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RESEARCH NOTES/NOTES DE RECHERCHE**REGENERATING THE FUTURE:****THE FIRST WORLD POWER CONFERENCE, LONDON, 1924¹**

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The international industrial exhibitions of the nineteenth century were usually seen by their participants as opportunities for business, the chance to stir up trade by showing one's wares. They were substantially important for the exchange of technical knowledge, too, but that tended to be a behind-the-scenes, less obvious part of such affairs than the elaborate arrays of machinery and manufactured objects which attracted popular attention.

Canada's role in these exhibitions was somewhat more problematic, however. Stocked with an abundance of natural resources but without an extensive manufacturing sector, the country's displays were necessarily more promise than product. Indeed, potential was what Canada had to sell and its exhibits, from London's 1851 Crystal Palace throughout the rest of the century, aimed at attracting the capital to exploit the country's natural wealth.

That historic approach to overseas industrial assemblies also shaped Canada's activities at the World Power Conference held in London during the summer of 1924. But because the meeting was organized to coincide with the British Empire Exhibition and because it was the first international gathering of engineers since the Great War, Canadian concerns for capital investment were subordinated to a display of technological competence that also reflected a post-war image of political maturation.

From the outset, the delegates felt a sense of consequence and of purpose. Despite the fact that many of the post-war conferences begun with high expectations had ended with few results, the president of the power conference, Lord Derby, claimed there were good reasons to think this particular meeting might be different.² Who could foretell the remarkable potential of electric power? What might not come from bringing together in one place the 'best brains' in the world on the subject of energy? And wasn't there something especially pregnant in a peaceful assembly of technical men from nations so recently at war? O.D. Merrill, of the US delegation, also struck that note when he claimed that the engineers had come to London to talk about power in a different way: 'Not the power of territorial possession or economic aggression, but that of mechanical energy and electricity, the greatest tool ever placed in

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the hands of man.'³ The most exalted vision of all, though, was left to the Prince of Wales, who suggested to the engineers that they comprise a League of Nations in matters technical, with a responsibility no less portentous.⁴

Yet, an array of practical concerns pulled these men together, too. Engineers from Canada and US, nations that had emerged relatively unscathed from the war, arrived with optimistic hopes for large-scale power consumption and with plans for systems to match that demand. Old World delegates faced rather different problems. As the London *Times* pointed out in its report of the opening ceremonies, everyone knew that post-war Europe was in 'an amazingly confused condition,' and that there was not enough wealth left in the world 'to maintain the old standard of living.'⁵ Clearly, the answer was to generate more wealth and it had become fashionable in Britain to compare the situation with that of Europe after the Napoleonic Wars, when the recovery from its effects had been brought about by the new technologies of steam power and machinery. So it proved appealing in the 1920s to see electric power as the basis for a whole new set of technological remedies, though as these men recognized, the difficulty of rebuilding Europe's shattered capital plant was exacerbated by depreciated currencies and debilitated governments.

In the minds of the conference organizers, the way to start was to make a sort of nation-by-nation inventory of energy resources and to connect that information with the best current technical practice in power development. Ideally, such a format had the dual attraction of bringing nations back in touch with each other and of creating a body of men international in their outlook. Thus, the exploitation of future energy resources could proceed from a common pool of knowledge as well as a sense of cooperative endeavour.

This kind of program for the conference also reflected a post-war shift in opinion among British engineers about the way to manage economically valuable knowledge. According to Paul Wooton, a correspondent of the US technical magazine *Electrical World* who had travelled in Britain in 1923, engineers there were increasingly persuaded of the long-term utility of exchanging knowledge, not only to improve practice, but to minimize costs through standardization, by reducing duplication and from the elimination of waste.⁶ They realized as well, he said, that much of the stock of pre-war information was useless.

