

## The Impact of Epidemic Influenza: Canada, 1918-1919

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Volume 12, Number 1, 1977

Fredericton 1977

URI: <https://id.erudit.org/iderudit/030824ar>

DOI: <https://doi.org/10.7202/030824ar>

[See table of contents](#)

### Publisher(s)

The Canadian Historical Association/La Société historique du Canada

### ISSN

0068-8878 (print)

1712-9109 (digital)

[Explore this journal](#)

### Cite this article

McGinnis, J. P. D. (1977). The Impact of Epidemic Influenza: Canada, 1918-1919. *Historical Papers / Communications historiques*, 12(1), 120-140. <https://doi.org/10.7202/030824ar>

### Article abstract

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**J.P. DICKIN McGINNIS**

*Précis*

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*The Impact of Epidemic Influenza:  
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According to a Chinese proverb, “after war comes plague”. War provides perfect conditions for the spread of disease. Soldiers are brought together from many backgrounds and forced to live in close proximity to people having different immunities from their own. They are sent out to troop across foreign territory meanwhile suffering from lowered sanitary and nutritional standards. Exhausted and sick, they come into contact with civilians of similarly lowered resistance. Different diseases are brought together in a medium excellent for their mutation and growth. After the cessation of hostilities, armies are sent home to spread unfamiliar, and perhaps even brand new, forms of sickness among a population likely suffering from some extent of privation due to the war. In Europe during the nineteenth century and earlier the end result was usually typhus. After World War I, it was “Spanish Influenza”.

Spanish influenza did not come from Spain. That country likely acquired the blame because, not involved in the war and having no press censorship, its epidemic in the spring of 1918 was the only earlier one widely publicized.<sup>1</sup> In fact, the flu seems to have broken out in China, notably in Canton in late February 1918. The next outbreak was recorded in France, possibly imported there with a contingent of Chinese laborers. By 5 March, it was spreading among United States troops stationed at Camp Funston, Kansas. By April, it was again reported in continental Europe, Spain not being afflicted until May. During this period, the disease was not given epidemic standing, nor was it always recognized as influenza. For example, England’s June epidemic in the army camps was diagnosed as botulism.<sup>2</sup>

Although this earlier epidemic was much milder than that which came later, it certainly adversely affected the trench warfare. A Quebecois soldier, Arthur Lapointe, stationed at Agny, France, has left a record of just how quickly flu could disable a soldier and indeed, a whole company. In his diary he notes under the date of 30 June 1918 that several of the men have been seized suddenly with a violent headache, other pains, and fever. A signaller is rolling on the ground, the sergeant-major has just been evacuated half unconscious and a runner has collapsed. Lapointe goes into his dugout for lunch, finds he cannot eat, readies his personal effects for the imminent relief of the company and starts to climb the dugout stairs. “As I reach the top, my head swims with sudden nausea, everything around me whirls, I totter, then fainting, fall to the ground.” Upon

regaining consciousness he rejoins his company, many of which are in the same condition, and it embarks on a one hour trudge through one mile of trenches to the aid post. One man, forced to crawling on hands and knees, has to be left behind till help can be secured. The commander, also sick, joins his company at the post and they are taken by ambulance to the rear. Lapointe is given permission to stay in billets rather than go to the hospital. After two days of being nursed by a friend, he is able to return to duty. At no point does Lapointe diagnose his own condition as flu. He suffers from it again in November while stationed at Bramshott Camp, England. This time, it is diagnosed as the after-effects of being gassed but there can be no doubt, from the symptoms he describes, the speed with which the disease spreads and the prevalence of flu in his area each time, that he was afflicted with Spanish influenza on both occasions.<sup>3</sup>

The infection invaded Canada, not surprisingly, on troop ships. The *Araguayan* left England 26 June and developed 175 cases among 763 soldiers on board. The first incident in which civilian officials took part involved the steamship *Somali* which had been granted pratique when it stopped in at the quarantine headquarters on Grosse Isle in the St. Lawrence River. However, upon arriving at Quebec City, several of its crew proved to be suffering from the flu and, after unloading, the ship was ordered back to Grosse Isle for care of the sick and general fumigation on 9 July 1918. By 11 July, forty-six crew members were in the Grosse Isle hospital. By the next morning, the number had risen to sixty-seven and by nightfall had reached seventy-two. At approximately the same date, the *Nagoya* arrived at Montreal and the *Med 1099* hospital ship at Halifax, likewise carrying the flu.<sup>4</sup>

However, the disease seems not to have spread very rapidly throughout the summer. The isolated cases that no doubt occurred were generally not recognized as Spanish flu. Indeed, even once the epidemic started in earnest, authorities were very reluctant to diagnose it as the real thing, sticking to descriptions of "ordinary flu" and catarrh. However, it was obvious by the end of September that Canada had a problem. On 23 September 1918, the Calgary *Herald* began regularly reporting on the flu. From these reports the routes of the infection throughout the country can be traced. The first cited three hundred college students sick at Victoriaville, P.Q., nine United States sailors dead from flu on ships in Quebec City harbor in the last few days, and the fifth flu-related death among the Polish infantry stationed at Niagara Camp, Ontario. The next day, new cases and deaths were reported at both Arthabaskaville and Trois Pistoles.

By this point, New York and Massachusetts were undergoing very serious epidemics, especially in the army camps, so it is likely that Canada was now being infected from overland as well as through its ports. By 28 September, the flu had not only reached Montreal where it was epidemic in the barracks but Canada was already exporting the disease back to Europe. On 28 September, the troop ship, the *City of Cairo*, sailed from Quebec City with 1057 troops. Nearly all on board contracted flu before arriving in Davenport on 11 October, with

thirty-two deaths at sea. On arrival 244 cases were transferred to the hospital, 114 of these on stretchers. The *Hunstead*, which had sailed from Montreal two days before the *City of Cairo* experienced similar casualties, as did the *Victoria* sailing from Quebec City on 6 October. To protect itself from contamination from its own homeland, the Canadian army in England was forced to place all new recruits in segregation camps for 28 days.<sup>5</sup> While protecting the training camps from infection, this move must also have provided excellent conditions for the incubation of flu among the newly-arrived troops.

