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Daniel Macfarlane

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Roberta M. Styrán and Robert R. Taylor. *This Colossal Project: Building the Welland Ship Canal*. 340 pp. Montreal: McGill-Queen's University Press, 2016. \$44.95 (hardcover). ISBN: 978-0773-5479-02

Building on their previous book about the three nineteenth century iterations of the Welland Canals, in *This Colossal Project* former Brock University professors Roberta Styrán and Robert Taylor address the fourth incarnation, the Welland Ship Canal. Accessibly written, amply illustrated, and extensively researched, the book chronicles the 1913-1932 building of this underappreciated Canadian technological achievement. The improved canal could accept much larger vessels and boasted much fewer – but much larger – locks, including the twinned flight locks that traverse the Niagara Escarpment.

The authors classify their effort as “on the ground” history, and they provide a rich and comprehensive account of the technical construction of the canal while also putting a human face on the project. The first two chapters investigate the challenges, ranging from the local to the international levels, that delayed the waterway's completion for many years. Ample attention is paid to the chief considerations that factored into choosing the new course of the canal, such as which sites were suitable for lock foundations. The next few chapters are case studies of specific elements of the project, such as creating the prism and the locks. The perspective of the lead engineers is emphasized, and a reoccurring theme is the constant need to adjust

plans because of geology and other conditions.

I appreciated an entire chapter on water management, which covers the supply works for the canal as well as the revamping of other intertwined water bodies such as the Welland River, which was taken under the canal by a syphon culvert. The following chapter examines other types of infrastructure that had to cross the canal: e.g., bridges, tunnels, and wires. This was one of the first occasions in Canada where concrete was used on such a vast scale, and the authors' discussion of its deployment and its attendant ramifications for the workforce (e.g., stonemasons) was fascinating. Later chapters focus on various social and local aspects: labour conditions, worker accommodations, health and deaths (well over 100 workers died), and the impacts on canal communities.

The book takes great pains to catalogue every statistic and dimension, but repeatedly misses opportunities to engage key debates and theories in connected fields – as a result, it tends to be historiographically weak and methodologically unsophisticated. The most obvious omission is the complete lack of environmental history analysis and insight, which is surprising in a study on massive landscape alterations. Given the emphasis on technology, the book would have benefitted in particular from incorporating or showing familiarity with environmental approaches utilized in other works on canals and hydraulic engineering: e.g., path dependencies, hybridity, high modernism, megaprojects, mobility/spatiality,

cultural landscapes, etc.. Classic concepts such as “organic machine” and “technological sublime” are invoked, but only superficially. The authors don’t recognize the ecological disruptions resulting from the canal’s creation or operation, nor the myriad ways that environments and technologies exert historical agency. There is no mention of invasive species, such as the sea lamprey, which were able to move to the upper lakes through the Welland Ship Canal since it further removed the natural hydrological separation provided by Niagara Falls.

The authors do a good job of uncovering the personal and professional lives of the project’s lead engineers, and demonstrate that this was the first Welland project where most were Canadian, had been schooled in Canada, and had experience on other canals in Canada and abroad. But this fine-grained detail isn’t used to identify overarching engineering or governmental mindsets and practices. The ship canal is frequently labeled as “modern” and “ultra modern”, but these terms are bandied about in problematic ways (particularly considering the extensive use of mule- and steam-

power). One is left with many questions about the engineering profession: e.g., what was unique about Canadian canal engineering techniques? Unfortunately, *This Colossal Project* directly endorses the flawed “engineer as hero” construct undermined by so much history of technology literature. This leads to exaggerations such as the unfounded claim that the Welland Ship Canal may be the most impressive Canadian technological achievement of the twentieth century. In fact, like the St. Lawrence Seaway which absorbed it, government planners probably would not have built the Welland Ship Canal if they had known its actual financial, environmental, and human costs.

Technology and science scholars may well find this book conceptually unsatisfying, as it is more a technical history than a technological history, though canal and hydraulic engineering historians could profitably use the book for comparative purposes. *This Colossal Project* will be of greatest interest to locals with a personal or family connection to the Welland Canal, Niagara peninsula historians, and the popular audience interested in heritage canals and ships.

*Daniel Macfarlane, Western Michigan University*