

# Perfect Subjects: Race, Tuberculosis, and the Qu'Appelle BCG Vaccine Trial

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**Abstract.** This article examines how Native children of the Qu'Appelle reserves in southern Saskatchewan became the subjects of a trial of the BCG vaccine for tuberculosis in 1933. Race and theories of racial evolution were referred to in the construction of the Native people as "primitives" and the reserves as disease menaces to the surrounding communities. Dr. R. G. Ferguson, medical superintendent of the nearby Qu'Appelle Sanatorium conducted the trial in order to prove that BCG could provide resistance to tuberculosis even among the "less evolved races." While BCG afforded some protection against tuberculosis, nearly one-fifth of the children in the trial died from diseases of poverty, gastroenteritis and pneumonia, as a result of the lethal living conditions on the reserves.

**Résumé.** Cet article examine comment les enfants amérindiens des réserves de Qu'Appelle dans le sud de la Saskatchewan sont devenus les sujets d'un essai du vaccin BCG contre la tuberculose en 1933. On faisait alors référence à la race et aux théories d'évolution raciale afin de dépeindre le peuple amérindien comme «primitif» et les réserves comme des «menaces de maladie» pour les communautés environnantes. Le surintendant du sanatorium de Qu'Appelle, le docteur R. George Ferguson, a mené l'essai afin de prouver que BCG pourrait fournir de la résistance à la tuberculose même parmi les «races» moins évoluées. Bien que BCG ait procuré de la protection contre la tuberculose, près d'un cinquième des enfants sont morts de pneumonie et de gastro-entérite, conséquence des conditions de vie affreuses des réserves.

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In 1933 the Qu'Appelle Indian agency in southern Saskatchewan became the unlikely laboratory for a significant medical trial of the effectiveness of the BCG vaccine for tuberculosis. The vaccine trial has received some attention from historians, but the focus has been on either the vaccine or the doctors who administered it, never the people who

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became the subjects of study.<sup>1</sup> How did an isolated, poverty-stricken agency in an equally isolated province come to be the site for a major medical experiment? Who were the subjects and how did they benefit?

Disease, and tuberculosis especially, among Native people has been an important factor in the development of the relationship between Native and non-Native people in Canada. In the decades on both sides of the turn of the century, the notions of Social Darwinism informed the thought of those in contact with Native people. The ideas of evolutionary theory and survival of the fittest, applied to human societies, were used to explain the Native people's plight. Native people were thus less "evolved" and had to be brought, by force if necessary, to assimilate to the pinnacle of racial evolution, Anglo-Saxon Christian society. Accordingly, they suffered from disease to such an extent, not primarily because of their poverty, but because they were making the necessary but difficult transition from "savagery to civilization." Because civilization was not easily won, disease and death were seen as a sort of penance to be paid.<sup>2</sup> Poverty, then, was seen as the consequence, not the cause of their poor health status. Christianity and civilization were held out to Native people by government officials and missionaries as the paths to good health. The category of race has fundamentally influenced how disease and its treatment were understood and explained.

The Qu'Appelle reserves of southern Saskatchewan, like most western Canadian reserves in the early twentieth century, were dusty, desperate places where there was little work, little food, poor housing, and plenty of disease.<sup>3</sup> In the nineteenth century the Cree, Assiniboine, and Saulteaux of the region were bison hunters who traded at the Hudson's Bay Company's Fort Qu'Appelle. By the 1870s the great bison herds retreated further and further westward as hunters, survey parties, railway crews, and traders swarmed onto both the American and Canadian sides of the North American plains. Recognizing that their economy was in transition, the Qu'Appelle people demanded that the Canadian government enter into treaties before their lands were liberated from them, and in 1874 signed Treaty Four.<sup>4</sup>

The government had assumed that the treaty-making process would be an inexpensive way to clear the prairies for immigrant agricultural settlement. But in its rush to make treaties, the government had made promises that it was unable and unwilling to honor. Moreover, Department of Indian Affairs officials feared that by extending aid, food, and clothing, they would "pauperize" the people. The term pauperization did not refer simply to poverty or dependency, but a loss of initiative and a slovenly attitude.<sup>5</sup> Consequently the department's "work for rations" policy was strictly enforced. Rations of bacon and flour would not be extended unless the resident Indian agent was satisfied that work

had been performed. The "work for rations" policy also meant that there was little time for the people to secure the other necessities of life—clothing and proper shelter. A growing segment of Canadian opinion, best expressed by the opposition in the House of Commons and the department itself, worried that ever larger expenditures on relief were creating a permanent class of paupers and "pensioners upon the public treasury" fed and clothed by the government and "... doing little or nothing for themselves." Prime Minister Macdonald, who personally directed the Department of Indian Affairs, defended department policy by noting that although the government could not allow the people to die, he assured the House that his agents "are doing all they can, by refusing food until the Indians are on the verge of starvation, to reduce the expense."<sup>6</sup>

Starvation, exposure, overcrowding, and high infant mortality haunted the Qu'Appelle people, along with most other plains Native people who likewise had signed government treaties. The vicious cycle of malnutrition, a weakened immune system, and consequent infection wrought havoc on reserves. The cycle could begin either with infection or malnutrition, and almost any endemic disease had epidemic potential. But certain diseases were especially dangerous such as dysentery, tuberculosis, influenza, and pneumonia.<sup>7</sup> By the approach of the twentieth century Treaty Four reserves had lost between 40% and 50% of their populations. The average child mortality rate surpassed the birth rate; for every child born at least one, and often two, children died.<sup>8</sup> The death rate on the Qu'Appelle reserves was 60 per thousand population, while the birth rate was 44.9.<sup>9</sup> By way of comparison, Winnipeg's death rate was 15.7, while Quebec City had the highest death rate of Canada's cities at 31.6 per thousand. The death rates in 1894 in London and Paris were 20 per thousand.<sup>10</sup> At the same time, the Department of Indian Affairs did not accept any responsibility for the medical care of Native people, except for a promise made in Treaty Six to keep medicine chests at each agency. But it did accept an ad hoc responsibility to keep disease from spilling out from the isolated reserves and posing a danger to business and to the growing immigrant population. To that end a large medical bureaucracy grew and was fed by the department's need to distribute patronage and its attempt to protect settlers from contagious disease. But there was little that physicians could do in light of the economic conditions on reserves.