Meanwhile, back home the epidemic had reached the Maritimes by the end of September. Sydney and North Sydney, Nova Scotia experienced five deaths by 30 September. The reports on Halifax seem to indicate, at first glance, that that city was not similarly afflicted. Around the beginning of October, it was sending doctors and nurses to help out the especially hard-hit city of Boston. However, since it is known that flu-ships had entered the port in the summer and again at the end of September,<sup>6</sup> the more likely reason for this magnanimity was the debt Halifax owed Boston for the considerable help that city had rendered at the time of the disastrous Halifax explosion in 1917. By 11 October, Halifax was certainly suffering in epidemic proportions.

Epidemics traditionally travel along the usual lines of communication therefore it was obviously only a matter of time before the railways would bring the infection west. However, a questionable decision by Canadian military authorities speeded up the process considerably. The quarantined barrack in Quebec City numbered among its inhabitants several seemingly-healthy soldiers due to be transferred to Vancouver. At the end of September, these men, who had certainly been in contact with the flu, were loaded onto a C.P.R. train and sent west. As men became ill, they were handed over to health authorities at several points along the way. At 3 a.m. on 2 October, one officer and fourteen privates were dropped off in Calgary. By the time the troops reached Vancouver, the whole train had been ordered quarantined.<sup>7</sup> This move, however, was a little too late for the prairies. The infected soldiers soon spread disease throughout the military hospitals they were taken to, then throughout their camps and then into the surrounding civilian community. It is true these areas would have eventually been hit anyway. For example, shortly after the troop train arrived in Calgary, infection entered that city through at least three other channels.<sup>8</sup> But the infection via the military was by far the most significant one, introducing so large a number of sick into that most perfect medium for incubation, the army camp.

The flu next spread along the railways and highways into the remoter parts of all provinces. Smaller Ontario centres were the first to report, then those in the southern prairies. The epidemic was serious in Edmonton by 18 October and raging in the northern prairies generally by the beginning of November. Also by that date the Queen Charlotte Islands had been infected, either by Canadian or United States vessels. Newfoundland was probably infected by fishing ships from the Grand Banks. The Yukon and Northwest Territories were contam-

inated via Alaska and did not really suffer until the rivers opened allowing mail and flu to reach remoter areas in the spring.

It is obvious from the newspaper reports that the more isolated centres would be able to watch the dreadful disease stalk towards them and it might be thought that quarantine would be tried. As a matter of fact it was. At least three smaller prairie municipalities — Lethbridge, Taber and Pincher Creek — ordered all C.P.R. passenger cars sealed while passing through and set up roadblocks run by the Alberta Provincial Police on the major incoming highways.<sup>9</sup> None of them escaped infection. In fact, Pincher Creek suffered so dreadfully that it had to ask for the R.N.W.M.P. surgeon to come over from Fort Macleod when all the town doctors went down sick at once.<sup>10</sup> Prince Edward Island, the only province allowed (under the terms of its entering Confederation) quarantine rights from the other provinces, tried a somewhat less stringent method. As had been done during the New Brunswick smallpox epidemic earlier that year, P.E.I. asked that all passengers for the island be checked by a medical health officer and stopped if symptoms were present.<sup>11</sup> On a larger scale, an attempt was also made to quarantine the entire Yukon Territory. Indians were warned not to wander across the border into Alaska, all Yukon-bound travellers were checked by United States health authorities in Skagway, and for a while quarantine barracks were opened at Carcross and Whitehorse.<sup>12</sup> But none of these places escaped infection. In fact the only inhabited place on the entire globe left untouched was Tristan da Cunha, a tiny island 1500 miles south of St. Helena in the Atlantic Ocean.<sup>13</sup>

What was this disease with which the whole world now had to deal? Influenza was by no means a new disease. In the nineteenth century alone it had appeared in major epidemic proportions on at least six occasions — in 1800, 1830, 1843, 1857, 1874 and 1889-90. The last of these was the most virulent and affected forty percent of the world's population. Influenza's earlier history is more difficult to chart, partly because, being an epidemic rather than an endemic disease, it was given a different name each time it made one of its periodic appearances: flu, grippe, feveret, epidemic catarrh, Spanish, Chinese or German disease or even *coqueluche*, a term now used for whooping-cough. It is even possible that the great epidemics of sweating sickness in the sixteenth century were actually influenza.

The name influenza comes from the Italian for influence, from influence of the stars, accepted in the fourteenth and fifteenth centuries as the cause of the disease. In the sixteenth century contaminated food was the accepted cause; in the seventeenth and eighteenth it was blamed on sudden changes in temperature. From then on, it was increasingly viewed as a contagious disease but this did not find general acceptance until after 1890.<sup>14</sup>

Influenza has been, and still is, passed off as a mildly amusing disease. This is partly due to the fact that, although it generally has a high morbidity, it also usually has a very low mortality. Its importance is also masked by the fact that,

although it reduces the resistance to other diseases, it is these other diseases, readily identifiable in their own right, that usually do the killing and are therefore regarded with much greater respect. Included are pneumonia, encephalitis and meningitis.<sup>15</sup> Another way in which influenza may be masked is by an epidemic of a more acute, unrelated disease occurring at the same time, thereby drawing attention from the lesser disease. For example, two Canadian flu epidemics, in 1830-32 and 1847-48, were both hidden in this way, the first by cholera and the second by typhus.<sup>16</sup> This may be partly the reason the 1918-19 epidemic was regarded as so serious at the time. Medical authorities had learned to control most of the major communicable diseases. Throughout the war they had congratulated themselves on avoiding typhus and typhoid fever, the usual scourges affecting armies. But the importance of the 1918-19 epidemic cannot be dismissed simply by pointing out that it had no competitors. The influenza of those years was a very serious disease.

As stated, influenza generally exhibits a high morbidity but a low mortality. The 1918-19 variety was different in that it had a very high morbidity (from fifteen to fifty per cent in various countries) coupled with a much higher mortality rate (about one per cent of those who contracted flu, died). It also manifested the curious feature of killing, not the very young and the very old — its usual victims, but healthy individuals in the prime of life.<sup>17</sup> Its symptoms ranged from mild to acute and generally started with a sudden onset complete with shivering, severe headache, pains in the back and legs and a general feeling of prostration. Occasionally there was giddiness and collapse, a dry and sore throat and a hacking cough. Also likely to appear were a fever, often high, a flushed face, injected eyes, heavily furred tongue and a drowsy state complete with sensitivity to bright light. In serious cases pleurisy and pneumonia might develop, or cyanosis, a bluish discoloration of the skin and mucous membranes due to an excessive concentration of reduced hemoglobin in the blood. This last symptom usually preceded death and added fuel to an opinion that had some popular currency that the culprit was not influenza at all but black plague.

