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### *Les Pâtes et Papiers au Québec, 1880-1980 : Technologies, travail et travailleurs*, par Jean-Pierre Charland, Québec, IQRC, 1990. Pp 447.

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*Les Pâtes et Papiers au Québec, 1880 - 1980: Technologies, travail et travailleurs*, par Jean-Pierre Charland, Québec, IQRC, 1990. Pp 447.

The author is a researcher at the Institut québécois de recherche sur la culture and is best known for his writings on the history of professional and technical training in Québec. In this book he states his intention to discuss the evolution of technological systems in the pulp and paper industry of that province, noting 'les périodes de changements techniques rapides des années 1880-1900, 1920-1940 et 1960-1980 témoignent du niveau de saturation du système technique antérieur et de la constitution du nouveau' (p. 27). Enthusiasts for the work of Thomas Hughes will be disappointed that this conception is not developed to any degree. Indeed, the organization of the book is thematic, not chronological. The author modestly declines to offer any grand theoretic conception of technological change, saying that must wait upon further industry studies. True enough, but Charland has made a solid contribution to such a programme.

Part I offers a brief overview of the techniques of pulping and paper making and the origin of the industry in Québec. Part II discusses the industry in its political and economic aspects. Part III will be of greatest interest to the readers of this journal, as it deals with productive processes, R & D, innovation, scientific personnel, professionalization and technical control. Finally, Part IV highlights the labour process.

The book is well provided with tables, illustrations and appendices filled with useful information. Charland mentions that excellent trade journal, the Pulp and Paper Magazine of Canada, first amongst his sources, which also include the records of firms, unions and government records. The bibliography is extensive though with puzzling gaps both in contemporary scholarship and classic works. The lack of any index seriously detracts from the work's usefulness as a scholarly reference.

Charland highlights the multiplicity of sources of demand for pulp and paper products and the image of technologies of usage. He shows the many ways in which provincial and local governments facilitated the exploitation of forest resources. These included such little remarked upon aspects as setting up more meteorological stations. He reminds us how early the industry was driven to reforestation, forest management and advanced silviculture techniques. Here the reader will wish to compare the account given by Gillis and Roach in their *Lost Initiatives*. Charland notes as well how quickly skills in fabricating and assembling pulp machinery were acquired locally.

Unlike many other writings on the pulp and paper industry, this book gives full measure of attention to non-newsprint aspects of the industry. The author argues that the competition of big integrated newsprint mills drove smaller enterprises to find market niches in specialty paper products: 'à cause des caractéristiques

spécifiques de leur productions, ils s'avèrent souvent les premiers à acquérir les équipements techniques les plus sophistiqués, à adopter les méthodes les plus rigoureuses de gestion de la main-d'oeuvre, à employer le personnel le plus qualifié' (p. 113). In discussing the timing of the scientization of the industry, Charland observes: 'Vers 1920, le perfectionnement des équipements, la diversification de la production et le besoin d'une gestion plus serrée de la main-d'oeuvre coïncide avec le développement d'un nouveau système. Il s'accompagne d'un accroissement du nombre des scientifiques' (p. 167). Even more interesting in this regard is his assertion that 'La crise économique [the Great Depression] stimule la recherche au sein des entreprises de pâtes et papiers' (p. 175). He notes the various firms which established laboratories in the 1930s. This is in contrast to the near collapse of the industry support for collective research in the early 1930s. Charland's judgement on the effect of increasing scientific control on labour seems moderate and balanced: 'Certes, les scientifiques permettent d'augmenter la qualité des produits et contribuent à éliminer des tâches qui exigeaient un effort physique considérable, mais, en rendant les tâches routinières, ils provoquent également une détérioration des conditions de travail' (p. 242). As well, he does not neglect the effect of technical transformation on traditional management.

I do, however, have some quarrels with this book, some more substantive than others. I am not sure Charland has worked out properly the mix of Québec forest species and the implications for industry production of such a mix. His contribution to this ongoing debate over the reasons for the migration of the North American pulp and paper industry to Canada is not very good and his discussion of the pre-World War I pulpwood embargo entirely inadequate. His statement that firms were less concerned with water pollution than air pollution is difficult to accept. First of all, it misses the precedent of 19th-century sawdust stream pollution and second, it ignores the tremendous volume of research on the derivation of by-products from spent sulphite liquor. Charland gives C.B. Thorne all too single-handed credit for the dissolving pulp system pioneered in Hawkesbury, perhaps because it is usually Thorne's name on the patents. Charland fails to explain that PAPRICAN incorporated only the Pulp and Paper Division of the Forest Products Laboratories of Canada, not the entire FPL, the significance of which I have discussed in this journal. His surprising insistence that the Canadian Pulp and Paper Association and its Technical Section opposed the Trois-Rivières school of papermaking is made with very little documentation.

Less seriously, the information on the relative costs of wages, power and materials is given in the least helpful and effective manner imaginable in the text and tables (p. 180). The proofreading of English words and names is not as careful as might be desired. And it is mildly annoying to see temperatures given in Fahrenheit and Celsius on successive pages.

On some issues Charland's performance is mixed. He is very strong on the significance of hydroelectric power to the pulp and paper industry, but much less satisfactory on the significance of transportation improvements. His summary of mechanical developments is excellent, but that for chemistry much less so. He highlights the role of instrumentation but neglects the importance of the development of the Canadian Standard Freeness Tester at the FPL.

Charland raises a host of issues which cry out for more extensive treatment. It is interesting to compare what he says about the participation of francophones in the industry in its early years in both R & D and production with De Bresson and Lampel's study of the snowmobile. This is a contribution to a longstanding debate in Québec historiography on which the last word is by no means written. We would like to know to what extent Québec machinery firms were only constructing pulp and paper machinery under license and not modifying it. Charland refers in passing to the curious interest of Québec pulp and paper firms in research which benefitted the growth of the southern US kraft industry. The same was true of the giant Ontario-based Abitibi Power and Paper and deserves further investigation and explanation.

This book is a major contribution to our understanding of one of Canada's most important industries. It will be of interest to historians of the forest, Québec in the 20th century, labour and technology. To all of these I strongly recommend it.

James P. Hull