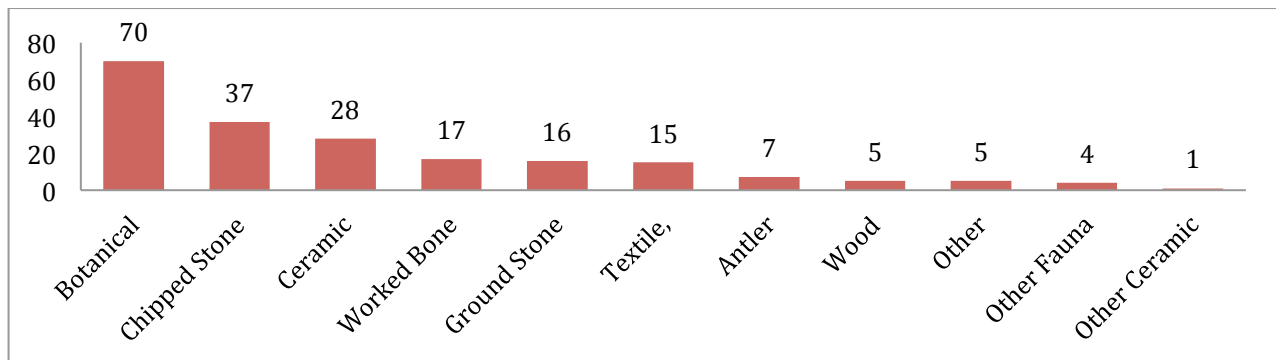


Figure 3.8 Distribution of artifact types in Rau's Robenhausen collection.

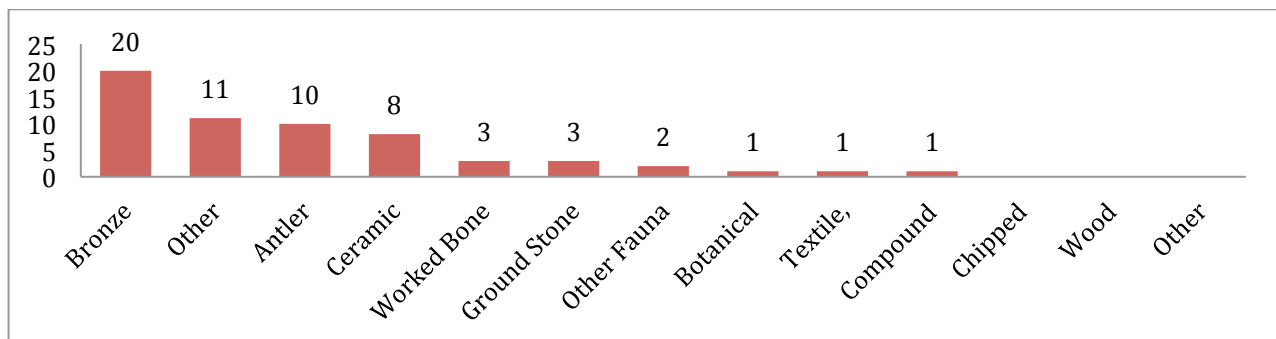


Figure 3.9 Distribution of artifact types in Rau's Auvernier collection.

Distribution of Artifacts in Wilson’s Robenhausen Collection

Thomas Wilson’s collection at the SI is also stored at the MSC in Storage Pod 2, spread among many of the same drawers as Rau’s collection. Maxwell (2013) conducted an analysis of Wilson’s collection and the following percentages come from her work (Maxwell 2013: 126). Botanical specimens make up over half of Wilson’s collections (63%). The next most common types are textiles, fibers, or matting (10%), ceramics (5%), wood (5%) and worked bone (4%). Table 3.6 and Figure 3.10 summarize the distribution.

Type	Number of Objects
Botanical Specimens	60 (63%)
Textiles, Matting and Fibers	9 (10%)
Ceramic Vessels	5 (5%)
Wood	5 (5%)
Worked Bone	4 (4%)
Other	4 (4%)
Other Faunal	3 (3%)
Other Stone	3 (3%)
Ground Stone	2 (2%)
Antler	0

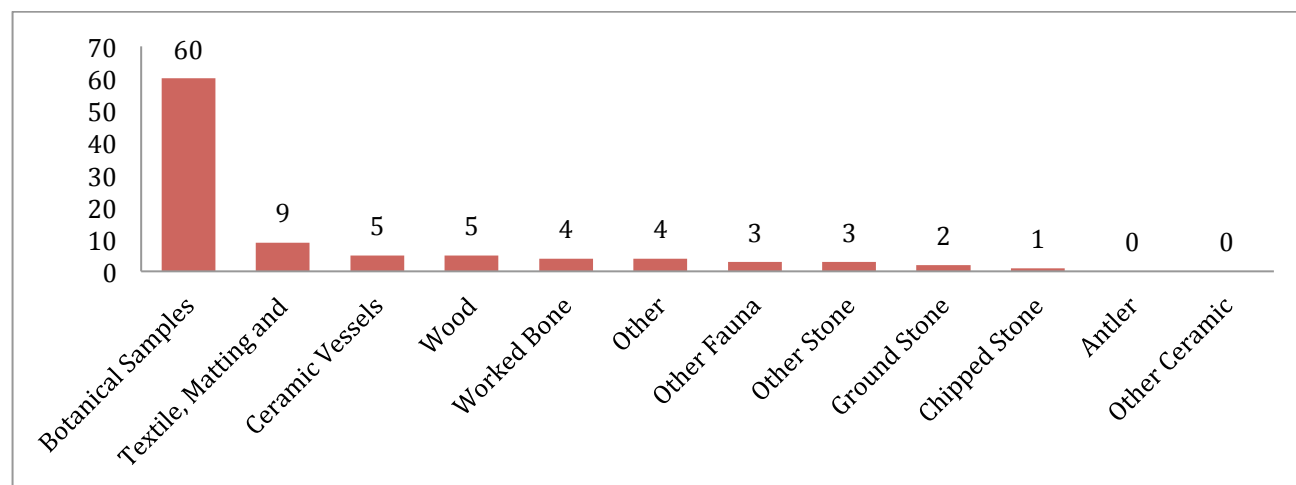


Figure 3.10 Distribution of artifact types in Wilson’s Robenhausen collection (Maxwell 2013).

Distribution of Artifact Types in Eleven Swiss Museums

Altorfer's (2010:119) study of Robenhausen collections stored at eleven Swiss museums provides another comparative source from a larger sample. Comparing Rau's collection to this assembled baseline allows us to see if his or Wilson's collections are more representative. The most common type of material is textile, matting, and fibers (28%). Ground stone tools (20%) are the second most common type. Wood (11%), Bone (11%), Antler (9%), Ceramic Vessels (9%), Chipped Stone (8%), Other Ceramics (4%), and Metal (<1%) make up the remainder of the collection (Table 3.7 and Figure 3.11).

Type	Number of Objects
Textile, Matting and Fibers	394 (28%)
Ground Stone	272 (20%)
Wood	151 (11%)
Bone	149 (11%)
Botanical Samples	139 (9%)
Antler	131 (9%)
Ceramic Vessels	126 (9%)
Chipped Stone	114 (8%)
Other Ceramics	56 (4%)
Metal	2 (<1%)

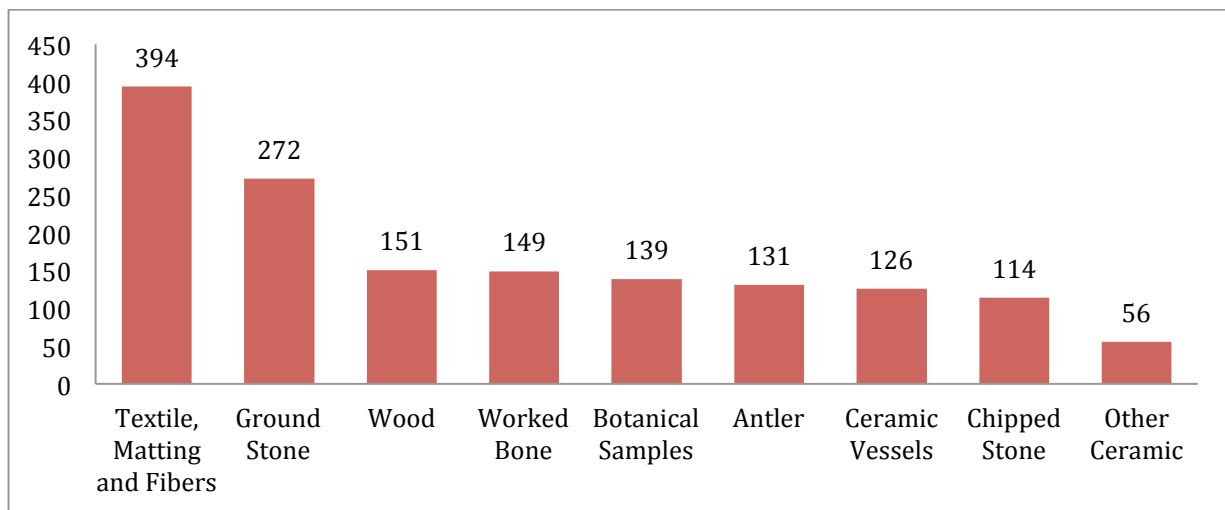


Figure 3.11 Distribution of artifact types in Swiss Robenhausen collections (Altorfer 2010).

Figure 3.12 illustrates the differences in the compositions of the three sources in this study. It becomes very apparent that Rau and Wilson's collections differ in significant ways, and both are much more heavily composed of botanical specimens than the Swiss museum collections. Possible reasons for these differences are examined in the following chapter.