The sudden onset, diversity of symptoms and difference in degrees of illness led to problems in controlling the disease. Quarantine, which had not worked for whole communities, did not work for individuals or their families either. The medical health officer of Edmonton has left a cogent summary of the various difficulties militating against effective quarantine of flu sufferers. To start with, influenza was not a notifiable disease and therefore not subject to even modified quarantine by placard, of the type applicable to measles and whooping cough. This obstacle was easily overcome by most authorities early in the epidemic simply by rushing a new law onto the books. Then the perplexities began in earnest. Some cases were so mild that they were diagnosed as the common cold and therefore not placarded. Many citizens regarded quarantine as an injustice either because they did not consider the diagnosis correct or were convinced that their neighbors were cheating. Some doctors became careless or indifferent in reporting their cases because they alleged other physicians were doing the same and that the members of the health department were guilty of discrimination. At

the same time, the health department had several officials down sick or recovering and the rest were overworked. The department could not hope to check up on anyone it felt was lax. Neither could it gain anything by prosecuting offending householders or physicians who did not report cases as it was unlikely any magistrate would convict on evidence of doubtful or contradictory diagnosis. Besides there was no proof that quarantine did any good. People taking great precautions to avoid infection did not seem to be any more successful than those taking none whatsoever. The high incidence of infection among professionals combatting the epidemic was more likely due to fatigue than exposure.<sup>18</sup> Other health officials agreed that quarantine was not worth the effort. Of fifty-two state and provincial health officers polled by the American Public Health Association, thirty-three felt that quarantine and placarding measures for flu were impracticable. Ten hedged their answers and only nine felt the measures practicable.<sup>19</sup>

If quarantine would not work, there were other measures that could be tried. One was the enforcement of masks. Laws to this effect were passed by various municipalities, provinces and states. The laws varied in application, some enforcing masks only for those actually caring for the sick, some for people in contact with the public such as bank tellers and store clerks, some for anyone entering crowded places like trains or street cars, and some, for example Alberta's, demanding that everyone wear a mask at all times while outside the home. The mask could be partly removed during meals. However, masks proved to be an even less effectual form of prevention than quarantine. Not only were they practically impossible to enforce but they were probably dangerous even when worn. The medical theory motivating the use of masks was that, since the contagion was passed from person to person through the respiratory tract, masks would both stop an early sufferer from passing it on while still at large in the community and would also stop healthy people from picking it up. It is probable that masks did exercise some control of the first problem, even if only by curtailing the activities or output of those two public villains of the epidemic, the sneezer and "the careless spitter". It is possible that well-cared-for masks also offered some degree of protection. However, this involved frequent changes of masks and disinfection of old ones, something few people appear to have done. An improperly cared-for mask was dangerous to wear. The damp, unsanitary cotton was the perfect environment for the breeding of germs. But few people likely suffered because of this. The grotesque masks were widely unpopular and the contemporary newspaper evidence is that they were generally not worn at all or just pulled into place when a policeman came in view.<sup>20</sup>

If people did not support quarantine or masks as means of prevention, they did look for answers in alcohol and patent medicines, chiefly those containing alcohol and/or narcotics. Such remedies relieved or masked the symptoms of more diseases than just flu. Medical science had not advanced much beyond dealing with symptoms by this point and the general public accepted pain-killing as the greatest good, or at least the greatest good possible. Prohibition in several areas and a general shortage of potable alcohol, due to the practice of filling ar-



my demands first, pretty well held consumption of alcohol in check. Doctors' prescriptions were seen as the fairest way of sharing out such supplies as were available. A good deal of the narcotics were also distributed under prescription, handed out in massive proportions. For example, during October 1918, Chicago pharmacies filled 741,825 prescriptions. Of these, 441,641 were for flu or pneumonia and of these 104,010 contained either opium, opium derivatives, cocaine or chloral.<sup>21</sup> Evidence is that Canadian druggists were similarly hard-pressed.<sup>22</sup> In addition to prescription drugs, a large quantity of patent medicines were available. Many of these contained narcotics, often with an alcohol base. Canadians had been consuming fair quantities of these commodities for several years,<sup>23</sup> and newspaper ads throughout the flu cashed in on the current crisis. Everything from laxatives to sweeping compounds were billed as specifics in the prevention of flu. Their effects ranged from harmful to useless. There was no drug that could prevent or cure influenza.

Neither was there an effective preventive vaccine. Various attempts were made at concocting one but almost everything militated against the successful completion of such an endeavor. For one thing, the epidemic hit too fast and too hard to allow health professionals much time for clinical experimentation. As one Canadian military physician lamented:<sup>24</sup>

. . . I must express my regret that owing to press of work, night and day, while many medical officers were sick, I and my colleagues in the military hospital have been unable to work out this interesting problem in the scientific way it should be done.

The other major problem with vaccination for flu was that the causative organism in the 1918-19 epidemic could not be identified until the introduction of a strong enough microscope in 1933. Vaccines were concocted from the variety of organisms found in the respiratory tract of sufferers. The preparations varied with parts of the world depending on the types of organisms likely to be present in the sputa of a person whose resistance was lowered by flu. For example, in temperate zones where streptococci are prevalent, these were nearly always included in the vaccines but in Africa where they rarely occur, they were not used.<sup>25</sup> It is possible that these shotgun preparations did help prevent contraction of secondary diseases like pneumonia, but it is obvious that any efficacy they might have had against the actual influenza virus could only have been due to luck.

