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BOOK REVIEWS/COMPTEs RENDUS

Power, The Pratt & Whitney Canada Story by Kenneth H. Sullivan and Larry Milberry, Toronto, CANAV Books, 1989. Pp 320, \$40.00.

Power is a company history of the US aviation industry giant Pratt & Whitney's Canadian subsidiary from its formation in 1928 to 1988. It is mostly chronological in organization with a focus on the hardware, successive generations of engines and the aircraft those engines powered. The authors, respectively a retired P & WC executive and a writer on aviation topics, are scrupulously uncritical of the company. This coffee table format book is lavishly illustrated with black and white photographs, many from P & WC's own archives. Oral history was the foundation of this book since, as the senior author writes, 'most of the records of the early days had been destroyed. I could find detailed production records for every engine that had passed through the shop but records of the people involved had been disposed of after the normal retention period.'(p. 9). Still, the blend of technological chronical and anecdote turns out to be remarkably readable.

The Pratt & Whitney aircraft engines, with their famous eagle logos, are the principal characters in this book. While at times the recitation of engine designations and their horsepower ratings is tedious, almost all the material is comprehensible to the non-specialist. Some attention is paid as well to other players in the aviation game. A great deal of valuable statistical information is presented, unfortunately without notes or attribution. This is especially disquieting as the text is clearly marred in places by shortcomings in proofreading; one Alaskan airline is identified as 'Wein' and 'Wien' on the same page. The reader would like to be able to check some of the more eyebrow-raising data.

Although the authors do not situate their work within the current historiography of North American technology, they do offer tantalizing glimpses of issues, such as the shop culture vs school culture conflict and the mechanisms of technological transfer, which are of great interest to the historian of technology. In some respects what emerges from this study is analogous to what Traves and Craven have told us about the railway industry in Canada. Both are not just transportation technologies but major manufacturing enterprises of great technological sophistication. The close links between P & WC in its early years and such firms as Dominion Bridge and Dominion Engineering are shown and the story of the firm is generally well set in the context of Montréal-area metal and engineering industries. This is a particularly good study, at the level of the firm, of the impact of WWII on the Canadian manufacturing infrastructure. All those aircraft used

in the British Commonwealth Air Training Plan needed their engines serviced and it fell to P & WC to do much of the servicing. The company increased its activities twenty-fold during the war.

The authors have made their own decisions on what issues to pursue and their decisions are not always those which the professional historian of technology might have made. The influence of United States military requirements in Vietnam on the development of the Twin Otter is interesting, but a sidelight; I wish instead we had more information on P & WC's testing equipment and machine tools. On the other hand, Sullivan and Milberry do an excellent job of elucidating the relationship between R & D and marketing. They point out how the mobility of technical personnel among firms is a means of maintaining close up and down stream links among manufacturers, their clients and their suppliers. We also see the sales engineer in action, a not sufficiently studied occupation.

P & WC's perspective -- and that is what we get -- on a number of issues is a valuable one to have. The story of the firm's involvement with the CF-105 eschews the typical ululations; its appropriate brevity reminds us that the cancellation of the Arrow did not wipe out the Canadian aerospace industry. The authors' account of the Turbo Train fiasco seems on the whole a balanced one. On the other hand, the short discussion of the well-known and often-violent strike at P & WC's Québec operations in the mid-1970s is rather self-serving.

Perhaps the most interesting issue however is that of continental economic integration. The original purpose of P & WC was to overhaul in Canada engines built by its parent and to assemble engines from parent-produced parts, thus avoiding the higher tariff of finished engines. Later it added manufacturing and still later R & D functions. P & WC thus changed 'from manufacturing engines and parts as a branch-plant licensee to an integrated manufacturer of its own gas turbine designs for sale around the world' (p. 125). Remarkably, P & WC even set up its own US subsidiary in West Virginia. The freedom and ability of P & WC to export its products was much more complex than the picture drawn by Williams in his *Not for Export*. The issue was handled pragmatically on a case by case basis and evolved over time. That evolution corresponds much more to the model suggested by Safarian than to the nationalist school of people like Gray, Levitt, Clement and Naylor. Overall, the managers of P & WC never forgot that the firm was both a Pratt & Whitney subsidiary and a Canadian corporate citizen. Nor did they overlook the opportunities for profits derived from both aspects of that status.

Power is a work which is flawed if judged by the standards of academic history, but those are inappropriate standards. The authors have given us an attractive and readable book which makes a real contribution to understanding Canadian aviation and industrial history. P & WC are to be commended as well for their

support of this project. May many other firms do the same.

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