

**ARCHIVES, HISTORICAL CLIMATE RECORDS, AND THE CLIMATE
OBSERVATIONS OF THOMAS CORCORAN, HUDSON'S BAY COMPANY,
1827-1841**

By

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Hudson's Bay Company, 1827-1841**

BY

Martin Comeau

A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of

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Of

Master of Arts

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Abstract

Growing interest in the natural environment has prompted important research into climate issues such as global warming and, more generally, into how humans interact with the environment. The information resources for this research are clearly important to its advancement. One primary source for climate researchers is the historical archival record.

Archives hold massive amounts of information from so many different sources on so many subjects that the historical record in archives can overwhelm researchers. The archival profession thus plays an important role in helping researchers locate and understand these records.

This thesis looks at the use of archival records in paleoclimatology, which is the study of climate before the general availability of written climate records. The first chapter provides a general overview of the different records that contain paleoclimatological information and some of the reasons why societies record such information. The second chapter expands on this overview by discussing in more detail the characteristics of particular archival records and the types of information paleoclimatologists seek in them. The final chapter examines some of the records created by Thomas Corcoran, a mid-nineteenth-century employee of the Hudson's Bay Company. His records are an important case example of climate information for that period.

Finally, the thesis will suggest how the archival profession can help find and thus 'create' records related to climate. This new conception of the archivist's role

suggests that the archivist is no longer a mere keeper of the records, but an active participant in record creation.

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Introduction

As concerns about environmental conditions mount, and society begins to deal with much more complex and elusive environmental problems, the value of historical information gleaned from archival records is receiving much greater attention among environmentalists and climatologists. Archival institutions increasingly contain large amounts of data which can be used for environmental research. For environmental researchers a better understanding of how humans interact with their surroundings, and what impact this may have on our environment, is now crucial. As climatologists Keith Alverson, Raymond Bradley and Thomas Pedersen say, "The records of the past show that climate shifts can appear abruptly and be global in extent, while archaeological and other data emphasize that such shifts have had devastating consequences for human societies. In the past, therefore, lies a lesson."¹

The Hudson's Bay Company Archives (HBCA) at the Archives of Manitoba is an important Canadian source of historical environmental information. There are literally thousands of records in the HBCA that contain day-to-day environmental data, such as temperature, wind direction, precipitation, and thawing conditions. Only a very small percentage of these records has been used in environmental history research and an even smaller amount identified for such research. Geographer Timothy Ball's experience in the late 1970s, when he first proposed doing a doctoral thesis on historical climatology using HBCA records, illustrates this point. His proposal was initially rejected because the review committee believed that there was not sufficient data:

How little is generally known about the extent, diversity, and detail of the HBC records, especially the weather information, was underlined for me when I made my doctoral thesis proposal to Queen Mary College, University of London. I proposed that weather maps be produced for each day, 1810-20, in northern Manitoba. The proposal was initially rejected because the committee said that there were insufficient recording stations for reasonable interpolation. Committee members were astounded when told that there were three times as many stations then as there are today.²

This thesis aims to improve understanding of the potential value of archives for environmental research. It is written primarily for archivists by an archivist in hope of stimulating greater interest in this increasingly important use of archives. It is also hoped that archivists will be sensitized to the types of sources, their characteristics, and the basic approaches to them which may support this research. It is not intended as a contribution to climatology as such, but aims to provide archivists with an introduction to the general value of archives for historical climatological research, an overview of the kinds of records which may be of use in such research, and a sample analysis of one such record at the HBCA. This thesis is not intended to provide extended amounts of historical climate information from archives to climatologists or to analyze the information extensively for its climatological research value. This is best done by climatologists. It is hoped that historical climatologists may benefit from this thesis by learning more about the kind of contribution archivists can make to their

research through the archivists' contextual, historical analysis of archival records. In this way a more meaningful dialogue and mutual education may occur which will benefit historical climatological research and archival work.

To attempt to accomplish these goals, the three chapters of this thesis will focus on the following areas. Chapter one will provide a general overview of various types of historical records that hold climate information. Chapter two will expand on this overview by discussing in more detail the characteristics of particular records and how climatologists use them. Chapter two will also suggest that the Canadian "total archives" tradition enhances climate history research by encouraging archives to acquire a very wide range of documentation. Records with long-term climate data prior to the twentieth century are considered rare. A study done by the American National Research Council in 1999 explains: "Deficiencies in the accuracy, quality and continuity of the records . . . place serious limitations on the confidence that can be placed in the research results."³ Therefore, finding sources that have this continuity can be crucial to understanding future climate trends; the Hudson's Bay Company Archives holds such records. Chapter three will look more closely at an example of an archival record that has been considered useful in historical climate research. Information from post journals created by Hudson's Bay Company (HBC) employee Thomas Corcoran from 1827 to 1841, and located at the HBCA, will be examined. Randomly selected entries will be reviewed in order to report the climate data that they contain. The chapter will also discuss who Corcoran was in order to help researchers interpret the records that he created.