Vaccines were prepared and distributed throughout Canada in the autumn stages of the flu, but contemporary medical opinion generally agreed that while the right vaccine would be invaluable, it probably had not been found yet.<sup>26</sup> The matter was discussed in detail at a special meeting of the American Public Health Association called at Chicago in December 1918 to discuss the flu. The consensus was that vaccine should only be used on an experimental basis, its results being unknown and perhaps dangerous. Some Canadian health authorities were still not convinced that vaccination should be abandoned. The federal govern-

ment was ambivalent about the matter. It refused to send vaccine to the Yukon and Northwest Territories in late 1918 because, in its opinion, no serum had been proved as a specific. But it did issue limited supplies to the Mounted Police for distribution to the northern Indians in the spring of 1919.<sup>27</sup>

Unable to prevent the spread of the disease, authorities were forced to turn their attention to the immediate problems of caring for the sick and helping as many as possible to struggle through to recovery. Canada, as a country, got off fairly lightly although some regions, such as Labrador and the province of Quebec, suffered more than others. Statistics of the period are incomplete and those for the flu are particularly untrustworthy as the disease was not made notifiable until the epidemic was underway, the proper authorities were too busy to always report cases and deaths, some cases were so mild they never received official notice, and many cases and deaths were misdiagnosed as due to other causes. A conservative estimate is that at least one sixth of the entire population was attacked and that 30,000 of these died. In later years the mortality estimate has been revised upwards to around 50,000 with a consequent increase in the morbidity estimate. The Canadian death rate per 100,000 for the years 1917, 1918 and 1919 shows a jump due to the epidemic: 12.7, 15.9 and 13.7, respectively. The province of Quebec alone suffered in excess of 530,000 cases and almost 14,000 deaths up to 27 December 1918. Ontario recorded 300,000 cases and almost 9000 deaths. Even Alberta, with a population of only 590,000 recorded over 38,000 cases and more than 4300 deaths. Canadians also suffered overseas, the armed forces reporting 45,960 cases and 776 deaths.<sup>28</sup> Crude and undigested as these figures are, they do indicate at least one thing — a lot of people were sick and in trying to provide the necessary care, Canadian society would be taxed as never before.

The flu was very contagious and the onset fast. The public was made aware of the symptoms and advised to go to bed immediately. Most sufferers had little choice as the earlier symptoms were often extremely debilitating. Once in bed, they might remain there for a few days or a month depending on the severity of the attack. Pneumonia was a frequent after-effect, keeping the patient in bed even longer or causing death. Sufferers who were very ill had to be moved to hospitals; the moderately ill could be cared for at home if one or more adults in the family were still healthy; whole families who were ill had to be removed to hospitals or have regular help from outside the home. Someone had to look after all these people. Some place also had to be found to put them, and food to feed them, and beds and sheets and bedpans and hundreds of other significant little items.

The regular medical facilities were, of course, turned to first but they soon broke down under the strain. Hospitals had been badly under-staffed throughout the war,<sup>29</sup> having lost not only doctors but nurses and orderlies to the armed forces, and support staff to better paid war jobs. The flu stretched the available staffs beyond their limits. In addition, morbidity was high among the medical professions. Consequently there were even fewer professionals to treat

even more patients. The buildings, too, were soon overtaxed. Some communities, realizing from the first that it was dangerous to put flu patients into regular hospitals, set up emergency centres immediately. Eventually almost all municipalities were forced to provide some type of emergency accommodation.<sup>30</sup> Buildings for this purpose were not usually too hard to find: schools could always be closed in most urban areas and hotels taken over in smaller towns. Provisioning these makeshift hospitals was another matter. The armed forces had had first call on most medical material since the war began. Even beds could be an almost insuperable problem in remote areas. The Yukon Territorial Secretary wrote three companies in December 1918 asking about the availability of beds should the flu strike. One could lay its hands on fifteen if needed, the other two had none although one promised fifteen mattresses and twenty-five sets of blankets.<sup>31</sup> Officials struggled with these problems as best they could and as the epidemic peaked in some centres, now superfluous equipment and supplies could be sent further along the line to where it was most needed.<sup>32</sup>

Extra trained medical staff could also be found in related services. The Victorian Order of Nurses, forbidden by its charter to care for contagious cases, dropped the rule for the duration of the epidemic.<sup>33</sup> The Canadian Red Cross turned from rolling bandages for the war to making masks and pneumonia jackets for civilians.<sup>34</sup> The Voluntary Aid Detachment of the St. John Ambulance Brigade provided many qualified volunteers, many of whom had to take over completely in remoter areas.<sup>35</sup>

The duties of non-medical officials were also stretched to meet the crisis. In Montreal, police and firemen delivered food and fuel to those confined to their homes. Toronto postmen were given cards to fill out at each place on their rounds asking the number of adults and children in the family, how many were ill and who needed help. In Ottawa, the Department of the Interior sent out a circular on 12 October to all offices urging officials to persuade "your women clerks" to volunteer for home nursing chores. By 6 November, the Privy Council added incentive by offering all such volunteers leave of absence with pay and guaranteed them that this would not interfere with their annual statutory leave. In the far north, R.N.W.M.P. officers covered as much as 178 miles in eight and a half days to bring isolated Indian communities serum, supplies and general information about the impending epidemic. And in northern Alberta, they not only tried to enforce quarantine but, on at least one reserve, took over the duties of a frightened Indian agent, hauled firewood, made soup, coaxed the sick to eat and spoon-fed them brandy. The general public also responded to the call. In addition to the thousands of women who went into the homes of the sick to care for their basic needs, others staffed soup kitchens and provided transportation. Benevolent societies and charities surveyed houses to ascertain who needed help and collected contributions of food and clothing from individuals, organizations and even businesses.<sup>36</sup>

One of the main reasons that such diverse types of people were involved in the flu fight was that nobody was quite sure whose responsibility it was and if

people had waited for some sort of superior organization to take hold, it would have been too late. The confusion among authorities as to what was within their legal realm is obvious. When the Acting Deputy Minister of Immigration and Colonization wired the inspecting physician at Grosse Isle asking him to take care of the *Somali* problem, he received the reply: "I will act in accordance with your wishes but would kindly ask you to communicate with our department so that they might give me special authority to that effect." The Acting Deputy Minister fired off a terse reply to the effect that Immigration and Colonization was the official's department and a memo to the head of the Public Health Branch relating the transaction and asking:

Under these circumstances, I would feel greatly obliged if you would arrange to notify the various members of your staff that the Public Health Branch is now part of the Department of Immigration and Colonization.

