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### *The British Ordnance Department and Canada's Canals, 1815-1855.* George Raudzens, Waterloo, Wilfrid Laurier University Press, 1979. Pp. xi, 204.

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## BOOK REVIEWS/COMPTEs RENDUS

*The British Ordnance Department and Canada's Canals, 1815-1855.* George Raudzens, Waterloo, Wilfrid Laurier University Press, 1979. Pp. xi, 204.

The British army's Ordnance Department was headed by a Master General and Board of Ordnance. The Master General commanded the Royal Artillery, Royal Engineers and Royal Sappers and Miners, held a seat in cabinet and, with the aid of the Board, was responsible for the manufacture, procurement and transport of all war supplies for the army and navy, the topographical survey of the United Kingdom and the construction and maintenance of fortifications, storehouses and military buildings throughout the British Empire.

In this book, George Raudzens seeks to enhance our understanding of the British military's contribution 'to the shaping of Canada' by providing an administrative history of the Ordnance Department in the context of its particular contribution to Canadian development. The book focuses on the Ordnance's Canadian canal construction program because the canals, which were intended to provide a secure interior military transportation network, were the Ordnance's 'outstanding contribution' to the development of Canada. Other contributions of the Ordnance Department to Canadian development are merely touched on in passing.

The opening chapters set forth the organization, duties and growing responsibilities of the Ordnance in the post-war of 1812 period, and most importantly, the success of the Duke of Wellington, the Master General, in resisting efforts to bring the department under close parliamentary control. The deficiencies in the existing system of Imperial administration and financial control are illustrated by what transpired on the Ottawa Canals project where work commenced in 1819, and the point made that when Lieut. Colonel John By of the Royal Engineers was appointed to superintend the Rideau Canal project in March 1826, the system remained open to exploitation by a determined man seeking his own ends. Colonel By's activities are the main focus of the book through the launching, expansion and final completion of the Rideau Canal amidst controversy over his expenditures. Succeeding chapters are devoted to the subsequent conflict concerning the Ordnance properties in the Canads, concluding with a general sketch of the Ordnance's impact on Canada prior to its demise in 1855.

Raudzens, following J.S. Galbraith's thesis in 'The Turbulent Frontier as a Factor in British Expansion' (*Comparative Studies in Society and History*, 2, 1959-60, 150-68), sees Colonel By in the same mould as the so-called 'man-on-the-spot' Imperial administrators. The proconsuls on the fringes of the British Empire who, through taking advantage of poor communications with London, acted on their own personal inclinations and views as to what local circumstances required. Men who, often in direct violation of their instructions from London, committed the British government to a policy of

aggrandizement through territorial expansion, at the cost of colonial wars and heavy expenditures, and/or, as Raudzens attests in By's case, committed the home government to massive expenditures in pursuit of personal ambitions.

More specifically, it is argued that Colonel By, to satisfy his personal designs and grandiose plans, deliberately opposed the orders of his superiors and through guile, evasiveness and good luck, managed to commit the British government to constructing a canal much larger than the supreme military strategist, the Duke of Wellington, wanted built. Thereafter, Colonel By through taking advantage of the loose system of Imperial financial administration, the imprecise nature of his instructions, and a series of either careless or deliberately-evasive estimates prepared by himself, managed to evade the limits imposed on his annual expenditures and carried on so extravagantly on the Rideau that costs escalated five-fold over the preliminary estimate of £169,000 formed by the Ordnance for the project. In all, £822,804 was spent on the Rideau project, by far the largest expenditure on any Imperial defence project throughout the course of the 19th century.

In sum, Colonel By is depicted as one of the worst types of 'man-on-the-spot' who exploited his position so blatantly that he brought the wrath of the Treasury Board down on himself and the Ordnance with the result that the system of Imperial financial control was tightened up and the Treasury Lords refused to countenance any further large-scale expenditures on colonial defence projects. This was a minor disaster for the Ordnance as it meant that the Duke of Wellington's grand strategy for the defence of the Canadas could not be carried to completion, and with no monies forthcoming to finish enlarging the Ottawa Canals on the scale of By's large Rideau Canal steamboat lock, the monies expended on enlarging the Rideau Canal locks was supposedly largely wasted. The Rideau Canal as constructed by Colonel By, although admittedly an impressive technical achievement, 'left the Ordnance with more canal problems than benefits.' These developments, it is concluded, were a direct result of the inadequacies of the Imperial system of administration which prevented the London authorities from restraining Colonel By, their 'man-on-the-spot,' from embarking on the construction of a much larger canal than was necessary and spending unjustifiably excessive amounts of money.