The records of Thomas Corcoran have been looked at briefly by climatologists and identified by them as likely to be valuable in climate research. This thesis will probe them further to try to help climate researchers to learn more about their value. Corcoran meticulously recorded daily climate data from the beginning of his service as a clerk in charge for the HBC in 1818 until his retirement in 1856. Why are these particular documents worth examining for their value to climatological research? To help us understand present and future climatic trends, it is necessary for researchers to understand past environmental conditions, such as those environmental conditions prior to extensive human development within in a region. By understanding how climate has varied in recent times, climatologists can have a better understanding of what may occur in the future. Climatologist Raymond Bradley⁴ emphasizes understanding the impact of human activities on climate and environment; these anthropogenic climatic effects will be partly responsible for future trends. Bradley states that, "Unless we improve our understanding of what these factors are, and how the climate system has responded to them in the past, there is little prospect of interpreting, or anticipating, future climatic changes."⁵

The Corcoran records are from the era following AD 1500, which is categorised by some climatologists as the climatic period most directly affected by human influence. During this time, the Earth was being explored and documented more systematically than ever before. This vast body of documentation provides many new sources of climatological knowledge, which Bradley and Philip Jones argue offers insight into human history as well:

Over the course of the next 500 years extraordinary changes in society took place. These occurred against a background of environmental changes, which may have played a critical role in some of the events which occurred. However, until we can document climatic variations of the last 500 years, the extent of such influence will remain controversial.⁶

Bradley adds that, "Some of the most diverse and invaluable sources of proxy data are historical documentary records. The data are particularly important as they deal with short-term climatic fluctuations during the most recent past."⁷

Paleoclimatology will be a focus of attention in this thesis. The American government's National Oceanic and Atmospheric Administration (NOAA) explains that "Paleoclimatology is the study of climate prior to the widespread availability of records of temperature, precipitation and other instrumental data."⁸ Students of paleoclimatology look at different forms of data to describe past weather events. Historical data is considered to be part of the proxy data that climatologists can use to establish past climate conditions since past climates cannot be observed directly. As such, written records of environmental indicators are considered valid forms of data, as NOAA maintains:

Historical documents contain a wealth of information about past climates. Observations of weather and climatic conditions can be found in ship and farmers' logs, travellers' diaries, newspaper accounts and other written records. When properly evaluated, historical data

can yield both qualitative and quantitative information about past climate.⁹

It is important to note here that since this information was not recorded specifically for the climatologist, and often without satisfactory instruments, there is a need to assess, or contextualize, this information. Who gathered these observations? What conditions affected its acquisition? How accurate is it? When was it accumulated and, finally, why was it written? Bradley and Jones write, "Such records of climatically sensitive natural phenomena are surrogate or proxy measures of past climate; they contain climatic information which must be extracted and separated from the non-climatic matrix in which it is embedded."¹⁰ It is important to know whether this extraction can be done with such records.

Historical documents have the advantage of being distributed over all continents and of containing potential information on almost all aspects of climate. This information can help fill gaps left by other sources used by climatologists. This documentation comes in various forms. Geographers Alan Catchpole and D.W. Moodie observe that its "most useful role lies in supplying fragments of otherwise unavailable information, or in verifying or validating data derived from other sources."¹¹ The many HBCA journals, post records, diaries, and reports can contribute to climate research and are considered to be quite important sources of information, especially where no other sources exist.

The conclusion of this thesis will outline how an understanding of the records in various archival holdings can help in areas of scientific research such as climatology. It will suggest that archives are not a mere repository of old records,

useable for only a limited range of historical studies and genealogy, but for a widening array of purposes, including climatology. The thesis will also conclude with the suggestion that an archivist who understands the history of the records can help interpret and locate various forms of archival information, both for climatologists and others.

Endnotes

¹ Keith Alverson, Raymond Bradley and Thomas Pederson. Paleoclimate, Global Change and the Future (Berlin/New York: Springer, 2003). Preface.

² Stuart Houston, Tim Ball and Mary Houston. Eighteenth-Century Naturalists of Hudson Bay. (Kingston/Montreal: McGill-Queen's University Press, 2003), p. 117.

³ Ibid., p. 113.