The offending quarantine officer contritely apologized for his lack of information. It was an unfortunate incident, especially since the quarantine service dealt admirably with an almost impossible situation. At the beginning, until a tougher law was passed, officers could not demand the quarantine of influenza cases but could only accept into their barracks anyone the captains of vessels might want to leave behind. Even after the law was changed, the officers could stop only ships from "overseas" and could do nothing about either Canadian ships from infected home ports or United States vessels. They did not even have jurisdiction over vessels that did not show their first signs of infection until in port. These were the responsibility of municipal or provincial authorities, not federal, which meant that their sick were to be taken ashore for treatment rather than to the isolation station, thereby defeating the whole purpose of coastal quarantine.<sup>37</sup>

Other government bodies ran into similar problems of jurisdiction and lack of information. Worriedly watching the approach of the epidemic, the commanding officer of the R.N.W.M.P. post at Great Slave Lake wrote on 20 December 1918, to the Commanding Officer at Peace River asking that he be sent all necessary medicines to fight the impending epidemic before it hit the population in his charge. Proceeding through channels, the letter was sent to the Assistant Commissioner at Regina who, on 20 January 1919, enclosed it in a letter to the Comptroller in Ottawa. Things were a little speedier from then on. The Comptroller sent out letters regarding the matter, dated 24 January 1919, to the Departments of the Interior and of Indian Affairs and to the Privy Council. Four days later the Deputy Minister of the Interior advised the Comptroller to wire Regina authorizing the R.N.W.M.P. officials there to send the requested supplies, to be used according to the opinion of the officers at Slave Lake and to be paid for by Interior. A wire to that effect went to Regina that night. The Department of Indian Affairs did not reply until 4 February at which time it announced it had already sent drugs to schools and missions at Forts Smith and Simpson and had bypassed channels to inform the C.O. at Great Slave Lake of this directly on 31 January. As a result, these two areas got double their ration of medicines as the C.O. at Peace River informed Regina on 11 February that the

drugs that had come through channels had been forwarded by him to those two and to three other northern communities by registered mail. The whole process had taken almost eight weeks to transact and even then had not come off quite right. However, the expended time probably mattered little. As the C.O. at Peace River explained, he could not send the medicines to two other forts until navigation opened and the mails started on 1 June. If the mails could not get through until then neither in all probability could the flu.<sup>38</sup>

Other northern worthies also had their problems with jurisdiction. Canada having no quarantine against the United States, the Medical Health Officer at Whitehorse had to rely on officials at Skagway to stop people with flu from getting on the train to Whitehorse. After United States objections over the expense, Canadian authorities agreed to pay half the costs in mid-January 1919. But even this gave Canada no say over how the inspections were carried out. Whitehorse imposed its own quarantine on travellers arriving there from Skagway in April. It dropped them in early May when Skagway announced the flu there was waning. Less than two weeks later, in a letter to his superior in Dawson, the R.N.W.M.P. inspector at Whitehorse laments that he and the Medical Officer of Health are not getting very reliable information from the United States authorities and that even though he understands he cannot send a man to check up on quarantine operations there without permission from the foreign government, he thinks it would be a good idea to at least have someone to send on accurate reports. At any rate, quarantine against Skagway had already been reimposed.<sup>39</sup>

Under the circumstances, people got information and help where it was available and gave them in return. The acting Gold Commissioner of the Yukon asked for and received posters and pamphlets relating to flu from the mayor of Vancouver. When Boston thought it had happened upon the ideal facilities in which to treat pneumonia patients, it sent out blueprints and instruction unsolicited, to many Canadian and United States health officers. Larger Ontario towns provided accommodation and help for sufferers from surrounding communities which had not had the foresight to build hospitals. Alberta cities not only cared for the sick from surrounding rural areas but their health departments handled requests for help and information that came in not only from within the province but even from British Columbia and Oregon. The provincial department also overstepped its responsibilities to send aid to outlying areas. Finally things became so disorganized in the north that the Provincial Health Board revoked the powers of the local boards and ran things from Edmonton.<sup>40</sup>

There were other attempts at reorganization. In Quebec, the Conseil Supérieur d'Hygiène was transformed into the Bureau Central d'Hygiène and given full powers to take any measures necessary to halt the spread of the flu. The Montreal Board of Health, previously consisting of laymen, was replaced by one of physicians. Ontario passed an order-in-council granting the Board of Health summary powers to take over any land and unoccupied buildings for hospital purposes. It also gave local medical health officers full power to close

public places such as schools and theatres. Regina established a central health bureau and Edmonton, due to a shortage of nurses, set up a system whereby professionals visited homes and made diagnoses but left their actual nursing care to volunteers working under their instructions.<sup>41</sup> The Canadian railways wanted organization on an even larger scale — viz. a central board of two doctors (advisers) and one businessman (the administrator) to collect information as to sources of infection and to standardize methods of prevention and treatment. Such a board would be given:<sup>42</sup>

. . . the authority to order whatever may be necessary to protect the country against the threatened breakdown of the industrial and transportation machinery if the disease continues at its present rate, and to take its present toll of workers.

The board was never appointed.

The railways had good reason to be concerned. They were among the hardest hit of all Canadian business concerns. From late October to early December, newspaper wire services chronicled their woes. On 22 October, the Grand Trunk terminal at Toronto announced that 219 of its staff were off sick with flu and it was therefore necessary to place an embargo on all freight going east. It was two days later that the railways called for a central organization of health services, an estimated 1373 of their Ontario employees alone being off sick by this time and the west to east embargo now applying to all rail lines. Even a small city like Calgary reported 216 C.P.R. men sick. Fortunately, in an ironic sense, passenger demand was also off due to the flu — as much as fifty per cent in the west. On 28 October, Ottawa announced that for the duration of the flu, demurrage would not be charged against those shippers unable to take railroad cars they had reserved. The train service was obviously in no position to be sticky about businesses living up to their obligations and was no doubt relieved at the release this generosity on their part gave them from their own. The next day it was announced from Montreal that as many as 10,000 railroad workers were off with flu in eastern Canada and that the only goods the War Board would allow to be shipped from west of Toronto to east of Toronto were shipments destined for overseas. On 1 November, the estimate was raised to 14,000 employees sick and, while the epidemic was abating in the east, it was only starting to take its toll in the west. In hopes of averting quite so severe a crisis there, the War Board was sending several thousand bottles of serum to inoculate free any railroad employee who was willing. By the last week in the month, rail service was still under normal and the commissioners extended the demurrage release under the provision that the shipper be able to prove that its own problems extended from the epidemic. But the end was almost nigh. Beginning 3 December, normal service was restored to prairie lines.<sup>43</sup>

Other concerns also suffered losses because of the flu. Some Alberta coal mines were shut down due to sickness and the total flu-related loss of production in the Crowsnest Pass alone by 15 November was 130,000 tons. The lowered pro-

duction affected not only the mining companies but also businesses relying on that fuel. It was feared in Toronto that the coal shortage would soon be such that lay-offs would result.<sup>44</sup>

