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Résumé de l'article

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# 'THE ONERY COUNCIL OF SCIENTIFIC AND INDUSTRIAL PRETENCE': UNIVERSITIES IN THE EARLY NRC'S PLANS FOR INDUSTRIAL RESEARCH

Philip C. Enros<sup>1</sup>

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## *Abstract*

The quarrel between Queen's University and the National Research Council in 1919 provides an opportunity to look at the evolving relationship between university and government science in Canada. Although several factors were involved in the NRC's decision to press for central research laboratories, the main one was the value placed on pure research by the NRC's Chairman, A.B. Macallum.

## *Résumé*

Le conflit de 1919 entre l'université Queens et le Conseil national de recherches du Canada fournit l'occasion d'examiner l'évolution des relations entre les universités et la recherche gouvernementale au pays. Parmi les divers facteurs qui ont joué dans la décision du CNR de créer ses propres laboratoires de recherche, le principal était sans doute la valeur qu'attachait à la recherche pure le président du CNR, A.B. Macallum.

In February of 1919, a quarrel between Queen's University and the recently established National Research Council which had been simmering for quite some time boiled over onto the pages of the press. What had been a private dispute now became public with a report in the *Globe* on a speech given by the Principal of Queen's, Robert Bruce Taylor. He complained that his university was not being treated fairly by the NRC, a body, he said, run by Toronto and McGill men.<sup>2</sup> The Chairman of the NRC, Archibald Byron Macallum, denied any discrimination toward Queen's.<sup>3</sup> He added that Council members were drawn from several universities aside from Toronto and McGill.

1 Office of the Science Advisor, Environment Canada, Ottawa, Ont K1A 0H3..

2 'Says That Queen's Is Unfairly Treated,' *Globe*, 22 February 1919, 12.

3 'Denies Unfair Treatment,' *Globe*, 1 March 1919, 4. See also the statement in Queen's Univer-

Macallum's reply did not calm the waters. Instead, it provoked a second, bitter round of public argument. Taylor reaffirmed his position that Queen's had been slighted, objected to 'the implication that we are worthy of no place in any scientific movement,' and stated that the Council, under Macallum, was attempting to take credit for work performed by others. 'The method of the chairman,' he wrote, 'has been to blow the trumpet and invite the attention of a wondering world to problems that were to be solved by different men who have been working quietly and unobtrusively, but none the less effectively, in Ottawa.'<sup>4</sup> Macallum, in return, issued a lengthy statement to the press. Exasperated with Taylor, he wrote

It is difficult to carry on a discussion with Principal Taylor. He ignores the amenities fundamental to such a discussion, he indulges in insinuations regarding his opponents' motives and he resorts to the rhetoric which occasionally characterizes a certain type of politics which he ostentatiously affects to despise. I am not going to emulate him in this style of controversy, .... His letter is crammed with mis-statements, or half truths, and sweeping statements of the ad captandum kind. Three-fourths of his alleged facts are baseless, as are also the conclusions which he draws from the rest. I am not going to deal with them seriatim. Life is too short and newspaper space too valuable to waste either in this way.<sup>5</sup>

The conflict then slipped out of the public eye. Both sides began preparing for the hearings of the newly appointed House of Commons committee on scientific research (the Cronyn Committee).<sup>6</sup> Queen's sought allies. Taylor's files contain several memos outlining points to be made and refutations of Macallum's arguments, as well as letters from various individuals critical of Macallum. (The quote in the title of my paper is taken from one such letter.<sup>7</sup> It is a play on the original name of the NRC, the Honorary Advisory Council for Scientific and Industrial Research.) Some of the files contain nasty personal attacks on

sity Archives (QUA), Principal's Office Files, Ser. 1A, Box 2, Macallum file.

- 4 'Principal Taylor Reaffirms Position That Queen's Has Been Slighted,' *The Kingston Standard*, 3 March 1919, in QUA, Principal's Office Files, Ser. 1A, Box 2, Macallum file. 'Principal Taylor Holds Ground,' *Globe*, 4 March 1919, 3.
- 5 Mel Thistle, *The Inner Ring: The Early History of the National Research Council of Canada* (Toronto, 1966), 64-67. See also QUA, Principal's Office Files, Ser. 1A, Box 2, Macallum file, and the *Toronto Daily News*, 15 March 1919. Part of this quote, from 'His letter' on, was not printed in the *Toronto Daily News*.
- 6 Special Committee Appointed to Consider the Matter of the Development in Canada of Scientific Research, referred to in these notes as the Cronyn Committee.
- 7 From Louis Simpson of Ottawa, a member of the American Electrochemical Society. Onery is a variant of ornery.

