

Wilfrid Laurier University

Scholars Commons @ Laurier

Theses and Dissertations (Comprehensive)

1995

Marking the line: The surveying career (1872-1892) of Otto Julius Klotz. The professionalization of dominion land surveyers and patronage in the federal civil service

Brenda Ackerman
Wilfrid Laurier University

Follow this and additional works at: <https://scholars.wlu.ca/etd>



Part of the [History Commons](#)

Recommended Citation

Ackerman, Brenda, "Marking the line: The surveying career (1872-1892) of Otto Julius Klotz. The professionalization of dominion land surveyers and patronage in the federal civil service" (1995). *Theses and Dissertations (Comprehensive)*. 19.
<https://scholars.wlu.ca/etd/19>

This Thesis is brought to you for free and open access by Scholars Commons @ Laurier. It has been accepted for inclusion in Theses and Dissertations (Comprehensive) by an authorized administrator of Scholars Commons @ Laurier. For more information, please contact scholarscommons@wlu.ca.



National Library
of Canada

Acquisitions and
Bibliographic Services Branch

395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale
du Canada

Direction des acquisitions et
des services bibliographiques

395, rue Wellington
Ottawa (Ontario)
K1A 0N4

For the reference

Our file - Notre référence

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

Canada

**MARKING THE LINE
THE SURVEYING CAREER (1872-1892) OF
OTTO JULIUS KLOTZ**

**The Professionalization of Dominion Land Surveyors
and
Patronage in the Federal Civil Service**

BY

**Brenda Ackerman
B.A., University of Waterloo, 1992**

**Thesis
Submitted to the Department of History
in partial fulfilment of the requirements
for the Master of Arts degree
Wilfrid Laurier University
1995**

©Brenda Ackerman 1995



National Library
of Canada

Acquisitions and
Bibliographic Services Branch

395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale
du Canada

Direction des acquisitions et
des services bibliographiques

395, rue Wellington
Ottawa (Ontario)
K1A 0N4

Your file Votre référence

Our file Notre référence

THE AUTHOR HAS GRANTED AN
IRREVOCABLE NON-EXCLUSIVE
LICENCE ALLOWING THE NATIONAL
LIBRARY OF CANADA TO
REPRODUCE, LOAN, DISTRIBUTE OR
SELL COPIES OF HIS/HER THESIS BY
ANY MEANS AND IN ANY FORM OR
FORMAT, MAKING THIS THESIS
AVAILABLE TO INTERESTED
PERSONS.

L'AUTEUR A ACCORDE UNE LICENCE
IRREVOCABLE ET NON EXCLUSIVE
PERMETTANT A LA BIBLIOTHEQUE
NATIONALE DU CANADA DE
REPRODUIRE, PRETER, DISTRIBUER
OU VENDRE DES COPIES DE SA
THESE DE QUELQUE MANIERE ET
SOUS QUELQUE FORME QUE CE SOIT
POUR METTRE DES EXEMPLAIRES DE
CETTE THESE A LA DISPOSITION DES
PERSONNE INTERESSEES.

THE AUTHOR RETAINS OWNERSHIP
OF THE COPYRIGHT IN HIS/HER
THESIS. NEITHER THE THESIS NOR
SUBSTANTIAL EXTRACTS FROM IT
MAY BE PRINTED OR OTHERWISE
REPRODUCED WITHOUT HIS/HER
PERMISSION.

L'AUTEUR CONSERVE LA PROPRIETE
DU DROIT D'AUTEUR QUI PROTEGE
SA THESE. NI LA THESE NI DES
EXTRAITS SUBSTANTIELS DE CELLE-
CI NE DOIVENT ETRE IMPRIMES OU
AUTREMENT REPRODUITS SANS SON
AUTORISATION.

ISBN 0-612-01805-9

Canada

TABLE OF CONTENTS

Chapter	Title	Page
	List of Illustrations	ii
	List of Tables	iii
	Acknowledgments	iv
1	Introduction	1
2	Early Life and Education (1852-1872)	15
3	Building A Career Base (1872-1879)	33
4	Career Development (1880-1883) and Professional Activities (1882-1886)	54
5	Reaching a Plateau (1884-1892)	78
6	Conclusion	97
	Works Cited	103

LIST OF ILLUSTRATIONS

Figure		Page
1	Otto Julius Klotz, age 20. Graduation Photograph.	v
2.	Otto Julius Klotz, circa 1895 (age 43).	102

LIST OF TABLES

Table		Page
1.	Comparison of Civil Engineering Curricula 1870-1871	24-25

ACKNOWLEDGMENTS

I would like to thank the many people who provided me with assistance and advice - without them this thesis would not have been possible. These include, Larry McNally at the National Archives of Canada; the staff of the Topographical Surveys and Mapping Branch Library in Ottawa; Jim Quantreil at the Cambridge Archives, Cambridge, Ontario; and the staff of the Bentley Historical Library, University of Michigan, Ann Arbor.

Professor Suzanne Zeller of Wilfrid Laurier University acted as my supervisor, and her thoughtful comments exhorted me to improve and refine my work.

Dr. Heather MacDougall, of the University of Waterloo, has been a supportive friend and mentor since the time of my undergraduate studies. I would also like to thank Dr. Gerald Stortz of St. Jerome's College, University of Waterloo, whose encouragement gave me the confidence to pursue graduate studies.

I am also indebted to my friend, Rick Drennan, who was my sounding board, advisor and editor. He helped me in many ways, especially through the final editing process.

Financial assistance was provided by the Waterloo Region Heritage Foundation and the provincial chapter of the IODE, and is much appreciated.

Finally, I wish to thank my family and friends for their support and patience during the course of this project.



Figure 1.

Otto Julius Klotz, age 20. Graduation Photograph. University of Michigan Albums, Box 17, 1872. Michigan Historical Collections, Bentley Historical Library, University of Michigan, Ann Arbor.

"There are several characters from early Canadian history at hand, and in search of an author. There is a world now scattered in the archives and the dust waiting for whoever wants to try putting it together again."

William Kilbourn, The Firebrand.¹

CHAPTER ONE

Introduction

The Dominion of Canada, formed by the federation of the provinces of Ontario, Quebec, New Brunswick and Nova Scotia in 1867 would, within five years of its creation, span the North American continent, bookended by two vast oceans, the Pacific and Atlantic. The acquisition of the Hudson Bay Company lands (Rupert's Land) in 1870, and British Columbia's entrance into the federation in 1871, resulted in an unprecedented rush of nation-building activities. The Canadian state was faced with the administration, management and development of millions of acres of land, much of it uninhabited, unexplored and unreachable by anything but canoe, horse or foot. The politicians' task was daunting: to bind a vast territory with a tiny population into a single nation. Westward expansion required a large administrative apparatus, and plans to oversee immigration and settlement, the resettlement of native peoples onto reservations, exploration and analysis of the land itself, and the development of an infrastructure for communication and travel, as well as maintaining a police and military presence. Canadians intended that the development and settlement

¹ William Kilbourn, The Firebrand: William Lyon Mackenzie and the Rebellion in Upper Canada, (Toronto: Clarke, Irwin, 1956), p. 7.

of their North West was to be an orderly affair, rather than the headlong rush experienced in the United States.

One of the initial steps was the dispatch of large numbers of surveyors to the North West each year. The Geological Survey, a small scientific group funded by the federal government, sent parties to explore and study unknown regions. The goals were complex: to determine the potential for resource development, to study the suitability of land for farming, and locate coal deposits required for the planned trans-national railway. A much larger group of surveyors, however, was that consisting of the men of the Dominion Lands Survey. Their task was to place survey lines through the often empty wilderness and bring an arbitrary order to the landscape. The surveyors subdivided land into the standard sections that formed the settler's farm allotment; surveyed the railway route and the belt of railway lands that bordered it; mapped out town plots, frequently where there was nothing but grass and trees; and laid out Indian reservations in accordance with treaty arrangements. These men, these surveyors, measured, marked, recorded and analyzed the North West. Then, in an historical snap of the fingers, they were gone. Their efforts, so vitally important to western development, were only required to be performed once and were, by definition, of very limited duration. Begun in 1870, the bulk of the work of the Dominion Land Surveyors was complete by the end of the 1880s. They had fulfilled their task in record-breaking time.

Most of the land surveyors moved on to other work when their government contracts were completed. A small group, however, had been hired as full-time government employees, and a few others were able to turn the temporary work into more permanent civil service appointments. These were the elite of the land surveyors, men such as W.F. King, Edouard Deville, William Ogilvie and Otto Julius Klotz. They were the men with university educations in the fields of mathematics, physics, astronomy, and engineering; men of science who were also adventurers. They spent more than half of each year in the unsettled North

West, in primitive conditions and overcoming the obstacles of weather and geography, armed with their surveyors' tools - theodolite, chain, survey markers, axe and diaries, where all observations were recorded.

Only one of this small group of men maintained detailed personal records of his life and career, first as a land surveyor and later as an astronomer at Canada's Dominion Observatory. The diaries of Otto Julius Klotz, started in 1866 when he was fourteen years old, reveal a vivid image of his life and work. Klotz started work as a contract surveyor for the Dominion government in 1879, and continued in this capacity until 1892 when he became a full-time government employee. Klotz's civil service career lasted forty-four years, until his death in 1923 at the age of seventy-one. Klotz was active in the Dominion Land Surveys from 1879 to 1884, the British Columbia Railway Belt Survey from 1885 through to 1890, and finally, in the surveys of the Alaska boundary relative to the dispute between the United States and Canada regarding the placement of the boundary during the 1890s. In the early 1900s Klotz became one of two employees of the Dominion Observatory, the nation's first major astronomical observatory. In 1916, Klotz would become head of that institution when he was appointed Dominion Astronomer. Otto Julius Klotz was a member of the Board of Examiners for Dominion Land Surveyors from 1886 until his death. His knowledge, expertise, and abilities were recognized by the scientific communities of both Canada and the United States. Klotz was awarded two honorary LL.D. degrees, one by the University of Toronto in 1904 and a second by the University of Pittsburgh.² The University of Michigan granted Klotz the degree of D.Sc. in 1913.³

2 R. Meldrum Stewart, "Dr. Otto Klotz," Journal of the Royal Astronomical Society of Canada, 1924, XVIII(1-2):6.

3 "Otto Julius Klotz," Waterloo Historical Society, 1914, 2:50.

Otto Julius Klotz was an important and influential figure in Canadian land surveying and astronomy during the last quarter of the nineteenth century and the first quarter of the twentieth. The diaries of Otto Klotz have been used extensively by historians studying both land surveying and astronomy in Canada. To date, however, no one has undertaken a detailed study of the man himself. This study is limited to the life and career of Otto Julius Klotz to 1892. This year can be considered as the end of the first phase of Klotz's civil service career, since this was when Klotz moved to Ottawa and committed himself to full-time government employment.

Many of Klotz's experiences were undoubtedly common ones shared by his fellow Dominion Land Surveyors and employees of the Dominion government, but Klotz was the only one to record his entire career for future study. Each group, surveyors and civil servants, shared common frames of reference as well as goals and interests. They also all experienced employment practices driven by patronage; working as contract government employees; ongoing and intense competition for government positions, both contract and full-time; spending half of each year in wilderness conditions; and efforts to enhance the status of the surveying profession and foster a meritocracy in the federal civil service. Because Klotz's experiences and beliefs were not entirely unique, his diaries can be used to study and appreciate the goals and aspirations, as well as the limitations faced by both federal land surveyors and other employees.

Through the use of Otto Julius Klotz's diaries and the records of the Surveys Branch and Department of the Interior, it is possible to examine the operation of clientelism in federal government hiring in detail. Klotz had to have the support of political patrons in order to be appointed to government contracts. In turn, Klotz's patron gained the support of other politicians for his client, thereby creating a series of linkages both among patrons and clients and between the two groups. This system of patrons and clients created an intricate web of

relationships and constantly shifted the balance between favours granted and owed. The client, Otto Klotz, was expected to “pay” for his patron’s support. Klotz, as a land surveyor, provided firsthand reports of the geography of the North West and the potential for business speculation for profit there. This was accepted as a normal part of conducting business in the years following Confederation.

In his book, Patrons, Clients, Brokers, S.J.R. Noel terms this type of social organization as “clientelist.” The colony of Canada West had evolved, from the time of first permanent settlement in the 1780s, into a society where the roles of patron and client were inherent in political and social spheres of life. The “core [of clientelism] is a type of reciprocity, an exchange of mutually valued goods or services between individuals who are of unequal status and in control of unequal resources.”⁴ Noel notes that this kind of relationship, called patronage when related to politics, is an accepted notion in Canadian history. He argues, however, that “clientelism” is a better word since, like the behaviour pattern it describes, it is not limited to politics, and “[c]lientelism was long assumed to be a normal part of the political process because it was a normal part of practically everything else.”⁵ Clientelism and patronage were not foreign ideas to immigrants to Upper Canada. In Britain, where most of the pre-1832 settlers came from, “every post of church or state was part of a pervasive patronage system.”⁶ When the Dominion of Canada was formed in 1867, the practice of clientelism and patronage politics was carried on by the new level of government as well.⁷

4 S.J.R. Noel, Patrons, Clients, Brokers: Ontario Society and Politics, 1791-1896, (Toronto: University of Toronto Press, 1990), p. 14.

5 Noel, Patrons, Clients, Brokers, p. 15.

6 Noel, Patrons, Clients, Brokers, p. 15.

7 Noel, Patrons, Clients, Brokers, p. 278.

J.E. Hodgetts' Pioneer Public Service is an examination of the administrative history of the United Canadas between 1841 and 1867. This was the government structure inherited by the Dominion of Canada in 1867.⁸ Hodgetts agrees that the administrative machinery remained relatively unchanged under control of the new government. He also acknowledges the important role patronage played in government activities, and the potential power and wealth to be gained therefrom.⁹

Increasingly, however, clientelism could not remain the major determinant of government hiring. Ongoing technological advances meant that suitably qualified persons were required to perform certain types of work. Land surveying was an early case where officially recognized expertise was demanded. This was the first occupation subjected to certification standards and regulations by the government.¹⁰ These requirements were instituted to meet the state's needs for competently performed and accurate surveys.

Otto Julius Klotz's years of experience working for the Dominion government demonstrate the juxtaposition of clientelist hiring practices and the growing level of technical expertise, training and skill required to perform an increasing number of tasks. The greater need for expertise and skill led to increased importance being placed on possessing those qualifications. Respect for, and the influence of, those with the requisite technical ability also increased. These factors contributed to the gradual shift in employment criteria from clientelist practice towards policies more based on individual merit and ability. As the trend to technological skills and qualifications continued and expanded, more

8 J.E. Hodgetts, Pioneer Public Service, (Toronto: University of Toronto Press, 1955), preface, p. vii.

9 Hodgetts, Pioneer Public Service, pp. 53, 162.

10 Hodgetts, Pioneer Public Service, pp. 44-45

occupational groups perceived the opportunity their expertise offered, and started to identify and promote themselves in new ways.

Many new ideas and concepts were evolving during the second half of the nineteenth century. Two of these which are important to this thesis are the "middle class" and "professionalism." Both of these ideas emerged dramatically during the nineteenth century in the United States, England and Europe. These ideas would become increasingly important in Canada, and would be used as a model for the goals and behaviours for many occupations. In America, the term "middle class" was a vague concept, but generally such persons "own[ed] an acquired skill or cultivated talent."¹¹ Thus a doctor, a butcher or a bookkeeper could all identify themselves as members of the "middle class." This skill, which a person used to earn his living, became the source of personal identity and sense of worth. The new middle classes worked to restructure society on the premise that merit had more importance and relevance than birth and patronage.¹²

The second concept that is important relative to this thesis is that of "professional." This idea, like that of "middle class," is a rather vague concept and is difficult to provide a definitive meaning for. Generally, a professional's skill was based on theoretical knowledge, which required specialized education and training; examinations and certificates provided evidence of the professional's attainment of a degree of expertise and skill; that skill provided the primary source of the professional's income; and the occupation organized itself as a group and sought professional status (recognizing that the group's self-perception could

11 Burton J. Bledstein, The Culture of Professionalism: The Middle Class and the Development of Higher Education in America, (New York: W.W. Norton & Co., 1976), p. 4.

12 Magali Sarfatti Larson, The Rise of Professionalism: A Sociological Analysis, (Berkeley: University of California Press, 1977), p. 5.

be at odds with society's)¹³ The professions "were the original achievement of Mid-Victorians who sought the highest form in which the middle class could pursue its primary goals of earning a good living, elevating both the moral and intellectual tone of society and emulating the status of those above one on the social ladder."¹⁴ Professionals, in essence saw themselves as an elite of the middle class. People who were educated at university in the sciences were among those who worked hardest for recognition of their technical expertise through professionalization of their field.

In the early 1880s a group of federal land surveyors founded the Association of Dominion Land Surveyors (ADLS). Otto Julius Klotz was the association's first president, a post he held for four years. Klotz wrote the group's bylaws and constitution, as well as being the author of several government memorials. The purpose of the ADLS was the general enhancement of land surveyors' professional status. This was achieved in part through the dissemination of advanced technical knowledge to its membership. Most significantly, however, the association would provide a single, organized voice to advance the profession's interests to the government. These interests included the promotion of surveying projects that would provide ongoing employment, surveyors' qualifications and certification, matters of pay and other terms of employment. In its first years, Otto Julius Klotz's was the voice behind the ADLS. This effort by land surveyors was only one of many hundreds of similar professionalization projects undertaken by various occupational groups

13 These are consistently cited as some of the dominant features in the early concept of professionalism, and are discussed at length in: Larson, Rise of Professionalism, preface, p. x; Terence J. Johnson, Professions and Power, (Toronto: Macmillan, 1972), p. 23; Ernest Greenwood, "The Elements of Professionalization," Professionalization, Howard M. Vollmer and Donald L. Mills, eds. (Englewood Cliffs. Prentice-Hall, 1966), p. 9.

14 Bledstein, Culture of Professionalism, p. 80

Otto Julius Klotz's writings chronicle some of his experiences of and thoughts regarding land surveying, professionalization, and government employment. Klotz was a reflection of the society in which he lived, but he also exerted some influence on the sectors of society in which he operated. Klotz was energetic and dedicated to the development and enhancement of the role of science in general, and land surveyors in particular. Klotz was an early advocate of professionalization and the importance of personal merit, expertise and skill in government hiring. Klotz was not immediately successful in efforts to professionalize land surveying or to institute government hiring based on merit. Certainly, he did not have such a fundamental impact. However, the ideas of Klotz and the many men like him, laid the foundations for the changes that would ultimately occur in the twentieth century, as the ideals promoted by men such as Klotz gained favour and greater influence over time. Unfortunately, for the most part, these pioneers of employment meritocracy and professionalism became disillusioned and frustrated over the continued practice of patronage and clientelism in government hiring. It was later generations of government employees that benefited from the struggles of men such as Klotz in the nineteenth century.

While Otto Julius Klotz was unique because he was educated as a civil engineer in the United States, his life illustrates the development of the concept of professionalism and social mobility made possible by a middle class in which a person's status at birth is not a determinant. The time he spent in the United States may have made Klotz more aware of these ideas than other Canadians were. However, Canadians were certainly learning of these ideas through books, newspapers and contacts with professionals from other countries, and land surveyors and other specially trained or educated groups began to adopt the goals of professionalization to achieve recognition and enhanced social status. Otto Klotz willingly worked within the framework and limitations of the patronage system to achieve his career goals, even though he professed to disapprove of it. By doing so, Klotz and others who

shared his opinions may have contributed to the gradual shift away from clientelist policies, and to the growth of professionalism in general that occurred during the early twentieth century

Little detailed work has been performed in Canada in this field to date. S.J.R. Noel's Patrons, Clients, Brokers, and Pioneer Public Service, by J.E. Hodgetts are two key works offering insight into the clientelist nature of government and its political and administrative structure and history. A number of books have been written about land surveyors and their work. Don Thomson's ambitious work, Men and Meridians,¹⁵ studies the history of surveying and mapping in Canada from colonial times to 1967. Thomson examines surveying events and their importance to development and settlement. Morris Zaslow's Reading the Rocks,¹⁶ details the official history of the Geological Survey in Canada. The Boundary Hunters,¹⁷ by Lewis Green deals specifically with the Alaska boundary dispute and surveying in that region. Other works such as Vision of an Ordered Land¹⁸ and They Left Their Mark,¹⁹ study the surveyors themselves and limit their scope to particular periods or surveys. Vision of an Ordered Land, for example, is an examination of the Dominion Lands Survey. Richard Jarrell's The Cold Light of Dawn²⁰ and J.H. Hodgson's The

15 Don W. Thomson, Men and Meridians: The History of Surveying and Mapping in Canada, 3 vols. (Ottawa: Queen's Printer, 1967)

16 Morris Zaslow, Reading the Rocks: The Story of the Geological Survey of Canada 1842-1972, (Ottawa: Macmillan, 1975).

17 Lewis Green, The Boundary Hunters: Surveying the 141st Meridian and the Alaska Panhandle, (Vancouver: University of British Columbia Press, 1982).

18 James G. MacGregor, Vision of an Ordered Land: The Story of the Dominion Land Surveys, (Saskatoon: Modern Books, 1981).