⁴ Raymond Bradley is Professor and Head of the Department of Geosciences at the University of Massachusetts, Amherst. He has authored/edited five books and published more than 100 articles on climatology and climate change over a wide range of time scales.

⁵ Raymond Bradley and Philip Jones, eds. Climate Since A.D. 1500 (London: Routledge, 1992), p. 1.

⁶ Ibid., p. 3.

⁷ Raymond Bradley, Paleoclimatology: Reconstructing Climates of the Quaternary (San Diego: Academic Press, 1999), p. 439.

⁸ National Oceanic and Atmospheric Administration (NOAA). "What is Paleoclimatology." Accessed: October 24, 2004. <http://www.ngdc.noaa.gov/paleo/primer.html> .

⁹ National Oceanic and Atmospheric Administration (NOAA). "Paleo Proxy Data." Accessed: October 24, 2004. http://www.ngdc.noaa.gov/paleo/primer_proxy.html .

¹⁰ Bradley and Jones, eds. Climate Since A.D. 1500. p. 3.

¹¹ A.J.W. Catchpole and D.W. Moodie, "Archives and the Environmental Scientist." Archivaria 6 (Summer 1978), p. 120.

Chapter One

Historical Records, Climate Research, and Archives: An Overview

An interest in recording information about the environment has preoccupied human beings throughout history. The methods and media for recording environmental information have evolved over time, but the desire to know and even master the environment has been a key part of human experience. Recording climatological information has been an important feature of this phenomenon. Today's researchers are able to locate environmental information from every corner of the planet where humans have set foot. Wherever they have been, details of the local environment can be found in various media.

For instance, Chinese oracle bones may have some of the oldest environmental information useable by climatologists for that area of the world. Alan Catchpole and D. W. Moodie note: "They provide the only written records available in China prior to 1100 B.C. and contain carved descriptions of farms, crops and agricultural methods as well as predictions of rain and snow."¹ These records in themselves do not give us information on day-to-day weather patterns and were not created for that purpose. Nonetheless, researchers know that oracle bones from the Yia Hsu Period (1400-1100 BC) document that rice cultivation occurred in the Anyang region of northern Honan in March, or a month earlier than at present.² This is a significant finding as it demonstrates that the climate has changed over time and is not as stable as many people used to believe. Another example of very old records which document environmental conditions, but which were not made for that purpose, can be found in Japan.

Catchpole and Moodie note that Japan has excellent historical sources of climatic information stretching over several centuries. They illustrate their point by referring to the Emperor's annual celebration of the blooming of the Cherry Tree at Kyoto. This important event (held until 1868) has generated a regular record of blooming dates since the ninth century.³

Records like these can be found throughout the world. Although a record may not directly contain weather or climate information such as numerical temperatures, evidence taken from the record demonstrates how a cultural response to an event can show how the environment affected society. This can be reflected in the records kept by these societies. Geographer Timothy Ball notes how inferential historical evidence regarding human activities can be related to climate. Settlement, cultivation, and migration patterns are shaped by climatic conditions.⁴ As always, historical evidence containing written information which directly reflects human views of the environment is most valuable. However, as British climatologist H.H. Lamb notes, "... many weather diaries are extant, but very few have been studied in even a cursory manner."⁵

Native people lived in North America long before the arrival of Europeans. The former understood the importance of climate and its effects on their population. Therefore knowledge concerning climate (retained mainly in oral tradition) pre-dates the European expansion into the North American continent. The evidence discussed in this thesis is from conventional Euro-Canadian historical records. Some information on Native contributions to knowledge of climate is in these types of records. Hudson's Bay Company journals record

weather information given by Natives to European fur traders, especially if conditions were untypical. Peter Fidler reported in 1819 that “the invariable information of the different Tribes I have enquired at agree that the country is becoming much drier than formerly.”⁶ A book on this very topic has been recently published, *Voices from the Bay: Traditional Ecological Knowledge of Inuit and Cree in the Hudson Bay Bioregion* (Ottawa, 1997), compiled by Miriam McDonald, Lucassie Arragutainaq and Zack Novalinga. This book covers various aspects of Native American ecological knowledge within the Hudson Bay watershed.

By studying weather evidence related to climate in Canada with the understanding that this can only go back for the most part as far as European expansion into the continent, we can find large amounts of both government and private records that were kept on this subject. One can ask why such records were kept and who kept them? The most important single source of these records is the Hudson’s Bay Company, which was established in 1670, and developed an extensive commercial trade network across much of what is now Canada. Ball speculates about why such records were created. He believes that the company’s governors wanted to see more agriculturally self-sufficient trading posts. By understanding the environment where the posts were located, officials could determine what could and could not be cultivated and thus reduce costly food imports: “The struggle for self sufficiency revolved around attempts at growing English produce in gardens at each Fort, and by animal husbandry.

