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Author's Preface

THE UBC DEPARTMENT of Mechanical Engineering was brave to hire an “outsider” to write its history. Before the project began, I was unfamiliar with the department and its members were unfamiliar with me. I had no commitment to a celebratory account of great accomplishments or inevitable progress, believing such an approach to be undesirable in historical writing. On the other hand, I had few preconceptions or axes to grind and was prepared to give a fair and considerate interpretation of the evidence I found. My hope was (and still is) that this account might afford a description of the department's past that rang true with those who experienced it, and provide a reasonable explanation of how and why the department acquired its characteristics.

The resulting history examines several aspects of the department: administration, the teaching and research of professors, the undergraduate curriculum, and student culture. The history also identifies influential forces outside the department and how faculty members actively pursued beneficial social arrangements. Chapter 1 explores the rise of post-secondary education in an industrializing British Columbia until 1920, and examines the

potential value of the new department to governments, local industries, a rising middle-class, and a new, regulated profession of engineering. Chapter 2 examines how from 1920 to 1950 the department promoted its undergraduate program to key allies, particularly the engineering profession, British Columbia's resource industries, and potential students. The department established a place for itself in British Columbia society that remained unchanged until the 1950s when Mechanical Engineering began to participate in the new research mission of the university. Chapter 3 shows how a new wave of young professors in the department joined the university's push toward research and introduced the curricular and social adjustments needed to support the "research department" while maintaining their teaching obligations. Changes in British Columbia society and its educational system also helped to transform the department. Finally, Chapter 4 examines the new priorities from the 1980s and into the new millennium. Changing economic and demographic patterns in the university and across British Columbia and Canada influenced department research, teaching, and even student culture.

Woven throughout are the students, faculty members, and administrators who played roles in creating and sustaining the department. Yet a brief history such as this has left many stones unturned. For example, although this is largely a social history, I have not investigated extensively the social origins and destinations of students and faculty members; a closer examination of them would say much about the department. I have also left aside the general history of engineering in British Columbia except for events of direct relevance. Similarly, the story of the province's technological development is not recounted here in detail. I have not given the intellectual development of "engineering science" or related academic disciplines detailed attention, although one will find comments on the curriculum and research activities. Relationships among the University of British Columbia, the provincial government, and wider society have been included only as

required by the central themes of this account. More work could be done on these aspects of the department and the Faculty of Applied Science.

Many of the sources for this history are kept at the University of British Columbia Special Collections and Archives, with others at the City of Vancouver Archives, the office of the Association of Professional Engineers and Geoscientists of British Columbia, and the Head's Office of the Department of Mechanical Engineering. Unless otherwise indicated, the collections cited in the notes are located at the university. I gratefully acknowledge the assistance of various people at these locations, particularly Chris Hives and Leslie Field of UBC Special Collections and Archives, and Wayne Gibson of the Association of Professional Engineers and Geoscientists of British Columbia. Erica Hernandez organized the department's archival materials (mainly photographs, blueprints, and reports) from the 1960s, 1970s, and 1980s for preservation in the University of British Columbia Archives. Staff in the Faculty of Applied Science Dean's office and especially in the Department of Mechanical Engineering general office were also helpful in responding to various queries.

Unfortunately, archival material pertaining directly to the Department of Mechanical Engineering was not abundant, making inferences from faculty or university documents necessary. To the documentary evidence I added data from nearly thirty personal interviews with current and past department faculty members, graduates, and staff. A questionnaire distributed in the department in the fall of 2000 provided an additional source of information. These data have collectively been cited in the text as "Personal Interviews and Correspondence, 2000-2001," and I thank those who shared their views with me.

Writing this history has provided me with an enjoyable learning experience for which I am most appreciative. Perhaps the most satisfying aspect was the freedom to make my own judgements. Dale Cherkas, Chair of the history project, Robert Evans, and

Ian Gartshore from the Department of Mechanical Engineering provided encouragement and let me build what I thought was a defensible account. I was thus able to show the ups and the downs of the department's past, and also to suggest where personal values and politics played a role. William Bruneau from Educational Studies offered useful historiographical and organizational advice, and Ronald Hatch provided excellent editorial services. Since, however, I was given the freedom of interpretation, the responsibility for any errors, omissions, or lapses of judgement falls in my lap. The reader is invited to alert the Department of Mechanical Engineering to any such oversights.

Finally, thanks go to my family and friends who provided their customary and much appreciated moral support.