19 John L. Ladell, They Left Their Mark: Surveyors and Their Role in the Settlement of Ontario, (Toronto: Dundurn Press, 1993).

20 Richard Jarrell, The Cold Light of Dawn: A History of Canadian Astronomy, (Toronto: University of Toronto Press, 1988).

Heavens Above and the Earth Beneath²¹ are studies of Canadian astronomy. Both, therefore, touch on some of the events covered by this thesis, but only as they relate to the development of the science of astronomy in Canada.

Little work has been undertaken on the study of professionalism and the middle class in Canada. Paul Axelrod's Making a Middle Class²² is an examination of student life in Canada's universities during the 1930s. J. Rodney Millard's The Master Spirit of the Age²³ chronicles the professionalization of Canadian engineers in the late-nineteenth and early-twentieth centuries. It has been, therefore, necessary to utilize the ideas and work of authors who have studied the experience of the United States and England. Both concepts, as they developed in the United States, have the closest bearing on this thesis. Otto Julius Klotz embraced the American version of these ideals while he was being educated in that country. Burton J. Bledstein's The Culture of Professionalism deals directly with the development of the concepts of middle class and professionalism in the United States during the second half of the nineteenth century. Professional Men²⁴ by W.J. Reader examines the early roots of and growth of the idea of professionalism in nineteenth-century England. Other works dealing with the concept of professionalism and a middle class are those prepared by sociologists. These studies focus on the goals of groups that try to professionalize, and the source of their authority and power within society. Magali Sarfatti Larson's The Rise of

-
- 21 J.H. Hodgson, The Heavens Above and the Earth Beneath: The Story of the Dominion Observatories, (Ottawa: Surveys and Mapping Branch, 1990).
- 22 Paul Axelrod, Making a Middle Class: Student Life in English Canada During the Thirties, (Montreal and Kingston: McGill-Queen's University Press, 1990).
- 23 J. Rodney Millard, The Master Spirit of the Age: Canadian Engineers and the Politics of Professionalism, 1887-1922, (Toronto: University of Toronto Press, 1988).
- 24 W.J. Reader, Professional Men: The Rise of Professional Classes in Nineteenth-Century England, (New York: Basic Books, 1966).

Professionalism,²⁵ examines and compares the development of professions in the United States and England, with an historical perspective rather than a purely sociological analysis. A variety of other works focus on the purpose and methods used by groups in their efforts to professionalize and consolidate their professional power.

Finally, the use of diaries as an historical source must be discussed. Otto Julius Klotz started keeping a diary in 1866 when he was fourteen. He maintained the diaries until his death in 1923, his son, Oskar, made the final entry noting his father's passing. Through the years, Klotz's diaries grew to thirty-four volumes, written in hard-cover, legal-size journals. These records, along with Klotz's correspondence and personal scrapbooks and memorabilia, are held by the National Archives of Canada. Klotz's correspondence is very limited, and consists mostly of items regarding his work on the Alaska boundary. The scrapbooks contain newspaper clippings about Klotz himself, his family and friends, as well as any news item he found particularly important or interesting. Klotz's papers also include many of the technical articles he wrote over the years. A file of memorabilia contains items such as invitations, programs for social events, etc. All of this information provides remarkable insight into the man, his experiences, aspirations, and his beliefs about life and work in the latter nineteenth and early twentieth centuries.

These diaries, of course, represent a biased view of events. Indeed, Klotz was a highly opinionated man, who was not afraid to let his views be known. Klotz's diaries are a reflection of the fact that he was confident of his abilities, professional expertise and social standing. As well, as is the case in human experience, views and opinions change and become ingrained as a person grows older. The tolerant, hopeful glow of youth fades and is replaced by the uncompromising harshness of reality. Klotz's personal evolution from a firm belief

25 Magali Sarfatti Larson, The Rise of Professionalism: A Sociological Analysis, (Berkeley: University of California Press, 1977).

in merit-based employment practices to participation in the Canadian system based on patronage and seniority, is an example of this. Klotz came to accept the status quo in the federal civil service - he complained, was bitter about it and tried to change things, but he did not seek other employment.

Klotz cannot be criticized for expressing his ideas, or for offering a one-sided view of events. His diaries are just that, one man's record of his experience and ideas. The diaries were not written as historical logs, which in any case would be biased as well. The diaries were simply written to be read. This is made clear by the fact that people and places are always carefully identified, and current job titles are frequently given. As well, Klotz refers to past experiences, and for information, notes the dates and page numbers of the pertinent entries.

Otto Julius Klotz's diaries and other papers make up the best existing record of the life of a surveyor, Department of the Interior employee, and later, founding employee of the Dominion Observatory. None of Klotz's contemporaries left personal papers or records of any significance. Colonel J.S. Dennis, who became Surveyor General, did leave papers behind, but these deal largely with the Fenian Raids of 1866. Often the events and circumstances Klotz discusses in his diaries are not the type of information kept in government records. As well, many of the records of the Department of the Interior have been discarded over the years, so some information cannot be verified. Klotz's diaries do illustrate in clear detail the working of the system of clientelism and patronage in the federal civil service. A reader gets a clear sense of the jealousies, resentments and bitterness that are the inevitable result of unfair competition for employment. While Klotz's descriptions of departmental infighting and lobbying for positions are one-sided, they certainly reveal the types of struggles that were ongoing. Clearly, all of Klotz's opinions and descriptions of people cannot be accepted as facts, but they are indicative of the effects of constant and

intense competition between employees. While anyone utilizing diaries as an historical source must remember and make allowances for the biased view they contain, this does not negate their value.

"I now strike out for CIVIL ENGINEERING."

Otto Julius Klotz¹

CHAPTER 2

Early Life and Education (1852 - 1872)

Otto Julius Klotz was born on March 31, 1852, in Preston, Canada West. He was the sixth of seven children born to Otto Klotz and his wife Elizabeth (nee Wilhelm). Klotz senior was a well-known, respected member of the local community who had emigrated from Germany in 1837. His wife, a native of Berlin (now Kitchener), Canada West, was a member of an established family in that community. Otto Klotz senior operated various businesses during his lifetime, but his main business activities were those of wine importer and hotelier. Klotz was appointed to a number of government positions over the years, but he was perhaps best known and most influential in Waterloo County as a result of long service to the community's educational system. Klotz senior first served as a local school trustee in 1839 and continued in various roles until shortly before his death in 1893. He had served as local Superintendent of Public Instruction from 1854 until 1872 and was a member of Waterloo County's Board of Public Instruction.² In addition to this appointed service,

1 Otto Julius Klotz, "Diaries," January 12, 1869, MG30B13, National Archives of Canada. [All subsequent references to this work will be cited as "Klotz Diaries" followed by the date.]

2 Jesse E. Middleton and Fred Landon, The Province of Ontario: A History, 1615-1927, (Toronto: Dominion Publishing Co., 1927-1928), vol. III, pp. 171-172.

Klotz senior was an elder in the Lutheran church, a Mason and a founding member who also served as president of the Mechanics' Institute of Preston

The culture of clientelism that permeated Canada West was not a monolithic system "These relationships are conditioned by the custom of the community and the character of the economy . . . they are personal, face to face and reinforced by other ties, such as common religion or ethnicity."³ Ethnicity was an important part of community life in Waterloo County. The 1871 census revealed that 70.38% of the residents of the village of Preston and 54.78% of Waterloo County residents were of German descent, making it the largest concentration of Germans in Ontario.⁴ There were significant communities of Lutheran, Catholic and Mennonite Germans. As Lutherans, the Klotz family enjoyed closer ties with the Mennonite community than Catholics may have done, including Jacob Shantz, who was very active in encouraging further immigration to Canada. Shantz and Klotz's older brother, Jacob, recommended Otto Julius Klotz for his first federal employment contract. Klotz's political patron, Hugo Kranz, who later supported his applications for employment as a land surveyor, was also German and was related to Klotz by marriage. Klotz's ethnic and familial ties were the foundation of a number of his clientelist relationships.

The six Klotz children who grew to adulthood were well connected within their community and were able to enjoy success in their business and community lives. Two brothers were businessmen, one a dentist, and one a teacher (although he died in the early 1870s). A sister, Dorothea, married a doctor, while the other sister remained unmarried. Jacob, the eldest, was president of the Canadian Office and School Furniture Company. His

3 S.J.R. Noel, Patrons, Clients, Brokers: Ontario Society and Politics, 1791-1896, (Toronto: University of Toronto Press, 1990), p. 14.

4 Allan William Junker, "Otto Klotz and the Implementation of Education Policy in Waterloo County, 1846-1871," Unpublished Cognate Essay, Wilfrid Laurier University, 1987, p. 16.

father's connections to the educational community would have proved invaluable in assisting his son to pursue this business. Jacob also served as the mayor of Preston in the early 1900s. For young Otto, however, it was his elder brother's term as Canada's Commissioner of Immigration for Germany from 1872 to 1880 that helped him win the appointment to his first contract with the federal civil service.

Otto Julius Klotz would have had a variety of career options open to him as he grew up since he was not limited by his family's financial status. He was not, however, interested in business. Klotz only considered careers with rigorous educational requirements, usually in the field of science. He was highly intelligent and, as a boy, well-used to achieving excellence in his academic endeavours. In 1865, he obtained the county scholarship in the public examination at Berlin. In 1866, he won the scholarship for free tuition at the Galt Grammar School.⁵ Klotz's diary, begun August 13, 1866, is filled with commentary about what he studied at school, tests taken and his achievements. In fact, the first two years of diary entries are made up almost entirely of comments about events at schools. Klotz would record entries such as "Missed nothing" or "Missed History questions," or whatever the subject of study had been. On several occasions Klotz detailed scholastic competitions and prizes he won.⁶ Achievement at school was very important to the young student.

On July 8, 1867, Klotz recorded in his diary "I've a grand notion to become a DOCTOR."⁷ In January 1868, the young man noted that he had discussed the possibility of becoming either a doctor or a lawyer, and his father was "telling me the advantages and disadvantages on both sides."⁸ Klotz's early interest in medicine may have been the result of being exposed to medical practice from a young age - his eldest sister, Dorothea, married

5 "Otto Julius Klotz," Waterloo Historical Society, 1914, 2:50.

6 Klotz Diaries, December 19, 1867 and December 23, 1868.

7 Klotz Diaries, July 8, 1867.

Dr. Rudolf Mylius in October 1861. This marriage produced what would prove to be a valuable kin relationship since Mylius was the cousin of Hugo Kranz, who would become Berlin's Member of Parliament during the 1870s. Young Otto formed a very close relationship with his brother-in-law who, in addition to being a physician, was "an inventor with a particular interest in chemistry and was a recognized authority on the subject of botany."⁹ Mylius was a man of varied interests, and through him Otto was exposed to a variety of scientific subjects and methods. Klotz learned to share his brother-in-law's wide range of interests, and these continued and expanded throughout his adult life.

Sometime during 1868 young O.J. Klotz's interests shifted, for in early 1869 he recorded that:

January 11: Tonight I spoke with father about becoming a Landsurveyor [sic] and Civil Engineer. He said "I have nothing to say against and do not wish to urge you to another business, for I have had the bitter experience of that myself being urged not to learn 'Captain of a Ship'." But he said whatever you do learn, learn thorough.

January 12: No more Latin. No more Greek. No more scolds to make me squeak. I now strike out for CIVIL ENGINEERING.¹⁰

Klotz's sudden interest in civil engineering is not as easy to explain as his interest in medicine. The young man never discussed the reasons for his career choice in his diary, and did not allude to them at any time in the future. Land surveyors who worked in unsettled, wilderness areas were, by definition, adventurous men. They worked in rugged conditions, far from even rural settlement. Their function was similar, especially perhaps in a teenager's mind, to that of an explorer. In addition, new territories were perceived as areas with a great

8 Klotz Diaries, January 30, 1869.

9 "Dr. Rudolf Mylius," Berlin News Record, Monday, October 6, 1902.

10 Klotz Diaries, January 11-12, 1869.

potential for scientific discovery as well as sites for profitable land and resource speculation. By the 1860s, the Hudson's Bay Company lands, which Canadians had once considered an "unknown waste land," had come to be accepted as a "necessary extension of [Canada's] own territory"¹¹ Young Otto Klotz's focused interest in and continued efforts to be employed in the western territories is, therefore, not surprising. Klotz may also have become interested in surveying as a result of his father's role as the government-appointed land conveyancer for Preston. In this role, Klotz senior completed the legal documentation required to perform the transfer of land from one owner to another. Klotz senior also had some expertise in the surveying field, as in 1869 he was able to begin giving his son drafting lessons. It was also arranged for father and son to go surveying with J. Pollock, PLS (Provincial Land Surveyor) of Preston.¹² Otto Klotz senior was a very supportive father, willing to help his son pursue the career of his choice.

On September 22, 1869, Klotz travelled to Toronto to complete his matriculation. These examinations took place at University College of Toronto between September 24th and October 1st. Examinations were conducted daily and Klotz placed first in Class I Mathematics, Classics and Class II English; second in Class I Chemistry and third in Class III French. The result of this achievement was being awarded the university's scholarship in medicine for 1869.¹³ This scholarship, worth \$120, would cover a significant portion of his first year's expenses. Fees were \$10 for the year's lectures¹⁴ and Klotz was paying \$4 per week for lodging and food. It is interesting to note that he considered this charge

11 Suzanne Zeller, Inventing Canada: Early Victorian Science and the Idea of a Transcontinental Nation, (Toronto: University of Toronto Press, 1987), p. 271.

12 Klotz Diaries, December 17, 1869.

13 University of Toronto: Class and Prize Lists, 1870, (Toronto: Henry Rowsell, 1871), pages unnumbered.

14 University College: Calendar for 1870-71, (Toronto: University College, 1870),

excessive and planned to find other accommodation.¹⁵ Based on these figures, the cost of attending university for one year was approximately \$150, with textbooks extra.

On October 14, 1869, Klotz was back in Toronto and paid his entrance fee at University College. After less than one week, he became disenchanted with the school, recording "I am not well pleased with my studies, because I have not enough and those which I have are too dry."¹⁶ The cause of Klotz's dissatisfaction was the inadequacy of civil engineering instruction at the university. Not only was there no professor of civil engineering, but no first- or second-year specialized courses could be offered, because no member of the teaching staff was qualified to give instruction in civil engineering subjects. "Students had to rely on the prescribed texts and such instruction in engineering technology as they could obtain outside the university."¹⁷ In early November Klotz noted, "I am reading up some of my branches that are not taught in the University"¹⁸ in an effort to cover material he needed to learn. This method would not have been very satisfactory for learning at the university level, especially for a student who was used to and expected to maintain high achievement levels. The university staff at Toronto were very aware of the inadequacy of the civil engineering program. In 1869, in an effort to address some of the concerns, the university petitioned the Ontario Legislature to establish a School of Mines and Mining Engineering and a Museum of Practical Geology and Mineralogy, which opened in 1871.¹⁹ These developments, however, came too late to be of any benefit to Otto Julius Klotz

p. 54

15 Klotz Diaries, October 1, 1869

16 Klotz Diaries, October 20, 1869.

17 Clarence Richard Young, Early Engineering Education at Toronto, 1851-1919, (Toronto: University of Toronto Press, 1958), p. 18.

18 Klotz Diaries, November 3, 1869.

19 Young, Early Engineering Education, p. 19

While Klotz did not mention concerns with the method of teaching civil engineering before the commencement of classes at University College, it is likely that he was aware of the status of the program at the school. Toronto was, in fact, not unusual in this regard. McGill University had instituted civil engineering training in 1857, but it was cancelled in 1863.²⁰ The program was suspended "owing to the temporary embarrassments of the university."²¹ The program was not reinstituted until 1872. Queen's University did not offer training in civil engineering during this period. Only training in the arts and medicine were available until 1892, when a Faculty of Applied Science and School of Mining and Agriculture were created.²² Otto Julius Klotz was left few choices as to where to obtain practical, valuable training in his chosen field of study.

Klotz wasted little time in Toronto. His decision to leave was quickly made, and on November 17, 1869, he requested that his initiation fee be returned. On November 24th, after spending little more than a month at the University of Toronto, Klotz returned to Preston to await the beginning of the next semester when he would attend the University of Michigan. In spite of the short time he spent at the University of Toronto, Klotz considered himself to be an alumnus throughout his life. He was a member of the Alumni Association. He received their newsletters and attended alumni events. In the acceptance speech for the honorary doctorate awarded to him by the University of Toronto in 1904, Klotz referred nostalgically to the time spent at the institution.²³ Klotz clearly realized the importance in his business

20 Stanley Brice Frost, McGill University for the Advancement of Learning, (Montreal: McGill-Queen's University Press, 1980), vol. 1, p. 188.

21 Hugh MacLennan, editor, McGill: The Story of a University, (London: George Allen and Unwin, 1960), p. 61.

22 Hilda Neatby, Queen's University, (Montreal: McGill-Queen's University Press, 1978), vol. 1, p. 218.

23 Otto Julius Klotz, "Notes" for LL.D. acceptance speech, undated, MG30B13, vol. 5, file 9, National Archives of Canada.

and social circle of being a member of the exclusive group of University of Toronto alumni. In this period when social ties were vital to gaining government appointments, being an alumnus was a valuable link to Canadians in positions of influence and authority. Klotz very astutely took advantage of every tool at his disposal in the quest for government employment.

Klotz's choice to change educational institutions reveals a number of things. First, the need for money was not a factor in Klotz's desire to win a scholarship to University College in Toronto. Klotz simply enjoyed and wanted to win the competition, since he easily abandoned the scholarship and school. Attendance at the University of Michigan was a far more expensive educational choice, but one his parents were obviously prepared to pay for, since their son never worked steadily, either in Preston during summers, or while in Ann Arbor. Klotz's diaries reveal he did not perform wage work, other than occasionally producing German-to-English translations for professors and fellow students.

Several factors probably influenced Klotz to choose the University of Michigan. Ann Arbor, where the university was located, was less than a day's train trip from Preston. The community also had a significant German population.²⁴ Furthermore, two acquaintances, Simon Herres and August Kaiser, attended the American university.²⁵ After completing medical training at the University of Michigan in 1871, Kaiser emigrated to Detroit.²⁶ Herres studied law and became a barrister at the University of Michigan.²⁷ Of the three students, only Otto Klotz returned to live in Canada.

24 Howard H. Peckham, University of Michigan, (Ann Arbor: University of Michigan Press, 1967), pp. 40-41, 46.

25 E.F. Donohoe, "St. Jerome's College," Waterloo Historical Society, 1940, 28:105

26 Dr. A. Campbell, "The First Physicians in Waterloo County," Waterloo Historical Society, 1987, 75:96-97.

27 Donohoe, "St. Jerome's College," 105

The University of Michigan was a well-known institution. Following the American Civil War, it became the largest university in the United States. The university's student body was made up of people from a variety of backgrounds. In the 1866 - 1867 school year, of 837 students, two-thirds were from other states in the Union, forty-one were Canadians and four were from other countries.²⁸ The university's founders had based the school on the Prussian system and it was the first American university to adopt and implement the German research ideal.²⁹ The German research ideal emphasized practical learning; the belief was that students needed to develop new ideas and learn through experimentation. The traditional university approach, on the other hand, involved the memorization and learning by rote of required material. The Prussian educational model had been popularized and was increasingly adopted at both the grammar school and university levels in Canada and the United States in this period. This model, it has been noted, was also more suited to the American idea that the goal of popular education was to 'educate the electorate and reinforce democracy.'³⁰ This goal was at variance with the traditional view that "colleges were for perfecting an intellectual elite."³¹

Most importantly for Otto Julius Klotz, the University of Michigan had offered a full four-year civil engineering program since 1860.³² The "first two and one-half years of this course are identical to the first two and one-half years of the Scientific course, and are intended to lay a broad and substantial foundation of general culture, both scientific and

28 Peckham, University of Michigan, p. 57.

29 Peckham, University of Michigan, pp. 13, 32, 35.

30 Peckham, University of Michigan, p. 23.

31 Peckham, University of Michigan, p. 23.

32 Peckham, University of Michigan, p. 43.

literary."³³ The specialized courses offered in civil engineering were far superior to what was available at the University of Toronto. The chart below lists the syllabus for each university

Table 1. Comparison of Civil Engineering Curricula 1870 - 1871		
Year	University of Toronto (2-year program)	University of Michigan (4-year program)
Freshman - General Year I	no corresponding year	History French Mathematics English Botany
Sophomore - General Year II	no corresponding year	Surveying Geometric Drawing French Mathematics Essays Geometry History English Literature

33 University of Michigan Catalogue, 1870-71, (Ann Arbor: University of Michigan, 1871), p. 56.

Table 1. Comparison of Civil Engineering Curricula 1870 - 1871		
Year	University of Toronto (2-year program)	University of Michigan (4-year program)
Junior - Specialized Year I	Euclid Statics & Dynamics Astronomy English French Chemistry & Chemical Physics Elementary Mineralogy & Geology	History Perspective Drawing Physics Calculus Speeches Lectures on Machinery Machine Drawing Analytical Mechanics Chemistry & Mineralogy Astronomy
Senior - Specialized Year II	Hydrostatics Optics Acoustics Applied Chemistry Mineralogy & Geology	Geology Lectures on Engineering Geodesy & Topography Higher Astronomy Lectures on Machinery Machine Drawing Political Economy Electives (2)

(*Sources: University College Calendar for 1870-71, (Toronto: University College, 1870), pp. 18-19; and University of Michigan Catalogue, 1870-71, p. 56.)