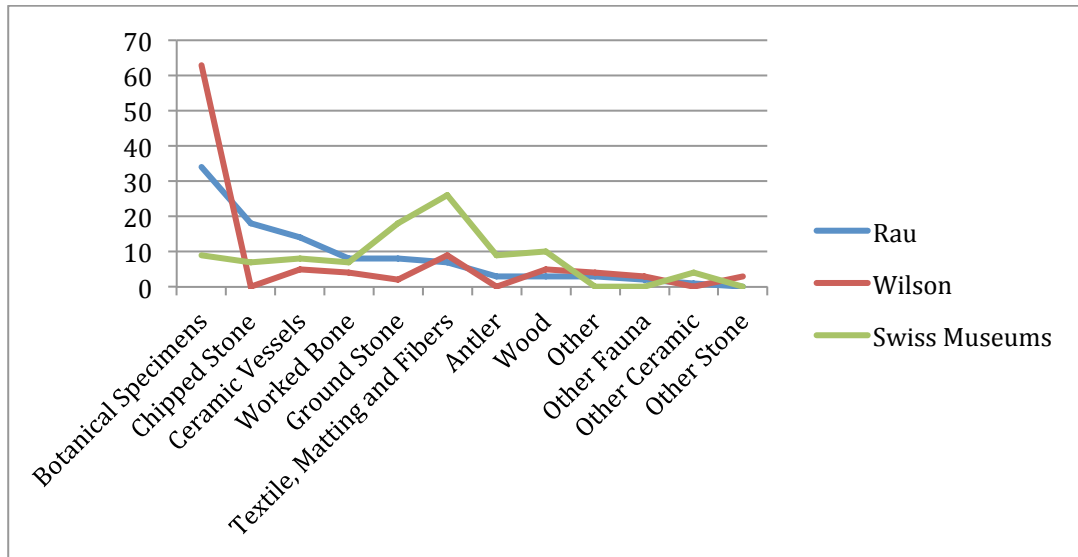


Figure 3.12 Distribution of artifact types in collections by percentage of total collection.

Chapter 4: Conclusions

4.1 Comparison of Artifact Distributions

Rau's Robenhausen and Auvernier Collections

A comparison between Rau's collected materials from these two sites provides some useful insights. The sites of Robenhausen and Auvernier are very different. Robenhausen is for the most part a Neolithic site (see Chapter 2, this thesis), with a limited Early Bronze Age occupation. The area of Auvernier excavated in the mid-nineteenth century on the other hand is primarily a Bronze Age site (Desor 1866). The agents from whom Rau purchased the collection also could not be more dissimilar. The Robenhausen collection was purchased from Jakob Messikommer, a farmer who owned the land on which Robenhausen is situated, and allowed visitors to excavate there, purchasing their finds afterwards (Arnold 2013: 869). Rau's Auvernier materials came from Pierre Jean Édouard Desor, a well-known naturalist who had studied with world-renowned naturalist Louis Aggasiz (Kaeser 2004). Rau's collection from Robenhausen is also substantially larger than that from Auvernier and reflects the different temporal context of this site.

Rau's Robenhausen collection consists of a large amount of botanical material (34%). The most obvious difference is in the absence of bronze objects in the Robenhausen collection and their abundance in the Auvernier collection (33%). While Robenhausen has an Early Bronze Age occupation, metal objects are very rare. There is conversely an absence of chipped stone tools in the Auvernier collection, while this category represents 18% of the Robenhausen collection. The other major difference is the presence of a large number of "Other Ceramics" in the Auvernier collection. The "Other Ceramics" category is

comprised of 10 spindle whorls and one large clay ring. Oddly, considering its textile finds, Robenhausen produced few spindle whorls (Lillis 2005: 73) (Table 4.1 and Figure 4.1).

Table 4.1 Distribution of Artifact Types in Rau’s Robenhausen and Auvernier Collections.

Type	Robenhausen (N=205)	Auvernier (N=60)
Botanical Specimens	70 (34%)	1 (2%)
Chipped Stone	37 (18%)	0 (0%)
Ceramic Vessels	28 (14%)	8 (13%)
Worked Bone	17 (8%)	3 (5%)
Ground Stone	16 (8%)	3 (5%)
Textile, Matting and Fibers	15 (7%)	1 (2%)
Antler	7 (3%)	10 (17%)
Wood	5 (3%)	0 (0%)
Other	5 (3%)	0 (0%)
Other Fauna	4 (2%)	2 (3%)
Other Ceramic	1 (1%)	11 (18%)
Bronze	0 (0%)	20 (33%)
Compound	0 (0%)	1 (2%)

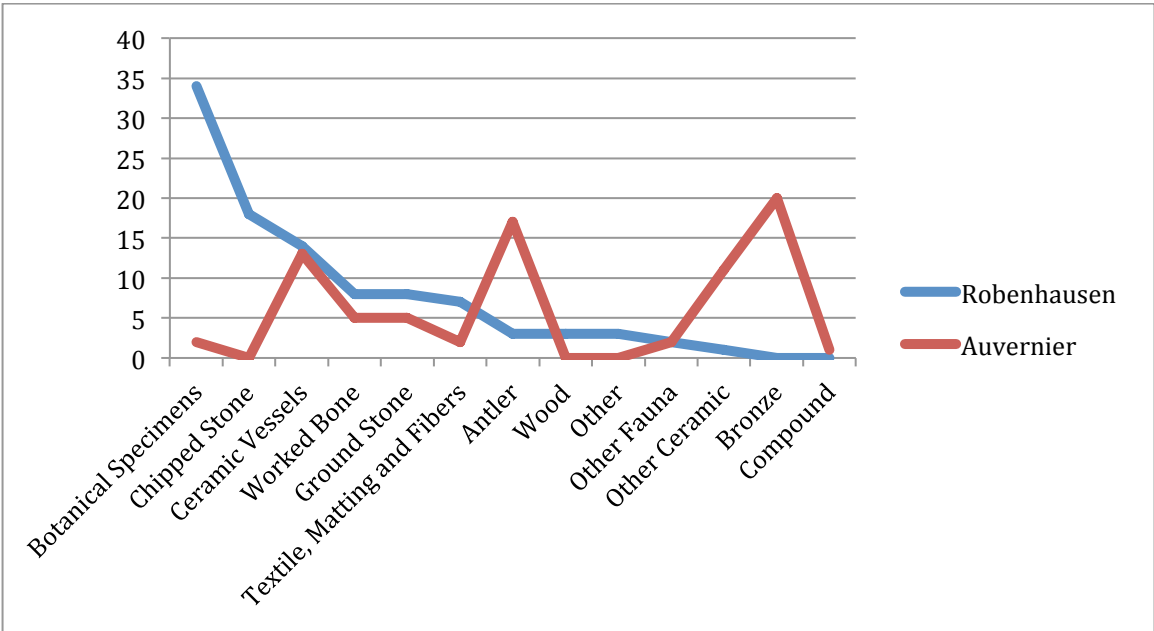


Figure 4.1 Comparison of composition of types in Rau’s Robenhausen and Auvernier collections by percentage of total objects.

In other respects, the collections are very similar. Both contain a diverse range of objects, and both focus on utilitarian objects. If the botanical samples in Rau’s Robenhausen

collection are disregarded, “Chipped Stone” tools make up 27% of the remaining objects, with ground stone tools making up another 12%. Bronze objects make up around 33% percent of the objects in the Auvernier collection. Both these percentages far outweigh the percentages of similar objects in the Wilson’s collection, and the Swiss collections. Given Rau’s focus on technological evolution and its relationship to the environment, this focus on tools is logically consistent.

Rau’s Robenhausen Collection vs. Thomas Wilson’s Robenhausen Collection

Comparing Wilson and Rau’s Robenhausen collection reveals some important differences between the two collections. As discussed earlier, Rau purchased his entire collection remotely, while Wilson excavated a substantial portion of objects himself in the course of two visits to Robenhausen (Maxwell 2013: 7). There is no evidence that Rau travelled back to Europe except for the visit to Northern Europe discussed earlier in this thesis, which may have taken place before Messikommer began to actively advertise his site in the English-speaking world.

Rau’s collection is significantly larger than Wilson’s and much more diverse. In both collections botanical samples represent the largest single category of objects; however, Wilson’s collection contains nearly twice the amount of botanical material proportionally (63%) as Rau’s (34%). Rau’s collection includes a significant number of chipped stone artifacts (18%), while Wilson’s collection has none. This may be because Messikommer is known to have amended assortments with stone tools from other lake dwelling sites (Kauz 2004:160-162). Rau’s collection also contains a large number of sherds from ceramic vessels (14%) while Wilson’s contains relatively little (5%). Remaining categories contain 10% or less of the total of both collections (Table 4.2).

Table 4.2 Distribution of Artifact Types in Rau's and Wilson's Robenhausen Collections		
Type	Rau's Collection (N=205)	Wilson's Collection (N=96) (Maxwell 2013)
Botanical Specimens	70 (34%)	60 (63%)
Chipped Stone	37 (18%)	1 (1%)
Ceramic Vessels	28 (14%)	5 (5%)
Worked Bone	17 (8%)	4 (4%)
Ground Stone	16 (8%)	2 (2%)
Textile, Matting and Fibers	15 (7%)	9 (10%)
Antler	7 (3%)	0 (0%)
Wood	5 (3%)	5 (5%)
Other	5 (3%)	4 (4%)
Other Fauna	4 (2%)	3 (3%)
Other Ceramic	1 (1%)	0 (0%)
Other Stone	0 (0%)	3 (3%)

Even in Rau's illustrations of artifacts, there seems to be a preference for assortments, as can be seen in this plate from *Early Man in Europe* (Figure 4.2).