Obviously climatic information would be of some value in determining those species most suitable to the conditions.”⁷

Ball identifies another reason why such records may have been kept. An apparent interest in this type of information on natural history was of interest to many company employees. Various observers of natural history working for the Hudson’s Bay Company would gather enormous amounts of information. There was also a very close connection between the British Royal Society and the Hudson’s Bay Company. Samuel Wegg, for example, who was a long-term treasurer of the society and a member of the company board (serving as Governor of the Company for six years), was keenly interested in the acquisition of scientific information.⁸ Across the first 150 years of this accumulation of specimens and data, there was little scientific expertise available to the company: “But curiosity was unlimited, and those with it were termed ‘curious’ men, meaning something very different from twentieth-century usage. The fur-trade officers of the Hudson’s Bay Company lived in and contributed to one of the most exciting periods in the history of science.”⁹

The Royal Society’s interest in and continuous prompting of the Hudson’s Bay Company to continue this work helped create a source of information of incredible value for today’s researchers. Unwittingly, the fur traders became some of the first weather observers in the New World. This contribution to climatology is considered quite important to modern day science.¹⁰ Finally, an additional reason for keeping daily weather records was the high degree of dependence of company employees in their day-to-day lives and work on

weather conditions that could affect how trade was done in good or poor weather.¹¹

It is important to bring these records to the attention of researchers and to demonstrate their potential value for current and future environmental studies. With a growing concern for the environment, and especially climate change, archives may play a key role in helping researchers find the information they require to make knowledgeable decisions in this regard. There is considerable evidence of global warming in scientific publications and other media.¹² In 2004, the BBC's online news service said that scientific studies of climate change indicate that it may result in the extinction of a million animal and plant species by 2050.¹³ The BBC's Alex Kirby adds: "Similarly, the evidence that human activities are intensifying natural climate change is impressive, and hardening. The world really is changing, almost imperceptibly, but in line with what science says will happen."¹⁴ Subtle changes are hardly noticed by the general public, and it is even harder to prove that these changes are happening. Over a few years we may not notice a fraction of a degree increase or decrease in average temperature, but over a long period these changes, if they continue, can have detrimental effects. Kirby comments: "The trouble with imperceptible change is that for a long time it has virtually no impact, certainly not on the political timescale of four or five years. And politicians respond (often) to what they think matters to voters."¹⁵ The need to understand and to transmit this information to others is becoming critical. We can no longer deny that change is happening. But where can we find the information or evidence to help give these predictions

greater credence, as some powerful interests are still sceptical? Humans have been recording climatic information for centuries. The need to find and interpret these records is becoming an important factor in better understanding human impact on the environment.

Literature on environmental issues and archives is limited. For example, if we look at *Archivaria*, Canada's leading journal on archival issues which has been published since 1975, only two articles have been written that directly relate to the environment. Topics such as climate history and change need to be addressed so that governments and others can make knowledge-based decisions on these issues. With massive population growth, industrialization and unrestricted use of natural resources over the past century, widespread interest in our environment, specifically our climate, has grown considerably and now among archivists as well.¹⁶

Archival records are a valuable and largely untapped source of information for climatic research. The amount of climatic knowledge is vast, and its potential is great. Greater awareness of the value of this information is still lacking. We must also address the difference between information and knowledge. Though we may acquire a lot of environmental information, the need for environmental knowledge is greater. Archival theorists are placing emphasis on this, as are other professionals in the information field.¹⁷ As Daniel Boorstin, a historian and former Librarian of Congress, puts it:

The challenge facing librarians today is to establish the distinction between knowledge and information, the

importance of the distinction and the dangers of failing to recognize it. Knowledge is cumulative, the enduring treasures of our whole human past.¹⁸

Environmental studies is a very broad field. It includes but is not limited to: forest management, air quality, flora and fauna extinction rates, and ozone depletion. Interest in this field is growing as demand for more information on how climate affects everyday life becomes important. Catchpole and Moodie noted this as early as the mid-1970s:

The present decade has witnessed an unprecedented demand from our politicians, conservationists, economists, farmers, and the public for improved long term forecasting. Given today's state of development of meteorological science, it is not possible to forecast climatic changes over periods of years. Since long-term forecasts must be performed empirically by projecting past trends into the future, the key to improving short term forecasts lies in a fuller understanding of the past.¹⁹