Eric Damer
October 1, 2001

Chapter 1

Creating the Department, 1907–1920

WHEN THE UNIVERSITY of British Columbia opened its doors to students in 1915, the Department of Mechanical Engineering was one of the few departments ready to provide undergraduate instruction. Initially, the department provided only a partial program of study, but by 1920 it offered a complete Bachelor of Applied Science degree. The origins of the degree-granting Department of Mechanical Engineering predated the university and lay with a provincial government eager to promote industrialization by educating technical experts, first through high schools and then through post-secondary institutions. UBC's Mechanical Engineering Department began in an earlier college jointly sponsored by the provincial government and McGill University. Other aspects of British Columbia society in the first decade of the century encouraged a demand for post-secondary technical educa-



British Columbia was industrializing rapidly in the first years of the twentieth century. The Buntzen Lake Power House No. 2 (shown under construction in 1913) was among the new industrial projects. City of Vancouver Archives LGN832.

tion. As the economy and population grew, ambitious middle-class British Columbians looked to education as one way to secure well-paid and stable careers for themselves or their sons, and to authorize who might work as a “professional” engineer. Public educators also seized the opportunity to advance their own careers by providing post-secondary technical education in new institutions. For the new professors of mechanical engineering, their task was to find a way to satisfy both technical and social demands from government, industry, and engineers themselves.

British Columbia at the opening of the twentieth century was a rough and booming frontier society with a wealth of forests, minerals, and other natural resources. The economic mood of the new century was optimistic, and ambitious young men sought — and frequently won — great profits. Capital from central Canada,

the United States, and Britain flowed into the region, bringing with it industrial technology. The Canadian Pacific Railway had helped transform Vancouver into western Canada's leading city. Hastings Mill on Burrard Inlet reminded Vancouver residents that lumbering, the province's largest industry, was increasingly mechanized. Mining was another source of great profit, and such mines as the Britannia on Howe Sound or the Sullivan and Le Roi in the Kootenays depended on increasingly sophisticated ore-processing techniques. Demand for urban utilities was on the rise, particularly in the more populated south-west corner of the province. The British Columbia Electric Railway Company had two hydro-electric power plants operating by 1903 for lighting and streetcar systems, the Goldstream plant near Victoria and the Buntzen Lake plant near Vancouver. The provincial government under a popular Richard McBride — the people's Dick, as he was called — contributed to industrialization in various ways before 1914, notably a railway building boom.¹ Mechanical engineers, with their special knowledge and skills to generate and direct mechanical power, played an important role in this rapid industrialization by designing and maintaining steam, electric, and compressed air plants; construction, mining, logging, and canning equipment; steam and internal combustion engines; and furnaces, freezers, and waterwheels.²

Proponents of higher education in the province often argued that local opportunities were needed to educate mechanical engineers and other technical experts.³ Many early engineers in the province came from central or eastern Canada and the United States, often as employees of railway or mining companies.⁴ Yet local entrepreneurs, capitalists, and civic boosters were not satisfied with outside experts, remembering, perhaps, some poor experiences with foreign engineers.⁵ Local expertise required local education, but few British Columbians seriously considered that a university could do the job. Most residents simply would never make use of an institution that had long been associated with a

clerical or humanities curriculum, and engineers had other ways to recruit and educate new practitioners. However, British Columbia was too young and too small to support a traditional apprenticeship system to meet the demand for technical expertise, making a school of some sort inevitable. One local engineer, Frederick Tytler, had begun his own school in Vancouver by 1907.⁶ Although small in number, the British Columbians who advocated a public university were influential and wanted to locate their university near the province's commercial and industrial centre where technical experts were most in demand.

As university promoters debated the form and location of their university, the provincial government passed an Act in 1906 establishing the Royal Institution for the Advancement of Learning to oversee a post-secondary college sponsored by McGill University: the McGill University College of British Columbia.⁷ The Act enabled the government to circumvent public debate and begin university-level education immediately, following a precedent in Quebec. The Royal Institution was essentially a committee of government representatives, businessmen, and a few professionals who administered the budget of the new college.⁸ McGill, a well-established "practical" university and a leading provider of engineering degrees in Canada, was already affiliated with Vancouver and Victoria High Schools. The university college ("McGill B.C.") provided up to three years of study toward an undergraduate degree in Arts or two years in Applied Science, transferable to McGill University in Montreal for completion. The engineering school at Columbian College in nearby New Westminster, an affiliate of the University of Toronto, provided little competition although some felt that the government had given unfair advantage to McGill.⁹ Government officials, university promoters, and McGill B.C. administrators understood, however, that the college would relinquish its duties once the provincial university was established.

McGill B.C. began in modest surroundings, with classes during