The subsequent poverty and staggering death rates from disease on reserves only confirmed in officials' minds that the people needed to be assimilated, civilized, and Christianized, as quickly as possible. As farm instructor Hockley, whose wife was paid to teach domestic management at the Qu'Appelle reserves, stated, "It is well known how difficult

they [Native women] are to deal with being so generally indolent, improvident and naturally of dirty habits. . . . [Mrs. Hockley's] influence would be greater had the Indians means to build better houses, for it is hard for them to be neat and tidy housewives in a 7 by 9 foot log hut without a floor, and where the whole family live, cook, eat, sleep, and use it as a nursery."<sup>11</sup> Moral failing was seen as a cause of the Native people's plight, and their failing was a consequence of their race.

In the non-Native community the clearer understanding in the early twentieth century that tuberculosis was an infectious disease, and not hereditary, led to a greater emphasis on treatment and prevention. Voluntary associations of concerned citizens were established across the country and were fundamental to the sanatorium movement. Saskatchewan's Fort Qu'Appelle Sanatorium was conceived by volunteers and supported by provincial government grants, but remained on a shaky financial foundation until 1917 when handsome per diems were paid by the federal government to treat tubercular veterans of World War I. The Fort Qu'Appelle Sanatorium did not accept Native patients because, as Dr. M. M. Seymour, provincial health inspector and the moving force behind the creation of the Sanatorium, stated, there was "not enough room for White patients."<sup>12</sup> By 1924, with most of the returned soldiers discharged, the Sanatorium made forty beds available for Native patients in order to repay debts to the federal government. Dr. R. George Ferguson joined the Sanatorium in 1917 and remained as the medical superintendent until his retirement in 1948.

Dr. R. George Ferguson's first love was not medicine, but the church. He worked for a time as a Methodist preacher, but a serious bout with laryngitis left him without that most important attribute of a good preacher, a strong voice. He resigned himself to his second choice, medicine. But his religious background and his love for missionary work never left him. His patients were exhorted to embrace their treatment and change their habits of living: the cure for tuberculosis was not found in a bottle of medicine, but instead "it is an Idea: a way of life . . . the development of a spirit of faithful endeavour, helpfulness, earnestness, good humour, kindness and forbearance."<sup>13</sup>

In 1921 the Saskatchewan Anti-Tuberculosis Commission undertook the first survey of schoolchildren in order to gauge the level of tuberculosis infection in the province. The Commission found that 54% of the 1,184 non-Native children examined had a positive reaction to tuberculin tests which indicated infection or exposure. Of the 192 Native children examined however, 92.5% had a positive reaction.<sup>14</sup> The Commission's recommendations were not concerned with Native people, except to urge the federal government to take action to stop the spread of tuberculosis. Native people, it reported, suffered more from tuberculo-

sis than other Saskatchewan residents because of their low standard of living, and because of the "natural superstition of the race, and their fondness for their own method of dealing with sickness. . . ." <sup>15</sup> In 1924 the national Canadian Tuberculosis Association (CTA) formed a committee to study the tuberculosis problem, and more importantly to interest the Department of Indian Affairs in undertaking some action. As the CTA's secretary reported, "There is growing evidence of anxiety among the White population living adjacent to certain Indian bands in regard to the intimate gross infection brought to the villages and towns. . . . Further, the leaders of certain bands of Indians were publicly agitating for increased facilities for diagnosis and treatment. . . ." <sup>16</sup>

At the same time the National Research Council (NRC) began to take an interest in tuberculosis, initially at the insistence of livestock associations who needed help to control outbreaks of bovine and avian tuberculosis. In 1925 the Associate Committee on Tuberculosis Research (ACTR) was formed and the Qu'Appelle Sanatorium was named as one of five research centres to investigate aspects of human and bovine tuberculosis, but most of the attention of the committee was given to research into bacillus Calmette-Guerin or BCG. <sup>17</sup> The NRC began by funding the experimental vaccination of infants with BCG undertaken in Montreal by Dr. Baudouin who was working under the direction of the Pasteur Institute of Lille. <sup>18</sup>

Calmette and others in France had begun human BCG trials on infants in 1921 using an oral dose mixed with milk. Results of the study were published in 1924 and concluded that BCG did not regain virulence and that BCG was of practical value in preventing tuberculosis. <sup>19</sup> The Montreal trials were initiated not so much to test Calmette's claims as to affirm them. As a result, the Montreal trials suffered the same problems as Calmette's, particularly the outcome that not only was tuberculosis mortality reduced in the vaccinated children, but that general mortality was also reduced. The charge that subjects were chosen selectively to skew the results in favor of the vaccinated group was levelled against the BCG trials. The use of BCG was rejected in the United States and Britain for a number of reasons including distrust of French statistics and methods, and because of fears that the vaccine was not stable. <sup>20</sup>

The ACTR reported in 1928 that BCG seemed harmless enough, and although evidence that BCG actually conferred resistance to tuberculosis was encouraging, the committee considered it too early to arrive at a definite conclusion. <sup>21</sup> Dr. E. A. Watson, ACTR member, researching bovine tuberculosis, injected a note of caution. Fearing that BCG may regain its virulence, he warned, "At best the vaccination of infants with BCG is considered to be a question of expediency in cases where children are born and raised in contact with tuberculous cases. . . . It is be-

lieved that in this country present methods for the control of tuberculosis are preferable."<sup>22</sup> It is worth noting that sanatorium treatment was always the treatment of choice in Canada. Vaccination was eventually used only upon those deemed at particularly high risk and those who were unacceptable for the lengthy sanatorium stays because of their low socio-economic status.