Macallum. For example, one document described Macallum's efforts as 'characteristically German. ... No doubt the Chairman of the Council studied these methods carefully on the 16 trips which he publicly stated he had made to Germany prior to the war.'<sup>8</sup>

These quotes give an idea of the heat generated by the quarrel. But what was at issue? The substance of the dispute involved plans being developed by the NRC. The immediate cause of the public wrangling was a campaign by the NRC to increase the amount of university research and graduate studies. The Council was concerned that those receiving its student awards would not be able to obtain graduate education in Canada. Unfortunately, Macallum chose to single out a few universities for increased financial aid, and Queen's was not one of them. For example, in an article in the *Globe*, a month before Principal Taylor's complaint, he called for more government funding for Toronto, McGill and L'École Polytechnique.<sup>9</sup> To the embarrassment of Queen's, Macallum had also convinced Sir John Willison, a prominent trustee of Queen's and president of the newly established Canadian Reconstruction Association, to publicly support the NRC's plans.

A further cause of the dispute was another NRC decision, to recommend the establishment of a Central Research Institute combining a bureau of standards and industrial research laboratories. Queen's was opposed to locating industrial research in a government body, contending that such an arrangement would suffer from government bureaucracy and would damage the universities. Queen's believed that aid for industrial research should be directed to universities, where it would strengthen their research and stimulate their students, rather than to central laboratories.<sup>10</sup> Because of the NRC's plans, Queen's leaders had come to believe that 'anything that Queen's may get will not come to her without a stiff fight.'<sup>11</sup>

The significance of the Queen's-NRC quarrel lies in providing an opportunity to look at the evolving relationship between university and government science — the decisions being made about who would do what — at a time when R&D was

8 'Memorandum Suggested Official Inquiries,' QUA, Principal's Office Files, Ser. 1A, Box 2, Macallum file.

9 'Chemistry as Industry's Aid,' *Globe*, 2 January 1919, 10.

10 See for example the letter from R.B. Taylor to Sir Thomas White, 28 December 1918, NRC Early History Collection, Eagleson binder.

11 Letter from A.L. Clark to R.B. Taylor, QUA, Queen's University Records, Personnel, Clark file.

emerging as a recognized activity in Canada. The quarrel reveals the forces at work in defining how national research activities would be funded and coordinated. To better understand those forces, the context of the dispute — the situation at Queen's, the NRC's campaign for central laboratories and the views of Macallum — needs to be explored.

### The Situation at Queen's University

The turn of the century marked a period of transition for Queen's. It was slowly being transformed from 'a little Church college into a large modern university.'<sup>12</sup> The change even involved some rethinking of that most basic function of a college, education. To the question 'What do we expect of a university?', the Principal of Queen's responded in 1903 that the ideal of a liberal education

... is one function, one purpose, one ideal of the university. Yet not the only one, for a man's life consists not merely in the abundance of that which he is, but also in the abundance of that which he can do; and so the university, more especially in our modern conception of it, seeks to qualify many of its students directly for their life work by the technical schools in which, along various lines, special training is provided for them.<sup>13</sup>

There was a definite drift toward more useful, practical functions.<sup>14</sup>

Spearheading the transformation were scientific research and graduate studies.<sup>15</sup> Leaders at Queen's clearly recognized the need to build up these functions.<sup>16</sup> To do so would mean increased expenditures. Extra funds, then as now, were difficult to find. But Queen's had little choice. It had to keep pace with

12 James Cappon, 'The Situation in Queen's,' *Queen's Quarterly* 17 (1910), 193-211, 209.

13 D.M. Gordon, 'The Functions of a Modern University,' *Queen's Quarterly* 10 (1903), 487-497, 487-488.

14 See for example, Chad Gaffield, Lynne Marks and Susan Laskin, 'Student Populations and Graduate Careers: Queen's University, 1895-1900,' in Paul Axelrod and John G. Reid, eds., *Youth, University, and Canadian Society: Essays in the Social History of Higher Education* (Montreal, 1989), 3-25, 5-6.

15 For more detail on scientific research and the transformation of Canadian universities, from the perspective of the physics community, see Yves Gingras, *Physics and the Rise of Scientific Research in Canada* (Montreal, 1991).

16 See especially chapter two in Frederick W. Gibson, *Queen's University, Volume II 1917-1961: To Serve And Yet Be Free* (Kingston, 1983).