Wooton's last point soon became evident. The opening technical sessions, to survey the world's power resources, revealed a series of startling developments. For Europeans, perhaps the most surprising was to learn of the scale of electric generating operations in North America. New York City produced more electric power than all the generating plants of Great Britain; Chicago not only generated more electricity than London, it did so with three stations instead of seventy-seven.⁷ And the concept of 'Superpower,' a new scheme to link large generating plants into great regional or even national power networks, described by the American delegate, W.S. Murray, indicated a level of technical achievement beyond anything under consideration

in England. The extent of electrification in Switzerland proved notable, too, particularly that country's highly effective use of waterfalls. And the delegates learned that on a *per capita* basis Switzerland manufactured twice as much electric power as the USA, three times as much as Britain and six times that of France or Italy.

The resumes of power resources of the British Dominions brought some other surprises. New Zealand's commitment to hydro-electric development was as intense as that of Switzerland, for example, and carried with it an outspoken social program. The consulting engineer to the New Zealand High Commissioner reported that his government aimed 'to provide a supply of electricity to every inhabitant no matter how remote the district in which he resided.'⁸ A substantial survey by the Australian Institution of Engineers documented great stores of lignite, while from India engineers estimated ten million horsepower in hydro-electric capacity in the lower Himalayas alone.

But there was another message in these optimistic reports from the Dominions and it was exemplified in the presentations of the Canadian delegates. Long defined in its relations with both Britain and the USA as a subordinate economic partner, the Canadians in London forcefully described an impressive case of independent technical development. As more than one of its delegates reminded the conference, Canada was second only to the United States in the scale of its power operations. Even more noteworthy -- the centrepiece of its demonstration and the model of an approach to public policy -- the Ontario provincial government's Hydro-Electric Commission ruled the largest system in the world. And within the country's technical community there was the conviction that this remarkable progress was chiefly the work of 'a young and brilliant group of engineers,' whose success mirrored the Dominion's economic and social possibilities.⁹

Attracting capital investment, the old ambition of previous displays of the country's natural resource wealth was behind the Canadian government's explicit intention to play an important role at the conference. Consequently, the Department of the Interior's Water Power branch planned 'to present a complete survey of the possibilities in the Dominion.'¹⁰ But the reigning sentiment within the engineering community was that Canadian technical ability, which had won an international reputation for itself, 'readily commanded all the capital needed.'¹¹ That viewpoint argued the centrality of hydro-electric capacity to Canada's own industrial development, not the exportation of natural resources.

Nor was Canada the only Dominion to have come out of the war with the sense it had earned its place among the family of nations. According to the newspaper report of his speech, Sir Joseph Cook, Australian High Commissioner, made the point plainly when he said the Dominions 'aimed at producing something more than the raw materials of Empire.' Indeed, he directly linked their resource self-sufficiency with independent political status, and as he contrasted the hearty vigour of the Dominions with a Europe 'still sick and in trouble,' he claimed

there would be no going back to the old order of things.¹² As the conference took shape, then, it became clear there was more on the agenda than high moral purpose or the useful exchange of practical information.

The most significant division at the London meeting was not, however, between Britain and her Dominions, or even between Europe and North America. What most separated the delegates was their commitment either to private or public enterprise in the electric utility industry. That alignment produced another in its train: the advocates of private power development were mostly concerned with coal-fired generating plants while the champions of publically-operated systems were usually involved with hydro-electricity. As a result, the British and US delegates emerged united in their support for private enterprise while Canada, New Zealand and the Scandinavian countries formed the bloc dedicated to public or mixed public and private power development. And just as Sir Joseph Cook's starchy comments revealed old grievances within the British family of nations, the public vs private power arguments at the conference often seemed framed for consumption back home. Thus, for example, when H.M. Addinsell, of the New York investment firm Harris, Forbes & Co, stood up and announced that the world needed 'more business in Government and less Government in business,' a speech reported as the shortest one of the conference, no one could have thought the remark much advanced their understanding of the world's energy problems.¹³