Unfortunately, where Colonel By's activities and expenditures are concerned, this book suffers from a narrowness of treatment and an analysis pursued in a vacuum. The argument presented bears all the marks of an effort to support an *a priori* thesis by means of a selection of evidence, often taken out of context. Colonel By's escalating expenditures are duly noted, as well as the Ordnance's initial negative reaction to his proposal for enlarging the Rideau Canal locks; but subsequent developments in the technical arguments involved in that initial rejection are ignored, as well as critical developments within the Ordnance Department, in Colonel By's dealings with the Ordnance and between the Ordnance and the Treasury Board. These developments, if treated in the context of the

construction problems encountered on the Rideau Canal project, a comparative analysis of costs/cost overruns on other major 19th-century construction projects, and the technical/strategic implications of a Rideau steamboat navigation, would have cast Colonel By's expenditures and achievements in a far different light. The author's narrowness of treatment is responsible for a number of questionable assumptions and conclusions, as for example:

- 1) That Colonel By tricked the Ordnance into authorizing the large lock steamboat navigation.

On the contrary, the Ordnance's decision to reject By's proposal was not absolute. The great military potential of a steamboat navigation was realized, but it was rejected on the grounds of its supposedly far greater cost and technical considerations -- that steamboats could not operate on canals as the wash from their paddles would destroy the banks. Thereafter, Colonel By was able to refute these arguments. He pointed out that the so-called Rideau Canal was in reality a canalized river system where high floods scoured the river banks each spring, and that the several canal cuts were being carried for the most part through the rock of the Canadian Shield, hence immune to damage from steamboats. Also, on the Rideau, high dams were being erected to flood out the rapids, as opposed to the more conventional approach of excavating long canal cuts around the rapids. Hence, as long as the depth of the navigation remained the same, the enlargement of the locks to accommodate steamboats would add relatively little to the total cost of the project. After two committees of Royal Engineers -- the Bryce Committee in London, and the Kempt Committee on the Rideau -- examined By's plans, they concurred in his arguments, and the larger scale of lock was authorized in June 1828.

- 2) That the large lock decision was a victory over the Duke of Wellington, and that Colonel By was lucky Wellington had previously resigned as Master General of the Ordnance (p. 78).

What this assumption ignores is that in January 1828 Wellington had assumed the position of Prime Minister and First Lord of the Treasury in his own government. Had he continued to oppose the larger lock, it would not have been approved.

- 3) That Colonel By was slothful in producing his initial survey report (pp. 66, 68), and that it was carelessly produced, if not 'deliberately evasive' (p. 75).

How does one reconcile this with the Bryce Committee's commendation of By's survey report for the 'care and accuracy' displayed (p. 76), and the dispatch with which it was produced (p. 77). The author's comments betray a lack of understanding as to the difficulties and time-consuming labour involved in preparing a plan of construction and detailed estimate for a major construction project on the scale of the Rideau Canal.

4) That Colonel By, owing to a defective system of financial control, was able to spend 'massive unauthorized sums' on the Rideau Canal, and that the Ordnance and Parliament had no power to restrain him (pp. 10, 80-81, and 93).

Contrary to the author's assumption, Colonel By was as much sinned against as sinning. He was not the architect of his instructions. On the Rideau Canal project, the Ordnance, to speed construction, had adopted an open-ended contract system with the contractors being paid per unit of work completed and no limit on the amount to be paid out in any year. Previously on Ordnance construction projects, expenditures were limited to the amount of the annual parliamentary grant, with the project closing down on the grant being expended. However, Colonel By was instructed to ignore the annual parliamentary grant, and to pay the contractors out of the Military Chest to avoid any curtailment of construction should the annual grant be exceeded. This system, as the Ordnance realized from the beginning, deprived the superintending engineer of control over his expenditures, but it was assumed that the total expenditures would even out by the end of the project. Excesses in any of the early years of the project would be offset by underspending in the latter years of the project as it was wound down. However, when costs continued to soar beyond the annual grant over the last years of the project, the Ordnance shrank from the only course open -- abrogation of the contracts -- for fear of being sued by the contractors. Far from exploiting the system to his advantage, By was a victim of the open-ended contract system devised by the Ordnance.

5) That Colonel By continually overspent his cost estimates (p. 80) and exceeded the original Rideau Canal estimate five-fold (p. 64).