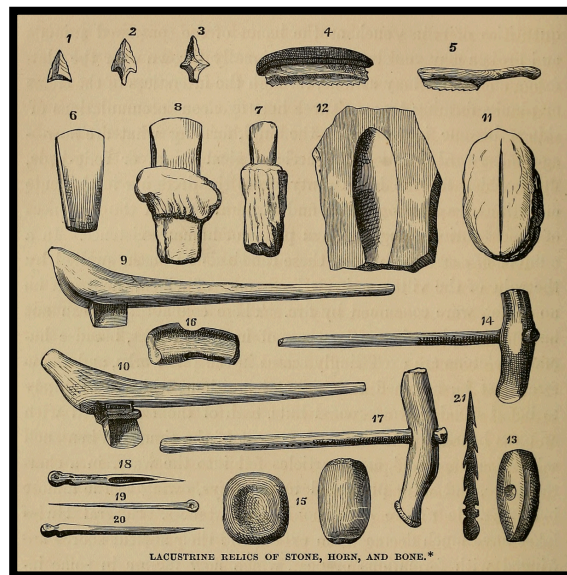


Figure 4.2 Plate from *Early Man in Europe* (Rau 1876: 122).

Many of the objects in both collections contain significant numbers of objects with the original Messikommer labels. As discussed earlier, Messikommer used different labels at different times. Altorfer created a seriation for these labels, and it is possible to surmise

when the artifacts were labeled, if not when they were collected, on that basis. Labels in Wilson's collection analyzed by Maxwell (2013: 121-124) indicate the collections were labeled fairly close in time to each other. Both Wilson and Rau's objects have labels used after 1867, although Rau has a few objects with labels used prior to 1866 (Figure 4.3).



Figure 4.3 Example of Messikommer labels in Rau's SI collection.

Based on the description provided in Maxwell (2013), the collections seem to be in similar states of preservation. Both are stored in the same cabinets in the MSC and have largely retained their historic containers with the exception of objects that were once on display.

While it is difficult to make definitive judgments as to why these collections differ, I think it is telling that Rau claims to have first become aware of parallels between Old and New World technologies on a trip to Europe in the early 1860s. Rau's preoccupation with evolutionism could have led him to develop a more comparative collection for his own purposes. Rau's writing was largely focused on lithic technologies, but he also wrote about ceramics and artifacts made from perishable materials. Wilson wrote extensively on lithic technologies and his work in this area is cited famous today (Wilson 1899), which makes the relative paucity of Robenhausen lithics in his collection especially significant. Robenhausen was not especially prolific as a source of lithic material, which may explain why so little of this artifact type is represented in Wilson's collection as he had excavated much of his collection himself (Maxwell 2013).

A short investigation of the subjects of Rau’s writing highlights the types of objects in which he was most interested. Based on Messikommer’s labels, Rau’s collection from Robenhausen was probably collected in the late 1860s and early 1870s. Rau also likely had to limit his personal collecting practices after he became employed at the SI full time in 1876.

Cross-Collection Comparison

Altorfer’s analysis of collections from eleven Swiss museums provides an interesting baseline for collections of materials from Robenhausen. The sample size in Altorfer’s study provides a better baseline of normalcy in collections from these sites and from Swiss lake dwelling more generally (Table 4.3, Figure 4.4 and 4.5).

Table 4.3 Distribution of Artifact Types in Rau’s and Wilson’s Robenhausen Collections Compared to Swiss Collections			
Type	Rau’s Collection (N=205)	Wilson’s Collection (N=96) (Maxwell 2013)	Robenhausen Collections from Eleven Swiss Museums (N=1531) (Altorfer 2010)
Botanical Specimens	70 (34%)	60 (63%)	136 (9%)
Chipped Stone	37 (18%)	0 (0%)	114 (7%)
Ceramic Vessels	28 (14%)	5 (5%)	126 (8%)
Worked Bone	17 (8%)	4 (4%)	149 (7%)
Ground Stone	16 (8%)	2 (2%)	272 (18%)
Textile, Matting and Fibers	15 (7%)	9 (10%)	394 (26%)
Antler	7 (3%)	0 (0%)	131 (9%)
Wood	5 (3%)	5 (5%)	151 (10%)
Other	5 (3%)	4 (4%)	N/A
Other Fauna	4 (2%)	3 (3%)	N/A
Other Ceramic	1 (1%)	0 (0%)	56 (4%)
Other Stone	0 (0%)	3 (3%)	N/A

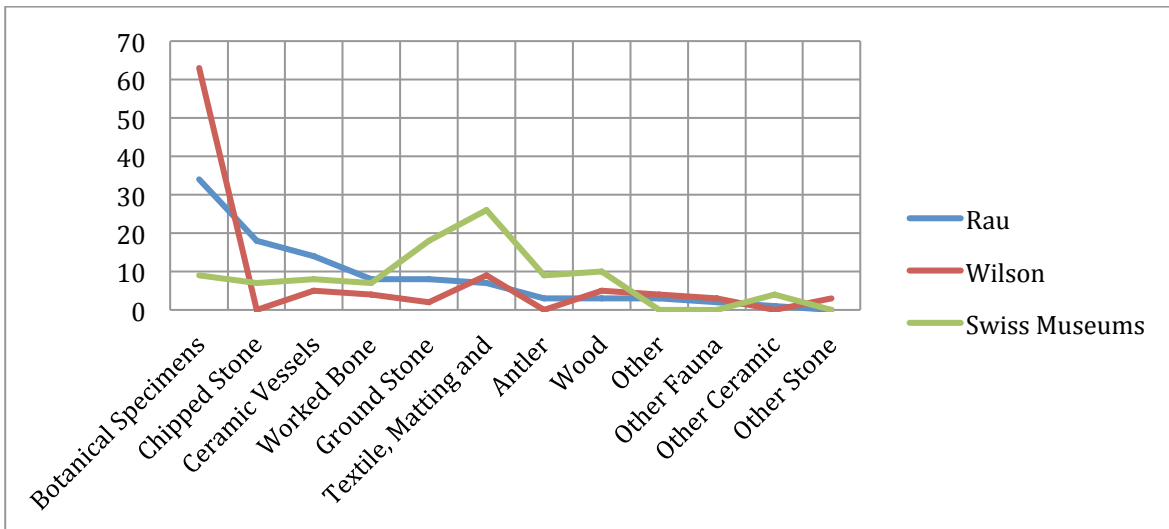


Figure 4.4 Comparison of composition of collections by type by percentage of total.

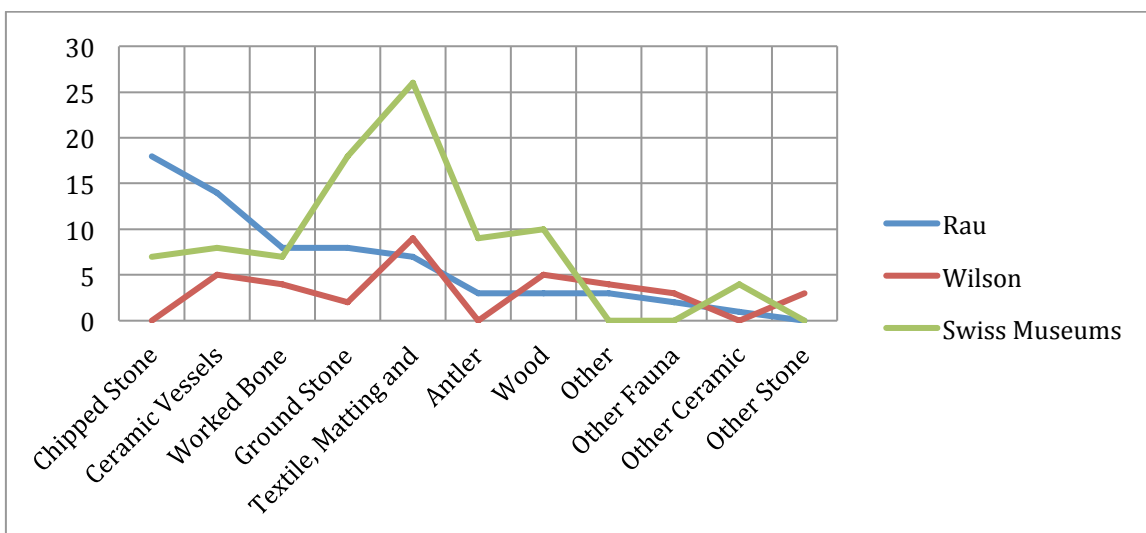


Figure 4.5 Comparison of composition of collections by type by percentage of total excluding "botanical specimens".

Both Wilson and Rau's collections differ in significant ways from the Swiss museum collections. The over-representation of botanical samples in both American collections is particularly striking. Could it be that these botanical samples were easier for Messikommer to ship overseas? While that is one possible explanation, a far simpler one is that the level of preservation of botanical samples is very rare in the US, while it is ubiquitous in Switzerland in lake dwelling contexts. This scarcity made the objects more appealing to

foreign collectors, while the ubiquity in Switzerland made them less appealing to a domestic audience. Presumably only the spectacular pieces were retained by the National Museum, leaving more common material for sale overseas.

Rau's collection is also more heavily characterized by chipped stone tools and pieces of ceramic vessels than the collections in Europe. Wilson's personal interests were primarily in lithic technologies, so why does Rau's collection contain more stone tools? It might have been a result of Wilson's in-person collecting at the site of Robenhausen. Messikommer would sometimes include objects from other localities to complete an assortment in collections that he sold. Collecting in person, Wilson would not have had this issue. Wilson took two collecting trips to Robenhausen to collect objects in person at the site (Maxwell 2013). It is telling that that Wilson did not find any (Maxwell 2013:129) stone tools during his excavations despite his interest in the material.