Services also suffered losses. Calgary's street railway estimated that its losses due to reduced passengers varied from \$600 to \$950 a day by the end of October and that its total deficit due to the flu would be close to \$25,000. It was forced to shut down its remoter lines thereby causing great inconvenience to the townspeople who remained healthy.<sup>45</sup> Other services which had difficult times meeting their obligations to the public included the telephones, so necessary to people in isolated areas but so reliant on a steady staff for regular service; the newspapers which suffered not only reduced staffs but shortages of newsprint when the epidemic closed some paper mills; the post office which had even fewer people than usual to cope with the Christmas rush; and the federal government which was finally compelled to grant paid sick leave even to temporary clerks.<sup>46</sup>

A significant amount of business losses was not due to the actual morbidity of the epidemic but to restrictions set up by health boards. In an attempt to limit the spread of contagion, to allow people time to volunteer for flu work and to remove any temptations that might lure the sick from their beds, Canadian health authorities, in general, restricted the hours of stores and businesses. Those considered unnecessary to human existence were closed outright: dance halls, pool rooms, dancing academies, cabarets, joy parlors, theatres, picture shows, roller skating rinks, second hand clothing and furniture stores, auctions, rummage sales and private furniture sales.<sup>47</sup> The most immediate victims of these restrictions were the owners of the places, such people as theatrical troupes and sports promoters who depended on such facilities being open, and the actual employees thrown out of work.<sup>48</sup> But the restrictions also added to the general economic malaise. On 8 November 1918, Dun's review of New York reported a general temporary slow-down in business in Canada due to the flu.<sup>49</sup>

As the epidemic began to wane, there were numerous complaints from those who felt they had been taken advantage of unfairly by the bans or other aspects of the fight against the flu. These included not only businessmen but city councils who felt their power had been undermined, people who felt they had been dealt with discourteously by those looking after them or had been overcharged by them, and even the churches, which had been closed in many centres and one of which intended to take up the case as a violation of freedom of religion as guaranteed by the Treaty of Paris.<sup>50</sup>

It is difficult to ascertain just how many problems the epidemic left in its wake. There are some obvious financial difficulties, the most important of which for most communities being who was to pay for the emergency facilities provided, for the extra staff, both professional and volunteer, and for the numerous little items needed to nurse the population through the flu.<sup>51</sup> Most industries had suffered during the epidemic but there was one which, like the municipalities, was left with a whopping bill after it was over — the insurance industry. Infl-

enza accounted for 32.6% of all death claims against life insurance companies in Canada in 1918, compared with 20.95% for war claims. In 1919, the war claims had naturally dropped, to 4.64%, and so too had influenza claims, but only to 17.69%.<sup>52</sup> The Metropolitan Insurance Company alone paid over 83,000 death claims in Canada and the United States because of the influenza. In comparison, death claims against it stemming from World War I amounted to only 25,500. To add insult to injury, its overworked claims department was hit heavily by flu, forcing considerable overtime on the healthy. It is not surprising that one of the Metropolitan's first acts after it dug itself out was to organize the Influenza-Pneumonia Commission of specialists to study ways of combatting these diseases.<sup>53</sup>

There was also severe loss on a personal level for some people. Arthur Lapointe, the Quebec soldier who survived two bouts of flu in Europe returned home to find that he had lost three brothers and two sisters within nine days as a result of the epidemic.<sup>54</sup> Children's shelters offered record numbers of children for adoption and reported that, in addition, many orphans had already been taken over by relatives. Many families lost their chief wage-earner and charities reported that they had been called on as never before to provide necessities and little Christmas luxuries. A great number of the families added to the rolls had never asked for assistance before. People who had been laid off without pay during the epidemic also suffered financial loss, even though many of them, including theatrical troupers trapped in one centre or another, earned some small wage as flu volunteers.<sup>55</sup>

But in large part, though many people were sick, most recovered. They lost some time from work, felt very ill for from a week to a month, perhaps even went into hospital. Those who were not sick helped out as best they could among their families and friends or volunteered their aid to total strangers. Those who had mild cases also were able to help out before and after their bouts. But the proof that life generally went on is that the health boards had to pass laws to limit the hours of or to close outright the concerns that they did. They were also forced to place bans on club meetings, labor rallies, wedding parties and public funerals. The schools were closed, Hallowe'en celebrations cancelled and official thanksgiving for the end of the war postponed.<sup>56</sup> But even these restrictions failed to keep people entirely at home. For example, the Dominion government may have decided to put off its victory celebrations until 1 December but the general populace went wild on 11 November, bringing a relapse of the epidemic in many centres. The majority of people simply did not hide in their houses peeping out at a hostile world. Some suffered tragedy, many underwent some financial loss, more suffered painful illness, and all encountered inconvenience. But the important point is that most survived and carried on their lives as normally as possible. There may have even been some advantages. For example, the effect of the epidemic on eastern grist mills meant that orders for the unpopular corn and rye substitutes for wheat flour could not be filled and government orders enforcing their consumption had to be lifted.<sup>57</sup>



## THE IMPACT OF . . .

Just how important was this pandemic that killed probably around twenty-two million people? That staggering figure of loss of life alone makes it an event on a par with any war. But there is a tendency to be carried away by it when discussing the social and economic effects of the flu. For one thing, the mortality was not evenly spread and the western industrial nations got off fantastically lightly when compared to India which accounted for over twelve million of the deaths. Fatality inflicted by disease also has a basic difference from that inflicted by war. The latter is done with some political purpose in mind, the former is utterly random and its effects are not reached with any goal in mind. However, neither should the influenza epidemic be granted too little importance. It mattered.

Balfour and Scott, in their volume on health problems of the British empire, coin the term "Imperial Diseases" and give the definition "any important communicable malady the presence of which exercises a markedly deleterious effect on the resources of the Empire", or more precisely:<sup>58</sup>

. . . diseases transferable in a variety of ways from the sick person or from the so-called healthy carrier to the sound, existing as endemics, pandemics, or more especially as epidemics and possessed of such crippling or lethal powers that, taking the British Commonwealth as a whole, they interfere with progress and development, hinder trade and commerce, and occasion monetary loss.