Tuberculosis associations had increased public awareness of tuberculosis prevention and treatment, and exerted steady pressure on the federal government to control the tuberculosis "menace" on reserves. Dr. R. George Ferguson's proposal to determine the necessity of BCG vaccination on Native people was heartily endorsed by the ACTR. As the committee put it, "It has long been known that Indians are far more susceptible to tuberculosis than are the White races of mankind." Although the committee did not know why this was so, it supposed that the White races had developed "a resistance to the disease greater than that of the Indians."<sup>23</sup>

Ferguson began his investigation into tuberculosis on reserves by examining Native children at the nearby File Hills school in 1927. He outlined their physical features and noted: "heads longer than average for Whites . . . flat feet are usual." He remarked on the children's "hackney gait," the prevalence of impetigo scars, and evidence of early rickets. He was particularly struck by their absence of nervous disturbances, "None high strung or very vivacious. Have sense of humour. More mischievous than White. Stoicism marked on injection. . . . Wonderful nervous systems." His report then moved from a physical inspection of children's bodies to characterizations of the race. "Less self control when aroused than Whites. Strike—resort to force. Tendency to dominate weaker physically or mentally. Make good foremen but poor drudges. Courtship does not tend to demonstrate itself in intellectual manner. Parental affection very deep but marital affection not manifest or observable. Precipitous marriages—after few days or week courtship."<sup>24</sup> Ferguson's notes go far beyond a simple physical examination of children's bodies to an examination of the race and its defects. Ferguson's observations provide a rare glimpse into contemporary social and medical stereotypes of Native people.

In his reports and articles Ferguson consistently referred to the Native people as "primitives." As such they were less resistant to the disease than the more civilized "White races." Unwilling to wait for Native people to evolve and build resistance, the tuberculosis vaccine, BCG, was a logical and humane solution. Ferguson's missionary bent, and his medical mission against tuberculosis were extended to Native people. And like the missionaries, school officials, and department employees,

he shared the paternalistic conviction that they knew what was best for the people.

Ferguson's preliminary report for the NRC in 1928 was his attempt to understand tuberculosis among Native people. Ferguson studied the history of the people of the Qu'Appelle and File Hills reserves, and declared them a "primitive people . . . [who] having a tuberculosis death-rate of twenty times that of the surrounding community, offers a most necessary and advisable field to adopt prophylactic vaccination."<sup>25</sup> Central to Ferguson's recommendation of vaccination was his characterization of the tuberculosis problem as an epidemic beginning in 1882, reaching its peak in 1886, and gradually subsiding to 1927.<sup>26</sup> Ferguson had canvassed community pioneers, retired North West Mounted Police officers, missionaries and Indian department officials for their perceptions of the history of the Native people. His informants referred to the role that they had played in their "civilizing" mission. So, according to Mr. I. Forbes, retired NWMP, who was involved in forcing Piapot's people from Cypress Hills, "TB was prevalent among Piepot [*sic*] tribe who were the dirtiest and sanitary conditions as the worst of any tribe of Indians on the plains [*sic*]." Rev. Mr. T. Ferrier, current inspector of Indian schools and hospitals for the United Church, suggested that any decrease in the prevalence of tuberculosis was a result "of our educational and medical work among the people." Informants considered that adjustments were too difficult for the people who were like "wild birds confined in cages." Ferguson interviewed Kiwist, a 91-year-old "Medicine Man" or healer on the File Hills reserve, who recalled that with government rations "some began to fall sick. . . . Shortly after treaty children mostly began to have sore necks [*scrofula*]. A lot of them died, but some got better."<sup>27</sup> Although Ferguson never advanced the notion that there was a particular "Indian tuberculosis," his perceptions were always colored by the current ideas of racial development, and a misreading of history.

Ferguson assumed that the Canadian government had foreseen the destruction of the bison economy and thus had entered into treaty with Native people to cushion their fall "with the result that when the buffalo disappeared they were straightaway settled on reserves, rationed, instructed, and gradually rehabilitated."<sup>28</sup> He determined that Native people did not suffer from tuberculosis prior to the early 1880s because they were not exposed to it. In fact they had been in regular contact with traders for nearly 200 years. Instead, according to Ferguson, exposure came from American Sioux, Red River "half-breeds," and White settlement which by 1882 surrounded the reserves. In fact, significant non-Native immigration into the area did not occur until after 1890.<sup>29</sup> Ferguson noted that after 1879 the people had ample food, but they found

their diet of bannock and salt pork unpalatable.<sup>30</sup> He reckoned that the plains people, like other "Carnivora," found it difficult to change and might be compared to "the equally virile and majestic lion, who when removed from his natural feeding-ground to that of the zoo, not only loses his physique and morale, but begets a poorer type of cub, difficult to raise and susceptible to disease."<sup>31</sup> Changes in housing, especially the lack of mobility that followed the change from the lodge to the log hut, conspired to create new threats. To a great extent Ferguson found that the epidemic was as much a result of changed circumstances as the Native people's failure to adapt to change.

The epidemic then was peculiar to Native people and it had a natural course. Decreases in tuberculosis death rates could be accounted for by the physiological response of the host, not necessarily improved living conditions. He did allow that improved living conditions and "a certain amount of selection on the basis of fitness" could further cut the tuberculosis death rate. He studied the health of the residents of the File Hills Demonstration Farm colony where only healthy ex-pupils of Industrial schools were admitted and were then provided with comfortable housing and financial assistance.<sup>32</sup> He compared their health with the residents of the File Hills reserves and found 7% more tuberculosis deaths on the reserve.<sup>33</sup> Ferguson lived at the sanatorium, and could not fail to notice the destitution on the reserves that literally surrounded the sanatorium. Here was a people, who, according to his reading of history, were materially aided by government, yet continued to live in poverty and fall victim to disease at a rate far in excess of the surrounding non-Native communities. Ferguson found the explanation in their primitive nature and their inability to adapt.

Finally, Ferguson found that resistance to tuberculosis was limited, and depended to a great extent on the percentage of "White blood." He examined 392 boarding school students and separated those who were known, or appeared, to have a cross of White blood from those who did not. Ferguson concluded that "the introduction of White blood is not only a potent factor in civilizing primitive people, altering habits of living, appetites and desires, but also has a noticeable effect on increasing their resistance to tuberculosis."<sup>34</sup> He had clearly found perfect subjects for vaccination. The birth rates on the reserves were high, the people were surrounded by tuberculosis and most were unable to offer any resistance. And, unlike the working-class subjects in the Montreal BCG trials who had a tendency to move away in search of work, Native people were unlikely to leave. But there were still obstacles to overcome before the experiment could proceed.