McGill and Toronto, even though it lacked the rich Montreal patrons of the former and the provincial university status of the latter.

Queen's had proven itself to be resourceful. It was long used to fighting centralizing activities in its relationship with the University of Toronto. It had been able to gain a measure of provincial funding through the device of a School of Mining, which in turn supported the University's science and engineering. Through that School, Queen's had been involved in applied work and in industrial research, thereby helping to establish the University's tradition of service to the nation, a tradition also being developed through extension and commercial courses. The creation of the NRC seemed to galvanize Queen's efforts to develop research and graduate studies. The University set up a Committee on Scientific Research in 1916 and provided it with funds, instituted summer research assistantships in 1917, and endowed a research chair in physics or chemistry in 1919.

Hence, at the time of the formation of the NRC, Queen's was developing a tradition of service, it had experience in industrial research, it was used to being innovative in order to obtain funds, it was very sensitive to the issue of centralizing functions, and it was probably more desperate for money than either Toronto or McGill. The NRC was perceived as a valuable resource for Queen's in that university's efforts to fulfil its goals.

### **The NRC's Campaign for Central Laboratories**

Created in 1916, the NRC had not had an easy time in its first few years. Normal birth pains were compounded by the difficult circumstances of the war years. During this period the Council was able to spend only about half of its budget and to make less than ten student awards annually. There were times when few Council members could attend meetings. Yet significant issues awaited resolution.

Probably the most important issue the NRC had to tackle was the location of government-sponsored industrial research. The NRC's eventual answer, a central research laboratory located in Ottawa, was only one of several options. Universities had been the early favourite.

The significant role originally intended for universities by the Dominion Government is shown in the proceedings of a meeting held in May 1915, organized by the Minister of Trade and Commerce. This meeting led to the formation of the NRC the following year. The Minister, Sir George Foster, had in mind the establishment of a Commission on Industrial Research which, for the most part, would operate through the universities using their laboratories and personnel.

The early emphasis on directly involving universities is also seen in the government's plan presented at the first meeting of the NRC.<sup>17</sup>

The Council had before it the question of the proper organization to promote industrial research from its second meeting in January 1917 until its thirteenth in April 1918. The result of these deliberations is well known. The NRC decided to recommend a central National Research Institute. The Cabinet rejected this proposal soon after, it appears, the Macallum-Taylor exchange. But then a committee of the House of Commons, the Cronyn Committee, was formed in April of 1919 to consider the matter. It recommended central laboratories.<sup>18</sup> Legislation for an institute was passed by the House of Commons in 1921, only to be defeated in the Senate. Not until 11 years later were the NRC laboratories in Ottawa to be opened.<sup>19</sup>

The displacement of universities in the early NRC's plans did not go unchallenged within the Council. The member most involved in industrial research, S.F. Kirkpatrick, was actively opposed to a central institute. He was also a professor of metallurgy at Queen's University. Kirkpatrick argued at Council meetings in 1917 in favour of a greater role for universities, and he presented a plan in March of 1918 calling for the establishment at universities of bureaus of industrial and scientific research.<sup>20</sup> They would be directed by the universities but aided by the Dominion Government. Universities would provide labs, equipment and operating expenses, while the government would fund research personnel. Each university would specialize in problems suited to its industrial environment. Kirkpatrick argued that research to aid industry was better carried out at industrial centres than at Ottawa. A decentralized scheme would encour-

- 17 For more information on the May meeting see Philip C. Enros, 'The Bureau of Scientific and Industrial Research and School of Specific Industries: the Royal Canadian Institute's Attempt at Organizing Industrial Research in Toronto, 1914-1918,' in Richard A. Jarrell and James P. Hull, eds., *Science, Technology and Medicine in Canada's Past* (Thornhill, 1991), 210-222. For an overview of industrial R&D in Canada at that time see James P. Hull and Philip C. Enros, 'Demythologizing Canadian Science and Technology: The History of Industrial R&D,' in Peter K. Kresl, ed., *Topics on Canadian Business* (vol.10, no.3 of *Canadian Issues*, Association for Canadian Studies and the International Council for Canadian Studies: 1988), 1-22.
- 18 Only two of the fourteen witnesses appearing before the Cronyn Committee were in favour of supporting industrial research in universities. They were the representatives of Queen's University and the Mellon Institute.
- 19 For more information on the NRC laboratories see Wilfrid Eggleston, *National Research in Canada: The NRC, 1916-1966* (Toronto, 1978).
- 20 'Memorandum by Prof. Kirkpatrick regarding Central Research Laboratories or University Research Bureaus,' Exhibit C, Proceedings of the Twelfth Meeting (28-30 March 1918), Honorary Advisory Council for Scientific and Industrial Research.

age local initiative and promote healthy rivalry. As well all available funds would be used for research and not spent on buildings. The presence of such bureaus, Kirkpatrick said, would make universities see their responsibilities for developing researchers and would foster important and necessary links between universities and industries. Furthermore, these bureaus could draw on graduating classes and excite interest among undergraduates.