The University of Michigan was at the forefront of advancing academic standards. Traditionally, for example, masters degrees, awarded on an honorary basis, were presented at the university. This changed when two professors became the first to receive "earned" masters degrees based on "a graduate program of study and examination."³⁴ DeVolson Wood, professor of civil engineering, who has been described as the engineering department's "crusader and great teacher,"³⁵ was one recipient. James C. Watson, professor of astronomy, who built "a distinguished reputation in his field by discovering new asteroids,"³⁶ was the other. Both of these men, who practised their belief that a position, even that of university professor, should be earned, were Klotz's professors. Klotz described Watson as "the jolliest of Professors, full of jokes, but everything in its place"³⁷. The philosophy and ideals of both men naturally formed a part of their teaching, and Klotz and other students were indoctrinated to this perception of achievement.

The University of Michigan's civil engineering and astronomy programs were both highly regarded. In the 1850s the university's observatory was considered one of the three best in the country.³⁸ Astronomy was an area of study that would be one of Klotz's great loves and his second career in the early twentieth century. Klotz received his education from an institution offering some of the best academic training available in North America. Klotz was well-prepared in Michigan and developed the technical expertise required of a land surveyor, civil engineer and federal civil servant.

34 Peckham, University of Michigan, p. 43.

35 Peckham, University of Michigan, p. 37.

36 Peckham, University of Michigan, p. 56.

37 Klotz Diaries, May 18, 1870.

38 Peckham, University of Michigan, p. 37.

While Ann Arbor was a relatively short distance from Preston, the cost of education was very different from that in Canada, and no scholarship was available at the University of Michigan. Klotz recorded his initial fee was \$35 at Ann Arbor,³⁹ as compared with the \$10 he had paid in Toronto. On his graduation, Klotz recorded that his degree had cost him \$1800 (U S.),⁴⁰ more than five times what it would have cost to attend the two-year program at the University of Toronto. The school year at Michigan was divided into two terms. The first semester ran from October 1st to the beginning of February, and the second from early February until late June. Klotz commenced his studies in the second semester of the 1869-1870 school year. He was granted entrance at a combination of the freshman and sophomore levels,⁴¹ and was allowed to complete that year's studies within the single term. He would start the Fall 1870 school year as a junior.

On May 18, 1870, Klotz made his first visit to the university's observatory with half of his Junior class in astronomy. Klotz was intrigued by the subject, recording "I could sit whole nights and admire these phenomena. I think this study does the most honor to man."⁴² He was so pleased with this new interest that he returned to the observatory the next night with the other half of his astronomy class. Despite his interest in astronomy and liking for Professor Watson, it was Professor DeVolson Wood who became Klotz's advisor and mentor. Wood had tested Klotz prior to his acceptance at the university. He also recommended a special course of study for Klotz to pursue during the summer break in 1870.⁴³

39 Klotz Diaries, April 18, 1870.

40 "Private Circular to the Class of 1872, of the University of Michigan" inserted in Klotz Diaries, vol. 1, book 2.

41 Klotz Diaries, February 9, 1870.

42 Klotz Diaries, May 18, 1870.

43 Klotz Diaries, June 23, 1870.

During his second and third years at Michigan, Klotz visited Wood at his home, and often did German-to-English translations for him. In 1872, following his graduation, Klotz visited Wood to get advice on employment prospects.⁴⁴ The close relationship between teacher and student appears to have ended in 1872, when Wood accepted a post at the Stevens Institute of Technology in New Jersey.⁴⁵ The two may have maintained a correspondence over the years, however the Klotz Papers contain no letters from Wood and Klotz makes no reference to such correspondence in his diary.

During the summer of 1870, Klotz had his first real experience in surveying when he travelled with surveyor J. Pollock to Acton. The trip was a short one, lasting from July 29th to August 3rd, and Klotz was not a paid member of the party. Klotz returned to school in the fall of 1871 as a Junior and his course of study now included surveying, with field work. Unfortunately, Klotz became very ill in mid-October. Klotz does not explicitly state the diagnosis, but his symptoms included fever, severe headache and chills. He was too ill to travel until November 15th, when Klotz returned to Preston to recuperate. During the month-long illness, his weight had dropped from 160 to 140 pounds.⁴⁶ Klotz was not able to return to classes until the following January. In spite of missing more than half of the first term, Klotz successfully passed the examinations and started the second semester courses on February 6, 1871.

Klotz spent the summer of 1871 surveying with J. Pollock and examining and classifying a box of one hundred minerals that he had brought home with him from the university. The senior year in Michigan was devoted to practical surveying experience. The civil engineering class surveyed the route for a railroad through the university grounds. In

44 Klotz Diaries, July 24, 1872.

45 Peckham, University of Michigan, p. 72.

46 Klotz Diaries, November 15, 1871.

addition, the design and drawing of various bridges was covered, as was more work in the observatory. Klotz's final year in university was highlighted by his becoming engaged to Marie Widenmann in March 1872. Marie was one of the daughters of the German consul to Michigan. The couple would marry on December 4, 1873. On June 26, 1872, Otto Julius Klotz graduated with a degree in Civil Engineering from the University of Michigan. On July 5th, he left for home to work and become established in his new life as a land surveyor and civil engineer.

The fact that Otto Julius Klotz was educated in the United States set him apart from other Canadians. This included the men he would later work with in the Department of the Interior who, if they had university educations at all, had received them in Canada or Europe. Klotz's personality was naturally inclined with a strong desire to achieve excellence, as displayed in his scholastic achievements. This trait was further emphasized by the education he received in the United States. Beyond this, however, attending an American educational institution probably had other effects on Klotz. His attitudes and expectations of himself and of society around him reflected the values and ideals Klotz had adopted.

While in the United States, Klotz absorbed much of the American social and political culture. He declared himself to be a Republican in politics.⁴⁷ Political discussions and philosophical debates were a regular part not only of class life, but also of students' social gatherings. Klotz's time at the University of Michigan also placed him in the vortex of the growth of the "middle class" and "professionalism." In the United States, the ideal of social mobility and a middle class meant that anyone could move up the social ladder if they possessed the knowledge, talent and drive. This pattern emulated events in England, where the growth of the middle class also served to blur the rigid lines between the elite and

47 "Private Circular to the Class of 1872," in Klotz Diaries.

lower classes. The middle class demanded increasing respect and access to higher levels of society, based on individual skills rather than on the accident of birth. The "vertical" vision of society, and an individual man's ability to control his social destiny placed emphasis on personal achievement. The focus of education in the United States was the development of self-discipline, personal knowledge and skill.⁴⁸ This outlook and focus on personal autonomy strengthened "the radical idea of the independent democrat — a self-governing individual exercising his trained judgment in open society."⁴⁹ Nowhere were these ideas more strongly held than in the United States.

The Canadian vision of society fit somewhere between the free-wheeling American social structure and the less flexible, traditional one of England. The clientelist foundations of central Canadian society meant that the right connections remained an important factor in career advancement, and many other aspects of life. The growth of the new middle class and professions started in Great Britain in the late 1850s⁵⁰ and in the United States after 1870.⁵¹ In Britain, by the 1870s "aristocratic patronage [was] almost abolished."⁵² Competitive civil service examinations had been instituted in 1854. It was hoped this would improve the quality of the civil service and colonial administration.⁵³ In Upper Canada, civil

48 Burton J. Bledstein, The Culture of Professionalism: The Middle Class and the Development of Higher Education in America, (New York: W. W. Norton & Co., 1976), p. 250.

49 Bledstein, Culture of Professionalism, p. 87.

50 Magali Sarfatti Larson, The Rise of Professionalism: A Sociological Analysis, (Berkeley: University of California Press, 1977), p. 5.

51 Bledstein, Culture of Professionalism, p. 80.

52 W. J. Reader, Professional Men: The Rise of the Professional Classes in Nineteenth-Century England, (New York: Basic Books, 1966), p. 146.

53 Reader, Professional Men, p. 87.

service examinations were in place but, in 1857, required only a simple pass.⁵⁴ Patronage was, and remained, the prime determinant of entry into the federal and provincial civil services. In Canada, the growth of the middle class and professions occurred for the most part after 1900, when industrialization started to expand rapidly.⁵⁵ However, the activities of Otto J. Klotz in the 1880s suggest that he had a clear vision of and was attempting to professionalize Canadian surveyors. It was the early efforts of Klotz and others who shared his goals who laid the foundations for changes that would occur in the future.

Klotz possessed an unusual mixture of ideas, some of which may have been contradictory and difficult for the young man to resolve. As the son of an established middle-class family and a member of the local "elite" of Preston, Klotz was well versed in the rules of clientelist society. He was used to the give and take of patronage and knew that this was an accepted part of doing business. Yet, his life from childhood had also been dedicated to the pursuit of scholastic excellence and knowledge. Klotz's American education meant that he was very aware of the idea of professionalism and the achievement of upward social mobility through expertise and skill. It was natural for young O.J. Klotz, fresh from academic pursuits and filled with new ideas and confidence in his abilities, to believe that he should be able to turn that knowledge and skill into a respectable social position.

Klotz had accepted much of what he learned in the United States and believed fervently that ability and expertise should be paramount in hiring practices. His diary frequently condemns the patronage basis for awarding federal government appointments. Yet, he remained prepared to work within the structure of Canadian politics and business.

54 J.E. Hodgetts, Pioneer Public Service, (Toronto: University of Toronto Press, 1955), p. 53.

55 Paul Axelrod, Making a Middle Class: Student Life in English Canada During the Thirties, (Montreal and Kingston: McGill-Queen's University Press, 1990), p. 7.

Klotz tried to gain access to any connection available to him in his effort to gain employment with the Dominion government. While he did not approve of the practice, he was able to operate successfully within the framework of Canadian social politics

"My object in visiting him was to reconnoiter about a position."

Otto Julius Klotz¹

CHAPTER 3

Building A Career Base (1872 - 1879)

Following his return to Preston in 1872, Otto Klotz started to develop his professional career. He set up a private civil engineering practice in Preston. To fulfill the apprenticeship requirements for surveyors, he entered into a partnership agreement with M.C. Schofield, a Berlin land surveyor. Klotz completed the necessary examinations and was certified as a Provincial Land Surveyor in Ontario in 1876. In 1877, Klotz achieved the federal designation of Dominion Topographic Surveyor, the highest accreditation possible in Canada. Otto Klotz's university education placed him in a small group of surveyors, many of whom fulfilled the requirements through completing an apprenticeship only, rather than the combination of education and apprenticeship.

During this period, Klotz also worked to create a network of contacts who would be able to assist him in his quest for a government contract. Klotz attempted to find surveying work in northern Ontario and to gain knowledge and experience of the North West whenever possible. Klotz also travelled to Ottawa in order to promote himself to government officials. Possibly of most significance, Klotz was able to gain the support of a political patron, Hugo Kranz, the Member of Parliament for Waterloo North, who recommended Klotz for

1 Otto Julius Klotz, "Diaries," July 5, 1875, MG30B13, National Archives of Canada [All subsequent references to this work will be cited as "Klotz Diaries" followed by the date]

employment. Having this support was vital because patronage was an integral part of government hiring practices.

None of these efforts, however, guaranteed Otto Klotz a government surveying contract. When Canada gained title to Rupert's Land in 1869, government officials anticipated a massive influx of immigrants. The poor economic conditions experienced worldwide during the first half of the 1870s prevented the expected flow of newcomers. This meant that little surveying was conducted between 1873 and 1878 as land surveyed in 1871 and 1872 was more than enough to meet the needs of the few arriving immigrants. But in 1879, Klotz finally received his first government surveying contract. He had pursued the goal of working for the Dominion government in the North West for seven years before this success. Klotz's desire to survey in the North West was only the first "rung" on the career ladder he planned to climb. The survey, although of a vast territory, was to be definitely of limited duration. Klotz hoped to establish himself during this relatively short period of time of contract work and gain permanent status with the Dominion government in a scientific role.

After his return to Preston in July 1872, Klotz began to work towards accreditation as a land surveyor, first by Ontario, then by the Dominion government. Klotz completed the preliminary examination for Provincial Land Surveyors in early October, and signed a partnership agreement with M.C. Schofield, a Berlin surveyor, on October 28th.² Klotz completed the one-year term of apprenticeship required of university graduates in this way.³ In the spring of 1873 Klotz acted on the advice he received from Professor DeVolson Wood of the University of Michigan, which was that the young man look for work in northern Ontario. He travelled to Fort William (now Thunder Bay) in order to conduct a timber survey

2 Klotz Diaries, October 28, 1872.

3 John L. Ladell, They Left Their Mark: Surveyors and Their Role in the Settlement of Ontario, (Toronto: Durndum Press, 1993), p. 157.

for a Mr. Oliver, who held the mineral rights to a piece of land, and hoped to harvest timber from the land as well. On Klotz's arrival he was informed that the survey could not be conducted due to an Order-in-Council having been passed stipulating that timber surveys could not be conducted on mineral lands.⁴ The purpose of the Order-in-Council was to prevent speculators from purchasing a single right, such as mining rights, for sections of land and then exploiting other resources for which they had paid no fees. The disappointed Klotz inquired about the prospects of obtaining other work in the area, such as for the Hudson's Bay Company, and after receiving a negative response, he returned to Preston. It was important that Klotz try to gain experience of wilderness surveying and conditions in these parts of Canada in preparation for working for the Dominion government.

When Canada purchased the Hudson's Bay Company rights to Rupert's Land in 1869, the government expected a massive influx of new immigrants.⁵ In preparation for this, surveying crews were dispatched to the new territory starting in the summer season of 1869. Surveyors produced a Principal Meridian, which would provide the basis for extending surveys westward, and the International Boundary with the United States was re-surveyed. Due to the "disturbed state of affairs in that province [Manitoba]"⁶ no survey work was undertaken in 1870. Work began in earnest in 1871, and the work of 1869 had to be, for the most part, redone. Over this, and the subsequent two seasons, land, mostly in Manitoba, was surveyed and subdivided into settlement lots of 160 acres each.⁷ In 1871, twenty-one

4 Klotz Diaries, June 2 and 5, 1873.

5 Sessional Papers, "History and Theory of Dominion Lands Surveys," Annual Report of the Department of the Interior, 1892, Part VI, p. 1. [All subsequent references to this and other Annual Reports will be referred to as "ARDI" followed by the year, part and page number.]

6 ARDI, 1892, Part VI, p. 6.

7 ARDI, 1892, Part VI, pp. 6-9.

surveyors were employed; in 1872, forty-six, and in 1873, thirty-four surveyors worked in the North West. Unfortunately, the economic depression after 1873 resulted in reduced immigration to Canada, making the surveying of new territory unnecessary. Between 1874 and 1878, no more than twenty-one surveyors were employed by the Dominion government in any single year. In 1876, eighteen surveyors were employed in the North West, in 1877 only seventeen; and in 1878, twenty worked there.⁸ This left little opportunity for a young, inexperienced surveyor to obtain a contract.

O.J. Klotz observed this state of affairs and did what he could to improve his chances for successfully winning a government contract. He had tried to lay the groundwork for this goal in 1875 while he was in Winnipeg. Klotz had been engaged to act as escort and interpreter for 138 Russian Mennonites on their journey from Toronto to the Mennonite reserve near Winnipeg. The immigration had been arranged by Klotz's brother Jacob, who had been Canada's Commissioner of Immigration for Germany since 1872. Jacob Shantz, a Mennonite of Berlin, played a major role in promoting the event. In the spring of 1875, Otto Klotz paid a number of visits to Shantz before receiving his recommendation to act as escort for the group. This appointment was a federal government one, and was Klotz's first official employment with the Dominion government.⁹

While in Winnipeg, Klotz heard that Lindsay Russell (1839-1912), Assistant Surveyor General, was also there recuperating from a multiple fracture of the ankle. Klotz took advantage of the opportunity and on July 5, 1875, presented himself to the patient in order "to reconnoiter about a position." Russell may have been surprised by this uninvited guest,

8 ARDI, 1892, Part VI, pp. 9, 15-16, 19.

9 Klotz's personnel record lists that this year was used in the calculation of the death benefit to be paid to his widow in 1924. "Klotz, Otto Julius" (Personnel File), Civil Service Commission Records, RG-32, Box 435, Accession 1990-91/015, National Archives of Canada.

but Klotz records that Russell "livened up and took apparently a great interest in me" after Klotz's opening discussion of "scientific subjects." This first visit was cut short by the arrival of "an unscientific man (a preacher),"¹⁰ but Russell invited Klotz to return. The young man did, visiting on July 6th and again on the 12th. Klotz became familiar with the Assistant Surveyor General, hoping to impress Russell so that he would respond favourably to applications for surveying work when Klotz became fully qualified.

In January 1876, Klotz successfully completed the final examinations and became a certified Ontario Provincial Land Surveyor.¹¹ Klotz's next step was to attempt to secure a surveying contract from the Dominion government. Less than three weeks after receiving his Provincial Land Surveyor commission, Klotz travelled to Ottawa "to see what the prospects are for work in the North West this season."¹² Since he was not a certified Dominion Land Surveyor yet, Klotz must have hoped to work as an apprentice or assistant to a qualified surveyor. On arrival, Klotz checked in to the Russell House, "the headquarters of most Government representatives, civil service men and Government micawbers,"¹³ to which latter I belong."¹⁴ This shrewd choice of lodging meant that Klotz would be able to meet various government people in a social environment outside of business hours. Any opportunity Klotz had to make contacts, to become known, liked and respected, would be invaluable in securing a coveted government contract.

10 Klotz Diaries, July 5, 1875.

11 Klotz Diaries, January 3, 1876.

12 Klotz Diaries, January 24, 1876.

13 "A person perpetually idling and trusting that something good will turn up. . . character in Dickens's *David Copperfield*." *The Concise Oxford Dictionary*, Seventh Edition, (Toronto: Oxford University Press, 1989).

14 Klotz Diaries, January 24, 1876.

On January 26th, Klotz called at the Dominion Lands Department and met with Lindsay Russell. Klotz's hopes were dashed when Russell informed him that the geodetic survey Klotz had heard the government would conduct on the Peace River was not to proceed. Russell vaguely promised that Klotz "would not be forgotten"¹⁵ if work proceeded the following year. Unfortunately for Klotz, an increase in federal surveying activity did not occur until three years later, in 1879. The competition for available government positions was intense. Throughout this period, Klotz continued to apply for a government appointment each year and worked to improve his qualifications.

In November 1877, Klotz again travelled to Ottawa. The purpose of this trip was to complete the examinations for certification as a Dominion Land Surveyor. The Board of Examiners for Dominion Land Surveyors had been established in 1875 in order to ensure that only qualified men were designated land surveyors. In 1876, at the surveyors' request, the title was changed from Deputy Surveyor of Dominion Lands to Dominion Land Surveyor (DLS). At the same time the Surveyor General of Canada also recommended the creation of a higher designation, that of Dominion Topographic Surveyor (DTS), for those who completed examinations which required more extensive knowledge, abilities and excellence than the DLS title necessitated.¹⁶ Canada's land surveyors had been the first members of the civil service subjected to rigorous entrance requirements. The surveying of vast tracts of lands and the importance of settlement "was reflected in the early insistence on an efficient surveyors' branch."¹⁷ As the main employer of men with these technical skills, it was necessary for the government to "assume the initiative in administering and regulating the

15 Klotz Diaries, January 26, 1876.

16 Ladell, They Left Their Mark, p. 173.

17 J.E. Hodgetts, Pioneer Public Service, (Toronto: University of Toronto Press, 1955), p. 44.

profession."¹⁸ By taking this step, the government was involved in early efforts to professionalize Canada's land surveyors.

Professionalization can also be viewed as part of the process of state formation. The Canadian state bureaucracy had expanded as first the colonial and then Dominion government assumed new responsibilities. Immigration, emigration, the construction of major infrastructure projects such as canals and railroads, as well as industrial development, were some of the matters perceived as requiring direct state control and government intervention.¹⁹ The needs of the Canadian state, which represented those of the governing classes, were met by instituting systems of administration and bureaucracies to oversee westward expansion. The governing classes were made up of various business interests - such as manufacturers, mining and other resource industries, and those involved in railway construction. Many of the goals and interests of these various businesses were interdependent, and the development and growth of the Canadian nation was their goal. As Bruce Curtis notes relative to the development of the educational state in Canada West, "Members of the governing classes conceived, planned, struggled for and set out to build an educational state. It was a *project*, a set of conscious initiatives guided by clearly articulated goals."²⁰

This concept also applies to the nation's westward expansion to the Pacific. Canada's politicians organized the state to meet the needs of those groups with special interests in the West. The Department of the Interior was a large state structure created in 1873 to supervise and regulate that development. The Department determined and administered policy with

18 Hodgetts, Pioneer Public Service, p. 45.

19 Allan Greer and Ian Radforth, eds., Colonial Leviathan: State Formation in Mid-Nineteenth-Century Canada, (Toronto: University of Toronto Press, 1992), pp. 4-5.