Such statements are gross distortions as they fail to take account of the fact that the preliminary estimate was not formed by Colonel By, and that the several early estimates were for a smaller scale of canal. By's estimate for the scale of canal actually constructed was £576,757, and when in 1830 flood waters flowing over several of the newly-completed high dams threatened to undermine them, the estimate had to be increased to £693,449 to cover the cost of constructing waste weirs to protect the dams. At that time, only £30,124 of the new supplementary estimate was to cover a projected cost overrun on the estimate, and both the Ordnance and Parliament accepted the projected overrun as 'not unreasonable' given the large sums being spent in prosecuting works in a veritable wilderness. Thereafter costs soared, in the face of malaria and costly hard rock excavation work, to a final cost of £822,804. Although this sum included the cost of items not in the estimate, such as bridges and blockhouses, nonetheless taken as a bald figure By's total expenditure represents an increase of 42.6 percent on the estimate for the locks actually constructed, and only 18.6 percent on the supplementary estimate accepted by Parliament. By way of comparison, the Ordnance Ottawa Canals project had a cost overrun of 60 percent

on a supplementary estimate, and had been running 222 percent above the original estimate. The contemporary Welland Canal project had a cost overrun of 55 percent, and the Caledonian Ship Canal constructed by Thomas Telford, one of the pre-eminent civil engineers of the age, had a cost overrun of 87.6 percent. Such overruns were typical of major 19th century construction projects, many of which proceeded under far less trying conditions than those on the Rideau.

6) That Colonel By's heavy expenditures on the Rideau project crippled Wellington's defence plan, thereby endangering Canada's military security (pp. 63, 94).

This conclusion ignores the fact that Wellington's defence scheme was never a viable undertaking. From its inception in 1825, successive governments had refused to bring it before Parliament because of the heavy projected expenditures, and in 1828 when Wellington, as Prime Minister, insisted on the scheme being presented to Parliament, all of the projected works were rejected after an acrimonious debate. Thereafter, as a compromise, two new projects were authorized -- the Halifax citadel, and new fortifications at Kingston -- but on a reduced estimate. After the fall of Wellington's government in November 1830, the new Reform government curtailed the Kingston project, and refused to authorize any new colonial defence works. The escalating Rideau expenditures were no doubt a factor, but not the critical factor.

7) That the original scale of canal would have sufficed, and By's heavy expenditure in constructing the larger steamboat canal was 'a waste' (p. 94).

This conclusion ignores the fact that the topography, mapped during the initial survey -- the high rock cliffs, extensive swamps and large lakes -- ruled out the construction of towpaths along the canal. This fact alone, as the Kempt Committee attested in June 1828, necessitated the employment of steam propulsion on the canal. Otherwise, in the absence of towpaths, vessels propelled by sail could be held up for days or even weeks on end awaiting a favourable wind where the narrow river made tacking impossible. Hence, the need for the larger locks capable of passing steamboats.

The author also, though he comments on the commercial impact of the Rideau Canal, overlooks the military implications of the steamboat navigation. From its opening in May 1832, the Rideau Canal steamboat navigation was and remained a vital element in British military planning for the defence of the Canadas. Moreover, its importance actually increased with the defeat of Wellington's scheme to defend the Canadas with a lightly-garrisoned system of large permanent fortifications. Thereafter, the military planned to defend the Canadas with a large, highly-mobile field army capable of repulsing any American attack, and the speed, certainty and economy of transport provided by the Rideau Steamboat navigation was essential to the implementation of that plan.

Indeed, the Duke of Wellington in an 1841 reappraisal of the Canadian defence plan stated that:

'However expensive the works upon the Rideau, nobody now doubts the wisdom of the plan, its efficacy, and above all, its economy.'

In many ways, *The British Ordnance Department and Canada's Canals* is a very unsatisfactory book which, in focussing on Colonel By's activities on the Rideau project, loses sight of its main aim: to elaborate on the British military's contribution 'to the shaping of Canada.' Nonetheless, the subject is one that merits further study, and it can only be hoped that this initial effort will encourage others to produce a fuller, more satisfactory treatment.

*Addendum:* Lieut E.C. Frome's article is not the only contemporary technical treatment of the Rideau Canal project. Lieut W.T. Denison, who also worked on the Rideau project, published three contemporary articles in the *Papers on Subjects Connected with the Duties of the Royal Engineers*. Two of these articles pertain directly to the canal structures: 'Rideau Dams,' vol. 2, 1838; and 'A Detailed Description of Some of the Works on the Rideau Canal, and of the Alterations and Improvements made therein since the Opening of the Navigation,' vol. 3, 1839.

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