In their list of imperial diseases, flu shares the honors with ancylostomiasis, cholera, dysentery, enteric fever, malaria, plague, smallpox, tuberculosis and venereal disease. But it is different from all the others in that it has attained this position solely through one disastrous epidemic while the others have had years of endemic or regular epidemic existence. Balfour and Scott admit that flu would never have made the grade but for the 1918-19 pandemic:<sup>59</sup>

. . . influenza cannot be said to be constantly sapping the health and vigour of the community, and it does not, as a rule, interfere with commerce. Neither is it much in evidence in tropical and subtropical lands under ordinary circumstances. And yet, as recent events have shown, and as a study of its history clearly indicates, there is no malady which better merits the title "imperial" than influenza in one of its great periodic outbreaks. It then sweeps like a pestilence from country to country, sparing no race, indifferent to climate, dislocating traffic, occasioning immense losses in lives and money, and teaching anew the lesson that we are in large measure powerless against those communicable diseases whose true nature is still obscure, even if, as in the case of influenza, we have some idea as to the methods of spread and know in a general way how best to combat them.

However, outside the general picture of misery and loss described above, it is a little difficult to attach any specific results to the epidemic. It might be thought that it would have had some effect on the outcome of the war. In some ways it did. Troops in large numbers on both sides became unable to fight. And

the population at home was also affected in its ability to back them up. But no one gave up entirely. For example, although Victory Loan parades were cancelled, the loan campaigns themselves were not.<sup>60</sup> True, due to the terrible sickness and death in Canadian training camps and on troop ships, conscripts were no longer called up and volunteers were no longer taken after the epidemic became serious.<sup>61</sup> But the situation was just as bad in Germany, if not worse. That country suffered an estimated 2.75 million cases with a death toll of 186,000 troops and 400,000 civilians.<sup>62</sup> By 28 October an estimated 45,000 railroad workers in Prussia and Hesse were off with flu.<sup>63</sup> By the same token, it cannot be assumed that sickness in Germany gave the allied powers any advantage. Not only were Canadian and United States troop supplies affected but Britain also suffered dreadfully, England and Wales recording 151,446 deaths from flu in the fifty-nine weeks starting 23 June 1918. Many of these were young and previously healthy adults.<sup>64</sup> And at the same time that German railroads were so debilitated, French rail companies reported thirty per cent of their engineers and firemen were ill and daily express trains were to be suspended for ten days.<sup>65</sup>

It is likely that the epidemic shortened the war. The armies could fight no longer. During the allied march to the Rhine after armistice, evacuation of the sick was so huge a task that the added burden of battle casualties would have made matters impossible.<sup>66</sup> In addition the military and its support organizations had to tend to large numbers of influenza-stricken civilians.<sup>67</sup> But the epidemic probably did not shorten the war by much. The victor had already been decided with United States entry into the war in 1917. That country still had more men to call up for soldiers, but the Germans had no reserves. They were exhausted and their troops demoralized. They could not fight much longer. In this matter, the epidemic inflicted more insult on them than injury. Had a ceasefire been called or forced until the flu had passed, the results would have been the same.

The positive achievements stemming from the flu come in other areas. It had been obvious to most people that the current organization of health services in Canada and other countries was, to say the least, faulty. No one wanted to be caught so short again. In fact, the International Red Cross gave the epidemic as one of three reasons for extending its activities into peacetime.<sup>68</sup> In Canada, communities voted funds for hospitals that had somehow never seemed that urgent before.<sup>69</sup> Calgary's civic elections at the beginning of December 1918 were dominated by health issues.<sup>70</sup> Nova Scotia established a public health nursing course at Dalhousie University.<sup>71</sup> And the United Farm Women's Association, meeting in Edmonton in January 1919, called for a system of medical and nursing aid to provide adequate health care, especially in rural areas, and a federal department of health.<sup>72</sup>

The U.F.W.A. was not the only organization to express this last wish. The Canadian Medical Association had been pushing for better federal health coordination since before the turn of the century. The federal government had always hung back, giving as excuse jurisdictional problems with the provinces.

## THE IMPACT OF . . .

But with the epidemic, the popularity of the idea soared to politically expedient heights. The subject of favorable comments in both the Commons and the Senate,<sup>73</sup> the Department of Health Act received its first reading 26 March 1919. The department was staffed during the summer and was functioning by early autumn. There were many reasons for its inception: pressure from the medical profession, embarrassment over the poor degree of physical fitness among recruits, desire to increase the population through conquering communicable disease, worry over Canada's unusually high infant and maternal mortality rate, and, not least, the general euphoria of post-war reconstructionism.<sup>74</sup> But there can be no doubt that the flu was a major cause, and the most urgent one. The *Report to the Vice-Chairman of the War Committee of the Cabinet on the Establishment of a Federal Department of Public Health*, dated 25 October 1918, gives as a major reason for such a department the inadequacy and lack of co-ordination of current facilities:<sup>75</sup>

The recent epidemic of Spanish influenza points to the need of a Federal Health authority. Throughout this crisis there was no organization competent to handle the problem on a national scale. The control of the disease was necessarily left to local bodies, many of them ill-formed and all of them inevitably lacking in coordinated effort.

Throughout the section of the Report devoted to the flu there is a portent of returning pestilence and in fact most authorities, and probably most of the population, expected the influenza to return. One of the most urgent matters taken up by the newly constituted Dominion Council of Health, the chief advisory organ of the new Department, was preparations for a return of the epidemic. The measures it supported were a program of public education, a rapid expansion of hospital facilities up to one percent of the population, registration of all available nurses, emergency medical training of volunteers and registration of any voluntary home helpers.<sup>76</sup> It was unable to propose anything more concrete until jurisdictional disputes could be ironed out with the provincial and local health authorities.

Other health organizations awaited the return of the flu. The Ontario Medical Association held a symposium on epidemic influenza at the end of May 1919, as did the Canadian Public Health Association and Ontario Health Officers' Association.<sup>77</sup> In fact, the Spanish flu did not leave until the mid-1920s and in April of that year, the *Canadian Medical Association Journal* still considered it widespread enough to refer to "the present epidemic".<sup>78</sup> But it never again flared up as it had in the fall and winter of 1918-19.

However, the precautions were not wasted. The flu had pointed out basic shortcomings in the facilities for the treatment of all diseases and related problems. The reforms it inspired gave not only Canada, but many countries, a firmer base from which to pursue better standards of health for the population.

NOTES

<sup>1</sup> It is also possible that the choice of name was further influenced by allied dislike of Spanish neutrality. Only slightly less repulsive than an outright enemy, Spain was seen as the sort of place likely to be diseased and to be indiscreet enough to pass it around. The same sort of psychology was involved centuries earlier in the French tagging syphilis "the English disease" and the English calling it "the French disease". In an interesting twist, *Maclean's Magazine* blamed the flu on the Germans who, it said, craftily named it Spanish flu before it could acquire its true name of German plague. *Maclean's Magazine*, XXXII (Feb. 1919), p. 49.