20 Bruce Curtis, Building the Educational State: Canada West, 1836-1871, (London: Althouse Press, 1988), p. 14.

regards to Dominion Lands use, including settlement lands, water rights, school lands, timber licenses and permits, and mineral rights. The North-West Mounted Police provided law and order. The Indians and Indian Land Branch oversaw natives and their orderly resettlement into reservations and the administration of treaties. The Dominion Lands Branch was responsible for surveying and settlement matters. As the settlement of western Canada proceeded, the Department of the Interior expanded to meet the additional administrative requirements.

Within this context, the regulation and professionalization of land surveyors met the needs of the Canadian state. Accurate surveys would limit the number of disputes over land claims, and would aid in efficient railway construction and determining the potential for resource exploitation. Thus, land surveyors were organized by government administrators into a small group of technically qualified men. The same skills, apprenticeships, and examinations for certification were shared by land surveyors. This type of project has been described as a "totalizing project, representing people as members of a particular community."²¹ One by-product of this definition and regulation of land surveyors was the development of a degree of self-awareness. Over time, surveyors began to perceive themselves as a group, whose members shared legitimate interests and goals of their own. This culminated in federal land surveyors acting to found the Association of Dominion Land Surveyors (ADLS) in the early 1880s. Provincial land surveyors formed separate professional associations to represent their interests as well.

As members of the middle class, professionals earned their living by some skill they possessed. A professional's skill, however, was based on theoretical knowledge and expertise. Through the later nineteenth and early twentieth centuries, professional knowl-

21 Philip Corrigan and Derek Sayer, The Great Arch: English State Formation as Cultural Revolution, (London: Basil Blackwell, 1985), p. 4.

edge was increasingly based on specialized education. Nineteenth-century professional reformers pioneered efforts to create a "link between education and occupational privilege [which became] a widespread ideology of mobility through education in the twentieth."²² However, during what can be described as a proto-professional stage, few land surveyors possessed higher education. Those who had attended university or college were awarded higher status. Symbols are an important feature of a profession. Official certificates, accreditations, and university or college diplomas symbolize the authority of professionals.²³ For surveyors, the Dominion Topographic Surveyor designation coupled with a university degree were the premier badges of achievement.

This additional authority granted to university graduates was evident in certification requirements for land surveyors. From the 1870s, candidates had to serve three successive years as assistants to a qualified surveyor; surveyors qualified by provinces (which also had apprenticeship periods) had to serve six months before writing their exams; university or college graduates were required to apprentice for only one year.²⁴ Most surveyors fulfilled the requirements for land surveyors by one of the first two options since relatively few had university or college educations. In 1889, of 122 active members of the Ontario Provincial Land Surveyors Association, only nineteen, or roughly eighteen percent, possessed post-secondary training.²⁵ Surveyors with university educations were a small and elite group.

22 Magali Sarfatti Larson, "The Production of Expertise and the Constitution of Expert Power," The Authority of Experts, Thomas L. Haskell, ed., (Bloomington: Indiana University Press, 1984), p. 37.

23 Greenwood "Element of Professionalization," p. 17, and Bledstein, Culture of Professionalism, p. 95.

24 Don W. Thomson, Men and Meridians: The History of Surveying and Mapping in Canada, (Ottawa: Queen's Printer, 1967), vol.2, p. 79.

25 Ladell, They Left Their Mark, p. 196.

Klotz recorded that he “received a warm welcome from Lindsay Russell”²⁶ when they met at the DLS examination site in the fall of 1877. Klotz also met Edouard Deville (1849-1924), another candidate, who was to rise very rapidly in the Canadian civil service. Deville, a graduate of the Naval College at Brest, France, and a veteran of the French navy, had come to Canada in 1874 and had been appointed Astronomer and Inspector of Surveys in Quebec. In 1880 Deville first surveyed for the Dominion government. His career advanced rapidly, and in 1885 Deville was appointed Surveyor General of Canada.²⁷ Deville’s career illustrates that talented men, who possessed the right contacts and who were in the right place at the right time, could experience a very rapid rise in career status. Deville and Klotz shared a genial relationship, and during the 1880s Deville acted as patron and tried to promote Klotz’s career.

Klotz was one of eight surveyors to achieve the Dominion Topographic Surveyor designation in 1877. These were an elite group of surveyors; between 1876 and 1965, only thirty-two were awarded, most of them during the nineteenth century.²⁸ Nineteen Dominion Topographic Surveyors were alive in 1892.²⁹ W.F. King (1854-1914), who had worked with the Department of Dominion Lands since the early 1870s, had been the first to pass the Dominion Topographic Surveyor examination in 1876.³⁰ King would advance and, in 1886, become Chief Inspector of Surveys in the Surveys Branch of the Department of the Interior

26 Klotz Diaries, November 12, 1877.

27 “Edouard Deville,” Proceedings and Transactions of the Royal Society of Canada, 1925, Series 3, 19:VIII-XI.

28 Ladell, They Left Their Mark, p. 73.

29 ARDI, 1892, Part VI, pp. 93-97.

30 J.S. Plaskett, “W.F. King - an Obituary Notice,” Journal of the Royal Astronomical Society of Canada, 1916, 10:267-268.

A graduate of the University of Toronto, King had matriculated in 1868 at the same time as Klotz.³¹ He and Klotz were to work closely together, since they both had training and experience in astronomy beyond that required of surveyors.

Unfortunately, few surveyors were hired for the 1878 surveying season, and even though Klotz had achieved the highest surveying qualification in Canada, he had to wait until 1879 to be offered employment. After completion of his qualifying exams, Klotz kept himself busy in Preston with his civil engineering and surveying business. In 1878 he escorted a second group of Russian Mennonites to Manitoba. In the spring of 1879 Klotz was again waiting anxiously to hear if he would be offered employment in the North West. On April 26th, he commented in detail about the difficulties:

My mind is at present in a state of libration,³² by the uncertainty of my obtaining government employment this season.

It is to be lamented that government situations are not granted according to real merit of the employees; as it is they are granted according to the merit of such and such an M.P. who applies for some friend of his and according to the brass and pertinacity with which the M.P. forwards his claim.

Mr. Kranz, M.P. [of Berlin] writes me that there are about 2000 applications in for engineers on the Canada Pacific, and only some 50 are needed. I am satisfied that if all government applicants were to take up arms in time of war they could rout the combined forces of the world.³³

With so many applicants in the competition, having the right contacts became very important in obtaining government work. Only thirty-two surveyors were employed in

31 University of Toronto: Class and Prize Lists, 1870, (Toronto: Henry Rowsell, 1871), pages unnumbered.

32 "Oscillate like balance-beam; be poised, balance; sway, quiver." Concise Oxford Dictionary.

33 Klotz Diaries, April 26, 1879.

1879,³⁴ a small number compared to the many who applied for posts. The 1872 Dominion Lands Act included provisions for the certification of land surveyors and founded the Board of Examiners to administer the examinations. Surveyors who had qualified provincially were entitled to be "blanketed in" as Deputy Surveyors of Dominion Land without completing any formal exams. At least 436 men took advantage of this grandfather clause.³⁵ The Board of Examiners conducted its first examinations in 1875, but unfortunately, the Annual Report of the Department of the Interior did not report the number of surveyors certified until 1880, when the Report for 1879 was issued. Between 1879 and 1882, sixty-four surveyors were certified by the Board;³⁶ the information was not reported in 1883; and thirty more men were certified in 1884.³⁷ If it is assumed that at least as many men completed the examinations in the years 1875 to 1878, it would mean that approximately 510 surveyors were qualified Dominion Land or Topographic surveyors when Otto Klotz was offered his first surveying contract by the Dominion government. It was, therefore, a considerable achievement that Klotz was one of those hired in 1879.

Klotz's patron in his efforts to win a government post was Hugo Kranz, the Liberal-Conservative Member of Parliament for Waterloo North from 1878 to 1887. Kranz was also the president of the Economical Mutual Fire Insurance Company of Berlin.³⁸ Kranz and Klotz had several ties. On the most basic level, both were German Canadians and from the same county. More importantly, Hugo Kranz and Klotz's brother-in-law, Dr. Rudolf

34 ARDI, 1892, Part VI, p. 20.

35 Thomson, Men and Meridians, vol. 2, p. 79.

36 In 1879, thirteen men completed the examinations, ARDI, 1880, Part II, p. 7; in 1880, thirty men were certified, ARDI, 1881, Part II, p. 6; and in 1881, twenty-one passed the exams, ARDI, 1882, Part II, p. 5.

37 ARDI, 1885, Part II, p. 4.

38 Jesse E. Middleton and Fred Landon, The Province of Ontario: A History, 1615-1927, (Toronto: Dominion Publishing Co., 1927-1928) vol. III, p. 215.

Mylius, were first cousins. In return for Kranz's support, Klotz was able to provide his patron with firsthand information on the North West, its land and prospects. Klotz recorded in his diary that he met with Kranz soon after returning home from each season's work and provided him with details of the land Klotz had surveyed or travelled through that year. The details Klotz provided to his patron may be viewed as a payment for Kranz's support of Klotz's applications for work. While Klotz's comments referred to earlier reveal his distaste for the practice, he was also realistic and willing to use his base of support - the patrons he had from kin, ethnic and other relationships - and was prepared to offer that person a payment for his patronage, in order to gain the government position Klotz wanted.

Two sets of letters of application and reference submitted to the Department of the Interior by Klotz and Kranz are held by the National Archives of Canada. Records of the Department are quite fragmentary; many files have been discarded, with only a sampling of files dealing with various subjects and particular individuals surviving. Each surveyor's correspondence was filed together, so Otto Klotz's files contain all letters written to him and from him in a given year, as well as any departmental memos regarding him. The correspondence files, however, do not contain Klotz's final surveying reports, or submitted accounts and requests for payment. These records were kept in separate departmental files. Many of the surviving surveyors' diaries and reports have been acceded to various provincial archives. Some are held in the National Archives, in the records of the Department of the Interior or the Surveys and Mapping Branch. Presumably the financial records were held by the Finance Department.

Klotz's correspondence with the Department of the Interior for 1880 and 1884 are the only two years that remain in the National Archives of Canada. Both files contain Klotz's application for work, which is a brief letter stating his desire for employment on the Dominion Lands surveys. In addition, each file also contains a letter from Hugo Kranz.

These letters illustrate the patronage at work in the hiring of government contract surveyors. Certainly Klotz was highly qualified for the position he was applying for; he was one of only nine Dominion Topographic Surveyors in the nation. It appears, however, that this technical expertise alone was not sufficient to earn him a surveying contract.

The 1880 letter of recommendation, regarding Klotz's second year of employment with the government, was addressed to the Minister of the Interior, Sir John A. Macdonald, and simply stated: "We hereby beg to recommend Mr. Otto J. Klotz to be employed on the Survey of lands in the Northwest Territory."³⁹ This letter is signed by Hugo Kranz and five other Members of Parliament. These others were Lachlan McCallum representing Monck, Joseph Royal of Provencher, Samuel Merner from Waterloo South, William Wallace of Norfolk South, and a final signator, who may have been William Elliott, representing Peel,⁴⁰ but this signature is not clearly legible. All of the signees were Conservative backbenchers, none was a member of cabinet at the time the letter of recommendation was written. Hugo Kranz must have gone to some lengths to obtain the signatures of support from the five Members of Parliament. Kranz was a member of small significance; however, as a successful businessman, he may have gained some influence.

Joseph Royal was an influential Member of Parliament from Winnipeg. Royal, a lawyer, had defended the two men charged with the murder of Thomas Scott following the 1869 rebellion. In addition, Royal was a provincial representative from 1870 to 1879, during which time he served as Provincial Secretary, Attorney General and Minister of Public Works. In 1879, he was elected to the federal parliament. Royal was also instrumental in

39 Hugo Kranz, Letter to the Minister of the Interior, February 24, 1880, Department of the Interior Records, RG-15, Series D-II-1, vol. 232, file 3129, letter 22471, National Archives of Canada.

40 House of Commons, Debates, "List of Members," Ottawa, 1880, vol. 8, pp. vi-viii.

the creation of the University of Manitoba. Royal served as a federal M.P. until he was appointed Lieutenant-Governor of the North West Territories in 1888.⁴¹ Joseph Royal was a man with considerable influence in Canada, and appears to have been the most significant supporter of Otto Klotz's application for employment. It may also be that the support of a western Canadian was desirable in such letters of recommendation. In any case, Royal's motivation for supporting Klotz's application is not clear.

Samuel Merner, a fellow German from New Hamburg, Ontario, had connections to Otto Klotz senior through membership in the Waterloo County school board. This may be a reason that prompted Merner to support Klotz junior.⁴² Merner was appointed a Senator in 1887, an indication of his service and influence within government circles. William Wallace, an M.P. from 1878 to 1882, was "an interesting but not an important federal politician."⁴³ Nevertheless, in 1885 he gained the support of thirty-four Members of Parliament in his unsuccessful application to be appointed Dominion Land Commissioner at Winnipeg. Like Merner, Wallace was a member of his local school board, on which he had served for over forty years. Wallace's knowledge of and possible acquaintance with Klotz senior may also have been a factor in his electing to support Klotz junior. No information was located on either Lachlan McCallum or William Elliott. This may be an indication that these two men were of least significance in their support of Klotz.

Klotz's letter of recommendation for 1884 is very similar textually to that of 1880:

-
- 41 Henry James Morgan, The Canadian Men and Women of the Time, (Toronto: William Briggs, 1898), pp. 894-895.
- 42 Rev. William Cochrane, The Canadian Album: Men of Canada, (Brantford: Bradley, Garretson and Company, 1893), vol. II, p. 364.
- 43 Donald Swainson, "Samuel Merner," Dictionary of Canadian Biography, George W. Brown, general editor, (Toronto: University of Toronto Press, 1966), vol. 11, p. 906.

We beg to recommend the re-engagement of Otto J Klotz, D T S on the Dominion Land Surveys. He has been for a series of years in the service of the Government and his professional attainments are such, as to merit such recognition.⁴⁴

This letter, however, has eight signatures of support in addition to Hugo Kranz's. It was written in Klotz's sixth year working for the Dominion government and after he had received promotions in the type of surveys he performed. The presence of more signatures on the letter may be because Klotz was lobbying to be assigned to perform an important exploratory survey and stronger support from politicians was required in order to win the assignment. It may also, however, be a result of the apparent reduced level of influence possessed by the signators of the letter. In addition to Kranz, the 1884 letter was signed by Thomas Robertson, the member from Hamilton; Richard Tyrwhitt of Simcoe South, James Beaty, junior, from Toronto West; John McDougald representing Pictou, Timothy Coughlin of Middlesex North; D.W. Gordon the member from Vancouver Island, Lewis Wigle from Essex South, and one other signature, which is indecipherable.⁴⁵

Thomas Robertson, an M.P. from 1878 until 1887, was an avid supporter of the Conservative National Policy. Robertson was appointed as a Justice of the High Court of Justice of Ontario in 1887.⁴⁶ He was a colleague of fellow lawyer and M P , Francis E Kilvert, who also represented Hamilton from 1878 until 1887.⁴⁷ Kilvert had participated in a land grant application with Kranz and Klotz in 1880. It seems likely that Kilvert was

44 Hugo Kranz, Letter to Minister of the Interior, February 22, 1884, Surveys and Mapping Branch Records, RG-88, vol. 301, file 0796, letter 13744, National Archives of Canada.

45 House of Commons, Debates, "List of Members," Ottawa, 1884, pp iv-vi.

46 G M. Rose, Cyclopaedia of Canadian Biography. Being Chiefly Men of the Time. (Toronto: Rose Publishing Company, 1886), pp 799-800

47 Morgan, Men and Women of the Time, p. 534

responsible for garnering Robertson's support for Klotz. It is curious, however, that Kilvert was not a signator of the letter of recommendation given that he was closely involved with Kranz and Klotz. James Beaty junior was a lawyer and former Mayor of Toronto.⁴⁸ John MacDougald had served in the House of Commons since 1881, and although he served until 1896 when he was appointed Commissioner of Customs, his source of influence in 1884 is not clear.⁴⁹ Lieutenant-Colonel Richard Tyrwhitt was a respected army officer who had been a member of parliament since 1878.⁵⁰ No information on the other three signators was located, which again may be indicative of their relative insignificance in Canadian affairs.

It is likely that similar letters accompanied Klotz's earlier applications for employment with the Department each year. Whatever his qualifications, the support of a member of parliament remained necessary, even after several seasons' experience. In 1884, Klotz hoped to be appointed to perform an exploratory survey to Hudson Bay and this may be why there were so many signatures on the letter of recommendation. It is, unfortunately, not possible to know whether this type of letter of recommendation was submitted each year until 1892, when Klotz became a full-time government employee.

Klotz finally got confirmation of his long-awaited opportunity to work as a surveyor on June 25, 1879, when he received instructions and a contract agreement from the Dominion government. Klotz was to work on the project known as the Special Survey. Initiated in 1875 by an Order-in-Council, the Special Survey included territory from Manitoba to the Peace River, which runs to Lake Athabasca ^{from} the Rocky Mountains. There were three main goals of the Special Survey. The first was to extend township surveys westward and promote orderly settlement. The second was to assist with the timely location of land grants

48 Morgan, Men and Women of the Time, pp. 57-58.

49 Morgan, Men and Women of the Time, p. 732.

50 Rose, Cyclopaedia of Canadian Biography, p. 461.

along the proposed Canadian Pacific Railway route. Finally, surveyors would record their observations of the land and soil conditions, available natural resources, flora and fauna, which would provide an ongoing and central source of information on new territory as it was surveyed.⁵¹ These three goals would aid the development and settlement of western Canada

The system of survey used by the Dominion government divided land into townships, each containing thirty-six sections of one square mile each (six sections long and six wide) The First Principal Meridian, also known as the "Winnipeg Meridian," ran northward from a point about ten miles west of Pembina, which was slightly eastward of ninety-eight degrees longitude.⁵² Other meridian lines were laid in subsequent years at 102, 106, 110 and 114 degrees. Meridian lines run north and south, and base lines run east and west. These lines were the most important, and all other surveying was added from the basic grid created by the meridian and base lines.⁵³ The international boundary served as the first base line, others were run every twenty-four miles northward. Base lines, including the international boundary, must curve "so that whenever they cross a meridian, that is any truly north and south line, they do so at right angles."⁵⁴ In addition, correction lines had to be surveyed periodically. These lines allowed for the earth's curvature and lack of parallelism of the meridians.

Following completion of meridian and base lines, block lines were laid This was performed by projecting the lines that fell between the base lines, east and west. Until 1879, blocks contained four townships each. From 1880 on, blocks contained sixteen townships.⁵⁵

51 Thomson, Men and Meridians, vol. 2, p. 38.

52 ARDI, 1892, Part VI, p. 3.

53 Thomson, Men and Meridians, vol. 2, p. 35.

54 MacGregor, Vision of an Ordered Land, p. 17

Surveyors placed markers along the Meridian and base lines, indicating where each subsequent survey line should cross it.⁵⁶ In the event the next surveyor was very far off this mark, he was required to try to correct the inaccuracy, even if it meant resurveying his entire line. The final step was performed by the subdivision surveyor, who projected the lines east and west, and north and south, to divide each 640-acre section and quarter-section of 160 acres.⁵⁷

This brief description illustrates, in order of decreasing importance, the survey lines laid. The meridians and base lines were the most important lines, and errors at this level would be reflected down through the remainder of the survey. This work was performed by separate survey parties, supervised by the Chief of the Special Survey, Lindsay Russell.⁵⁸ The most experienced and dependable surveyors were assigned to this important work. In his first year as a contract surveyor, Klotz was assigned to perform subdivision work, the most junior level of surveying.⁵⁹

In June 1879 when Klotz received his first official assignment, the excited young man completed and returned the contract agreement the same day. Klotz then travelled to Winnipeg, purchased equipment (carts, ponies, tools, food), and hired a crew of five men. On July 12th, however, A. Whitcher, Inspector of Surveyors, informed Klotz that he could not begin surveying until around August 1st because the surveys of block lines were incomplete.⁶⁰ The block lines had to be in place before subdivision work could begin, and

55 ARDI, 1892, Part VI, p. 21.

56 For a discussion of survey techniques, see L.M. Sebert, "The Land Surveys of Ontario, 1750-1980," Canadian Cartographer, 1978, 17(3), 65-106.

57 ARDI, 1892, Part VI, pp. 16-17.

58 Thomson, Men and Meridians, vol. 2, p. 38.

59 ARDI, 1880, Part II, p. 19.

60 Klotz Diaries, July 12, 1879

so Klotz's project was delayed. Klotz's assignment in 1879 was to subdivide townships 1 and 2 in the Turtle Mountain area, which was along the international border in Manitoba. Klotz was finally able to begin his season's work on August 6th, after a delay of almost one month. It was due to this late start, inexperience, and an early winter, that Klotz and his crew did not complete their survey until January 15, 1880.⁶¹

During this season, one of Klotz's complaints about terms of employment was that he was paid "at rates of so much per mile for certain kinds of work,"⁶² while he had to pay his crew by the day.⁶³ As well, surveyors were required to triangulate⁶⁴ each lake they encountered, which was time-consuming and for which no extra payment was allowed. The method of payment for subdivision surveys stressed speed of work rather than accuracy, and surveyors pushed their crews to do the most work in the least time. These were the type of complaints that likely led Klotz and other surveyors to form a professional association to promote their interests in 1882, which will be discussed in detail in the following chapter.