We must find a way to improve our knowledge of historical information about climate in archives. This is not to say there has not been interest in climatology prior to contemporary times, but there is a need to acquire a better understanding. Environmental issues, such as climate change, affect every part of our lives. Governments and "watchdog" groups, such as Greenpeace and the Sierra Club, play an important role in responding to this major concern. Meteorological studies are becoming more and more important. Archives can and should play an important role in this area of study. American archivist Todd

Welch comments: "Considerable disagreement exists on the ideas, values, and goals of environmental thought, but the need and search for relevant environmental information is universal. Therefore, it is crucial that archivists select, preserve, and encourage the use of records containing information related to the interaction between nature and humans." ²⁰

Whatever disagreements individuals or organizations may have on the topic of the environment, it is clear that there is a need for more information. Archival knowledge can help provide the answers. Archives are more than just a storehouse for old documents. Archivists play an important role in collecting not only documents, but a body of knowledge from the past that is relevant to the present and the future. Archivists must do so by intelligent engagement in the document selection process. Archivists must understand what type of information is being stored and what kind of knowledge can be obtained from it.

Archivists have been changing their thinking and methods in order to provide this service in the much more complex information universe we inhabit. In light of the exponential growth in the volume of records, the increasing complexity of multimedia records, and the growing diversity of research interests, which archivists cannot always anticipate or know a great deal about, archivists are turning more and more to knowledge of the context in which records were created (or the actual history of the records themselves) as the intellectual basis for their work. This is important when looking at climatological records. With these records, too, it becomes important to gain a deeper understanding of the history of the record. One feature of the history of records is that they have been

(sometimes) carefully selected. Not all records are kept. A large percentage are purged.²¹ They are not just a haphazard grouping of historical documents, but a collection of records relating to certain people and events, which reflect the interests of those who made, selected, and still use them. As Terry Cook points out, using an early example, archives have had an influence and purpose of their own in the area of record keeping:

Medieval archives, scholars now find, were collected – and later often weeded and reconstructed – not only to keep evidence of legal and business transactions, but also explicitly to serve historical and sacral/symbolic purposes, but only for those figures and events judged worthy of celebration, or memorializing, within the context of their time.²²

When looking for historical climatological records we are not able to search as directly for this information as we can today with contemporary climate information. We cannot simply contact Environment Canada²³ or other weather agencies across the globe in order to find environmental records dating back hundreds of years. These agencies have been collecting data over the last century, but historical environmental records go beyond that time. Due to the relative youth of these types of agencies, climatic information about Canada and other countries is limited. A better understanding of what was collected and why it was collected can help us in locating such information. Today, because of the growing interest in the environment, governments purposefully collect it. Prior to

this activity, climatological data would be collected mainly for other purposes, such as to meet the food supply needs of an area, as discussed earlier in this chapter.

Future research into environmental concerns will likely be better supported by archives. Vast amounts of more recently created archival records contain environmental information. In addition, the recent emergence of the field of environmental history augurs well for future study of the environment using archives. Environmental history goes beyond the history of the physical environment itself to include human interactions with nature, attitudes toward and uses of nature, and the history of the conservation movement. For some contemporary environmentalists this historical perspective has been lacking. Many have thought that this history is limited to the current interest. Environmentalist Derek Wall states that:

For most of us, even the committed activist, the Green movement has no history. Worries about environmental destruction seem very modern. Acid rain, the greenhouse effect and ozone depletion are concerns of the last twenty years, especially of the last four or five.²⁴

Wall dismisses this shortsighted view by stating that we now need to become aware of this history: "I argue not only that the Greens have a history but that both they and wider society would do well to learn about it."²⁵ As Todd Welch notes, the contemporary environmental movement and management of the environment are heavily reliant on recorded information – both historical and

recently created. What has been developing recently from past research is the need for documented information from the past that can be used as evidence:

These early developments and the growing awareness and involvement of private citizens, government agencies, and legal professionals in the 1960's and 1970's created a demand for environmental research with practical applications for society as a whole. This research goes beyond improving our understanding and management of the environment and requires documentation for the preparation of environmental impact statements and the creation and enforcement of environmental laws.²⁶

In light of these statements, one needs to ask certain questions related to the climate and the archives. What can be found in archives that would be relevant to this varied research? What are archivists doing to help researchers locate and access these records? Are archival records usable as evidence by the scientific community? There are certain criteria that must be met for climatologists to use these past documents in research. As Canadian archivist Candace Loewen states, "... environmental records are often most valuable when cumulative in nature and viewed longitudinally; transactions are less important than patterns over time."²⁷ It is important when looking at environmental records to focus on continuity and a specific geographical area, which is far more useful for research. The more detailed information that is available, especially if the data is constant, helps in the development of current