It was a rather easy matter to gain access to boarding school students, where school principals, not parents, consented to have students exam-



ined and tested.<sup>35</sup> It was quite another matter to gain access to infants, most of whom were born at home on the reserve under the care of Native midwives. Moreover, in the 1920s Native people were attempting to redress their economic and social concerns through political organization, and were launching an increasing number of challenges to the Indian Act's prohibition of ceremonial dancing. Ferguson pointed to this "friction between the Indians and the Department" as an obstacle to his work. As he noted to the president of the NRC, "I did not consider it advisable to push the clinical phases of our research work here until such time as [department medical officer] Dr. Simes has dully [sic] established himself and gained the confidence of these Indians."<sup>36</sup> It was first necessary to "win the confidence of the Indians" before any kind of survey or examination of the reserve residents could proceed. Furthermore, it was necessary to have infants born in the hospital in order to undertake the BCG experiment. To that end the Qu'Appelle Indian Demonstration Health Unit was established in 1930.<sup>37</sup>

Ferguson and the Saskatchewan Anti-Tuberculosis League had first proposed a Health Unit as a result of their 1921 survey of tuberculosis in the province. Their proposal would have concentrated on the area schoolchildren and immunize, improve the diet and rest periods, examine children for tuberculosis before admission to school, and transfer the acutely ill to the Qu'Appelle Sanatorium.<sup>38</sup> The details differed very little from what the department's chief medical officer, Dr. Peter H. Bryce, had recommended 14 years previously, and met with about as much success.

Dr. Peter H. Bryce was appointed as the department's chief medical inspector in 1904, and was a product of the new science of bacteriology, a fervent believer in the value of vital statistics, and an advocate of the purity movement that sought to reform society through sanitation, and medical and moral reform.<sup>39</sup> In his annual reports to the Department of Indian Affairs, Bryce consistently noted that the tuberculosis problem was primarily a housing problem. Improved housing and sanitation, as well as the removal and isolation of the sick, would improve the situation markedly. Although the cause of the people's poor health was undoubtedly their poverty, their race and all that that implied aggravated their problems. For example, Bryce wondered how it was that Native people who were living in the most salubrious climate on the prairies, "in a district famous, and properly so, as a health resort for the White consumptive . . .," suffered so greatly from tuberculosis. Touching on the racial theories of the day Bryce noted that Native people were moving through a particularly difficult stage of civilization. Those Native bands that suffered least from tuberculosis were those that were far removed from civilization, or those that had undergone an "advance in

general intelligence of how to live, through the valuable admixture of White blood with its inherited qualities. . . ."<sup>40</sup> In 1907 Bryce reported on the health conditions in the Indian Industrial schools on the prairies. Bryce's school report noted that at the File Hills school, 69% of all exp-pupils were dead. Generally, he found an "... intimate relationship between the health of the pupils while in the schools and that of their early death subsequent to discharge."<sup>41</sup> In all cases the reported cause of death was tuberculosis. Bryce found that the medical condition of the children upon admission to school was rarely inquired into, that principals and physicians ignored or minimized the danger of accepting students with tuberculosis, and that there was no attempt to ventilate dormitories and classrooms. Bryce expressed surprise that the morbidity and mortality statistics were not worse. In his recommendations (that were never made public) Bryce made it clear that the government itself was to blame for the poor health of the schoolchildren. The per capita grants that government paid to the schools were too low to provide both education and good health, and had forced the churches into making decisions that were detrimental to the children's well-being. According to Bryce, of the eight Industrial schools "several are expensive successes, but most are expensive failures and ought not to be continued."<sup>42</sup> School buildings needed radical improvements in sanitation and ventilation, a medical officer trained in public health should inspect the schools twice a year, and small tents should be erected alongside schools to isolate children with tuberculosis "where, instead of being sent home to die, they may in most cases . . . be nursed back to health without jeopardizing the health of other pupils."<sup>43</sup> In response to Bryce's report the department's deputy superintendent Frank Pedley amended school admission forms to attempt to exclude ill children from the schools and he increased funds for schools. The next year a new general appropriation of \$5,000 "to prevent the spread of tuberculosis" was created, but only half was spent.<sup>44</sup> As for Bryce's recommendations for a restructuring of the schools with a view to the health of the children, the department responded that while his recommendations "may be scientific [they] are quite inapplicable to the system under which these schools are conducted."<sup>45</sup>

Like Bryce's recommendations, Ferguson's 1921 proposal for a Health Unit that was focused on the schools was rejected. But by 1929 Ferguson had expanded his proposal to include the reserve residents, and its focus was primarily tuberculosis. At that the NRC agreed to pay for examination of patients, the Department of Indian Affairs agreed to pay the physician's salary and to put the File Hills colony hospital under the Health Unit's direction, and the Qu'Appelle Sanatorium agreed to provide its facilities for research.<sup>46</sup>

It was an unusual departure for the Department of Indian Affairs to become involved in a long-term medical project, because, as the department secretary explained, "The department . . . is under no legal obligation to furnish medical attendance to Indians under any circumstance, [and] that the provisions it makes is [*sic*] entirely philanthropic."<sup>47</sup> But the department's obligation to the Health Unit (the salaries of one physician and a nurse) was not significantly more than it already paid for medical attendance. The services of four physicians at the two schools and two reserves could all be eliminated and replaced by one medical officer, Dr. A. B. Simes. Like the show-piece of Native farming at the File Hills Farm colony, the Qu'Appelle Demonstration Health Unit could be pointed to as evidence of the care the department was providing for its Native wards.<sup>48</sup>

The Demonstration Health Unit showed very promising results. There was a "conscientious effort" made to improve living conditions. A number of one-room log huts with sod or thatched roofs were replaced by frame houses in 1930, wells were sunk to improve the water supply, families were provided with hens and garden seed, and special nourishment was given to schoolchildren and expectant mothers. A full-time public health nurse was hired in early 1931 to provide care in the homes to children with infectious disease, and Dr. Simes admitted all reserve residents with active tuberculosis lesions to the hospital. By 1932 the tuberculosis death rate had been cut in half from 5.6 per thousand in 1930 to 2.7 per thousand (a rate that was less than half the rate of other Native people in the province). The general death rate and the infant mortality rate both also fell.<sup>49</sup> Thus before the BCG vaccine trials were begun the tuberculosis death rate had been reduced by half by marginal improvements in living conditions, and especially by segregating those with active tuberculosis.