It had taken Otto Julius Klotz seven years to achieve his goal of working for the government in the North West. Between 1872 and 1879, Klotz worked to build a career base. For the first five of these years, Klotz could only pass exams and make the contacts he hoped would serve as a foundation for his bid to work for the Dominion government. In 1876 Klotz became a member of the elite group of nine Canadian surveyors who achieved the premier surveying designation, that of Dominion Topographic Surveyor. Klotz's technical credentials were impeccable, but expertise alone did not guarantee an offer of

61 Klotz Diaries, January 15, 1880.

62 ARDI, 1881, Part I, p. 5.

63 Klotz Diaries, September 20, 1879.

64 "Measure and map (an area) by the use of triangles with a known base length and base angles and determine (a height, distance, etc.) in this way," Concise Oxford Dictionary.

employment. Government regulation of land surveyors, instituted to meet the needs of the state, resulted in a growing self-awareness of surveyors as a group, which would soon result in the founding of a professional association to promote the surveyors' interests.

Klotz tried to gain what experience he could, both of western Canada and of surveying in the north and in wilderness conditions. Klotz worked to gain the personal contacts he hoped would help win him a government contract. Klotz also received the support of a political patron, who wrote letters of recommendation and garnered signatures of other members of parliament. Such support was vital given the clientelist nature of Canadian society generally, and government and political spheres specifically. Unfortunately, the economic realities of the depression of the 1870s hindered Klotz's efforts to begin his surveying career. Little surveying was conducted during most of the 1870s due to reduced immigration levels. Klotz's perseverance and patience were finally rewarded in 1879, when he received his first contract to survey in the North West. O.J. Klotz would prove to be a skilled and dedicated surveyor, and his career would advance steadily. Each year Klotz was assigned to increasingly important surveying tasks, which he hoped would help ensure his continued employment, once the boom years created by the undertaking of the Special Survey in Western Canada were over.

"The news brought copious tears from Marie who will have seven to eight months comparative solitude but I hope that my whole life may not be spent thus."

Otto Julius Klotz¹

CHAPTER 4

Career Development (1880 - 1883) and Professional Activities (1882 - 1886)

During the first half of the 1880s, Otto Julius Klotz worked energetically to consolidate his position in the Department of the Interior. As a contract employee, he did not have any job protection or security, which meant it was necessary to continually apply himself to demonstrating and increasing his value to the Department. The years during which large numbers of surveyors would be required to work in the North West were limited, and Klotz did not want his employment to end with the surveying boom. To achieve his goal, Klotz used a variety of strategies. He continued his relationship with his patron, Hugo Kranz, and cultivated the friendship of other Members of Parliament. He maintained business and social relations with government staff members. In 1882, to meet the heavy demands of surveying the North West for settlement and railway construction, the Surveys Branch was created within the Department of the Interior. This move enhanced the importance and position of surveying within the Department's administrative hierarchy. The strength of

¹ Otto Julius Klotz, "Diaries," March 29, 1881, MG30B13, National Archives of Canada. [All subsequent references to this work will be cited as "Klotz Diaries" followed by the date.]

Klotz's relationships was an integral part of the ongoing lobbying that was required in order to be appointed to perform important tasks, such as the exploratory survey to Hudson Bay he completed in 1884. During a time when seniority was very important in determining who advanced in the civil service, Otto Klotz had none, since he remained a worker in the outside service. Klotz's education, technical ability, activity and high profile within his profession, coupled with his contacts and ambition, were all factors in his career advancement within the Department of the Interior

Klotz was energetic and willing to work in order to gain the recognition and status he wanted. In the spring of 1882, while at Winnipeg, Klotz was elected president of the newly-formed Association of Dominion Land Surveyors. Klotz was only thirty years of age at this time, and there were certainly many others more experienced available to fill the post. Klotz's education, interest in the profession and its development, as well as his personal demeanour and ability to articulate ideas, and his willingness to work, all played a part in his election to this role. As its first president, Klotz's actions were pivotal to the Association's early development and success. Klotz pursued advancement of the surveyor's role and pay, while demanding professional excellence and technical expertise. His activity as president of the Association enhanced his personal profile in the surveying profession. Klotz was also active in the founding of the Association of Provincial Land Surveyors of Ontario in 1886. Klotz and other surveyors realized that professional associations could be used to advance the profession and its interests. Associations provided a forum through which governments could be lobbied, and technical education be disseminated to members. This undertaking by the Dominion Land Surveyors and Provincial Land Surveyors was part of a trend towards forming professional associations that became prevalent in the second half of the nineteenth century

On February 16, 1880, barely a month since his return from Manitoba and his first season's surveying work, Klotz met with Lindsay Russell, the Surveyor General, in Ottawa and was informed that he had been selected to test a new solar compass being considered for use in the next season.² It is likely that Klotz received this assignment because of his specialized training in astronomy. In the 1880 season, Klotz again performed subdivision surveys, this time in the Touchwood Hills of Manitoba. He completed the season's work in a more timely fashion than the previous year, finishing on October 11th.³ This was certainly due, in part, to the fact that the survey was not delayed this year, as well as the experience Klotz had gained the previous year. At any rate, Klotz and his crew were not surveying through ice and snow that year.

After these two seasons of experience, Klotz received his first promotion. On December 10, 1881, when Klotz was again in Ottawa presenting his plans and reports for the past season's work, Lindsay Russell advised that Klotz was to be assigned to perform block work the following spring.⁴ This new assignment also meant a change in terms of payment - any of these outline surveys, the meridians, base, correction and block lines were "performed under the system of daily pay and allowance of actual expenditure."⁵ The difference in the terms of payment for outline and subdivision surveys reveals that accuracy was a goal of the former, and the government was prepared to pay for the time it might take to achieve, while the subdivision surveys did not require this precision.

2 Klotz Diaries, February 16, 1880.

3 Klotz Diaries, October 11, 1880.

4 Klotz Diaries, December 10, 1881.

5 Sessional Papers, Annual Report of the Department of the Interior, 1881, Part I, p. 5. [All subsequent references to this and other Annual Reports will be referred to as "ARDI," followed by the year, part and page number.]

In the 1881 season, Klotz produced the Third Base Line between the Second and Third Principal Meridian, or from 102 degrees to 106 degrees longitude. This was also the first year that Klotz, along with fellow surveyor, W. Thomson, was assigned to lay the standard section at Fort Ellice before setting out for the season's work. Together the two men established this section with extreme care and exactness.⁶ The surveyor's manual directed that "if going through Winnipeg, or any other point where a standard section may have been established, the surveyor will train his men there until they can chain correctly."⁷ The standard section was a permanent one, to be used repeatedly. In October, 1881, after completing his season's survey, Klotz returned to Fort Ellice and oversaw the setting of permanent stone monuments at the corners of the standard section.⁸ Thomson and Klotz were assigned to establish the standard section again in 1882, at Flat Creek near Brandon, Manitoba.⁹

The land surveyors in the North West not only subdivided and mapped the region, but it was also their responsibility to record conditions of the soil, weather, flora, fauna, and geological formations that might indicate the presence of minerals, as part of the report books they were required to keep of each season's work. Surveyors, as the first to enter an area and consider these aspects of its geography, were much sought after as sources of information. On his return to Winnipeg from Turtle Mountain in the winter of 1880, Klotz was

6 Klotz Diaries, May 9-13, 1881.

7 Manual Shewing the System of Survey of the Dominion Lands, (Ottawa: Dominion Lands Office, 1881), p. 10.

8 Klotz Diaries, September 28-October 2, 1881.

9 Klotz Diaries, May 14, 16-17, 1882.

questioned by friends and strangers about the prospects of the area, and recorded that “... people are crazy after that country”¹⁰ and its potential for development and profit. It was this type of information, and the potential advantage it offered in the intense competition for the rights to exploit new territories, that Klotz was able to provide to his political patron, Hugo Kranz.

On February 9, 1880, a few days after his return home, Klotz visited Hugo Kranz in Berlin, as he did annually after each season’s work. He drew Kranz’s attention “to the probability of speculation”¹¹ in the Turtle Mountain area. When Klotz was in Ottawa submitting his survey report in mid-February, he was summoned and questioned about Turtle Mountain by a Member of Parliament, F. Kilvert. While in Ottawa, Kranz, Kilvert and Klotz “form[ed] an alliance,”¹² for the purpose of speculation. A fourth man, Hugh Murray, “one of his [Kilvert’s] speculator associates”¹³ was added to the group. On February 21st, Klotz and Murray completed applications for about 40,000 acres of land.¹⁴

These applications were presented first to J.S. Dennis in his capacity as Deputy Minister of the Interior, and then to Sir John A. Macdonald, who in addition to his role as Prime Minister, acted as Minister of the Interior. Competition for speculative land grants in the North West was fierce. On his way home from Ottawa, Klotz met J. Shields, who confided that he was part of another group competing for land in Turtle Mountain. Klotz did not return the confidence, and was uncomfortable about Shields’ frank remarks.¹⁵ It was

10 Klotz Diaries, January 31, 1880.

11 Klotz Diaries, February 9, 1880.

12 Klotz Diaries, February 18, 1880.

13 Klotz Diaries, February 21, 1880.

14 Klotz Diaries, February 21, 1880.

15 Klotz Diaries, February 22, 1880.

information such as this, and the land, mineral or timber grants which could result therefrom, that enabled Klotz to repay Hugo Kranz and other elected officials for their support of his applications for surveying work. As S.J.R. Noel notes, clientelism was "firmly rooted in material self-interest,"¹⁶ and both Klotz and Kranz stood to benefit materially through their relationship. Their arrangement was a reciprocal one; both had their own needs met. This co-operation between patron and client was the cornerstone of the system of clientelism that existed in Canada, and was a regular part of government and business transactions. Within a few years, however, the ethics of such practices were questioned. In 1890 the Dominion government took the first steps to end this type of activity. A new Survey Act stipulated that members of the Geological Survey could not purchase "Crown lands, report their findings to anyone except their immediate superior, make investigations or prepare reports for private individuals, or have any pecuniary interest in any mineral activities in the Dominion."¹⁷

Klotz records in his diary that he visited Hugo Kranz following his return from the season's work in 1880, 1882 and 1883. He may have done so in other years, but does not refer to the visits in his diary. Presumably he would report on the physical attributes of the land he had surveyed or travelled through during the season, and on the potential Klotz felt there was for profitable exploitation of some resource. In late 1882, Klotz visited Kranz and the two men prepared an application for a timber grant. Finally, on March 21, 1884, Klotz dined with Kranz and Lachlan McCallum, member of parliament. The three men "talk[ed] over our 'would like to have' coal mine, next year charter for a railway Medicine Hat to Burton, etc. . . The whole thing emanates from me, but having met with invariable failure

16 S.J.R. Noel, Patrons, Clients, Brokers: Ontario Society and Politics, 1791-1896, (Toronto: University of Toronto Press, 1990), p.14.

17 Morris Zaslow, Reading the Rocks: The Story of the Geological Survey of Canada 1842-1972, (Ottawa: Macmillan, 1975), p. 145.

in my governmental applications, I treat the whole thing lightly.”¹⁸ This final comment reveals that the 1880 application for land in Turtle Mountain and the 1882 timber grant application were not successful.

Government work could be very profitable in terms of speculation opportunities. J.E. Hodgetts notes that “the Crown Lands Department assumed the burden of administering an enormous store of potential wealth.”¹⁹ The country’s natural resources, land, timber, mining rights, etc., were all under this one department’s control. “The Dominion government exercised all the prerogatives of imperial authority and the Department [of the Interior] was a veritable colonial office in its relations with western and northern Canada.”²⁰ Speculators vied for land grants as well as mineral and timber rights. The intricate web of clientelism was an important factor in determining who was successful in their bids to control vast tracts of land and the resources thereon.

While Klotz’s ambition was to become a surveyor for the Dominion government, this was not his ultimate goal. Government work provided opportunities for speculation and the chance to earn fortunes (even though Klotz was never able to do so successfully). Klotz, however, had a vision of himself as a respected member of the elite group of men of science in the employ of the government. Throughout the nineteenth century in British North America, governments were the largest employer of scientific experts such as geologists, botanists, and astronomers. There were few opportunities in the private sector for anyone who wished to make scientific study and research a full-time occupation. This meant that

18 Klotz Diaries, March 21, 1884.

19 J.E. Hodgetts, Pioneer Public Service, (Toronto: University of Toronto Press, 1955), p. 162.

20 Chester Martin, “Dominion Lands” Policy, with an Introduction by Lewis H. Thomas, The Carleton Library Edition, (Toronto: McClelland and Stewart, 1973), p. xiv.

being a full-time government employee in the field of science was symbolic of a high level of achievement and status. When Klotz received his survey assignment for 1881 he recorded, "The news brought copious tears from Marie who will have seven to eight months [of] comparative solitude but I hope that my whole life may not be spent thus."²¹ Although he never explicitly stated a final goal he aspired to, Klotz perceived surveying as only one step in his career, and one he would move upwards from. Klotz's ongoing focus on working for the Dominion government reveal that he hoped to make the upward climb within the ranks of the federal civil service.

During the months when he was not in the North West or completing paperwork relating thereto, Klotz kept up his civil engineering business in Preston. He performed surveys for people in Waterloo County and the surrounding area. In March, 1881, Klotz was appointed superintending engineer and designer of a new bridge to be erected at Freeport.²² In 1884, he designed and oversaw construction of the clock tower of the Galt Post Office.²³ He was active in and served as a member of the board of directors of the local Mechanics' Institute, and was a member of the Masonic Lodge.²⁴ As the son of a well-known local businessman and school trustee, Klotz enjoyed the position of being a pillar of his community. This may be the reason why he chose to remain in Preston rather than moving to Ottawa, which would have enabled Klotz to maintain a higher visibility in the Surveys Branch and other government circles.

21 Klotz Diaries, March 29, 1881.

22 Klotz Diaries, March 7, 1881.

23 Klotz Diaries, October 23, 1884.

24 Klotz Diaries, January 10, 1881.

On November 8, 1881, Klotz records that E. Deville, who was now Inspector of Surveys, "kindly alludes to the possibility of me being appointed on the board of examiners for Dominion Land and Topographic Surveyors."²⁵ The following day

By request I again called on the Surveyor General, Lindsay Russell . . . he tells me 'It is probable that there will be two vacancies on the Board of Examiners for Dominion Land and Topographical Surveyors and Capt E. Deville as well as I would like to see you on the board, and if you consent I will propose your name to the Minister (Sir John) Mr. W.F. King's name I have already proposed. You are one of those who take an interest in the profession and keep up your studies, we want no honorary members but such as will work.' 'I thank you for the honor you are conferring upon me Mr. Russell.' . . . With beating heart I left the room, contemplating upon the highest honor in our profession being likely to be conferred upon me.²⁶

Although recommended, Klotz's appointment to the Board of Examiners was not confirmed, while W.F. King did become a member. It may be that only one position opened up instead of the two that were expected, or that some other person received the appointment. In any event, it would be several years before Klotz became a permanent member of the Board of Examiners for Dominion Land Surveyors.

The years 1882 and 1883 were the busiest surveying years, with 92 and 119 surveyors being employed respectively.²⁷ "The surveys of this season [1883] were conducted on what may be termed a gigantic scale . . . The extensive surveying operations during this and the previous season became necessary owing to the rapid construction of the Canadian Pacific Railway"²⁸ The Canadian Pacific Company, the private corporation contracted to construct

25 Klotz Diaries, November 8, 1881.

26 Klotz Diaries, November 9, 1881.

27 ARDI, 1892, Part VI, p.24.

28 ARDI, 1892, Part VI, pp. 24-25.

the Canadian Pacific Railway, had requested that it be permitted to survey their 5,000,000 acre land grant.²⁹ E. Deville, Chief Inspector of Surveys, lobbied hard to have this bid turned down and the Surveys Branch, created in 1881, was assigned to perform the task. This meant that the Surveys Branch remained the central agency responsible for performing official surveys in the West. "If the CPR had been allowed to do any part of surveying their land grant, a dangerous precedent would have been set."³⁰ The recipients of other land grants would surely also have requested to perform their own surveying as well, and the Dominion would have lost control of surveying and possibly had many under-qualified surveyors at work and many inaccurate surveys performed. This success by the Surveys Branch would provide several more years of work to its staff and contract surveyors.

In 1882 and 1883, Klotz was again assigned to perform base line work. In 1882, he surveyed the Fifth Base Line from the Fourth to the Fifth Principal Meridian.³¹ In 1883 he produced parts of the Third Base Line westward from the Fourth Meridian and the Second Base Line from west of the Fourth Meridian to the Third Meridian.³² The group of base line surveyors was always a small, select one. In 1883, Klotz was one of only ten surveyors assigned to perform this important work.³³

The heavy workload of the early 1880s also necessitated some reorganization of the duties within the Department of the Interior and its surveying staff. Until 1881, surveys were administered under the Dominion Lands Office. In 1881, a separate Surveys Branch was

29 Peter Busby Waite, Canada 1874-1896: Arduous Destiny, (Toronto: McClelland and Stewart, 1971), p. 108.

30 James G. MacGregor, Vision of an Ordered Land, (Saskatoon: Modern Books, 1981), p. 75.

31 ARDI, Part II, 1883, p. 13.

32 ARDI, Part II, 1884, p. 20.

33 ARDI, 1892, Part VI, p. 24.

established. The attainment of "branch" status provided greater administrative responsibilities and a larger budget to Surveys. As well, the responsible administrators focused their attention entirely on surveying issues, rather than these being merely one of many duties. In 1883, the name of the branch was changed to "Technical Branch," which it would remain until 1890 when it was renamed "Topographical Surveys Branch." The International Boundary Commission, started in 1893, was a responsibility of the Topographical Surveys Branch.³⁴ This Commission was formed jointly by Canada and the United States, and was assigned to the task of resolving the two countries' dispute regarding the international boundary between Alaska and Canada.

Several staff changes were implemented in 1883 as a result of organizational changes. Lindsay Russell, who had been Surveyor General since 1878, and had acted as Deputy Minister of the Interior since 1881, turned over the Deputy Ministerial duties to A. M. Burgess, an administrator without direct surveying experience. Edouard Deville, who had been Inspector of Surveys since 1881, took over supervision of surveys from Ottawa, and assumed the newly-created title, Chief Inspector of Surveys. W. F. King, who had also been appointed Inspector of Surveys in 1881, kept this title, and directed outside operations.³⁵ The promotion of Deville ahead of King was somewhat unusual within the Department; King had been an employee since 1870, while Deville, with only three years service, was promoted ahead of him. The fact that King was passed over for promotion in this way may account for some of the jealousy Klotz recorded in his diary that King felt for Deville.³⁶

34 Dr. E. Voorhis, "A Summarized Technical History of the Establishment and Development of the Department of the Interior," Department of the Interior Records, RG-15, vol. 82, pp. 46-47, National Archives of Canada.

35 MacGregor, Vision of an Ordered Land, p. 76.

36 Klotz Diaries, February 18, 1886.

The rapid advancement of E. Deville in the Surveys Branch may, in part, be a result of the fact that he was a francophone. The federal Civil List reveals that at July 1, 1882, of the nineteen people listed as "Surveys Inside Staff," only five had French surnames and one was German, the other thirteen were of British origin.³⁷ In 1885, following reorganization of the Department of the Interior and creation of the Surveys Branch, there were three francophone, one German and seven British employees.³⁸ In 1892, of twelve inside staff, there were four francophones and one German.³⁹ This reveals the continuation of the disproportionate number of British employees to francophone employees, which had existed in the administration of the United Canadas prior to Confederation. In 1863, thirty-five percent, or 161 of 450 employees, were francophones and received only twenty percent of the payroll.⁴⁰ This may be indicative of the presence of prejudice on the basis of ethnic background at work in government hiring practices. Edouard Deville may have been promoted ahead of W. F. King as a means of evening the balance of power between French and English Canadians (remembering, however, that Deville was from France). However, it is also possible that Deville may simply have had more influential patron[s] than W. F. King.

In October 1882, upon the completion of his season's work, Klotz left from Calgary to travel through the western United States and visit San Francisco. Klotz visited various surveying offices, such as the Coast Survey office in San Francisco, and he went to the University of California's Lick Observatory. Klotz made another trip the following year to Washington, D. C., "to gain information regarding their different systems of surveying and

37 Sessional Papers, Civil Service Lists, 1884, pp. 14-15.

38 Sessional Papers, Civil Service Lists, 1885, p. 16.

39 Sessional Papers, Civil Service Lists, 1892, p. 19.

40 Hodgetts, Pioneer Public Service, p. 57.

everything appertaining thereto”⁴¹ Klotz visited at the office of the Secretary of the Department of the Interior. He also called on Professor Julius Hilgard, director of the Coast Survey. Armed with many questions, Klotz and a member of the United States department were “soon emerged [sic] in plans, field notes, maps, etc., comparing our two systems, costs, etc.”⁴² These two trips to the United States reveal Klotz’s interest in and dedication to his profession. He was always interested in other approaches to surveys and learning new techniques. Although he does not say so in his diary, it may also be possible that Klotz was investigating the potential job opportunities in the United States. Klotz was prepared to spend his own money and take time away from his family to make these trips. These trips are also indicative of Klotz’s solid middle class status, he had the funds available to make such extended journeys.