Another Council member, John C. McLennan, professor of physics at the University of Toronto, also did not favour central laboratories. From the first meeting of the NRC, he supported a decentralized scheme with research bureaus located in industrial centres and separate from universities. While university facilities could be used, McLennan believed, they were not the best for conducting industrial research because education, not research, was their primary business.<sup>21</sup>

Neither McLennan nor Kirkpatrick appear to have garnered much support from the nine other Council members. There is some indication of the views of five of them. A.S. Mackenzie, President of Dalhousie University, believed that setting up industrial bureaus at universities would mean duplication of effort.<sup>22</sup> R.A. Ross, a Montreal consulting engineer, argued that the national challenge of doing research on the country's natural resources required a concentration of expertise.<sup>23</sup> Several members held that universities should focus on pure research. Ross wrote that 'university research should very largely be confined to what is termed pure science.'<sup>24</sup> Mackenzie stated that 'the whole strength of a university's research lies in its perfect freedom.'<sup>25</sup> R.F. Ruttan, professor of chemistry at McGill, believed that graduate education should be based on broad, fundamental problems. He was concerned that utility would replace the advancement of truth as the goal of the pursuit of science in university departments.<sup>26</sup> W.C. Murray, President of the University of Saskatchewan, had another reason for supporting a central institute. 'To work through other agencies is no doubt to accomplish something,' he wrote to Macallum, 'but it leaves

21 Proceedings, Cronyn Committee (1919), 65.

22 *Ibid.*, 60-61.

23 Letter to Macallum, 13 January 1919, NRC Early History Collection, Eagleson binder.

24 *Ibid.*

25 Proceedings, Cronyn Committee (1919), 61.

26 *Ibid.*, 50-51.



the credit entirely with the agency and we cannot afford to be so anxious to efface all signs of our activities as that.<sup>27</sup>

However, the main force pushing for the establishment of a central research laboratory was the Council's full-time Chairman, A.B. Macallum. By the fall of 1918 he was able to pursue his vision with little internal opposition. McLennan had left Canada in the Spring of 1917 to do war research for the British Admiralty, and would remain in Great Britain until the end of the war. Kirkpatrick resigned from Queen's in the summer of 1918 to work for the Deloro Smelting and Refining Company, and soon after resigned from the NRC.

### The Views of A.B. Macallum

Macallum strongly favoured central research laboratories. In making his case, he had two lines of argument. In one, he argued that sponsoring industrial research bureaus at universities would 'precipitate' the universities into 'politics of the most undesirable kind.' Eighteen universities would clamour for funds, he said, and this would lead to rivalry of the worst kind, to inefficiency, and to 'an orgy of expenditure under no control or system.'<sup>28</sup> Any attempt to set up conditions governing the establishment of bureaus would later be swept away by 'log-rolling' and 'wire-pulling' on the part of university authorities.<sup>29</sup> The government would be 'extremely loath' to encourage this sort of lobbying. Besides, Canada had very limited finances. Employing the maxim that excellence depends on critical mass, Macallum was concerned about scattering funding for research.<sup>30</sup> The Dominion Government, he claimed, would not support such a course of action.<sup>31</sup>

His other line of argument in support of a central institute rested on the distinction between pure and applied research. For Macallum the distinction was

27 Letter to Macallum, 3 July 1917, NRC Early History Collection, Murray file.

28 Thistle, *op. cit.*, note 5, 53.

29 *Ibid.*, 58.