In the File Hills and Qu'Appelle schools the simple expedient that had been advocated for decades of removing the active cases of tuberculosis from the general school population effectively reduced the spread of the disease. As Ferguson remarked in 1935, "we now feel convinced that the same policy of segregation of spreaders will have the same results when applied to the Indians as has been proven in the case of the White residents of the province."<sup>50</sup> More importantly, the effective health measures went a long way toward winning the confidence of the people.

By early 1931 Ferguson expressed doubts regarding the BCG trials. The use of BCG was still highly controversial and his concerns hinged on the fact that the long-term effects of BCG were still unknown. Ferguson could not have been unaffected by the disastrous experiment in Lubeck, Germany in 1930. From late February to mid-April 249 infants in

the Lubeck municipal hospital were given oral doses of BCG. By June 67 infants had died and 80 were critically ill. Eventually 71 infants died as a result of receiving the BCG vaccine. The Lubeck disaster shook confidence in the use of BCG even after an investigation and trial found that the BCG vaccine had been contaminated with tuberculosis bacilli. Ferguson worried that, even though 400,000 children had been vaccinated with BCG with no serious complications except the Lubeck tragedy, which he dismissed as a blunder, there was still the danger that the vaccine might regain its virulence. He thought it wise and safe to wait four or five years to determine if the vaccine indeed might be dangerous. In a letter to the president of the NRC, marked private and confidential, Ferguson stated, "I feel as though it would be unwise to initiate human experimental work among Indian children who are the direct wards of the Government, and for which reason they are not in a position to exercise voluntary cooperation. Furthermore in case of difficulties arising, the Government itself could not be without responsibility."<sup>51</sup> Ferguson went on to explain that the work of the Demonstration Health Unit in diagnosing, treating and removing tuberculosis patients had resulted in a "very marked improvement," and that it was practical to locate all sources of infection on the relatively small reserves and "to handle the tuberculosis situation in practically the same way it would be handled in an ordinary county or municipality."<sup>52</sup>

Perhaps to prove his point that the standard practices of case-finding, isolation, and treatment were effective, in 1933 Ferguson committed the Saskatchewan Anti-Tuberculosis League to provide its travelling clinic to examine Native children in other boarding schools in the province. The Department of Indian Affairs accepted Ferguson's offer since it had only to pay for the x-ray film and travelling expenses of the physicians, while the Anti-Tuberculosis league paid the physicians' salaries. For the five years (1933-37) that examinations were performed, on average every year 1.5% of the students had extensive pulmonary lesions and were recommended for hospital treatment. Another 6.5% of the students every year were found to have "minimal or incipient" tuberculosis and it was recommended that they should be removed to a "spreaders school" should it ever be created.<sup>53</sup> The schools, Ferguson continued to point out, were the battleground for the fight against tuberculosis in Native people. Dr. Bryce had made the same recommendation 30 years previously. But the BCG vaccination was a far less expensive method of controlling tuberculosis than the alternatives of case-finding, lengthy sanatorium treatment, and improved living conditions. For that reason, as well as the benefits to the Native and non-Native communities if the vaccine proved effective, the Department of Indian Affairs was enthusiastically supportive of Ferguson's trials. In

March 1933 the NRC, with the support of the Department of Indian Affairs, gave its approval for the BCG vaccination experiment to begin.<sup>54</sup>

From October 1933 to December 1934 Dr. Simes, who performed all the clinical work, gave 51 infants oral doses of BCG (30 were subsequently re-vaccinated intracutaneously, and all were re-vaccinated every three years), and 51 infants were selected as controls. Although the selection of subjects for vaccination and control was to be random, Simes found that it was more convenient to vaccinate infants born at the Colony cottage hospital and to use as controls infants born at home.<sup>55</sup> Schoolchildren were also vaccinated intracutaneously beginning in 1933. The results of this vaccination of 160 schoolchildren and 113 controls were never published since there were no tuberculosis deaths among either group, primarily because all children with tuberculosis lesions and "incipient" tuberculosis were excluded from the schools.<sup>56</sup> Ferguson and Simes published their results in 1949.

The trial was a success. From 1933 to 1945, 306 infants were vaccinated and 303 infants remained as unvaccinated controls. Among the vaccinated infants there were six cases of tuberculosis and only two tuberculosis deaths, while among the unvaccinated infants there were 29 cases of tuberculosis and nine tuberculosis deaths.<sup>57</sup> Ferguson and Simes concluded that "BCG conferred valuable protection in a highly infectious environment," that the type of disease found among controls was more serious and generalized than that found in the vaccinated group, and, much to Ferguson's relief, that "there was no evidence... that BCG had a recurrence of virulence in the host."<sup>58</sup>

The study clearly showed the effectiveness of BCG vaccination, but at the same time pointed to the primary health problems on reserves. Of the 609 children who started the trials, 77 or more than 12% were dead before their first birthday.<sup>59</sup> Four children died from tuberculosis, two each from the vaccinated and control groups. The general mortality was 127 per thousand among the vaccinated group, and 125 among the controls. By way of comparison, in the Montreal BCG trials where subjects were taken from the "lower middle class and poorer sections of the community" the general mortality in the first year was 21 per thousand among the vaccinated and 24 among the controls.<sup>60</sup> Seven years into the Qu'Appelle study 105 children or more than 17% were dead from causes other than tuberculosis, primarily pneumonia and gastroenteritis. The non-tuberculosis death rate for those first seven years for the vaccinated group was 184.7 per thousand, and 240.7 per thousand for the control group. Comparable figures from the Montreal trials showed a seven year non-tuberculosis death rate of 86 per thousand for the vaccinated group and 73 per thousand for the controls.<sup>61</sup> The most obvious result of the BCG vaccine trials was that poverty, not tuberculosis, was

the greatest threat to Native infants. Although the vaccinated children were to an extent protected from tuberculosis by BCG, they shared the impoverished living conditions and poor diet of the reserves.