Rau's interest in collecting lithic objects is well illustrated in this letter to Messikommer regarding a recent shipment of objects:

"I am in fact in the process of writing a work in English about the Stone Age in Europe and America and had wanted a few good flint pieces in order to illustrate them in this work. The cutting implements are however not at all characteristic and both arrow heads are of far lesser quality than those you sent to Mr Hirzel. One of the pieces you designate as an arrow head certainly never was one. The small axe heads however are quite nice." (Rau to Messikommer 1868, Translated by Bettina Arnold)

4.2 Utility of Nineteenth Century and Early Twentieth Century Collections

Historic museum collections represent an important resource for scholars. When an object enters a museum storage facility, it could be described as entering a sort of house arrest (Derrida 1995). MacGregor (2001) identifies this portion of an object's biography as another sort of social death.

Several recent projects have highlighted the utility of nineteenth century museum collections. Besides the purely historiographical interest they represent, these collections provide data that can be used to answer relevant research questions without having to excavate more material. An especially relevant example is in Higgitt et al. (2011).

In a pilot study assessing the utility of a historic British Museum collection, Higgitt et al. showed that textiles in the Pitt Rivers Museum collection could be analyzed to provide answers to research questions (Figure 4.6 and 4.7).



Figure 4.6 Textile from Rau's collection at the NMNH.



Figure 4.7 Textile from British Museum (Higgitt et al. 2011: 82).

The team from the British Museum ran several tests, including an initial conservation assessment, a macroscopic examination of the weaving in the textiles, scanning electron microscopy, and Fourier transform infrared microscopy.

4.3 Relevance of Nineteenth Century Comparative Analysis

Rau's focus on comparative analysis has an increasingly important place in archaeological research today. A good example of a recent application of a useful internationalist project can be found in the *Oxford Handbook of Wetland Archaeology* (Menotti and O'Sullivan 2013). This extensive volume collects wetland archaeological research from every continent besides Antarctica, allowing for cross-fertilization of methods, interpretations, and new techniques. Comparative archaeology continues to be an important field of study, allowing for the effects of environment to be taken into account, while not assuming that there is a pre-determined outcome based on a presumed racial spectrum. Examining these sources also demonstrates the variability in evolutionary theory in the nineteenth century, which is often portrayed as a monolithic and inflexible paradigm (Carneiro 2003).

4.4 Future Directions for Research

This project points to several fruitful directions of future research. These avenues can be divided into several categories: archaeological, museological, anthropological, and historical/biographical.

Archaeological Research

At least one of the samples analyzed by the British Museum was from Robenhausen, and the textile materials in Rau's SI collection seem to be in very similar condition to the material used in the British Museum investigation (Figure 4.6). Since the objects at the

British Museum have proven useful in analyzing textile technologies from the Neolithic, the collection at the NMNH and other museums in the Robenhausen diaspora could prove similarly useful. Several of the ceramic vessels had residue preserved on their interiors. This residue could be useful for analysis if past conservation has not affected it too much.

Museological Research

There are many more collections of Swiss material in the United States, and around the world, that could be analyzed. A full catalog of the institutions that have these collections would be very useful for future researchers. If these collections could be reunited digitally (Arnold 2013), it would allow more in depth analyses to be carried out of the collections as well as the collectors.

How many collections exist in the United States? Who collected them? Why are they still maintained? In what condition are they? Re-excavating these legacy collections will provide important insights into the development of museums in the United States, and an important justification for the maintenance of legacy collections such as this one.

Anthropological Research

Future research into the Swiss lacustrine material at the NMNH, as well as Rau himself could provide useful insights into the development of archaeology in the United States, the development of the SI and NMNH, and the nature of transatlantic scholarly networks in the late nineteenth century. Rau's evolutionary theory magnum opus should be carefully analyzed for the likelihood that it would have contributed, pre-Steward, to the development of the field and possibly impacted Boas' influence in this area.

In some ways, Rau's ecological focus prefigures the multilineal evolutionary theory of Julian Steward. He was fascinated by the parallels in technologies between the Old and

New World, and saw the environment as the prime factor in the parallels that he noticed. Rau held that “where the external conditions of life were similar among men, their inventive powers were necessarily exerted in a similar manner” (Rau 1866:321). This is a more nuanced idea of evolution that focuses on external causality for parallels, rather than teleology. His evolutionary theory is more complex than that of many of his contemporaries, and Henry’s refusal to publish *Parallels* may have cost anthropological theory a revolutionary theoretical figure (see Chapter 3).

Rau’s ideas may have been too far ahead of their time for his own good. Kuhn argues that paradigm shifts often are not introduced by pioneers but by secondary adopters (Kuhn 2012: 157). Race science of the mid-nineteenth century insisted on the innate superiority of Europeans, and Rau’s acceptance that Native Americans built the mounds across the south and central portions of the US could have been part of the reason, together with his outsider status as a foreigner, that his book was never published in the form he had envisioned.

Historical/Biographical Research

A full biographical treatment of Rau would be extremely beneficial to understanding the history of anthropology. Understanding his early life in Europe, including his potential involvement in the 1848 revolution, would help illuminate the progressive and subversive nature of internationalist archaeology during this period, as well as further underscoring the links between ideological backgrounds as scientific paradigms.

Charles Rau’s position as the first curator of archaeology at the SI puts him in a pivotal role in the development of American archaeology that has hitherto been largely overlooked. Apart from the publications mentioned in Chapter 2, Rau is largely absent from

major historiographies of the field. A more extensive biographical treatment of Rau could remedy this situation. A closer examination of his time in New York would be especially fruitful. A closer look at Rau's transatlantic contacts, especially with Édouard Desor, would be especially useful in understanding the effect of Rau's European contacts on his theoretical stances. An examination of Rau's relationship with his two uncles—both professors of economics at the University of Heidelberg—might also give some insights into Rau's education, and development as an intellectual.

Rau managed to create a career in archaeology as an immigrant of limited means at a time when the field was dominated by the wealthy, and he was an early adopter of the principle of technological adaptation as an environmentally dependent process. He was an unsung innovator and deserves a more detailed study of his life and work—to which this thesis has contributed at least a preliminary step.

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Appendix A:

Catalog of Objects in Charles Rau's Swiss Lake Dwelling Collection at the SI/N

SI Catalog #	Rau Catalog #	SI Info	Artifact Type	Rau Info (on object / in catalog)	Location in MSC Storage Pod 2
A137156-0	84	Fragment Of Worked Antler	Antler	/ 84-87 Pieces of Antler with marks of sawing and cutting implements. Lake Pfäffikon near Robenhausen, Canton of Zürich, Switzerland.	42B00206
A137157-0	85	Fragment Of Worked Antler	Antler	/ 84-87 Pieces of Antler with marks of sawing and cutting implements. Lake Pfäffikon near Robenhausen, Canton of Zürich, Switzerland.	42B00318
A137158-0	86	Antler Tip Awl	Antler	Dr. C Rau / 84-87 Pieces of Antler with marks of sawing and cutting implements. Lake Pfäffikon near Robenhausen, Canton of Zürich, Switzerland	42B00106
A137159-0	87	Fragment Of Worked Horn	Antler	/ 84-87 Pieces of Antler with marks of sawing and cutting implements. Lake Pfäffikon near Robenhausen, Canton of Zürich, Switzerland.	42B00318
A137160-0	88	Bone Awls	Worked Bone	/ 88-89 Awls. Robenhausen	42B00318
A137161-0	89	Bone Awls	Worked Bone	/ 88-89 Awls. Robenhausen	42B00318
A137162-0	90	NOT PRESENT	Worked Bone	/ 90-91 Chisels. Robenhausen	42B00318
A137163-0	91	Bone Chisels	Worked Bone	/ 90-91 Chisels. Robenhausen	42B00318
A137164-0	92	Polished Axe	Ground Stone	/ Celt (greenstone). Robenhausen	42B00318
A137165-0	93	Polished Axe	Ground Stone	/ Celt (molasse sandstone?). Sippligen, Lake of Constance.	42B00207
A137166-0	94	Fragment Of Polished Axe	Ground Stone	/ Celt (serpentine). Robenhausen	42B00318

A137167-0	95	Polished Axe	Ground Stone	/ Small Celt or Chisel set in horn. Robenhausen	42B00312
A137168-0	96	Hammer-Stone	Ground Stone	/ Crushing-Stone. Robenhausen.	42B00207
A137169-0	97	Frag. Polisher	Ground Stone	/ Whetstone. Robenhausen	42B00318
A137170-0	98	Frag. Sawed Polisher	Ground Stone	Robenhausen_ "Augefoug Steinbeil"? / Piece of Rock which has been sawed and split. Robenhausen	42B00114
A137171-0	99	Oxide Of Iron In Bottle	Other	[illegible] / Oxide of Iron, probably used as paint. Robenhausen.	42B00317
A137172-0	100	Frag. Of Pottery	Ceramic Vessels	/ 100-102 Fragments of Pottery (ornamented). Robenhausen.	42B00318
A137173-0	101	Strings	Textile, Matting and Fibers	/ 100-102 Fragments of Pottery (ornamented). Robenhausen.	42B00318
A137174-0	102	Strings	Textile, Matting and Fibers	/ 100-102 Fragments of Pottery (ornamented). Robenhausen.	42B00318
A137175-0	103	Frag Of Multiple Headed Fishing Rod	Wood	/ Twirling sitck, probably used for making butter.	42B00202
A137176-0	104	Strings	Textile, Matting and Fibers	/ Strings. Robenhausen	42B00210
A137177-0	105	Piece Of Woven Cloth	Textile, Matting and Fibers	illegible / Woven Cloth. Robenhausen	42B00210
A137179-0	107	Layer Of Peat	Other	/ Layer of Peat in which remains occur (Fundsicht, Kulturschicht)	42B00318
A137180-0	108	Bottle Of Seeds	Botanical Specimen	<i>Hordeum hexast. sanct.</i> / <i>Hordeum hexastichum sanctum</i> . Lin. Small Lake-dwelling Barley (grains)	42B00318