30 Macallum to W. Murray, 2 May 1918, NRC Early History Collection, Murray file.

31 Indeed, in 1917 the Privy Council committee responsible for the NRC did not provide the funding requested by the NRC for local information and technical research bureaus. As well, a request in June of 1919 for aid for a bureau of technical and commercial information at Montreal was not approved.

merely a point of view because pure led to applied.<sup>32</sup> Yet he made a rigorous distinction when it came to their performance at universities. 'To thrust industrial research into our universities,' Macallum stated, would be fatal to their best interests and disastrous to their ideals 'which should be those of research in pure science.' The proper role of universities in industrial research was the training of researchers, and they were to be trained in research in pure science.<sup>33</sup> The goal of the universities, in Macallum's opinion, should be to obtain the resources necessary to permit them to offer graduate studies and to do research, two activities they had neglected in the past.<sup>34</sup>

This perspective on the relationship between pure and applied research allowed Macallum, in his arguments, to strip away industrial work from the universities, making their functions the 'higher' or primary ones of pursuing pure research and training researchers, and still be able to claim an important role for universities in a plan to aid industry. The same perspective underpinned Macallum's view that when Canadian universities became permeated with the research spirit then so too would Canadian industry, as well as his view that if Canadian universities had produced researchers then industry would have absorbed them.<sup>35</sup> Universities had a central role in Macallum's plans, but it was quite different from the one envisioned by Kirkpatrick, a much more elitist and detached position.

Macallum's arguments should not necessarily be taken at face value. They are clearly 'public science', that is the 'body of rhetoric, argument and polemic' produced when scientists 'justify their activities to the political powers and other social institutions upon whose good will, patronage, and cooperation they depend.'<sup>36</sup> However, his arguments do contribute to understanding the man's interests, objectives and commitments.

Macallum possessed a deep commitment to research. In a letter to a fellow member of the NRC, he wrote of his strong pull 'towards a life of private research, which counts for everything with me and will do so to the end.'<sup>37</sup> One of

32 *Proceedings*, Cronyn Committee (1919), 33. A.B. Macallum, 'The Research Council and Its Work,' *University of Toronto Monthly* 17 (1917), 257-268, 264.

33 1 March 1919, QUA, Principal's Office Files, Ser. 1A, Box 2, Macallum file.

34 *Proceedings*, Cronyn Committee (1919), 46. Thistle, *op. cit.*, note 5), 53-54.

35 A.B. Macallum, 'The Old Knowledge and the New,' *Royal Society of Canada Proceedings*, Series 3, 11 (1917), lix-lxxiii, lxx. *Proceedings*, Cronyn Committee (1919), 20.

36 Frank M. Turner, 'Public Science in Britain, 1880-1919,' *Isis* 71 (1980), 589-608, 589.

the most prominent scientific researchers in early twentieth-century Canada, Macallum had helped to make the University of Toronto a centre for physiological and biochemical research, and had long been an advocate for research within the University.<sup>38</sup> His experiences at Toronto undoubtedly contributed to his opinion that Canadian universities had yet to place sufficient priority on research, and to his critical attitude toward university administrators (two attitudes common to faculty even today!). One of his primary goals as Chairman of the Council was to get research faculties established in Canadian universities; in frustration he complained that the universities were more interested in putting up buildings than in research.<sup>39</sup>

Macallum is not known to have had any connection with or interest in industrial research. Indeed, he identified pure research with an other-worldly duty:

But while research in pure science should be supported because of its utility, proved and possible, the most powerful plea for its advancement comes from the purely intellectual side. ... The advancement of pure science then has sanctions deeper and more sacred than those derived from its utilitarian ends, valuable as these are in serving our physical life. Every agency that can promote this advancement ought to be engaged as in the performance of a high duty, of a duty with a religious significance.<sup>40</sup>

Macallum was deeply imbued with the culture of pure research. It would appear that this commitment lay behind his support for a central research institute and opposition to industrial research bureaus at universities. Except for Kirkpatrick and McLennan, the other Council members either shared this view or were willing to go along because of Macallum's forceful personality. Macallum's attitude toward academic research was probably the critical factor in the displacement of universities in the NRC's early plans.

## Conclusion

The quarrel between the early NRC and Queen's University reveals many of the forces involved in the NRC's decision to press for central research laboratories.

37 Thistle, *op. cit.*, note 5, 88.

38 Sandra F. McRae, 'The Scientific Spirit' in Medicine at the University of Toronto, 1880-1910,' (unpublished PhD dissertation, University of Toronto, 1987).

39 Thistle, *op. cit.*, note 5, 59.

40 Macallum, *op. cit.*, note 35, lxx-lxxi.

The efforts of universities to build up their research and graduate studies, the scarcity of funding, the activities of the federal government as patron of research, and the need of the newly established NRC to create a niche for itself, were among those forces. But the major force was the value placed on pure research by A.B. Macallum with the adjunct emphasis on developing pure research in universities. With the NRC's leaders holding such values, there was little likelihood that universities would have a direct role in national plans for industrial research.