But tuberculosis, not poverty on reserves, had captured the attention of physicians and the public alike. The Department of Indian Affairs responded to the public prompting by the provincial tuberculosis associations to do something about the reserves, in Ferguson's words, "scattered islands of infection throughout Canada... a menace to the surrounding population."<sup>62</sup> In 1936 the department finished building a small hospital that would be the new centre-piece of the Qu'Appelle Indian Health Unit.<sup>63</sup> But in that same year the Department of Indian Affairs was dismantled and became a branch of the Department of Mines and Resources. The Indian Affairs branch faced serious retrenchment in the new department in part due to the depression.

In January 1937 the Director of Indian Affairs Dr. H. W. McGill directed agents to drastically reduce medical care. Agents were ordered to remove from hospitals all Native people with chronic conditions, and that there would be no funds for tuberculosis surveys or for treatment in sanatoria or hospitals for chronic tuberculosis. Hospital care was to be restricted to those who absolutely needed it and then for the shortest possible duration, and that there was to be a "drastic reduction" in the use of drugs for Native people. Finally, medical officers were to carefully reconsider the necessity of surgical operations.<sup>64</sup>

Ferguson was livid. Under Ferguson's direction the Qu'Appelle sanatorium and the Saskatchewan Anti-Tuberculosis league had subsidized half of the costs of the examination of Native schoolchildren, presumably on the understanding that the initial examinations would lead to further case-finding and treatment. He sent an angry letter to the local MP J. G. Gardner, who was also the Liberal minister of agriculture and Ferguson's old schoolmate. To cut off funds, Ferguson insisted, "will result in a lot of bad feelings and criticism among those who have supported the Anti-Tuberculosis programme so loyally in an effort to clean up Saskatchewan." And if his points were still not taken, Ferguson noted, "It is only fair to tell you that one of the worst conditions [is] maintain[ed] at the Duck Lake school near Prince Albert in [Prime Minister] Mr. King's own constituency."<sup>65</sup> Perhaps through this political pressure, in 1938 the Indian Advisory Committee met with Thomas Crerar, the minister of Mines and Resources, to address the rising concerns regarding tuberculosis and Native people.<sup>66</sup>

The minister recognized that "public opinion was growing in favour of more active steps being taken to improve the tuberculosis situation not only for the benefit of the Indian but to protect the White population as well."<sup>67</sup> The Committee recommended that infected children should

be removed from the schools, that annual examinations of students be conducted before admission, and those with tuberculous lesions should be treated in hospitals or sanatoria. The Committee also recommended that tuberculosis found on reserves should be treated on reserves with the help of trained medical officers, and that "hopeful cases" might be treated in sanatoria "to demonstrate to the Indian that tuberculosis could be cured."<sup>68</sup> Reserves adjacent to non-Native communities should receive attention first. Lastly, the Committee recommended that living conditions on reserves should be improved. The Committee's recommendations differed little from Bryce's 1907 Report.

By the time Ferguson and Simes had published their BCG findings in 1949 the medical world had turned. Tuberculosis increasingly was being treated with drug therapy. Native people were admitted to sanatoria as beds became available. In 1937 there were about 100 Native patients receiving treatment for tuberculosis in department hospitals and sanatoria, in 1945 there were 903 under treatment in institutions, and by 1953 there were 2,975 Native patients treated for tuberculosis in institutions. Admissions dropped steadily after 1953 and by 1964 there were 860 Native people in institutional care when drug therapy became widely available for Native people.<sup>69</sup> The rise and fall of admissions for treatment reflected the growing availability of beds, not the incidence of tuberculosis among Native people. BCG vaccination was extended in 1938 to non-Native student nurses, sanatorium and mental hospital staff, Native infants born at the Qu'Appelle hospital, and others who were unavoidably exposed to tuberculosis. But BCG never represented more than a minor fraction of funds marshalled in the crusade against tuberculosis in Canada.

The BCG trial at the Qu'Appelle reserves must be viewed in the historical context of Native-White relations. Native people were viewed as primitives and strangers in their own land and in need of fundamental change. That Native people suffered from disease to a far greater extent than other Canadians was submitted as proof. Not until tuberculosis was understood as an infectious disease was public attention brought to bear on the government to take an interest in the problem, because, until Native people could span the evolutionary divide that separated them from the "White races" they were a disease menace. BCG might provide the means to drag Native people across the divide, at very little cost. That vaccination was attempted at all was due to Ferguson's concern, but that Native people were such perfect subjects was the legacy of their fate as government wards. As for the ghastly background of disease and death that the BCG trial inadvertently highlighted, there was no vaccine. The BCG trial was a success, but unfortunately the patients died.