A137181-0	109	Barley Grains In Bottles (<i>Hordeum Hexastichicum Sanctum</i>)	Botanical Specimen	<i>Hordeum hexast.</i> (densum in type is crossed out and replaced with sanct in handwriting) / <i>Hardeum hexastichum sanctum</i> (lumps). 3 spec. [something illegible]	42B00203
A137182-0	110	Barley Grains In Bottles (<i>Hordeum Hexastichic</i>)	Botanical Specimen	<i>Hordeum hexast. densum</i> / <i>Hordeum hexastichum densum</i> . Compact six-rowed Barley (grains)	42B00210
A137183-0	111	Compact Six-Rowed Barley Ears In Bottle	Botanical Specimen	<i>Hordeum hexast. densum</i> / <i>Hordeum hexastichum densum</i> . (ears)	42B00210
A137184-0	112	Wheat Ears (<i>Triticum Valgare Antiquorum</i> In Bottles)	Botanical Specimen	<i>Triticum vulgare antig.</i> / <i>Triticum vulgare antiquarum</i> . Lin. Small Lake-dwelling Wheat (ears).	42B00210
A137185-0	113	Wheat Ears (<i>Triticum Valgare Antiquorum</i> In Bottles)	Botanical Specimen	/ <i>Triticum vulgare antiquorum</i> (ears)	42B00208
A137186-0	114	Wheat Ears (<i>Triticum Valgare Antiquorum</i> In Bottles)	Botanical Specimen	<i>Triticum vulgare compact.</i> / <i>Triticum vulgare compactum</i> . Lin. Beardless compact Wheat (grains).	42B00210
A137187-0	115	Wheat Ears (<i>Triticum Valgare Antiquorum</i> In Bottles)	Botanical Specimen	/ Wheat-bread	42B00203
A137188-0	116	Scotch Fir Cone (<i>Pinus Sylvestris</i>)	Botanical Specimen	<i>Pinus sylvestris</i> L. / <i>Pinus sylvestrus</i> . Lin. Scotch fir (cone)	42B00103

		In Bottle			
A137189-0	117	Hazelnuts (<i>Corylus Asellana</i>) In Bottle	Botanical Specimen	<i>Corylu avellana</i> L. / <i>Corylus avellana avata</i> . Wild.	42B00208
A137190-0	118	Wild Hazelnut (<i>Corylus Asellana Ovata</i>) In Bottle	Botanical Specimen	<i>Corylus avell. ovata</i> Wild / <i>Corylus avellana ovata</i> . Wild	42B00210
A137191-0	119	Small-Leafed Flax, Seed, Pods And Fibres In Bottles	Botanical Specimen	<i>Linum angustifol. Huds. / Linum angustifolium. Huds.</i> Small-leaved Flax (seed-pods and fibres).	42B00210
A137192-0	120	Small-Leafed Flax, Seed, Pods And Fibres in Bottles	Botanical Specimen	/ <i>Linum angustifolium. Huds.</i> Small-leaved Flax (seed pods)	42B00201
A137193-0	121	Small-Leafed Flax, Seed, Pods And Fibres In Bottles	Botanical Specimen	Flax? <i>Illegible / Linum angustifolium. Huds. Small-leaved Flax (seeds)</i>	42B00210
A137194-0	122	Small-Leafed Flax, Seed, Pods And Fibres in Bottles	Botanical Specimen	/ <i>Linum angustifolium. Huds.</i> Small-leaved Flax (seed pods)	42B00202
A137195-0	123	Water Chestnuts (<i>Trapa Natans</i>) In Bottle	Botanical Specimen	/ <i>Trapa natans. Lin.</i> Water-chestnut	42B00210
A137196-0	124	Bottles Of Cultivated Apple (<i>Pyrus Malus</i>)	Botanical Specimen	/ <i>Pyrus malus. Lin.</i> Apple (cultivated)	42B00210

A137197-0	125	Bottles Of Cultivated Apple (<i>Pyrus Malus</i>)	Botanical Specimen	/ <i>Pyrus malus</i> . Lin. Apple (wild)	42B00203
A137198-0	126	Bottles Of Cultivated Apple (<i>Pyrus Malus</i>)	Botanical Specimen	/ <i>Pyrus mals</i> . Lin. Apple (wild)	42B00208
A137199-0	127	Bottles Of Cultivated Apple (<i>Pyrus Malus</i>)	Botanical Specimen	<i>Pyrus malus</i> L. / <i>Pyrus malus</i> . Lin. Apple. (seeds).	42B00210
A137200-0	128	Sloe (Berry) Stones In Bottle	Botanical Specimen	/ <i>Prunus spinosa</i> . Lin. Sloe (stones)	42B00210
A137202-0	130	Raspberry Seeds (<i>Rubus Edans</i>) In Bottle	Botanical Specimen	<i>Rubus idaeus</i> L. / <i>Rubus idaeus</i> . Lin. Raspberry (seeds)	42B00210
A137203-0	131	Fish Scales In Bottle	Other Faunal	"Fish-illegible" / Fish-Scales. Robenhausen	42B00202
A137208-0	136	Piece Of Antler With Marks Of Sawing And Cutting Implements	Antler	Abgehacktes hirschorn / Pieces of Antler with marks of sawing and cutting implements	42B00315
A137209-0	137	Lake Dwellers Seal	Antler	Pieces of Antler with marks of sawing and cutting implements	42B00109
A137219-0	138	Frag. Worked Bone	Worked Bone	Sawed Pieces of Bone	42B00109
A137211-0	139	Frag. Worked Bone	Worked Bone	Sawed Pieces of Bone	42B00109
A137212-0	140	Bone Awl	Worked Bone	Awl	42B00109
A137213-0	141	Bone Polisher	Worked Bone	Chisels	42B00109
A137214-	142	Bone Chisels	Worked Bone	Chisels	42B00109

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A137215-0	143	Bone Chisels	Worked Bone	Chisels	42B00109
A137216-0	144	Bone Chisels	Worked Bone	Chisels	42B00109
A137217-0	145	Bone Chisels	Worked Bone	Chisels	42B00109
A137218-0	146	Bone Chisels	Worked Bone	Chisels	42B00109
A137219-0	147	Frag. Of Scapula	Worked Bone	Cutting Implements	42B00109
A137229-0	148	Polisher Reject	Ground Stone	Steinbeil / Celt (greenstone)	42B00208
A137221-0	149	Polished Axe	Ground Stone	Steinbeil / Celt (greenstone)	42B00203
A137222-0	150	Polished Axe	Ground Stone	/ Celt, small (of a green stone, formerly supposed to be nephrite)	42B00203
A137223-0	151	Polished Chisel	Ground Stone	/ Celt, very small (serpentine).	42B00314
A137224-0	152	Polished Chisel	Ground Stone	Celt Very Small (Flint) Probably a cutting implement	42B00102
A137227-0	155	Hammer-Stones	Ground Stone	/ 154-155 Crushing Stones	42B00203
A137228-0	156	Frag. Polisher	Ground Stone	Whetstone	42B00204
A137229-0	157	Polisher Reject	Ground Stone	Angefang Steinbeil / Fragment of Implement, sawed and split	42B00203
A137230-0	158	Scraper or Flake	Chipped Stone	/ Flint Knife	42B00203
A137231-0	159	Scraper or Flake	Chipped Stone	/ Flint Flake	42B00203

A137232-0	160	Scraper or Flake	Chipped Stone	/ 160-172 Flint Saws. No 171 with traces of the asphaltum with which the implement was fastened in a handle.	42B00203
A137233-0	161	Scraper or Flake	Chipped Stone	/ 160-172 Flint Saws. No 171 with traces of the asphaltum with which the implement was fastened in a handle.	42B00203
A137234-0	162	Scraper or Flake	Chipped Stone	/ 160-172 Flint Saws. No 171 with traces of the asphaltum with which the implement was fastened in a handle.	42B00203
A137235-0	163	Scraper or Flake	Chipped Stone	/ 160-172 Flint Saws. No 171 with traces of the asphaltum with which the implement was fastened in a handle.	42B00203
A137236-0	164	NOT GIVEN	Chipped Stone	/ 160-172 Flint Saws. No 171 with traces of the asphaltum with which the implement was fastened in a handle.	42B00203
A137237-0	165	Worked Flakes	Chipped Stone	/ 160-172 Flint Saws. No 171 with traces of the asphaltum with which the implement was fastened in a handle.	42B00203
A137238-0	166	Worked Flakes	Chipped Stone	/ 160-172 Flint Saws. No 171 with traces of the asphaltum with which the implement was fastened in a handle.	42B00203
A137239-0	167	Worked Flakes	Chipped Stone	/ 160-172 Flint Saws. No 171 with traces of the asphaltum with which the implement was fastened in a handle.	42B00203
A137240-0	168	Worked Flakes	Chipped Stone	/ 160-172 Flint Saws. No 171 with traces of the asphaltum with which the implement was fastened in a handle.	42B00203
A137241-0	169	Worked Flakes	Chipped Stone	/ 160-172 Flint Saws. No 171 with traces of the asphaltum with which the implement was fastened in a handle.	42B00203