But it was more than the common use of coal that drew Britain and the USA together. The conference, it is worth noticing, had been organized and funded by the British Electrical and Allied Manufacturer's Association, a group chafing under the control of the Board of Trade, whose Commissioners had final authority in the generation and distribution of electric power and whose decisions tended to favour municipally-owned plants. Yet the prevailing note in the papers of such men as John W. Lieb of New York's Edison Company and David Jacobus, a consultant for boiler manufacturers Babcock and Wilcox, was that private power was more efficiently produced and more effectively delivered. They described US generating plants that produced twice the electricity of British stations using the same amount of coal, and that distributed it for half the price. And the American delegates, overwhelmingly from the private utility industry, claimed that 'Superpower' promised to push the benefits of private enterprise to even higher levels of efficiency.¹⁴

British engineers and manufacturers concerned to modernize the country's capital plant and to insure their own competitive position in the battle for post-war markets found the technical arguments they needed in these accounts of American practice. By contrast, the short paper Herbert Hoover sent to the conference on 'Government Policies in Relation to Power Development,' gave private power interests in Britain a rallying cry. And when the person reading it came to the sentence 'it is the business of government to provide an open road for the exercise of the individual initiative of its citizens,' the audience was thrilled, according to one account, as if by

'the blast of a trumpet.'¹⁵

But the Americans had battles to fight back home, too, and they also turned the conference to that account. A group of delegates formed themselves into a committee, abstracted portions of the American papers, and with funds from the National Electric Light Association, a trade organization promoting the interests of the US private power industry, published the collection under the title *Prosperity Through Power Development*. Aimed at 'every thinking American,' the pamphlet argued the centrality of electric energy 'to industrial and social progress,' claimed that Superpower provided the most efficient technology, and identified the matter of public or private ownership as the 'crucial question.'¹⁶ This unusual form of popular publication, while other delegations concentrated on detailed engineering reports, was directly the consequence of an opposing formula for electric power development in the US called 'Giant Power,' then being advocated by a group of reformers led by Gifford Pinchot, governor of the State of Pennsylvania.

In contrast to Superpower, Giant Power imagined large publically-owned generating plants situated at pit-heads in coal mining districts. This plan also emphasized the effective utilization of coal by-products and the extension of power to rural districts rather than its concentration principally in urban industrial areas. Besides the fact that the controversy between these opposing ideas was at its height in 1924, the battle had particular relevance for the London conference since Ontario's hydro-electric system was the example most cited by Giant Power enthusiasts as proof that publically-owned systems could be technically efficient, economically feasible and socially beneficial.

So, for instance, in March 1924, *Survey*, a US magazine that reflected liberal opinion, devoted a special issue to Giant Power and featured articles by Pinchot, Morris L. Cooke, an engineer already notorious for his attacks on private electric utilities, by the labour leader Samuel Gompers and by Sir Adam Beck, chairman of the Ontario Hydro-Electric Commission. Beck characterized the work of Ontario Hydro as a 'partnership of municipalities,' in an article that emphasized fiscal responsibility and political impartiality. Martha Bensley Bruere, one of the magazine's associate editors, sketched a different picture in an article she called 'Following the Hydro.' Bruere had driven into Ontario ostensibly to see how well the system was working, and found an idyll of socially effective technology. Cheap electricity had created clean and prosperous cities, but in her mind the system's real success was revealed in small towns. In Woodstock, Ontario, 'the perfect flower of the Hydro towns,' Bruere discovered a modern Eden. It had no poverty, no crime. There was gainful employment for everyone but no servants. The town had a high school, a small college and a hospital, while eighty percent of the families owned their own houses. But most important of all, inexpensive electric energy had ended rural isolation and made farm work easy. Bruere reported a conversation with the wife of a dairy farmer, far out in the country, to portray all the advantages

of that new way of life:

It was late afternoon and his wife in a fresh housedress with her greying hair piled high on her head had leisure to sit and rock and talk with me. The dinner was cooking itself in the electric oven, the electric washing machine was open and drying after the weekly wash.