Throughout his diaries, Klotz complained periodically of working terms and conditions that were unsatisfactory. Surveyors were required to triangulate marshes, ponds and lakes, for which they received no extra pay.⁴³ In September 1880, he remarks that “Our [surveyors’] treatment at present by the Department is not very encouraging.”⁴⁴ Furthermore, getting paid and settling accounts with the Department of the Interior appears to have been an ongoing problem. It was December 1880, before Klotz finally settled his 1879 season’s account with the Department. A dispute had arisen because Klotz believed surveys across ice, which he and his crew repeatedly fell through, should be classed as a higher degree of difficulty and, hence, he should be paid more for them than the Department was

41 Klotz Diaries, January 9, 1883.

42 Klotz Diaries, January 10, 1883

43 Klotz Diaries, August 13, 1879

44 Klotz Diaries, September 18, 1880.

willing to allow.⁴⁵ Department officials were probably of the opinion that it was Klotz's inexperience that resulted in the survey continuing into the winter months, and were unwilling to finance it. The Department did not consider that the delayed start to August 6th, 1879, of the season's survey constituted sufficient grounds for the survey taking until winter to complete. That this issue was not settled until the following December must have been a source of irritation and complaint.

These, and other problems no doubt experienced by other surveyors, led them, in 1882, to take action and form an association to further their interests. This was not the first time surveyors had acted to organize themselves, but it was the first association that remained active for a number of years. Surveyors had first moved to form an association at a meeting in Winnipeg in 1874. The result of this one and only meeting, was the request to change their title from "Deputy Surveyor of Dominion Lands" to "Dominion Land Surveyor."⁴⁶ In 1880, another meeting was held in Winnipeg, where officers were elected to the "Association of Dominion Land Surveyors of Manitoba and the North West Territories." When this group was incorporated on May 25, 1881, it was called the "Association of Provincial Land Surveyors" and remained a provincial rather than a national association.⁴⁷ Klotz's diary records that he "Attended at Provincial Land Surveyors association meeting"⁴⁸ on April 17, 1882. This association must not have been able to meet the needs of the contract surveyors of the Dominion government, because a few days later, Klotz wrote:

45 Klotz Diaries, April 23, 1880.

46 Don W. Thomson, Men and Meridians: The History of Surveying and Mapping in Canada, (Ottawa: Queen's Printer, 1967), vol. 2, p. 60.

47 Thomson, Men and Meridians, vol. 2, p. 61.

48 Klotz Diaries, April 17, 1882.

April 22nd: In the evening a meeting is held of the Dominion Land Surveyors in service of the Government for the purpose of discussing the advisability of asking for an increase in pay. I was elected chairman, and after some discussion a committee was appointed to draft a memorial.

April 23rd: I drew up the memorial to the Government.

April 24th: In the evening the memorial which I drew up was laid before the meeting of surveyors who approved thereof and all signed it. Thereupon it was proposed to form an association to further our mutual interests and to meet in Ottawa next winter, whereupon I was unanimously elected President and A.F. Cotton Sec. Treas. and we immediately formed a fund for current expenses at \$2 per man.⁴⁹

These notes form the only record of these first meetings of the Association of Dominion Land Surveyors (ADLS). The Association was national in scope, that is, its members worked for the Dominion rather than for a particular province. Surveyors in individual provinces formed associations of their own. The colonial, and later, federal and provincial governments had fostered this process when certification examinations and regulations were imposed on surveyors as a group. The formation of associations to represent the interest of its members was an important step towards professionalization. Professional associations are not equivalent to professionalism, but indicate the maturity of the planned efforts aimed at professionalization.⁵⁰ Possibly, the earlier efforts at forming an association were not successful because the concept of surveyors as professionals was not sufficiently well developed. The formation of the Association of Dominion Land Surveyors in 1882 was indicative of the recognition of surveying as a profession to surveyors themselves. The formation of an association assists the further "expansion of professionalism as a result of the growth of occupational group consciousness."⁵¹ Thus, the Association of Dominion

49 Klotz Diaries, April 22-24, 1882.

50 Magali Sarfatti Larson, Rise of Professionalism: A Sociological Analysis, (Berkeley: University of California Press, 1977), p. 5.

51 Terence J. Johnson, Professions and Power, (Toronto: Macmillan, 1972), p. 31.

Land Surveyors would also foster an increase in the level of professionalization among surveyors, and enhance the perception of surveyors as professionals by the rest of society.

The founding of the Association of Dominion Land Surveyors was part of a general move towards the formation of professional associations that was occurring in this period. In Great Britain, the Institution of Civil Engineering, the world's first engineering association was formed in 1818. Hundreds of other associations had formed by the 1870s. In the United States, the first civil engineering society was founded in 1848.⁵² Over two hundred other learned societies were formed in addition to many teachers' groups during in 1870s and 1880s.⁵³ Surveyors were influenced by the activities and espoused goals and aspirations of other professional associations and their undertakings. Klotz himself was a member of several other associations, and used the ideas of the Michigan Engineering Society, in his 1886 presidential address (discussed in detail below).

In February 1883, the Association of Dominion Land Surveyors held an annual meeting in Ottawa. The proceedings were not officially recorded or published, and the only records are the entries Klotz made in his diary. The main business the twenty land surveyors at the meeting conducted was to decide upon a course of action relative to the memorial they had initiated at their first and founding meeting in April 1882. Having received no reply to this missive, another memorial regarding the issue of a pay increase was drafted and an appointment made to see Sir John A. Macdonald on February 21st. Klotz recorded that he "addressed Sir John at some length whereupon he replied, and of course non-committal, and

52 J. Rodney Millard, The Master Spirit of the Age. Canadian Engineers and the Politics of Professionalism, 1887-1922, (Toronto: University of Toronto Press, 1988), p. 26.

53 Burton J. Bledstein, The Culture of Professionalism: The Middle Class and the Development of Higher Education in America, (New York: W.W. Norton & Co., 1976), p. 86.

would consider our case . . . we had an informal meeting and discussed our grievances further and concluded to print our memorial for distribution”⁵⁴ to Members of Parliament. It must also have been decided at the 1883 meeting that the Association required a constitution and bylaws, as Klotz records that he was busy preparing these documents in March.⁵⁵

In 1884, the Association started publishing the proceedings of its annual meetings. This is likely the reason the record is called the first annual meeting. Included in the proceedings were technical papers presented by members. The document was distributed to members, many of whom lived in the West and so could not make an annual trip to Ottawa. The technical papers could, hopefully, be studied and applied by surveyors. During his presidential address of 1884, Klotz brought the membership up-to-date on the issue that had first prompted the Association’s formation - the pay surveyors received. Other than an acknowledgment of receipt of the memorial “no further reply was ever made.”⁵⁶ This, however, was still an improvement over the total lack of response to their memorial of 1882. The remainder of Klotz’s address was spent defining the goals, purpose, and his hopes for the Association. Klotz envisioned the Association having higher aspirations than simply greater monetary rewards for surveyors. He hoped for “the elevation of the standard of the profession . . . not only by diffusing knowledge, by interchange of ideas, by discussing practical problems, but it also places before the public the surveyors as a profession commanding respect which must result in our pecuniary benefit.”⁵⁷ Klotz extolled the importance of making contributions in the form of technical papers, ideas to improve

54 Klotz Diaries, February 21, 1883.

55 Klotz Diaries, March 2, 1883.

56 Otto Klotz, “Presidential Address,” First Annual Meeting of the Association of Dominion Land Surveyors, February 19 and 20, 1884, Published by the Association, p. 3. [Hereafter the Association will be referred to as ADLS.]

57 Klotz, “Presidential Address,” First Annual Meeting ADLS, 1884, p. 5.

instruments, etc. He said, "Really, [of] original professional papers and books, there are far less in the world than one imagines."⁵⁸ Klotz's speech indicates that he possessed a clear understanding of the role of an association in the enhancement of professional status and technical expertise.

In this year Klotz presented a paper on "Projections" to the membership. William Ogilvie, another of the group of block line surveyors, also read a paper at this meeting. Klotz acted on his belief in the importance of technical papers and ongoing improvement in skill and knowledge by presenting papers at the Association meetings every year until 1890. He was the sole person to present seven papers on various technical subjects in these seven years. Only W.F. King approached this figure, with four papers in the same period. During this time, other members of the association who presented two or more papers were, E. Deville, Thomas Fawcett, Thomas Drummond and William Ogilvie. Until 1886, Klotz prepared his papers in addition to his duties as president of the association. This level of activity demonstrates Klotz's interest and dedication to the improvement of his profession.

Klotz's 1885 presidential address reflected the interests of the association. He deplored the fact that "the standard of the profession is kept low" because of the public's "preferring quick, cheap survey[s]."⁵⁹ He promoted a new project, stating that, "The greatest drawback to the land surveyor is that neither the Federal nor Provincial Government has made or begun to make a systematic and accurate survey of the country."⁶⁰ The Association voted to form a special committee to prepare a memorial to the government on the subject. If approved, such a significant undertaking would also guarantee surveyors work for years. Since surveyors were well aware that the Special Survey would not provide employment

58 Klotz, "Presidential Address," First Annual Meeting ADLS, 1884. p. 5.

59 Klotz, "Presidential Address," Second Annual Meeting ADLS, 1885, p. 7.

60 Klotz, "Presidential Address," Second Annual Meeting ADLS, 1885, p. 8.

for many more years, it made sense to promote new projects. If the government did not undertake more surveying projects, the services of surveyors would be dispensed with. The meeting also decided to lobby the government to impress on it the importance of allowing only certified Dominion Land Surveyors to perform the surveys of the Railway Belt in British Columbia.⁶¹ Again, this was a measure aimed at protecting surveyors' jobs. Surveyors focused and voiced their group needs and aspirations through the forum of the Association of Dominion Land Surveyors.

Science and scientific research held a precarious position in Canadian society and government at the time. Canada was a new and developing nation, with a small population to provide the financial basis for expansion. The government was the main employer and promoter of scientific research in Canada. Projects undertaken had to have a perceived practical value in order to be funded. In 1884, a Select Committee was appointed by the House of Commons to investigate the activities of the Geological Survey. One of the charges against its Director, Dr. Alfred Selwyn, was that he was "turning the Survey into a purely scientific organization."⁶² The Committee's final report confirmed that the Survey's primary purpose was "to obtain and disseminate, as speedily and extensively as possible, practical information as to the economic mineral resources of the country, and scientific investigations should be treated as of only secondary importance, except where necessary in procuring practical results."⁶³ The Geological Survey, like other government departments active in scientific work, had to consider the practical benefits of their work for Canada and its citizens (particularly its business interests). Undertakings were promoted on this basis,

61 "Proceedings," Second Annual Meeting ADLS, 1885, p. 32.

62 Morris Zaslow, Reading the Rocks: The Story of the Geological Survey, 1842-1972, (Ottawa: Macmillan, 1975), p. 135.

63 House of Commons, "Report of the Select Committee," 1884, p. 8, cited in Zaslow, Reading the Rocks, p. 139.

and also by making them symbolic of national advancement. In 1885, when Klotz was promoting the idea of a national "systematic survey," he told the meeting that, "... we are the only remaining civilized nation that has not commenced such a systematic survey."⁶⁴ In 1886, the Association appointed Klotz and two other surveyors to draft a memorial "... on the advisability and public benefit to be derived from a trigonometrical survey [of Canada]. . ."⁶⁵ If undertaken, this new project would provide a number of surveyors with employment for several years.

Klotz's theme during his finally presidential address to the Association, was generally the need to broaden surveyors' interests and scope, and to draw attention to the approaching end of an era:

We have surveyed our heads off. Block and outline surveyors . . . and the subdivider . . . all tending to hasten the approach of the inevitable, of having devoured so to speak the whole country with the instrument and chain. . . The functions of the Dominion Land Surveyor are about over and he must turn his face to pastures new and in another capacity. In this respect doctors and lawyers have the advantage over us; operating on a patient or client once does not necessarily kill him, in fact it is bad policy to kill him, but the public land admits of sub-division but once and then we are done. For Provincial Land Surveyors the circumstances are very different and more favorable, inasmuch as their practice is confined almost exclusively to private practice.⁶⁶

Klotz cited the example of the Michigan Engineering Society, a meeting of which he had just attended, to show how surveyors and civil and mechanical engineers had formed a single association. Klotz suggested the strength Canadians could gain by doing the same. Klotz's view was not shared by many other surveyors however. Engineering was not an

64 Klotz, "Presidential Address," Second Annual Meeting ADLS, 1885, p. 8.

65 "Proceedings," Second Annual Meeting ADLS, 1886, p. 21.

66 Klotz, "Presidential Address," Third Annual Meeting ADLS, 1886, p. 9.

officially recognized and regulated occupation as land surveying was. There was little for surveyors, who functioned as public officials, to gain by forming an alliance with engineers.⁶⁷ The matter was not discussed further by the ADLS membership. After presiding over the opening of the meeting and making his final address, Klotz resigned as president of the Association of Dominion Land Surveyors. Thomas Fawcett, a DTS like Klotz, was subsequently elected president. Klotz continued to remain active in the Association. In addition to the technical papers he presented each year, Klotz served as a member of various committees.

It was after this meeting and a discussion on the need to have mapmaking practises in Canada standardized, that Klotz wrote "It's a pity that the most of our members are not sufficiently educated to understand the subjects, and on the other hand are very poor business men, not knowing even how to properly demean themselves at a meeting."⁶⁸ These comments reveal that, to Klotz, being a professional meant more than being an accredited surveyor. Education was important, but along with that, an appropriate level of behaviour was expected. Professionals claimed a place in the upper middle classes of society by virtue of the education, expertise and talent that was the source of their authority.⁶⁹ Land surveyors, especially those who worked in the Canadian West, spent more than half of the year in wilderness conditions. The niceties of civilized life were forgotten for months at a time, and were, perhaps, slow to be regained in the off-season. But, to be accepted and recognized as a member of the upper middle class, the proprieties had to be observed. For Klotz and other university graduates, this behaviour was entrenched. Surveyors who had learned through

67 J. Rodney Millard, The Master Spirit of the Age: Canadian Engineers and the Politics of Professionalism, 1897-1922, (Toronto: University of Toronto Press, 1988), pp. 44, 68.

68 Klotz Diaries, February 16, 1886.

69 Larson, "Production of Expertise," p. 28.

experience, however, did not have the social background to draw from. Klotz, it seems, sometimes despaired of his fellow surveyors behaving appropriately, or even of perceiving the importance of their behaviour.

Klotz's energy and devotion were undoubtedly instrumental in the early successful development of the ADLS. As is often the case in a voluntary or even non-voluntary organization, the bulk of the work falls on the shoulders of a few members. Klotz recorded that he "Attended to committee business the work of which devolves upon me if it is to be done at all."⁷⁰ While he does not specify exactly what this work was, it appears likely that he was referring to that of the committee appointed to "frame a Bill to be presented to Parliament to incorporate the Association of Dominion Land Surveyors."⁷¹ Without the efforts of Klotz, the Association may not have been as successful or active as it was.

In early 1886, another surveyors association was founded. The Association of Provincial Land Surveyors of Ontario was formed at the instigation of Willis Chipman, Provincial Land Surveyor. Chipman corresponded with Klotz and others in December 1885, on the subject.⁷² Klotz attended this association's inaugural meeting in Toronto on February 23, 1886, and was the first to address the gathering. He said "There is material among the provincial land surveyors of Ontario to form an association creditable to themselves and to the country which will ever bear 'Progress' the watchword of the 19th century, on its banner."⁷³ Klotz then served on the committee assigned to draft a constitution, which he read to the assembly, but he "declined nomination for any office as I was not an active PLS"⁷⁴ Even though Klotz maintained his private civil engineering business, which was

70 Klotz Diaries, February 20, 1885.

71 "Proceedings," Second Annual Meeting ADLS, 1885, p. 32.

72 Ladell, They Left Their Mark, p. 184.

73 Ladell, They Left Their Mark, p. 186.

governed by the province of Ontario, he chose to devote his energies to his involvement in the federal association. The Ontario association grew quickly and became soundly established. Klotz maintained his membership and attended meetings annually, but this was the extent of his activity.

Klotz held memberships in a variety of other organizations. Professionally, he was a member of the three associations discussed above - the Association of Dominion Land Surveyors, the Michigan Engineering Society, and the Association of Provincial Land Surveyors of Ontario. He was also a member of the Alumni Associations of the two universities he had attended. As previously noted, he was also active in many fraternal societies. Klotz's involvement in so many organizations is partly a reflection of the importance of the contacts made through such activities. Klotz also learned of new ideas from his activities in these various associations, and adapted and applied them to the surveying profession. One example of this is Klotz's comments on the potential for forming a joint civil engineering and surveying society in Canada. Klotz gained many benefits as a result of his broad range of interests and activities.

Otto Julius Klotz's career advanced steadily during the first half of the 1880s. During these "boom" years there was much work for talented surveyors, and Klotz continued his role as contract surveyor working for the Dominion government. Like all surveyors, Klotz knew that the level of activity necessitated by the Special Survey of western Canada could not continue. If he wanted to go on working for the federal government once the period was over, Klotz had to find a niche he could fill in the civil service.

In his professional life, Klotz was instrumental in the founding of two surveyors' associations - the Association of Dominion Land Surveyors, in 1882, and the Association

of Provincial Land Surveyors of Ontario, in 1886. Klotz's four-year term as president of the former association helped the group grow from its infancy into an organization prepared to attempt to influence government policy. The surveyors tried to enhance their professional status and provide stable markets for their services. The two projects the surveyors promoted, national systematic and trigonometrical surveys, were "marketed" to politicians on the basis of the practical benefits Canadians would derive from them. Science was not promoted for its own sake, as revealed by the Select Committee investigating the Geological Survey in 1884. Even if their efforts appear to have been largely unsuccessful, the activity helped to provide focus and goals for the Dominion Land Surveyors. As a chief activist in these areas, the name and reputation of Otto Julius Klotz remained in the forefront of surveying matters.

"As I was not appointed I was glad to see my intimate friend King get it and not a political hanger-on."

Otto Julius Klotz¹

CHAPTER 5

Reaching a Plateau (1884 - 1892)

After the record-breaking year of 1883, the number of surveyors employed during each season declined rapidly. The greater part of the Special Survey was complete, and fewer surveyors were needed to conduct remaining work. Only those with the most skill, expertise and experience, along with the required connections, continued to be awarded contracts. In 1884, Otto Klotz performed an exploratory survey to Hudson Bay to determine the feasibility of constructing a railway to and port facilities on the Bay, which would allow grain shipments. From 1885 to 1888 Klotz was assigned to perform the astronomical work required to survey the British Columbia Railway Belt. Klotz's training in civil engineering, especially the courses he had completed in railway construction and astronomy, were probably considerations in his being assigned these tasks.

In 1889, Klotz received his next opportunity for advancement. He was sent to Alaska to perform an exploratory survey and submit a report of his findings pertaining to the disputed Canada - United States border. Klotz was enthusiastic about the potential of this role. He lobbied vigorously for the next three years to be appointed Commissioner of the

¹ Otto Julius Klotz, "Diaries," September 23, 1892, MG30B13, National Archives of Canada. [All subsequent references to this work will be cited as "Klotz Diaries" followed by the date.]

International Boundary Commission that would try to settle the dispute. In early 1892, Otto Klotz was forced to choose between continuing government work and living in his home town of Preston. Klotz chose to move his family to Ottawa and become a full-time civil servant. Otto Klotz was bitterly disappointed when, also in 1892, his superior, W.F. King, was appointed to the post of International Boundary Commissioner. In his diary, Klotz blamed his failure on the fact that he had favoured the United States' position in his report on the boundary issue in 1889. While this may have been a factor, it was not the only, or most important, reason Klotz was not assigned Commissioner. However, after accepting a significant pay cut and moving to Ottawa, King's appointment to the role of Boundary Commissioner must have been all the more galling.

In the fall of 1883, following the completion of his season's block line work, Klotz made his usual trip to Ottawa. He met at different times with Edouard Deville, Chief Inspector of Surveys; Lindsay Russell, Surveyor General; and A.M. Burgess, Deputy Minister of the Interior. In his diary, Klotz notes that he discussed the proposed exploratory survey to Hudson Bay with Deville, a project to which Klotz wished to be assigned. Presumably, Klotz discussed this survey with each of the other branch officials he met during this visit. The purpose of the proposed survey was to determine the feasibility of and best route for constructing a railway line to port facilities on the Bay, to enable direct shipments of grain to the United Kingdom and elsewhere. The railway and port would bypass Ontario and Quebec's shipping routes, and hopefully increase profits to western farmers.