A137242-0	170	Worked Flakes	Chipped Stone	/ 160-172 Flint Saws. No 171 with traces of the asphaltum with which the implement was fastened in a handle.	42B00203
A137243-0	171	Worked Flakes	Chipped Stone	/ 160-172 Flint Saws. No 171 with traces of the asphaltum with which the implement was fastened in a handle.	42B00109
A137244-0	172	Worked Flakes	Chipped Stone	/ 160-172 Flint Saws. No 171 with traces of the asphaltum with which the implement was fastened in a handle.	42B00203
A137245-0	173	Worked Flakes	Chipped Stone	/ Flint Scrapers	42B00203
A137246-0	174	Worked Flakes	Chipped Stone	/ Flint Scrapers	42B00203
A137247-0	175	Worked Flakes	Chipped Stone	/ Flint Scrapers	42B00203
A137148-0	176	Worked Flakes	Chipped Stone	/ Flint Scrapers	42B00203
A137249-0	177	Arrow-Heads	Chipped Stone	/ Flint Arrowhead	42B00515
A137250-0	178	Arrow-Heads	Chipped Stone	/ Flint Arrowhead	42B00109
A137251-0	179	Arrow-Heads	Chipped Stone	/ Flint Arrowhead	42B00515
A137253-0	181	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00203
A137254-0	182	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00203
A137255-0	183	Frag. Of Pottery	Ceramic Vessels	Dr. C Rau / 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00112
A137256-0	184	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00203

A137257-0	185	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00203
A137258-0	186	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00203
A137259-0	187	Frag. Of Pottery	Ceramic Vessels	Dr. C Rau / 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00112
A137260-0	188	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00203
A137261-0	189	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00204
A137262-0	190	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00114
A137263-0	191	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00208
A137264-0	192	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00114
A137266-0	194	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00204
A137267-0	195	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00204
A137269-0	197	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00114
A137270-0	198	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00114
A137271-0	199	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00114
A137272-0	200	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00204
A137273-0	201	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00204

A137274-0	202	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00204
A137275-0	203	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00204
A137276-0	204	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00114
A137277-0	205	Frag. Of Pottery	Ceramic Vessels	Dr. C Rau / 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00112
A137278-0	206	Frag. Of Pottery	Ceramic Vessels	Dr. C Rau / 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00112
A137279-0	207	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00204
A137280-0	208	Frag. Of Pottery	Ceramic Vessels	/ 181-208 Fragments of Pottery, plain and ornamented (No 181 two pieces)	42B00204
A137281-0	209	Frag. Of Pottery	Ceramic Vessels	Dr. C Rau / Small Vessel (broken)	42B00112
A137282-0	210	Frag. Of Pottery	Ceramic Vessels	/ Two Fragments of a perforated cone (weight of some kind)	42B00204
A137283-0	211	Piece of charred wood	Wood	/ Large Piece of charred Wood (part of Pile or Building)	42B00202
A137284-0	212	Piece Of Charred Wood	Wood	/ Twirling Stick	42B00202
A137285-0	213	Wheat Ears (<i>Tribicum Valgare Antiquorum</i> In Bottles)	Botanical Specimen	L. Pfäffikon / Flar perforated Pece, probably Float for a Net	42B00212
A137286-0	214	Twisted Flax Stems In Bottle	Botanical Specimen	/ Twisted Flax Stems (?)	42B00210
A137287-0	215	Bottles Containing Tow	Botanical Specimen	[illegible] / 215-216 Tow	42B00210

A137288-0	216	Bottles Containing Tow	Botanical Specimen	<i>[illegible]</i> / 215-216 Tow	42B00210
A137289-0	217	Thread, In Bottle	Textile, Matting and Fibers	<i>illegible [begins with an "F"]</i> / 217	42B00208
A137291-0	219	Strings	Textile, Matting and Fibers	Dr. C Rau / Strings	42B00106
A137292-0	220	Strings	Textile, Matting and Fibers	Geftecht [?] / 221-223 "Wattled" Cloth	42B00210
A137293-0	221	Wattled Cloth	Textile, Matting and Fibers	Geftecht [?] / 221-223 "Wattled" Cloth	42B00109
A137294-0	222	Wattled Cloth	Textile, Matting and Fibers	/ 221-223 "Wattled" Cloth	42B00109
A137295-0	223	Wattled Cloth	Textile, Matting and Fibers	Geftecht [?] / 221-223 "Wattled" Cloth	42B00210
A137296-0	224	Worn Cloth	Textile, Matting and Fibers	Gewebe / Woven Cloth.	42B00210
A137297-0	225	Worn Cloth	Textile, Matting and Fibers	/ Woven Cloth	42B00210
A137298-0	226	Fragments of a Fishing Net	Textile, Matting and Fibers	Fibrous Fragments	42B00102
A137299-0	227	Frag. Of Peat	Other	Two pieces of peat	42B00109
A137299-0	227	Frag. Of Peat	Botanical Specimen	Two pieces of peat	42B00204
A137300-0	228	Piece Of Peat Containing Raspberry Seeds In Bottle	Botanical Specimen	/ Piece of Peat containing Raspberry Seeds	42B00210
A137301-0	229	Wood, Stems, And Grains In Bottles	Botanical Specimen	Wood, Stems, and Grains	42B00204

A137302-0	230	<i>Chara Vulgaris</i> Seeds, in Bottle	Botanical Specimen	<i>Chara Vulgaris</i> on bottle	42B00102
A137304-0	232	Bottles Containing Barley Grains And Ears	Botanical Specimen	<i>/ Hordeum hexastichum sanctum</i> . Lin. Smal Lake dwelling Barley (grains)	42B00202
A137304-0	232	Bottles Containing Barley Grains And Ears	Botanical Specimen	<i>/ Hordeum hexasticum sanctum</i> . Lin. Small Lake dwelling Barley (grains)	42B00210
A137305-0	233	Bottles Containing Barley Grains And Ears	Botanical Specimen	<i>Hordeum hexast. sanct.</i> / 233-234 <i>Hordeum hexastichum sanctum</i> (ears)	42B00208
A137306-0	234	Bottles Containing Barley Grains And Ears	Botanical Specimen	<i>Hordeum hexast. sanct.</i> / 233-234 <i>Hordeum hexastichum sanctum</i> (ears)	42B00208
A137307-0	235	Bottles Containing Seeds	Botanical Specimen	<i>Hordeum hexast. sanct.</i> / <i>Hordeum hexastichum densum</i> . Compact six rowed Barley (ear)	42B00208
A137309-0	237	Bottles Containng Seeds	Botanical Specimen	<i>Serpus lacustris</i> L. / <i>Sirpus lacustris</i> . Lin. (seeds)	42B00208
A137310-0	238	Bottle containing seeds	Botanical Specimen	Carices on bottle/ <i>Carex</i> , LIN (Seeds) Sedge in cat	42B00102
A137311-0	239	Bottles Containng Seeds	Botanical Specimen	<i>Potamogeton compress.</i> L. / <i>Potamogeton compressus</i> . Lin (seeds). Pondweed	42B00208
A137312-0	240	Bottles Containing seeds	Botanical Specimen	<i>Ceretophyllum demers.</i> L. on bottle/ <i>Ceratophyllum demersum</i> . Lin (Seeds). Common Hornwort on bottle	42B00102
A137313-0	241	Cone Of Spruce Fir, In Bottle	Botanical Specimen	<i>Pinus abies</i> . Lin (conoe). Spruce Fir	42B00204

A137314-0	242	Bottle of Seeds	Botanical Specimen	<i>Pinus Abies</i> L. on bottle/ <i>Pinus abies</i> . Lin (seeds). Spruce Fir in cat	42B00102
A137315-0	243	Bottles Containing Pine Cone	Botanical Specimen	<i>Pinus sylvestris</i> L. / <i>Pinus sylvestrus</i> . Lin (cone) Scotch Fir	42B00103
A137316-0	244	Bottles Containing Pine Cone	Botanical Specimen	<i>Pinus montana</i> L. / <i>Pinus Montana</i> . Lin (cone) Mountain Pine	42B00103
A137317-0	245	Seeds Of Silver Fir (<i>Pinus Picea</i>)	Botanical Specimen	<i>Pinus picea</i> L. on bottle/ <i>Pinus picea</i> . Lin (seeds). Silver Fir	42B00102
A137318-0	246	Bottle Of Bark	Botanical Specimen	<i>Taxus baccata</i> L. / <i>Taxus baccata</i> . Lin. (bark). Yew.	42B00109
A137319-0	247	Bark Of Birch (<i>Betula Alba</i>), In Bottle	Botanical Specimen	<i>Betula alba</i> L. / <i>Betula alba</i> . Lin. (bark). Birch.	42B00109
A137320-0	248	Collection Of Seeds, Bark, Nuts In Bottles	Botanical Specimen	<i>Quercus Robur</i> L. on bottle/ <i>Quercus robur</i> . Lin. Oak	42B00102
A137321-0	249	Collection Of Seeds, Bark, Nuts In Bottles	Botanical Specimen	<i>Fagus sylvatica</i> L. / <i>Fagus sylvatica</i> . Lin. (nut). Beech.	42B00208
A137322-0	250	Collection Of Seeds, Bark, Nuts In Bottles	Botanical Specimen	<i>Corylus avellana</i> . Lin. (seeds). Hazelnut.	42B00208
A137323-0	251	Collection Of Seeds, Bark, Nuts In Bottles	Botanical Specimen	/ <i>Chenopodium album</i> . Lin (seeds). White Goosefoot.	42B00202
A137324-0	252	Collection Of Seeds, Bark, Nuts In Bottles	Botanical Specimen	<i>Sambucus nigra</i> L. / <i>Lambucus nigra</i> . Lin. (seeds). Elder	42B00208
A137325-0	253	Seeds Of Dwarf Elder (<i>Sambucus</i>)	Botanical Specimen	<i>Sambucus Ebulus</i> L. / <i>Sambucus ebulus</i> . Lin (seeds) Dwarf Elder	42B00102