"Nothing to do but the wrists and collar bands," she told me. "Annie!" she called to her sixteen-year-old daughter. "You better iron out a couple of the boys' shirts. They'll want them if we go to the movie after supper."¹⁷

For years, electrical power excited dreams of a new stage in human progress. To people in the waning years of the nineteenth century, its possibilities seemed particularly linked with the promise of the millenium. George S. Morison, an American civil engineer, wrote a small book exactly on that theme in 1898, called *The New Epoch as Developed by the Manufacture of Power*. Morison's argument was that the ability to generate energy cheaply and on a large scale would lead to an era unlike anything that had gone before -- a level of change so profound that it would obliterate existing ways of thinking and doing. In a style of discourse polished at the industrial exhibitions of the nineteenth century and refurbished for this occasion, speakers at the First World Power Conference also juxtaposed past and present as if there were little to connect the two. The past, they reminded each other, had been defined by great technological advances which revolutionized the order of things, and so too would the future be determined by the sweeping influences of electric power. The problem with that kind of rhetoric, with those 'nursery stories' of the coming electrical age, as the editor of the *New Republic* sarcastically described them, was that they masked the process by which important decisions were made. Language of that sort led one to assume that things will get done 'in the best of all possible ways.' Worse yet, according to the editor, thinking of the past as a series of advances led people to forget their own experiences with technological change.¹⁸

But it was no more likely for the London delegates to undertake such a critique of technological ends than it would have been for visitors at the Paris Exposition of 1900. In fact, the engineers had before their eyes what seemed positive evidence of the progressive nature of technical change; Stephenson's first locomotive stood on display in the Palace of Engineering where their sessions were held. Even more for the Canadians, there was a close correlation between the rhetoric of a new electrical age and the objectives that had brought them to London in the first place. Their industry appeared on the verge of take-off -- the value of its product finally exceeded that of agriculture -- and hydro-electric development was crucial to that new stage. Not only did water power provide an alternative to coal, but by happy providence the supplies of it were located near the country's manufacturing districts. And because industrial capacity was the measure of a country's

status, the *Canadian Engineer* argued, 'the importance of power development is second to no other national interest.'¹⁹

Thus in a way that had not been true of the country's participation in previous international industrial gatherings, Canadians went abroad in 1924 expecting to play a major part in the conference. As was so often claimed in the literature and reports surrounding the meeting, it offered Canada

a unique opportunity to present before the world her magnificent power resources both by hydro and fuel, and the efficient and economic manner in which they have so far been developed.²⁰

That agenda included the encouragement of capital investment but it also meant to convey a feeling of national accomplishment. In that sense, the commitment to hydro-electricity also reflected a certain view of history and of Canada's readiness to take its place on the world's stage.

NOTES

1. The original version of this paper was presented at the Lerbach, German, meeting of ICOHTEC, 3 September 1984.
2. *The Times*, 1 July 1924, 13.
3. *Power* 60 (29 July 1924), 160.
4. *The Electrician* 93 (4 July 1924), 4.
5. *The Times*, 3 July 1924, 19.
6. *Electrical World* 82 (10 November 1923), 985.
7. Herbert N. Casson, 'Significance of the World Power Conference,' *Industrial Management* 68 (November, 1924), 256.
8. *The Electrical Review* 95 (11 July 1924), 48. The magazine published a full account of the conference which also conveys a sense of the tone of the discussion.
9. *The Canadian Engineer* 46 (24 June 1924), 638.
10. *Ibid.*, 46 (20 May 1924), 544.
11. *Ibid.*, 46 (24 June 1924), 638.
12. *The Electrician* 93 (4 July 1924), 5.
13. *The Electrician Review* 95 (11 July 1924), 50.
14. Herbert Casson's article in *Industrial Management* provides the best account of the British reaction to American developments.
15. Casson, *op. cit.*, 258.

16. *Prosperity Through Power Development: A Compilation of Papers Presented at the First World Power Conference Held at London England, July 1924* (New York, 1925).
17. Martha Bensley Bruere, 'Following the Hydro,' *The Survey* 51 (1 March 1924), 593.
18. *New Republic* 38 (30 April 1924), 246.
19. *The Canadian Engineer* 46 (20 May 1924), 545.
20. *The Engineering Journal* 7 (July 1924), 321.