Klotz's efforts to be appointed to perform the Hudson Bay survey were successful. On February 27, 1884, he "received an official letter from Captain E. Deville notifying me

in very complimentary terms of my appointment to the Hudson Bay exploratory expedition.”² This new assignment moved Klotz beyond the confines of regular contract surveying. It was a promotion to a level of work that required independence and a careful analysis of a variety of factors. Klotz was expected to perform a detailed survey of the river route, requiring hundreds of astronomical observations. His training as a civil engineer, which had included studies in railway construction, would also be important as he assessed the terrain and its suitability for the proposed project. Klotz’s official report and findings would be used as part of the basis for determining government policy and whether or not the railway and port facilities would be built. Following his journey, Klotz reported that the railroad itself was practicable,³ but in his diary recorded that he did not believe such a railroad would ever be built.⁴

In 1885, Klotz was assigned to a new and important task when he was “appointed by the Dominion Government as chief of the astronomical observations to be conducted in British Columbia and the North West.”⁵ This made Klotz the first person in the federal government to be officially designated an astronomer in his job title.⁶ In this year, surveying conducted by the Branch, which had been renamed the Technical Branch, was reduced to a mere thirteen men, although the 1885 Rebellion was partly responsible for this small number.⁷ Klotz’s assignment was the “determination of the latitude and longitude along the

2 Klotz Diaries, February 27, 1884.

3 Sessional Papers, Annual Report of the Department of the Interior, 1885, Part 1, pp. 28-29. [All subsequent references to this and other Annual Reports will be referred to as “ARDI,” followed by the year, part and page number.]

4 Klotz Diaries, November 18, 1884.

5 Klotz Diaries, April 21, 1885.

6 Don W. Thomson, Men and Meridians: The History of Surveying and Mapping in Canada, (Ottawa: Queen’s Printer, 1967), vol. 2, p. 261.

7 ARDI, 1892, Part VI, p. 26.

line of the Canadian Pacific Railway in British Columbia”⁸ Winning the appointment to this work was important for Klotz, as it would require several years to complete.

Klotz was appointed to a special Board of Examiners for Dominion Land Surveyors committee in 1885. This board was composed of E. Deville, William Ogilvie and Thomas Drummond. Drummond was Klotz’s assistant in performing the longitude determinations. The purpose of this special committee was to hold Dominion Land Surveyor examinations for two surveyors who were qualified to work in British Columbia, but wanted to achieve the federal designation.⁹ Klotz was appointed secretary of the board, and examinations were conducted between May 11 and 18, 1885. Through this temporary assignment, Klotz received exposure to and gained experience in administering the examination process. By performing the duties on a temporary basis, the regular Board of Examiners was able to appraise his potential for permanent member status.

Otto Klotz was rewarded with a recommendation to receive a permanent appointment to the Board of Examiners for Dominion Land Surveyors in 1885. The retirement of Lindsay Russell, Surveyor General, in June 1884, left a vacancy on the Board. In January 1885, a memorandum of recommendation was submitted on Klotz’s behalf. Although unsigned, the handwriting reveals that it was prepared by Edouard Deville:

... it is respectfully recommended that Mr. Otto J. Klotz, Dominion Topographical Surveyor, be appointed in his [Lindsay Russell’s] place. Mr. Klotz ... has been for many years employed on Dominion Land Surveys and while so engaged has performed work of a high scientific character. His professional attainments are generally acknowledged by his brother surveyors ...¹⁰

8 ARDI, 1886, Part II, p. 5.

9 ARDI, 1886, Part II, p. 4.

10 Memorandum dated January 23, 1885, Surveys and Mapping Branch Records, RG-88, vol 483, file 3081, part 1, memo 59882, National Archives of Canada.

Nothing permanent was done about filling the retired Surveyor General's position on the Board of Examiners until two and one-half years later. In August 1887, the minutes of the Board meeting record as the first item of business that "Mr. L. Russell having resigned, O. in C. [Order-in-Council] was passed accepting his resignation and appointing Mr. Otto J. Klotz a Mbr. [member] of the Board in his room [sic]"¹¹ Klotz served on the Board until his death in 1923. With this appointment, Klotz achieved membership in the premier surveying body in Canada, which can be considered to be the pinnacle of excellence and evidence of the respect Klotz received within his profession.

In 1886, Klotz was one of thirty-nine surveyors employed by the Dominion government. He completed the determination of the "latitude and longitude of various points along the line . . . [and] completed the traverse of the railway line from Revelstoke to the summit of the Rocky Mountains."¹² In 1887 Klotz had the opportunity of electing to perform a different task, an exploratory survey of Alaska. But, he recorded that:

. . . having obtained charge of the Dominion astronomical works two years ago and as it will be continued this year for certain - I weighed the question for some time in any view whether to abandon the latter and seek to obtain the former or not . . . I intimated to the Deputy Minister Mr. Burgess and Mr. W.F. King that I did not desire the Alaska Survey¹³

Therefore, during the 1887 season, Klotz continued with the work on the Railway Belt. By the end of 1887 "latitude and longitude determinations have now been carried through British Columbia and eastward two thousand miles from the Pacific Coast along

11 Minute Book, Board of Examiners for Dominion Land Surveyors, August 1887, Surveys and Mapping Branch Records, RG-88, vol. 483, file 2731, National Archives of Canada.

12 ARDI, 1892, Part VI, p. 27

13 Klotz Diaries, March 2, 1887.

the line of the Canadian Pacific Railway.”¹⁴ Klotz took a chance by opting to continue with the astronomical work. He hoped that the work might “be the initial [step] to a systematic trigonometric survey of the Dominion.”¹⁵ This was the survey the Association of Dominion Land Surveyors had pressed the government to perform in its 1886 memorial. Klotz probably hoped that the initial work performed in British Columbia would convince the government of the importance of undertaking such a survey on a national basis. Further, Klotz believed he would be well placed to be appointed to work on a trigonometric survey by virtue of his astronomical work on the Railway Belt. While the trigonometric survey was not undertaken, Klotz’s choice to continue with astronomy proved to be a wise one. As years progressed, astronomy gained ascendancy in the Department of the Interior, and this field would become and remain Klotz’s source of employment for the remainder of his career.

During the 1888 season only thirty-five surveyors were employed and both Klotz and W.F. King, Chief Inspector of Surveys, performed longitude determinations of Edmonton and Ford Pitt.¹⁶ The Annual Report of the Department of the Interior for 1890 lists Otto Klotz only as performing an “exploratory survey” in 1889.¹⁷ Klotz had been assigned to “take a cruise along the [northern Pacific] coast with a chartered schooner to gain information in general and to ascertain what the American Government is doing in survey matters relative to the Boundary question.”¹⁸ Klotz was, of course, referring to the dispute between Canada and the United States regarding the international boundary on the Alaskan panhandle.

14 ARDI, 1888, Part II, p. 25.

15 Klotz Diaries, March 27, 1887.

16 ARDI, 1892, Part VI, p. 29.

17 ARDI, 1890, Part II, p. 8.

18 Klotz Diaries, August 12, 1889.

The boundary separating Alaska from its neighbours had been in dispute since the early nineteenth century, when Alaska was a Russian territory and British Columbia a British crown colony. The United States purchased the colony from Russia in 1867, and Canada added the North West, and later British Columbia, to its territories. These two countries thereby inherited the boundary dispute. Part of the problem resulted from the vague wording of agreements and treaty descriptions. Another contributing factor was that the region known as the panhandle had not been accurately mapped, and this was the area that was in dispute. This part of the coast had deep fjords and inlets, and was very mountainous. The Russian territorial claim described their territory as extending a distance of ten leagues from the coast, following the summit of mountains parallel to the coast. Since the area was very mountainous, just which mountains the description referred to was unclear.¹⁹

The United States' position was that the line should be measured from the actual coastline, whether that be at the bottom of a fjord or not. The Canadian position was that the ten-league line should be created as one parallel to the coast, exclusive of fjords and inlets. This position was propounded by Colonel D.R. Cameron, Canada's international boundary commissioner between 1872 and 1876, who oversaw the surveying of the 49th parallel. Cameron believed that "inlets less than six miles wide became territorial waters at the point where the three-mile limits met, and, as such, they were no different from fresh-water lakes or streams . . . [and at the] signing of the 1825 treaty, he was certain that neither the British nor the Russians considered the inlets as forming part of the coast."²⁰ There were other issues in the dispute as well, including even the exact location of the

19 Thomson, Men and Meridians, vol. 2, p. 184.

20 Lewis Green, The Boundary Hunters: Surveying the 141st Meridian and the Alaskan Panhandle, (Vancouver: University of British Columbia Press, 1982), p. 51.

Portland Canal, which was to be the starting point of the line on the panhandle. The stakes of the dispute were high. If the American position was upheld, Canada would no longer have an outlet to the sea in northern British Columbia and the Yukon territory. Gold discoveries in the region in the 1870s increased the potential value of the area.²¹

Assignment to a role in this issue, therefore, was a very important one and it was significant to Klotz's career. The negotiations regarding the international border would carry a very high profile and would last for years. Klotz hoped this assignment would be only his first relative to the Alaska Boundary dispute. Despite this Klotz believed he had to report honestly, and indicated in his official report that he was firmly convinced that Colonel Cameron's position was in error and the American position was the right one.²² Klotz later came to believe that voicing this opinion was a mistake that hampered his career for many years. Indeed, it would have made little sense for the government to designate a Commissioner who did not accept the validity of the position he was appointed to defend.

Two years later, W.F. King was sent on a similar mission. Klotz realized when King was assigned to make the same trip to Alaska that "This undoubtedly puts another candidate in the field"²³ in the competition to be named Commissioner of the International Boundary Commission. King supported the favoured Canadian position regarding the Alaskan boundary, a fact which would certainly help in his bid to be appointed Commissioner.²⁴ Klotz lobbied hard to be appointed to this position. He mentioned the role to the Minister and

21 Thomson, Men and Meridians, vol. 2, pp. 184-192.

22 The official report is cited in Green, Boundary Hunters, p. 53. Klotz's discusses his personal opinion in, Klotz Diaries, February 12, 1891.

23 Klotz Diaries, October 15, 1891.

24 Green, Boundary Hunters, p. 53.

Deputy Minister of the Interior whenever he met them.²⁵ In March 1892, Klotz arranged to be introduced to the Prime Minister at a social gathering in order to plead his case for being appointed to the task. Discouraged by this meeting, Klotz wrote "I fear the Commissionership will be given to some politician or personal friend or relative of some Minister, leaving the real work and small pay to be done by some competent man."²⁶

At any rate, in 1889, Klotz was still working on the latitude and departure measurements that were to be used as checks for previous surveys. W.F. King, in his new role as Chief Astronomer, reported that "This has involved finding the latitude and departure on more than 1600 courses . . ."²⁷ a time-consuming task that required careful calculations and complete accuracy. In 1890, Klotz's work required him to perform base line surveys and corrections of surveys in Saskatchewan.²⁸ With only twenty-eight surveyors employed, there was little opportunity to be selective about an assignment. In 1891, Klotz was instructed to perform a survey of locations on the Saskatchewan River and Cedar Lake where amber had been found, in order to determine whether mining rights should be sold, as well as the possible valuation of those rights.²⁹

When not in the field in both of these years, Klotz continued the "calculation of the limits of the Railway Belt in British Columbia."³⁰ This work finally forced Klotz to choose between life in his home town of Preston and a position with the Dominion government. Klotz, during the previous five years, had spent most of the off-season months performing

25 Klotz Diaries, October 15, 1891; February 17 and 19, 1892; and March 21, 1892.

26 Klotz Diaries, March 18, 1892.

27 ARDI, 1890, Part II, p. 6.

28 ARDI, 1891, Part II, p. 7.

29 ARDI, 1892, Part II, p. 18.

30 ARDI, 1891, Part II, p. 9.

various astronomic calculations for the Technical Surveys Branch, for which he was paid at a *per diem* rate. On January 13, 1892, Klotz recorded in his diary that he had received written confirmation that Edward Dewdney, Minister of the Interior had authorized him to continue work on these computations of the British Columbia Railway Belt.³¹ However, before the end of the month the situation had changed dramatically under the direction of Dewdney. On the last day of the month, Klotz was packing to leave for Ottawa:

... to continue my B.C. Railroad Belt computations there as requested by the Minister. This is undoubtedly the first step toward my removal to Ottawa altogether; an event which I had foreseen for years, and against which I worked. . . if I enter the Civil Service my salary will be reduced from what I receive as a temporary employee.³²

By working under these "temporary" terms, Klotz reported that he received approximately \$2200 per year in wages, plus a living allowance of \$300, for a total of \$2500 per year in income from the Dominion government.³³ In addition to this, Klotz received some income from his private practise in Preston. As a full-time civil servant, Klotz would receive no living allowance and be paid \$1800 per year.³⁴ The 1892 Civil List records W.F. King's salary as \$1900 and E. Deville's salary as \$2600.³⁵ O.J. Klotz, as a contract employee, earned more than his immediate supervisor, W.F. King, the Chief Astronomer, and only slightly less than the Surveyor General of Canada! It is not surprising that the government wished to reduce this cost. Maintaining Klotz and others as temporary employees represented a significant expense.

31 Klotz Diaries, January 13, 1892.

32 Klotz Diaries, January 31, 1892.

33 Klotz Diaries, May 11, 1892.

34 Klotz Diaries, June 2, 1892.

35 Sessional Papers, Civil Service Lists, 1892, p. 19.

The reason why the issue of cost had suddenly become very important was that an "investigation of the Royal Commission into our (Technical) Branch"³⁶ was underway. The Royal Commission had, in fact, been created in 1891 to perform a full examination of the federal civil service, including appointments, promotions, salaries, discipline, departmental organization and all financial business. As well, the Commission was assigned to draft a new Civil Service Act.³⁷ The Commission recognized that existing practices led "to the employment for long periods of temporary clerks at constantly increasing rates of remuneration."³⁸ Ending such needless waste and elimination of these sorts of irregularities were prime goals of the Royal Commission.

Therefore, Otto Klotz was not the only target of the drive to save money by moving temporary staff to full-time status. Klotz spent part of an evening with fellow surveyor William Drewry commiserating over the fact that both men had had their pay reduced significantly through this latest change in the terms of employment of some surveyors. Drewry was so offended that he vowed that he would never work on Sundays again.³⁹ Other cost saving efforts by the Department of the Interior included ending the practice of paying members of the Board of Examiners for Dominion Land Surveyors a fee of \$5 per day as a top-up to whatever other daily pay they were receiving when they conducted Board meetings or examinations. Klotz complained bitterly in his diary of the Auditor General's sudden objection to paying both fees. To make matters worse, only payment at the Board of Examiners rate, rather than the higher rates for surveying (\$6 per day) or office work (\$7

36 Klotz Diaries, February 6, 1892.

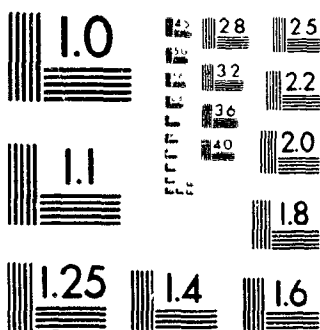
37 Sessional Papers, Royal Commission Report on the Civil Service, 1892, p. ix.

38 Royal Commission Report on the Civil Service, p. x.

39 Klotz Diaries, June 2, 1892.

2 of/de 2

PM-1 3 1/2" x 4" PHOTOGRAPHIC MICROCOPY TARGET
NBS 10¹⁰a ANSI/ISO #2 EQUIVALENT



per day) would be allowed.⁴⁰ Otto Klotz soon found a way to avoid being paid this lesser rate; he simply stopped submitting records of time spent on Board of Examiners business, and claimed an office work day, thereby receiving the extra \$2 a day in pay.⁴¹ A final cost-saving measure was implemented on March 15, 1892. Klotz recorded that this date was the final day on which civil servants were allowed free postage for all their correspondence, including personal items.⁴² The federal civil service appears to have been trying to cut costs wherever possible.

Following his decision to move to Ottawa in early 1892, Klotz felt anything but rewarded by his assignment in that season. He was appointed to a minor role, mostly observational, in a project to calculate the longitude of Montreal organized by McGill University and the Greenwich Observatory in England. Klotz was sent along because the Technical Surveys Branch staff believed that McGill was making a bid to be assigned some of the Branch's duties.⁴³ Klotz, however, believed that he had been selected to go to the east coast, the site of the intermediate astronomical observation point in the project, in order that he be out of the way when W.F. King was named International Boundary Commissioner, so as to avoid any unpleasantness.⁴⁴ Klotz was, initially, gracious about King's success:

... [King] having been recently appointed Commissioner re boundary, a position to which I think I should have been appointed, and to which I looked forward since many years. My non-appointment I attribute to two reasons - principally to the fact that I expressed my opinion in a report to

40 Klotz Diaries, December 14, 1891, and January 15, 1892.

41 Klotz Diaries, February 8, 1892.

42 Klotz Diaries, March 15, 1892.

43 J.H. Hodgson, The Heavens Above and the Earth Beneath: A History of the Dominion Observatories, (Ottawa: Geological Survey of Canada, 1989), p.9.

44 Klotz Diaries, March 28, 1892.

the Government that Canada had no claim to any part of the coast northward of the Portland Canal, i.e. that the inlets irrespective of their widths belong wholly to the United States. The Deputy Minister Mr. A.M. Burgess holds differently. In the second place the Deputy feels that King has not received the pecuniary acknowledgment that he deserves - I who am officially not of King's rank having received 6 to 7 hundred dollars a year more than he for the past six years - and now embraces the opportunity of doing something for him . . . As I was not appointed I was glad to see my intimate friend King get it and not a political hanger-on.⁴⁵

Klotz's inability to secure full-time permanent employment at the level he believed he deserved, and then the lack of promotions he felt he suffered, was partly due to simple bad timing. Certainly Klotz knew that employment and promotions were offered based in large part on seniority, and Klotz was only a temporary employee of the outside service. However, technical staff employed by the government were notoriously poorly paid. The Civil Service Acts of 1882 and 1885 rated the professional and technical officers of the government as clerks and the assistant directors as chief clerks.⁴⁶ It is not known whether Klotz had rejected full-time job offers before, but his January 31, 1892, comment that a move to Ottawa was something he had worked to avoid, indicates that he must have gone to some lengths to maintain his contract status. Being paid at the daily rate undoubtedly allowed Klotz and other contract employees to earn more than they would have as full-time employees, although their positions were not secure.

This method of improving employees' pay was also used by other government departments. During the time when scientific staff were usually classed as "clerks" in the Civil Service Lists, Dr. Alfred Selwyn, Director of the Geological Survey, was able to pay his non-permanent staff members at a higher rate he felt more commensurate with their

45 Klotz Diaries, September 23, 1892.

46 Morris Zaslow, Reading the Rocks: The Story of the Geological Survey, 1842-1972, (Ottawa: Macmillan, 1975), p. 53.

abilities.⁴⁷ Beyond this, however, the reality of the size of the Department of the Interior, and especially the Technical Surveys Branch, its staffing needs and the men who were already in full-time employ of the Branch, governed positions offered. In this period, the demands on surveying staff, which had been so intense in the early 1880s when the Special Survey and railways surveys were being conducted, were diminishing. The Technical Surveys Branch had, for the time being, stopped growing. This was a very unusual experience for Survey staff.

Rather than Klotz being limited solely by his position *vis-à-vis* the Alaska Boundary issue, it seems more likely that there was simply no room within the Branch structure to offer Otto Klotz a position he felt he deserved. Without the Branch assuming further responsibilities, there was no justification for making the role of Boundary Commissioner a new position. In addition, King's new role of Chief Astronomer left room for him to assume further duties. King may even have received this new title in 1890, with the plan that the role of International Boundary Commissioner be added to his duties. King's position had been created only in 1890, and this may have made it unlikely that another new position could be created two years later for Otto Klotz. As well, King undoubtedly lobbied for the appointment as Boundary Commissioner much as Klotz did. Given the importance of seniority, it would have been an insult for an outsider such as Klotz to receive the position. After the "insult" to King in 1883, when Edouard Deville was promoted ahead of him, there was good reason not to overlook King a second time. Clearly, this was Deputy Minister Burgess's opinion, as Klotz noted in his diary entry of September 23, 1892.

The Department of the Interior was subject to the influences and stresses created by rapidly changing staff and duties. Colonel J.S. Dennis (1820-1885), the first Surveyor

47 Zaslów, Reading the Rocks, p. 133

General, had retired in 1882. Lindsay Russell was promoted from Assistant Surveyor General to Surveyor General in 1882, and then had retired as a result of ill health in 1884. In addition, both Inspectors of Surveys were replaced in 1881 - Milner Hart, due to retirement, and A.H. Witcher, due to his promotion to Dominion Lands Agent at Winnipeg.⁴⁸ This meant that the top four positions in the Surveys Branch, which had only been separated from the Dominion Lands Branch in 1881,⁴⁹ opened up in a period of three years. Dennis and Russell were replaced by W.F. King and E. Deville. Following closely behind the steps of these two men was J.S. Dennis, Jr., the son of the former Surveyor General and Deputy Minister of the Interior.