		Ebulus) In Bottle			
A137326-0	254	Bottle Of Seeds	Botanical Specimen	/ <i>Galium palustre</i> . Lin. (seeds). Marsh Bedstraw	42B00202
A137327-0	255	Buck-Bean Seeds (Menyanthes Trifoliata) In Bottle	Botanical Specimen	<i>Menyanthes trifoliata</i> L. / <i>Menyanthes trifoliata</i> . Lin (seeds). Buckbean	42B00102
A137328-0	256	Seeds Of White Water Lily, In Bottle (Nymphaea Alba)	Botanical Specimen	<i>Nymphaea alba</i> L. / <i>Nymphaea alba</i> . Lin. (seeds). White Water-lily	42B00208
A137329-0	257	Bottles Containing Seeds	Botanical Specimen	/ <i>Nuphar luteum</i> . Lin (seeds). Yellow Water-lily	42B00202
A137330-0	258	Bottles Containing Seeds	Botanical Specimen	<i>Ranunculus aquatilis</i> L. / <i>Ranunculus aquatilis</i> . Lin. (seeds). Water Crowfoot	42B00208
A137331-0	259	Bottles Containing Seeds	Botanical Specimen	<i>Pastinaca sativa</i> L. . / <i>Pastinaca sativa</i> . Lin. (seed). Parsnip	42B00208
A137332-0	260	Bottles Containing Seeds	Botanical Specimen	<i>Peucedanum palustre</i> L. / <i>Peucedanum palustre</i> . Lin. (seeds)	42B00208
A137333-0	261	Bottles Containing Seeds	Botanical Specimen	<i>Rubus fruticosus</i> L. / <i>Rubus fruticosus</i> . Lin. (seeds).	42B00208
A137334-0	262	Wild Apples (<i>Pyrus Malus</i>) In Bottles	Botanical Specimen	/ <i>Pyrus malus</i> . Lin. Apple (wild)	42B00210
A137335-0	263	Wild Apples (<i>Pyrus Malus</i>) In Bottles	Botanical Specimen	<i>Pyrus malus</i> L. / <i>Pyrus malus</i> . Lin. Apple. (wild).	42B00208
A137336-0	264	Bottle Of Apples	Botanical Specimen	/ <i>Pyrus malus</i> . Lin. Apple (cultivated)	42B00210

A137337-0	265	Seeds Of Dogwood (<i>Cornus Sanguinea</i>) In Bottle	Botanical Specimen	<i>Cornus sanguinea</i> L. / <i>Cornus sanguinea</i> . Lin (seeds). Dogwood	42B00102
A137338-0	266	Bottles Of Seeds	Botanical Specimen	<i>Iris pseudacoris</i> L. / <i>Iris pseudacorus</i> . Lin (seeds). Yellow Flag	42B00102
A137339-0	267	Bottles Of Seeds	Botanical Specimen	<i>Popaver somnif.</i> var. <i>ani.</i> / <i>Popaver somniferum</i> var <i>anitqum</i> (seeds) Garden Poppy.	42B00208
A137340-0	268	Bottle Of Seeds	Botanical Specimen	Illegible / Faeces of Sheep	42B00102
A137341-0	269	Goat Feces In Bottle	Other	Illegible / Goat Faeces	42B00102
A137342-0	270	Bones Of Frog, In Bottle	Other Faunal	[illegible] / Frog Bones	42B00109
A137343-0	271	Bottle Of Shells	Other Faunal	[illegible] / Small Shells	42B00317
A137346-0	274	Sickle Blade	Chipped Stone	Knife or Saw (Flint)	42B00101
A137347-0	275	Stemmed Arrow-Head	Chipped Stone	/ Arrowhead (flint)	42B00109
A137348-0	276	Scraper	Chipped Stone	Dr. C Rau / Saw (flint)	42B00112
A137349-0	277	Scraper	Chipped Stone	NA / Saw (flint)	42B00102
A137350-0	278	Knife	Chipped Stone	NA / Saw (flint) arrowhead shape, but traces of wear.	42B00102
A137351-0	279	Knife In Bottle	Chipped Stone	/ Saw (flint) Partly enveloped by the asphaltum wuth which it was attached to the handle	42B00204
A137352-0	280	Scraper	Chipped Stone	/ Scraper (flint)	42B00204

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A137353-0	281	Split Polisher	Ground Stone	/ Small sawed Stone	42B00204
A137354-0	282	Flake	Chipped Stone	/ Piece of Flint	42B00204
A137357-0	285	Black Bowl	Ceramic Vessels	/ Complete Clay Vessel with ear. Bronze Period Station of Auvernier, Lake of Neuchâtel, Switzerland	
A137358-0	286	Arrow-Head-Flint	Chipped Stone	/ Flint Arrowhead. Robenhausen.	42B00109
A137359-0	287	Scratchers (Gravers)	Chipped Stone	Dr. C Rau / 287 - 291 Flint Scraper	42B00112
A137360-0	288	Arrow-Head-Flint	Chipped Stone	/ 287-291 Flint Scrapers. Robenhausen.	42B00109
A137361-0	289	Arrow-Head-Flint	Chipped Stone	/ 287-291 Flint Scrapers. Robenhausen.	42B00109
A137362-0	290	Scratchers (Gravers)	Chipped Stone	/ 287 - 291 Flint Scraper	42B00112
A137363-0	291	Scratchers (Gravers)	Chipped Stone	Dr Rau / 287 - 291 Flint Scraper	42B00112
A137427-0	355	Wood, Showing Axe Cuts	Wood	/ Wood exhibitng axe-cuts	42B00204
A137428-0	356	Polished Axe	Ground Stone	/ Celt	42B00204
A137429-0	357	Frag. Worked Bone	Worked Bone	/ 357-358 Bone Implements	42B00204
A137430-0	358	Frag. Deer Omoplate	Worked Bone	/ 357-358 Bone Implements	42B00204
A137431-0	359	NOT PRESENT	Antler	/ Celt Socket (stag's horn).	42B00204
A137432-0	360	NOT PRESENT	Botanical Specimen	Illegible = Brod. / Millet - Bread	42B00103

A137435-0	363	Worked Pieces Of Stag-Horn	Antler	/ 363-366 Wrought Pieces of Stag's Horn. Station of Auvernier , Lake of Neuchâtel, Switzerland	42B00204
A137436-0	364	Worked Pieces Of Stag-Horn	Antler	/ 363-366 Wrought Pieces of Stag's Horn. Station of Auvernier , Lake of Neuchâtel, Switzerland	42B00204
A137437-0	365	NOT PRESENT	Antler	/ 363-366 Wrought Pieces of Stag's Horn. Station of Auvernier , Lake of Neuchâtel, Switzerland	42B00204
A137438-0	366	Fragment Of Horn, Antler Tip	Antler	/ 363-366 Wrought Pieces of Stag's Horn. Station of Auvernier , Lake of Neuchâtel, Switzerland	42B00204
A137439-9	367	Socket Of Stag-Horn	Antler	/ 367-371 Celt Sockets of Stag's Horn. Auvernier.	42B00311
A137440-0	368	Socket Of Stag-Horn	Antler	/ 367-371 Celt Sockets of Stag's Horn. Auvernier.	42B00204
A137441-0	369	Socket Of Stag-Horn	Antler	/ 367-371 Celt Sockets of Stag's Horn. Auvernier.	42B00204
A137442-0	370	Socket Of Stag-Horn	Antler	/ 367-371 Celt Sockets of Stag's Horn. Auvernier.	42B00204
A137443-0	371	Socket Of Stag-Horn	Antler	/ 367-371 Celt Sockets of Stag's Horn. Auvernier.	42B00204
A137444-0	372	Prong Of Antler	Antler	/ Prong of Antler supposed to have been knawed by mice (Prof. Desor's opinion). Auvernier.	42B00312
A137445-0	373	Bone Awls	Worked Bone	/ Bone Implements (Awls). Auvernier (376 missing)	42B00204
A137446-0	374	Bone Awls	Worked Bone	/ Bone Implements (Awls). Auvernier (376 missing)	42B00204
A137447-0	375	Bone Awls	Worked Bone	/ Bone Implements (Awls). Auvernier (376 missing)	42B00204
A137449-	377	Teeth	Other Faunal	/ Teeth	42B00515