## NOTES

- 1 Stuart Houston, *R. G. Ferguson: Crusader against Tuberculosis* (Toronto: Hannah Institute and Dundurn Press, 1991) studies Ferguson who designed the trials; Georgina Feldberg, *Disease and Class: Tuberculosis and the Shaping of Modern North American Society* (New Brunswick, N. J.: Rutgers University Press, 1995), makes reference to the trials as evidence of American exceptionalism in its reluctance to undertake BCG vaccination.
- 2 Canada, House of Commons (hereafter CHC), *Sessional Papers*, Annual Report of the Department of Indian Affairs, vol. 11, no. 14, 1897, Reed Report, xxiv; Katherine Pettipas, *Severing the Ties that Bind: Government Repression of Indigenous Religious Ceremonies on the Prairies* (Winnipeg: University of Manitoba Press, 1994), p. 100.
- 3 The Qu'Appelle Agency includes the Piapot, Muscowpetung, Pasquah, Standing Buffalo, Little Black Bear, Star Blanket, Peepeekeesis, and Okanees bands, with a total 1900 population of 830. The Qu'Appelle agency was created in 1901 when the File Hills and Muscowpetung agencies were amalgamated. In 1909 File Hills was again made a separate agency.
- 4 Treaty Four included many groups besides the Qu'Appelle people. In the Treaty the government promised the people reserves of one square mile for every family of five, annuities, and some implements, in return for 195,000 square kilometers of western Manitoba and southern Saskatchewan.
- 5 Mariana Valverde, *The Age of Light, Soap, and Water: Moral Reform in English Canada, 1885-1925* (Toronto: McClelland and Stewart, 1991), p. 20. The same concerns were extended to the urban poor and especially immigrants to Canada.
- 6 CHC, *Debates*, 27 April 1882, 1186.
- 7 Robert Dirks, "Famine and Disease," in K. Kiple, ed., *Cambridge World History of Human Disease* (Cambridge: Cambridge University Press, 1993), p. 160; see also Thomas McKeown, "Food, Infection, and Population," in R. I. Rotberg and T. K. Rabb, eds., *Hunger and History* (Cambridge: Cambridge University Press, 1985), p. 44; Carl Taylor, "Synergy among Mass Infections, Famines, and Poverty," in *Hunger and History*, p. 288.
- 8 The reference is to the File Hills and Crooked Lakes agencies. Similar losses occurred at the Treaty Six reserves (central Saskatchewan and Alberta). The Battleford reserves lost 56% of their population, the Edmonton Reserves lost 26% of their population, and the Hobbema reserves lost 46% of their population. In Treaty Seven (central and southern Alberta) the Blackfoot lost 42% of their population, and the Stoney reserve lost 12% of their population, National Archives (NA), RG 10, Records of the Department of Indian Affairs, vols. 9417-27, Annuity Paylists, 1884-94.
- 9 The reference is to the Muscowpetung and File Hills agencies which were amalgamated in 1901 to form the Qu'Appelle agency. The death rates and birth rates of the two agencies were averaged to arrive at the amalgamated rates, NA, RG 10, vol. 3757, file 31398-1, *Vital Statistics, North-West Territories, Calendar Year, 1895*.
- 10 Herbert Brown Ames, *The City Below the Hill* (1897; reprint, Toronto: University of Toronto Press, 1972), p. 81.
- 11 CHC, *Sessional Papers*, vol. 25, no. 10, 1892, 163.
- 12 NA, RG 10, vol. 4084, file 495868, Grain to Scott, 5 August 1916.
- 13 Quoted in Houston, *R. G. Ferguson*, 51.
- 14 Saskatchewan Anti-Tuberculosis Commission Report, 1922, 19.
- 15 Saskatchewan Anti-Tuberculosis Commission Report, 1922, 31.
- 16 NA, RG10, vol. 3958, file 140,754-3, Wodehouse to Dr. D. A. Carmichael, Department of Soldier's Civil Re-Establishment, 4 September 1924.
- 17 Dominion of Canada, *National Research Council Report of the President and Financial Statement, 1926-27* (Ottawa: King's Printer, 1928), 44.
- 18 H. M. Tory, NRC president to Hon. W. R. Motherwell, Edmonton, 18 January 1929, excerpt of letter in Mel Thistle, *The Inner Ring: The Early History of the National Research*



- Council of Canada* (Toronto: University of Toronto Press, 1966), p. 289. Baudouin was director of the School of Applied Social Hygiene, University of Montreal. The vaccine was brought to Montreal by Dr. A. Pettit from a strain developed at the Pasteur Institute.
- 19 Feldberg, *Disease and Class*, p. 135.
  - 20 Feldberg, *Disease and Class*, p. 152. Feldberg argues that the Americans were especially unwilling to accept BCG because it challenged American nationalism and the middle-class's scientific-medical authority at a time when it was in transition.
  - 21 Dominion of Canada, *National Research Council Report of the President and Financial Statement, 1928-29* (Ottawa: King's Printer, 1930), p. 29.
  - 22 Dominion of Canada, *National Research Council*, 1932, p. 95.
  - 23 Dominion of Canada, *National Research Council*, 1928, p. 44.
  - 24 Saskatchewan Archives Board (SAB), A638 VII.45, Saskatchewan Lung Association (SLA), Ferguson Papers, "Notes Taken by Dr. Ferguson at File Hills Indian School February 12, 1927."
  - 25 R. G. Ferguson, *Tuberculosis among the Indians of the Great Canadian Plains: Preliminary Report of an Investigation Being Carried Out by the National Research Council of Canada*; reprinted from the *Transactions of the Fourteenth Annual Conference of the British National Association for the Prevention of Tuberculosis* (London: Adlard and Son, 1928), p. 1.
  - 26 Ferguson had estimated the tuberculosis death rates from all causes of deaths, because his sources, the annuity paylists, do not indicate cause of death.
  - 27 SAB, A638 IX.50, SLA, Ferguson Papers, Indian Research.
  - 28 Ferguson, *Tuberculosis among the Indians*, p. 2.
  - 29 Gerald Friesen, *The Canadian Prairies* (Toronto: University of Toronto Press, 1984), p. 223.
  - 30 Ferguson, *Tuberculosis among the Indians*, p. 33.
  - 31 Ferguson, *Tuberculosis among the Indians*, p. 36.
  - 32 The "Demonstration Colony" (as the department termed it) was an attempt by the department to illustrate, especially to dignitaries and foreign visitors, the successful management of Native people. Young graduates of the Industrial schools were provided with land, machinery, houses, and cash to begin farming. It was a "carefully contrived showpiece" of the department's treatment of Native people (Sarah Carter, "Demonstrating Success: The File Hills Farm Colony," *Prairie Forum*, 16, 3 [1991]: 157).
  - 33 Ferguson, *Tuberculosis among the Indians*, p. 42.
  - 34 Ferguson, *Tuberculosis among the Indians*, p. 24.
  - 35 Ferguson's trials predated late twentieth-century notions of informed consent which cannot be applied here. However, among non-Native children Ferguson deemed it necessary to obtain parental consent before tuberculin testing in 1921, see Houston, R. G. Ferguson, p. 60. But as late as 1966 Dr. Barnett vaccinated Native children with BCG in Saskatchewan without parental consent. He found consent forms "awkward and time consuming and eventually I just took it on my own hook to vaccinate them all anyway, as I felt it was good for them" (SAB, A638 VIII.157, SLA, Barnett to Stark, 20 May 1966).
  - 36 SAB, A638, VII.47, SLA Ferguson Papers, Ferguson to Tory, 2 September 1930.
  - 37 The Qu'Appelle Indian Health Unit consisted of the File Hills agency and school, the Qu'Appelle agency and school, and after 1931, the Standing Buffalo reserve.
  - 38 SAB, A638, VII.5, SLA Ferguson Papers, "A Memorandum Dictated in 1922 after the Completion of the Anti-Tuberculosis Commission Report."
  - 39 Bryce was at the same time also the medical inspector for the Department of the Interior and spent two-thirds of his time inspecting immigrants during one of the greatest immigration waves of the century.
  - 40 CHC, *Sessional Papers*, Department of Indian Affairs, vol. 12, no. 27, 1907, Annual Report of the Chief Medical Officer, 274.