The Department of the Interior had grown in importance and responsibility very rapidly. It was frequently reorganized, and had new branches and divisions created or renamed. In this environment, power struggles were ongoing and could become tense and bitter. One well-documented and highly visible example of such a struggle, is the experience of the parliamentary committee appointed in 1884 to examine the Geological Survey and its role. Morris Zaslow notes that much of the dispute had its foundation in the dissatisfaction with salary levels and limited opportunities for advancement. Only the top staff of the Geological Survey were on the Civil Service List as full-time employees, thereby being entitled to benefits such as super-annuation.⁵⁰ The inquiry was motivated largely by "personal animosities," on the part of Dr. Robert Bell, an Assistant Director of the Survey, against Dr. Alfred Selwyn, Director of the Survey. Bell was jealous of Selwyn and believed

48 ARDI, 1892, Part VI, p. 22.

49 Dr. E. Voorhis, "A Summarized Technical History of the Establishment and Development of the Department of the Interior," Department of the Interior Records, RG-15, vol. 82, pp. 4-5, National Archives of Canada.

50 Zaslow, Reading the Rocks, p. 133.

his superior had limited his career advancement. The committee hearings lasted one month, from March 6 to April 3, 1884, and the information gathering purposes of the meetings were “completely overshadowed most of the time behind these personal feuds”⁵¹ between the various staff members called to testify. Yet, after the smoke had cleared, Selwyn and Bell went on to work together for eleven more years. It is not difficult to imagine the bitterness and anger that resulted from the hearings, and their effect on the long-term operation of the Geological Survey.

Klotz witnessed some of the politicking that went on in the Department of the Interior. He remarked extensively on the struggles of 1886, including the fallout of the 1884 investigation into the Geological Survey:

In the afternoon I called on . . . the Geology Department. What has struck me this time more than ever is the extreme jealousy that exists between the different departments and between officers of the same department. Dr. Bell called Selwyn the director ‘a pig-headed stubborn old beggar.’ Professor Macoun told me that the geologists’ surveys are unnecessary, that we the surveyors should do all that, etc.

A.M. Burgess ‘sits on’ E. Deville.

W.F. King is jealous of E. Deville.

Poor Mr. Deville . . . should be better awarded than have the office of Surveyor General subservient to that of the Deputy Minister, and this is only so since he is Surveyor General.⁵²

In government departments, authority and position stemmed, in part, from personal relations, and success required “access to the ‘gossip’ that flows within the hierarchy.”⁵³ Alliances between staff groups were constantly forming and being amended. Because Klotz

51 Zaslów, Reading the Rocks, pp. 136-138.

52 Klotz Diaries, February 17, 1886.

53 J.E. Hodgetts, Pioneer Public Service, (Toronto: University of Toronto Press, 1955), p. 63.

spent most of his time when not surveying in the North West at his home in Preston, he was not an active participant in the day-to-day events of the Surveys Branch. As an employee of the outside service, Klotz "occupied a lower position in the hierarchy and had less connection with the senior civil service."⁵⁴

The jealousy Klotz referred to was an intrinsic part of employment in the civil service, in both the inside and outside services. The jealousy was, in part, a result of the ongoing competition between individuals and different departments and branches, and between the government and outside institutions, such as McGill University. Individual surveyors were forced to compete with each other constantly in their efforts to receive government contracts. In 1885, when T. Drummond had been assigned to act as Klotz's assistant in the Railway Belt work, he wrote a letter to the Minister of the Interior complaining that Klotz was appointed his supervisor. Drummond felt that he and Klotz should be equals since they were both experienced surveyors.⁵⁵ Klotz noted in his diary that King was jealous of E. Deville's position. Further, if Klotz's statements about his wages as compared to those of both King and Deville, are correct, this could be another source of bitterness and division between the men. Even though Klotz was in the outside service and had no standing in the Branch, he considered himself a peer of both Deville and King. This was certainly true in terms of education, qualifications and ability, but Klotz did not have the status that went along with being a full-time civil servant. After King's appointment as Boundary Commissioner, the relationship between Klotz and King deteriorated somewhat. The two men, however, were able to continue to work together effectively for many years, despite the events of 1892.

54 Hodgson, Heavens Above, p. 5.

55 Klotz Diaries, July 3, 1885.

The second half of the 1880s was marked by a rapid decline in the number of surveyors employed by the Dominion government. After the record breaking year of 1883, fewer surveyors were required to complete the surveying of the North West. In spite of the reduced need for technical staff, Otto Klotz advanced steadily in the Surveys Branch, being assigned to increasingly important tasks. In 1892, Otto Klotz elected to become a full-time civil servant, at the insistence of the Minister of the Interior. Undoubtedly, his hopes for the job of International Boundary Commissioner were a factor in this choice. A number of factors prevented Klotz receiving the appointment he desired. As a contract employee, Klotz had no seniority in his favour. It was also probably a mistake for Klotz to express his belief that the Canadian position regarding the dispute was incorrect. An opinion that went against official government policy would not help Klotz's efforts to gain the post of Boundary Commissioner. The fact that Klotz did report his position indicates that he believed it his duty to be honest and report his "scientific" opinion on the matter. The Deputy Minister of the Interior did not want to repeat the snub to W.F. King of the early 1880s when E. Deville was promoted ahead of him. The reduced demand for the Branch's expertise, likewise reduced the chances that a senior administrative position would be created for Klotz. He was very disappointed when W.F. King received the appointment as Commissioner of the International Boundary Commission.

The result was that in 1892, Klotz had reached a plateau, even if a temporary one, in his career. Klotz was now a regular government employee, but his position in the hierarchy was below that of Edouard Deville and W.F. King. Unfortunately for Otto Klotz and his peace of mind, he was unable to perceive the factors limiting his chances for obtaining the appointment he hoped for. Klotz was unable to see the simple reality of the needs of the Technical Surveys Branch. As a result, Otto Julius Klotz was a very disillusioned man in

1892, probably wondering if he had made a wise career choice when he moved his family to Ottawa.

"... [Klotz] through whose efforts the profession of... surveyors has attained such a high degree of efficiency."

Board of Examiners for Dominion Land Surveyors¹

CHAPTER 6

Conclusion

He came. He saw. He surveyed and marked it out. He conquered a land and a profession. And, perhaps most importantly, he recorded it all for posterity. Has one surveyor done more for his profession than Otto Julius Klotz? Hardly.

The most permanent monument to the memory of Otto Julius Klotz may be the two Canadian mountains that bear his name. In 1945 a peak in the Yukon was given his name; in 1957 another in southern British Columbia was named in his honour.² But, Klotz's real achievements are more intangible. He was a disciplined, detail-oriented, methodical land surveyor and scientist, with the romantic bent of an adventurer. How did all these traits exist in one man, and how were they expressed? Through his work, through his writings and through his achievements. Following Klotz's death in late 1923, the Board of Examiners for Dominion Land Surveyors recorded a tribute to him in their minutes:

[Klotz was] an active and valuable member since 1883³ and whose consummate scientific attainments reflected the greatest credit not only on

1 Minute Book, Board of Examiners for Dominion Land Surveyors, February 11, 1924, cited in Don W. Thomson, Men and Meridians: The History of Surveying and Mapping in Canada, (Ottawa: Queen's Printer, 1967), vol. 2, pp. 267-268.

2 Thomson, Men and Meridians, vol. 2, p. 92.

3 These Board minutes cite 1883 as the year Klotz became a member, yet as noted in

this Board but on the country he so brilliantly and faithfully served and through whose efforts the profession of . . . surveyors has attained such a high degree of efficiency.”⁴

Otto Julius Klotz had very definite career goals from the time of his youth, and he pursued them throughout his working life. Otto Klotz’s American education had placed him in the crucible where the dual concepts of professionalism and middle class were evolving. The social mobility made possible by the idea of a middle class and professionalism was attractive to Klotz and other university-educated people, who could thereby claim a position in the elite of society. By virtue of his status as a professional, Klotz believed he had earned a place in Canada’s upper middle class. The ideas of professionalism and vertical mobility between social classes were accepted more slowly in Canada than in either the United States or England. Klotz perceived that the vision of society he had adopted did not exist in the Canada he returned to following graduation from the University of Michigan in 1872.

Otto Julius Klotz, however, was prepared to accept and work within the restrictions and limitations of Canadian society. Klotz recognized that the system of clientelism permeated many aspects of Canadian social life, and was a vital component of his being hired as a surveyor by the Dominion government. Klotz utilized the patrons his family’s social status and kin relationships made available. Klotz willingly and vigorously participated in patron-client relationships in order to gain the support he needed to be appointed to government surveying contracts. Klotz may have remained more a product of his upbringing than of the ideals he had adopted while at university in Michigan. Klotz used his

Chapter 5, he was assigned a temporary role on the special Board of Examiners constituted in British Columbia in 1885, and did not become a regular member of the Board until 1887.

4 Minute Book, Board of Examiners for Dominion Land Surveyors, February 11, 1924, cited in Thomson, Men and Meridians, vol. 2, pp. 267-268.

available patrons effectively, and was willing to provide information and participate in speculative business ventures based on that information. While Klotz never profited materially from these attempts, he did not appear to perceive the apparent conflict of interest between his role as a government land surveyor and using details learned through execution of his duties for personal gain.

Klotz disparaged the practice of patronage and clientelism, but he was also a realist. He knew that if he wanted a government contract, he would have to operate within the existing and accepted method of awarding such appointments. Once Klotz had been hired as a contract surveyor, however, he tried to change his working environment to one where the roles of patron and client were eliminated. Klotz believed skill, expertise and technical knowledge should be the sources of a person's prestige and power, not who their friends and supporters were. While he never occupied a position which enabled him to make major changes to government hiring practices, Klotz promoted his ideals as best he could. Technical advances during the second half of the nineteenth century increased the education, knowledge and skill required to perform many tasks, particularly those in the field of science. All these factors combined, and gradually the concept of a meritocracy became generally accepted and a shift in the hiring practices of the federal civil service reflected these new attitudes.

The founding of the Association of Dominion Land Surveyors in 1882 was an important step in the advancement of professionalization of land surveyors. The first steps towards their professionalization had been taken by officials of colonial governments when accreditation standards and examinations were instituted prior to 1850. This fostered a growing sense of group identity among land surveyors. By 1882, the Dominion Land Surveyors had a clear sense of the common goals and interests they shared. They formed the Association of Dominion Land Surveyors mainly as an instrument to voice those goals

and interests to the federal government, and to enhance their status as professionals. The surveyors hoped to provide some stability in the market for their services - they were well aware that once the surveying of western Canada was complete, their jobs would be gone. Otto Julius Klotz was unanimously elected president of the Association, a position he held for four years. As the man who wrote the constitution and bylaws of the Association, as well as preparing and being signator of several government memorials, Klotz was instrumental in the early success and activity of the ADLS. Klotz's participation in the founding of the Association of Provincial Land Surveyors of Ontario indicates his dedication to surveying as well as his appreciation that the enhancement of any one group of surveyors would aid the advancement of the profession as a whole.

Following his move to Ottawa in 1892, Klotz's civil service career advanced slowly. Throughout most of the 1890s he was assigned tasks relative to the Canadian-American dispute regarding the Alaska boundary. In 1898, Klotz was sent on a fact-finding mission to London and St. Petersburg, where he conducted research on original documents relative to agreements between Russia and England regarding the boundary. In this same period, interest was building in the field of astronomy. Because W.F. King and Otto Julius Klotz had special training and interest in astronomy, they were assigned to work together in this field. The two lobbied successfully for construction of a small astronomical observatory in Ottawa in the late 1880s. Their efforts continued through the 1890s, and culminated in the construction and official opening of the Dominion Observatory in 1905. King was appointed Dominion Astronomer, and Otto Julius Klotz was named Chief Astronomer. Unfortunately for Klotz, because he and King were contemporaries in age, there was no potential for Klotz to advance within the civil service due to his superior's retirement. Klotz therefore remained in a position subordinate to W.F. King throughout the remainder of King's life (to 1914).

In 1916, after the intense anti-German sentiment following the outbreak World War I had waned, Otto Julius Klotz was finally named Dominion Astronomer. Klotz held this position until his death in 1923.

The diaries of Otto Julius Klotz are the most extensive personal record written by any Canadian land surveyor. More than this, however, Klotz's diaries span fifty-seven years, and include writings on almost every aspect of human existence. Klotz witnessed the birth of Canada, was an active participant in its westward expansion, experienced both economic depression and boom, and was a victim of national prejudice directed against Germans during World War I. He expressed his thoughts and philosophies regarding topics such as education, politics, religion, law, and war. Klotz regularly recorded his perceptions regarding major events of the day - the North West Rebellion of 1885, the Boer War, and the seemingly perennial question of the likelihood of Canada's national survival with the United States as a neighbour. But Klotz also writes of the more minor details of life - marriages, feuds, social events and celebrations, birthdays, events in the small town of Preston and then the city of Ottawa, and quiet evenings at home or on the prairie during the surveying season. Love, friendship, jealousy, enmity, birth and death are all found in the diaries' pages. A case could be made for identifying Otto Julius Klotz as the Samuel Pepys of Canada. Klotz's diaries should be viewed as being as invaluable to Canada and its historians as Pepys' are to the British. To date, the diaries have only been used as a resource for the study of the history of land surveying and astronomy in Canada. This thesis also focuses on the former subject, but provides a deeper consideration of Klotz himself. The thirty-four volumes of Otto Julius Klotz's diaries are waiting in the National Archives of Canada for anyone interested in delving into the life and thoughts of an educated, influential Victorian man of science.



Figure 2.

Otto Julius Klotz, circa 1895 (age 43). Public Archives of Canada, PA12295.

Works Cited

PRIMARY MATERIAL

Government Documents

Canada. House of Commons. Debates. "List of Members " 1879 through 1884

Canada. Sessional Papers. Annual Report of the Department of the Interior 1872 through 1892.

Canada. Sessional Papers Civil Service Lists 1884 through 1892

Canada. Sessional Papers. Royal Commission Report on the Civil Service 1892.

National Archives of Canada

Klotz, Otto Julius. Papers. MG30B13. 11 vols.

"Klotz, Otto Julius." (Personnel File). Civil Service Commission Records RG-32, Box 435, Accession 1990-91/015.

Kranz, Hugo. Letter to the Minister of the Interior. February 24, 1880. Department of the Interior Records. RG-15. Series D-II-1. vol. 232. file 3129. letter 22471.

———. Letter to the Minister of the Interior. February 22, 1884. Surveys and Mapping Branch Records. RG-88. vol. 301. file 0796. letter 13744.

Voorhis, Dr. E. "A Summarized Technical History of the Establishment and Development of the Department of the Interior." Department of the Interior Records RG-15, vol. 82.

Minute Book, Board of Examiners for Dominion Land Surveyors Surveys and Mapping Branch Records. RG-88. vol. 483. file 2731.

Memorandum dated January 23, 1885. Surveys and Mapping Branch Records RG-88 vol. 483. file 3081. part 1. memo 59982.

Department of the Interior Records. RG-15

Surveys and Mapping Branch Records. RG-88.

Published Works

Annual Reports of the Association of Dominion Land Surveyors. 1884 through 1892.
Published by the Association.

Manual Shewing the System of Survey of the Dominion Lands. Ottawa: Dominion Lands Office. 1881.

University College: Calendar for 1870-71. Toronto: University College. 1870.

University of Michigan Catalogue, 1870-71. Ann Arbor: University of Michigan. 1871.

University of Toronto: Class and Prize Lists, 1870. Toronto: Henry Rowsell. 1871.

SECONDARY MATERIALArticles

Campbell, Dr. A.D. "The First Physicians in Waterloo County." Waterloo Historical Society. 1987. 75:96-97.

Donohoe, E.F. "St. Jerome's College." Waterloo Historical Society. 1940. 28:105.

Greenwood, Ernest. "The Elements of Professionalization." Professionalization. Howard M. Vollmer and Donald L. Mills. Editors. Englewood Cliffs: Prentice-Hall. 1966. 6-12.

Larson, Magali Sarfatti. "The Production of Expertise and the Constitution of Expert Power." The Authority of Experts. Thomas L. Haskell, Ed. Bloomington: Indiana University Press. 1984. 27-65.

Plaskett, J.S. "W.F. King - An Obituary Notice." Journal of the Royal Astronomical Society. 1916. 10:267-274.

Sebert, L.M. "The Land Surveys of Ontario, 1750-1980." Canadian Cartographer. 1978. 17(3): 65-106.

Stewart, R. Meldrum. "Dr. Otto Klotz," Journal of the Royal Astronomical Society of Canada. 1924. XVIII(1-2):1-8.

Swainson, Donald. "Samuel Merner." Dictionary of Canadian Biography. George W. Brown, general editor. Toronto: University of Toronto Press. 1966. vol. 11. p. 906.

"Dr. Rudolf Mylius." Berlin News Record. Monday, October 6, 1902.

"Edouard Deville." Proceedings and Transactions of the Royal Society of Canada. 1925 Series 3. 19: V^{II}-XI.

"Otto Julius Klotz." Waterloo Historical Society. 1914 2.50.

Books

Axelrod, Paul. Making a Middle Class: Student Life in English Canada During the Thirties. Montreal & Kingston: McGill-Queen's University Press. 1990.

Bledstein, Burton J. The Culture of Professionalism: The Middle Class and the Development of Higher Education in America. New York: W.W. Norton & Co. 1976.

Bond, Courtney C.J. Surveyors of Canada 1867-1967. Ottawa: Canadian Institute of Surveying. 1966.

Cochrane, Rev. William. The Canadian Album: Men of Canada 2 vols. Brantford. Bradley, Garretson and Company. 1893.

Corrigan, Philip and Derek Sayer. The Great Arch: English State Formation as Cultural Revolution. London: Basil Blackwell. 1985.

Curtis, Bruce. Building the Educational State: Canada West, 1836-1871. London. Althouse Press. 1988.

Frost, Stanley Brice. McGill University for the Advancement of Learning. 2 vols. Montreal and Kingston: McGill-Queen's University Press. 1980.

Green, Lewis. The Boundary Hunters: Surveying the 141st Meridian and the Alaska Panhandle. Vancouver: University of British Columbia Press. 1982.

Greer, Allan and Ian Radforth. Editors. Colonial Leviathan: State Formation in Mid-Nineteenth-Century Canada. Toronto: University of Toronto Press. 1992.

Hodgetts, J.E. Pioneer Public Service. Toronto: University of Toronto Press 1955

Hodgson, J.H. The Heavens Above and the Earth Beneath: A History of the Dominion Observatories. Ottawa: Geological Survey of Canada. 1989.

Jarrell, Richard. The Cold Light of Dawn: A History of Canadian Astronomy. Toronto. University of Toronto Press. 1988.

Johnson, Terence J. Professions and Power. Toronto: MacMillan. 1972.

Junker, Alan William. "Otto Klotz and the Implementation of Education Policy in Waterloo County, 1846-1871." Unpublished Cognate Essay. Wilfrid Laurier University 1987.

- Kilbourn, William. The Firebrand: William Lyon Mackenzie and the Rebellion in Upper Canada. Toronto: Clarke, Irwin. 1956.
- Ladell, John L. They Left Their Mark: Surveyors and Their Role in the Settlement of Ontario. Toronto: Dundurn Press. 1993.
- Larson, Magali Sarfatti. The Rise of Professionalism: A Sociological Analysis. Berkeley: University of California Press. 1977.
- MacGregor, James G. Vision of an Ordered Land. Saskatoon: Modern Books. 1981.
- Martin, Chester, with an Introduction by Lewis H. Thomas. "Dominion Lands" Policy. The Carleton Library Edition. Toronto: McClelland and Stewart. 1973.
- Middleton, Jesse E. and Fred Landon. The Province of Ontario: A History, 1615-1927. 4 vols. Toronto: Dominion Publishing Co. 1927-1928.
- Millard, J. Rodney. The Master Spirit of the Age: Canadian Engineers and the Politics of Professionalism, 1897-1922. Toronto: University of Toronto Press. 1988.
- Morgan, Henry James. The Canadian Men and Women of the Time. Toronto: William Briggs. 1898.
- Neatby, Hilda. Queen's University. 2 vols. Montreal: McGill-Queen's University Press. 1978.
- Noel, S.J.R. Patrons, Clients, Brokers: Ontario Society and Politics, 1791-1896. Toronto: University of Toronto Press. 1990.
- Owram, Doug. Promise of Eden: The Canadian Expansionist Movement and the Idea of the West 1856-1900. Toronto: University of Toronto Press. 1980.
- Peckham, Howard H. The Making of the University of Michigan, 1817-1967. Ann Arbor: University of Michigan Press. 1967.
- Reader, W J. Professional Men: The Rise of Professional Classes in Nineteenth-Century England. New York: Basic Books. 1966.
- Rose, G.M. Cyclopaedia of Canadian Biography: Being Chiefly Men of the Time. Toronto: Rose Publishing Company. 1886.
- Thomson, Don W. Men and Meridians: The History of Surveying and Mapping in Canada. 3 vols. Ottawa: Queen's Printer. 1967.
- Waite, Peter Busby. Canada 1874-1896: Arduous Destiny. Toronto: McClelland and Stewart. 1971.
- Young, Clarence Richard. Early Engineering Education at Toronto, 1851-1919. Toronto: University of Toronto Press. 1958.

Zaslow, Morris. Reading the Rocks: The Story of the Geological Survey of Canada 1842-1972. Ottawa: Macmillan. 1975.

Zeller, Suzanne. Inventing Canada: Early Victorian Science and the Idea of a Transcontinental Nation. Toronto: University of Toronto Press. 1987.