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A137450-0	378	Teeth	Other Faunal	/ Teeth	42B00515
A137451-0	379	Knife In Horn Socket	Compound	/ Worked Flint (Awl? Scraper?). Auvernier. L. Neuchâtel	42B00204
A137452-0	380	Fragment Of Polished Axe	Ground Stone	/ 380-381 Stone Celts, one very small. Auvernier. L. Neuchâtel	42B00204
A137453-0	381	Polished Chisel	Ground Stone	/ 380-381 Stone Celts, one very small. Auvernier. L. Neuchâtel	42B00204
A137454-0	382	Spindle-Whorl Of Sandstone	Ground Stone	Auvernier / Spindle - Whorl (sandstone)	42B00208
A137455-0	383	Carbonised Wheat And Millet In Bottle	Botanical Specimen	/ Carbonized Wheat and Millet. Auvernier. L. Neuchâtel	42B00204
A137456-0	384	Piece Of String In Bottle	Textile, Matting and Fibers	String, perhaps remnant of a Net. Auvernier. L. Neuchâtel	42B00208
A137457-0	385	Bronze Knife	Bronze	Auvernier, Dr. C Rau / Knives Auvernier	42B00103
A137458-0	386	Bronze Knife	Bronze	Auvernier, Dr. C Rau / Knives Auvernier	42B00103
A137459-0	387	Bronze Knife	Bronze	Auvernier, Dr. C Rau / Knives Auvernier	42B00103
A137460-0	388	Bronze Chisel And Point Combined	Bronze	Piercing Implement. Auvernier	42B00106
A137461-0	389	Bronze Ring	Bronze	Ring. Auvernier	42B00106
A137462-0	390	Bronze Arrow-Head, Barbed	Bronze	Arrowhead. Auvernier	42B00106
A137464-0	392	Bronze Double Fish Hook	Bronze	Auvernier, Dr. C Rau / Fish - Hook (double) Auvernier	42B00104

A137466-0	394	Bronze Pins	Bronze	Hair and (probably) Dress Pins. Auvernier.	42B00106
A137467-0	395	Bronze Pins	Bronze	Hair and (probably) Dress Pins. Auvernier.	42B00106
A137468-0	396	Bronze Pin	Bronze	Hair and (probably) Dress Pins. Auvernier.	42B00106
A137470-0	398	Bronze Pin	Bronze	Hair and (probably) Dress Pins. Auvernier.	42B00106
A137471-0	399	Bronze Pin	Bronze	C Rau / Hair and (probably) Dress Pins, Auvernier	42B00103
A137472-0	400	Bronze Pin	Bronze	Hair and (probably) Dress Pins. Auvernier.	42B00106
A137473-0	401	Bronze Pin	Bronze	Hair and (probably) Dress Pins. Auvernier.	42B00106
A137474-0	402	Bronze Pin	Bronze	Hair and (probably) Dress Pins. Auvernier.	42B00106
A137477-0	405	Bronze Bracelet	Bronze	/ Armrings. Auvernier	42B00116
A137479-0	407	Bronze Bracelet	Bronze	Auvernier, Dr. C Rau / Earing (large)	42B00106
A137480-0	408	String Of Bronze Rings	Bronze	/ Twelve small Rings. Auvernier. Quite numerous and supposed to represent the money of the period (Prof. Desor's View)	42B00116
A137482-0	410	Bronze Rings	Bronze	Rings of various sizes. Auvernier	42B00106
A137483-0	411	Bronze Rings	Bronze	Rings of various sizes. Auvernier	42B00106
A137486-0	414	Gray Vase	Ceramic Vessels	/ 414-417 Four Vessels, more or less complete. Nos 414-416 from Auvernier; No 417 (ornamented) from Möringen.	

A137487-0	415	Black Bowl	Ceramic Vessels	/ 414-417 Four Vessels, more or less complete. Nos 414-416 from Auvernier; No 417 (ornamented) from Möringen.	42B00105
A137488-0	416	Small Jar	Ceramic Vessels	/ 414-417 Four Vessels, more or less complete. Nos 414-416 from Auvernier; No 417 (ornamented) from Möringen.	42B00105
A137489-0	417	Brownish Cup With Incised Lines	Ceramic Vessels	/ 414-417 Four Vessels, more or less complete. Nos 414-416 from Auvernier; No 417 (ornamented) from Möringen.	42B00105
A137490-0	418	Frag. Of Pottery	Ceramic Vessels	Auvernier. L. Neuchatel. Dr C Rau. (also a small typed label that says "auvernier" / 418 - 419 Halves of Vessels. Auvernier	42B00110
A137491-0	419	Frag. Of Pottery	Ceramic Vessels	Lac de Neuchâtel_Auvernier. Dr. C. Rau / 418 - 419 Halves of Vessels. Auvernier	42B00110
A137492-0	420	Frag. Of Pottery	Ceramic Vessels	Lac de Neuchâtel_Auvernier. Dr. C. Rau / 420 - 421 Rim pieces (the first ornamented). Auvernier.	42B00110
A137493-0	421	Frag. Of Pottery	Ceramic Vessels	Auvernier. Dr. C. Rau / 420 - 421 Rim pieces (the first ornamented). Auvernier.	42B00111
A137494-0	422	Frag. Of Pottery	Ceramic Vessels	/ 422-423 Fragments of Pottery (ornamented). Auvernier. No423 part of 418	42B00114
A137495-0	423	Frag. Of Pottery	Ceramic Vessels	NA / 422-423 Fragments of Pottery (ornaments). Auvernier. No 423 part of 418	42B00111
A137493-0	424	Frag. Of Pottery	Ceramic Vessels	Lac de Neuchâtel_Cortailod / Fragments of pottey (ornamented). Cortailod, Lake of Neuchâtel	42B00111
A137497-0	425	Clay Ring	Other Ceramic	/ One of the Rings used for supporting small vessels	42B00109

A137498-0	426	Clay Spindle-Whorls	Other Ceramic	/ 426-434 Spindle-Whorls. Auvernier. Nos 426 and 427 not very common shapes; No428 very large; the remainder represents the ordinary shapes and sizes.	42B00311
A137499-0	427	Clay Spindle-Whorls	Other Ceramic	/ 426-434 Spindle-Whorls. Auvernier. Nos 426 and 427 not very common shapes; No428 very large; the remainder represents the ordinary shapes and sizes.	42B00311
A137500-0	428	Clay Spindle-Whorls	Other Ceramic	/ 426-434 Spindle-Whorls. Auvernier. Nos 426 and 427 not very common shapes; No428 very large; the remainder represents the ordinary shapes and sizes.	42B00311
A137501-0	429	Clay Spindle-Whorls	Other Ceramic	/ 426-434 Spindle-Whorls. Auvernier. Nos 426 and 427 not very common shapes; No428 very large; the remainder represents the ordinary shapes and sizes.	42B00311
A137502-0	430	Clay Spindle-Whorls	Other Ceramic	/ 426-434 Spindle-Whorls. Auvernier. Nos 426 and 427 not very common shapes; No428 very large; the remainder represents the ordinary shapes and sizes.	42B00311
A137503-0	431	Clay Spindle-Whorls	Other Ceramic	/ 426-434 Spindle-Whorls. Auvernier. Nos 426 and 427 not very common shapes; No428 very large; the remainder represents the ordinary shapes and sizes.	42B00311
A137504-0	432	Clay Spindle-Whorls	Other Ceramic	/ 426-434 Spindle-Whorls. Auvernier. Nos 426 and 427 not very common shapes; No428 very large; the remainder represents the ordinary shapes and sizes.	42B00311

A137505-0	433	Clay Spindle-Whorls	Other Ceramic	/ 426-434 Spindle-Whorls. Auvernier. Nos 426 and 427 not very common shapes; No428 very large; the remainder represents the ordinary shapes and sizes.	42B00311
A137506-0	434	Clay Spindle-Whorls	Other Ceramic	/ 426-434 Spindle-Whorls. Auvernier. Nos 426 and 427 not very common shapes; No428 very large; the remainder represents the ordinary shapes and sizes.	42B00311
A137507-0	435	Clay Spindle-Whorls	Other Ceramic	/ 426-434 Spindle-Whorls. Auvernier. Nos 426 and 427 not very common shapes; No428 very large; the remainder represents the ordinary shapes and sizes.	42B00311
A137508-0	436	Flint Scraper	Chipped Stone	/ Flint Scraper	42B00204
A137509-0	437	Boar's Tusk	Other Faunal	/ Boar's Tusk, sharpened	42B00210
A137510-0	438	Scoop Deer Omoplate	Worked Bone	/ Bone Implement, from a shoulder blade	42B00204
A137511-0	439	Wooden Spatula	Other	/ Small Implemet of yew-wood (Knife?)	42B00204
A137512-0	440	Perforated Wood Net Float	Wood	Small wooden Object with rwo perforations. Probably Float for a Net	42B00212
A137513-0	441	Woven Cloth	Textile, Matting and Fibers	/ Woven Cloth	42B00318
A137514-0	442	Cretan Catch-Fly (Silene Cretica)	Botanical Specimen	Silene cretica L. / Silene Cretica (seeds). Cretan Cathfly. Preserved in water.	42B00102
A137515-0	443	Vetch (Vicia) In Bottle	Botanical Specimen	/ Vicia. Vetch	42B00210
A137517-0	445	Wattled Cloth	Textile, Matting and Fibers	/ "Wattled" Cloth from the pilework at Robenhausen, Switzerland. Sent by Jac. Messikommer.	42B00210

Appendix B:

Location of Letters Written by Rau at the SIA in RU 28

Location of Rau Letters on SIA Microfilm in Record Unit 26

Volume	Number
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66	100, 101
68	220, 231, 234
70	292, 295, 326, 327, 332
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78	326, 337, 346, 358, 359, 360, 364
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89	217, 228, 230, 231, 240, 257, 268
102	26, 27, 45, 57, 114, 119, 131, 135
118	27 - 33
125	252 - 260
135	1 - 11
138	262
145	20
150	98
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156	23, 27, 144, 148, 150, 151
159	171
160	367 - 370
161	354
164	216
165	66
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167	121
169	549
171	200
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181	254
187	331
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Appendix C:

Electronic Appendix on CD: Photographs of Rau's Swiss lake dwelling collection.