- 41 P. H. Bryce, *Report on the Indian Schools of Manitoba and the North-West Territories* (Ottawa: Government Printing Bureau, 1907), p. 18.
- 42 NA, RG 10, vol. 4037, file 317,021, Bryce Recommendations, 4 June 1907.
- 43 NA, RG 10, vol. 4037, file 317,021.
- 44 By way of comparison the appropriation for printing and stationery that year was \$8,000 (CHC *Sessional Papers*, vol. 15, no. 27, 1909, 164; vol. 17, no. 27, 1910, 131).
- 45 NA, RG10, vol. 3957, file 140,754-1, D. C. Scott, accountant, memo, "Notes on Dr. Bryce's Report with Suggestions for Further Action," 7 March 1910.
- 46 SAB, A638 VII.47, SLA Ferguson Papers, Memorandum from E. L. Stone, Director of Medical Services, Department of Indian Affairs to D. C. Scott, DSGIA, 20 April 1929.
- 47 NA, RG10, vol. 1015, Battleford Agency, Monthly Medical Reports, secretary to Dr. Cameron, 20 August 1934.
- 48 In 1914 the department had established and maintained a cottage hospital at the File Hills Farm Colony. In the centre of the showpiece was the cottage hospital, which was intended to demonstrate that school graduates had forsaken their own healers in favor of modern medicine.
- 49 In 1930 the general death rate was 23.54 per thousand, by 1932 it was 22.5 per thousand, while infant mortality in 1930 was 216 per thousand, by 1932 it jumped to 302.3 due to epidemics of whooping cough and influenza. By 1933 it was down to 137.9 per thousand. The birth rate was 34.9 per thousand in 1930, and 45.08 in 1932 (SAB, A638 VII.5, SLA Ferguson Papers, "Tuberculosis Research among the Indians of the Qu'Appelle Indian Health Unit," Progress Reports, 1930, 1933).
- 50 SAB, A638 VII.50c SLA, Ferguson Papers, Ferguson to Saskatchewan Minister of Public Health J. M. Uhrich, 26 March 1935.
- 51 SAB, A638 IX.53, SLA, Ferguson Papers, Ferguson to H. M. Tory, 3 January 1931.
- 52 SAB, A638 IX.53, SLA, Ferguson Papers.
- 53 SAB, A638 VII.5, SLA Ferguson Papers, "Report of Indian Boarding School Children in Saskatchewan," 1933-37.
- 54 SAB, A638 VII.50b, SLA Ferguson Papers, "Resolution Passed at the Annual Meeting of Persons Directing Research Under the Auspices of the Associate Committee on Tuberculosis, March 21, 1933."
- 55 See C. Stuart Houston, "Ferguson's BCG Research—Canada's First Randomized Clinical Trial?" *Clinical Investigation of Medicine*, 16, 1 (1993): 90. The failure to select appropriate controls for BCG trials had haunted both Calmette's original studies and the Montreal trials.
- 56 The schoolchildren were in groups designated as "B" and "Bx," SAB, A638 IX.60, SLA Ferguson Papers, "Year End Reports to the National Research Council—Qu'Appelle Indian Research, 31 December 1946."
- 57 R. G. Ferguson and A. B. Simes, "BCG Vaccination of Indian Infants in Saskatchewan," *Tubercle*, 30, 1 (January 1949): 2.
- 58 Ferguson and Simes, "BCG Vaccination," p. 7.
- 59 Ferguson and Simes, "BCG Vaccination," p. 5. Of the vaccinated group 39 of 306 children died in the first year, and 38 of 303 controls died within the first year.
- 60 J. W. Hopkins, "BCG Vaccination in Montreal," *American Review of Tuberculosis*, 43, 5 (May 1941): 591. The Montreal trials were conducted by Dr. Baudouin from 1926 to 1938.
- 61 Hopkins, "BCG Vaccination in Montreal," Table 4b, p. 592. The method of accumulating the death rates is Hopkins'.
- 62 SAB, A638 VII.25, SLA, Ferguson Papers, "The Indian Tuberculosis Problem and Some Preventive Measures," June 1933.
- 63 Dignitaries in the 1950s made public appearances at the Qu'Appelle Indian Hospital. When Liberal Prime Minister Louis St. Laurent and Minister of Health Paul Martin appeared they were made "Honourary Indian Chiefs" and received feathered bonnets (personal interview, Dr. G. Monks, hospital physician 1949-51, 18 March 1998.)
- 64 NA, RG10, vol. 1225, file 311-T7-16, McGill to Agents, 14 January 1937.

- 65 SAB, A638 VII.27, SLA, Ferguson Papers, Ferguson to Gardner, 8 February 1937.
- 66 The Committee was made up of representatives of the provincial tuberculosis associations, including Ferguson.
- 67 SAB, A638 IX.52, SLA, Ferguson Papers, "Meeting of the Indian Advisory Committee, March 10, 1938," p. 1.
- 68 SAB, A638 IX.52, SLA, Ferguson Papers, p. 4.
- 69 NA, RG 10, vol. 1225, file 311-T7-16, Report of the Advisory Committee, p. 3; G. J. Wherrett, *The Miracle of the Empty Beds: A History of Tuberculosis in Canada* (Toronto: University of Toronto Press, 1977), Table 7, p. 116.