<sup>2</sup> Charles Graves, *Invasion by virus: can it happen again?* (London, 1969), p. 17-22.

<sup>3</sup> Arthur Lapointe, *Soldier of Quebec (1916-1919)*, trans. by R.C. Fetherstonhaugh (Montreal, 1931), pp. 100-2.

<sup>4</sup> Sir Andrew MacPhail, *Official history of the Canadian Forces in the Great War. 1914-19; The Medical Services* (Ottawa, 1925), p. 272. Public Archives of Canada (hereafter P.A.C.), Records of the Department of Health and Welfare, RG 29, vol. 300.

<sup>5</sup> MacPhail, p. 272-3.

<sup>6</sup> P.A.C., RG 29, vol. 300.

<sup>7</sup> Richard Collier, *The Plague of the Spanish Lady: The Influenza pandemic of 1918-1919* (London, 1974), p. 81-2. *Calgary Herald* (hereafter *Herald*), 2 Oct. 1918.

<sup>8</sup> J.P. Dickin McGinnis, "A City Faces an epidemic," *Alberta History*, XXIV (Autumn, 1976), pp. 1-2.

<sup>9</sup> *Herald*, 17 and 18 Oct. 1918.

<sup>10</sup> P.A.C., Records of the R.C.M.P., RG 18, vol. 565.

<sup>11</sup> P.A.C., RG 29, vol. 300.

<sup>12</sup> P.A.C., RG 18, vol. 567, and Yukon Territorial Records, RG 91, vol. 67.

<sup>13</sup> Adolph A. Hoehling, *The Great epidemic* (Boston, 1961), p. 8.

<sup>14</sup> Erwin H. Ackerknecht, *History and Geography of the most important diseases* (New York, 1965), p. 73-8.

<sup>15</sup> Goldwin W. Howland, "The Nervous conditions associated with influenza," *Canadian Medical Association Journal* (hereafter *C.M.A.J.*), IX (Aug.), 1919, pp. 727-31.

<sup>16</sup> John J. Heagerty, *Four centuries of medical history in Canada*, vol. I (Toronto, 1928), p. 213-4.

<sup>17</sup> Ackerknecht, p. 75-6.

<sup>18</sup> T.H. Whitelaw, "The Practical aspects of quarantine for influenza," *C.M.A.J.*, IX (Dec.) 1919, pp. 1071-2.

<sup>19</sup> J.W.S. McCullough, "Influenza," *The Public Health Journal*, X (Jan.), 1919, pp. 28-30.

<sup>20</sup> Dickin McGinnis, pp. 5-6.

<sup>21</sup> Graves, p. 201.

<sup>22</sup> Collier, p. 187; Dickin McGinnis, p. 4; and P.A.C., RG 18, vol. 567.

<sup>23</sup> Terry L. Chapman, "Drug use in western Canada," *Alberta History*, XXIV (Autumn), 1976, pp. 19-20.

<sup>24</sup> E.A. Robertson, "Clinical notes on the influenza epidemic occurring in the Quebec garrison," *C.M.A.J.*, IX (Feb.), 1919, p. 159.

<sup>25</sup> Andrew Balfour and Henry Harold Scott, *Health problems of the empire: Past, present and future*, vol. V of *The British empire*, ed. by Hugh Gunn (London, 1925), p. 219.

<sup>26</sup> Major F.T. Cadham, "The Use of a vaccine in the recent epidemic of influenza," *C.M.A.J.*, IX (June), 1919, pp. 519-27. John J. Heagerty, "Influenza and vaccination," *C.M.A.J.*, IX (March) 1919, pp. 226-8.

- <sup>27</sup> P.A.C., RG 29, vol. 300; and RG 18, vol. 567.
- <sup>28</sup> Heagerty, *Four centuries*, pp. 219-21. M.C. Urquhart and K.A.H. Buckley, eds., *Historical statistics of Canada* (Toronto, 1965), p. 42. Alberta, *Annual Report of the Department of Public Health of the Province of Alberta, 1918* (Edmonton, 1919), p. 35. Alberta, *Annual Report of the Department of Public Health of the Province of Alberta, 1919* (Edmonton, 1920), pp. 8 and 148.
- <sup>29</sup> See for example, H.E. MacDermot, *History of the School for nurses of the Montreal General Hospital* (Montreal, 1940), p. 59-60.
- <sup>30</sup> For example, Montreal and Calgary. S. Boucher, "The epidemic of influenza," *C.M.A.J.* VIII (Dec., 1918), pp. 1087-92; and Dickin McGinnis, p. 6.
- <sup>31</sup> P.A.C., Records of RG 81, vol. 67.
- <sup>32</sup> For example, Montreal sent its leftovers to Alberta in recognition of the aid the city had received from an Alberta Red Cross official. *The McGill News*, I (Dec.), 1919, p. 55.
- <sup>33</sup> John Murray Gibbon, *The Victorian Order of Nurses for Canada* (Montreal, 1947), p. 73.
- <sup>34</sup> *Canadian Red Cross Bulletins*, no. 41 (Dec. 1918-Jan. 1919), pp. 38-40 and 61.
- <sup>35</sup> G.W.L. Nicholson, *The White Cross in Canada* (Montreal, 1967), pp. 71-2.
- <sup>36</sup> Boucher, pp. 1090-1; Graves, p. 184-5; P.A.C., RG 29, vol. 300; RG 18, vols. 565, 567 and 568; Dickin McGinnis, p. 6-7.
- <sup>37</sup> P.A.C., RG 29, vol. 300.
- <sup>38</sup> P.A.C., RG 18, vol. 567.
- <sup>39</sup> P.A.C., RG 91, vol. 67; and RG 18, vol. 567.
- <sup>40</sup> P.A.C., RG 91, vol. 67; and RG 29, vol. 300. Wm. Perkins Bull, *From Medicine man to medical man* (Toronto, 1934), p. 336. *Herald*, 12, 21 and 23 Oct., 28 Nov., 15 Dec. 1918.
- <sup>41</sup> Arthur Bernier, "La Lutte contre la grippe," *Revue trimestrielle canadienne*, IV (fév.), 1919, p. 356; Heagerty, *Four Centuries*, p. 218; "The Control of influenza in Ontario," *The Public Health Journal*, X (Jan.), 1919, p. 47; *Herald*, 23 and 24 Oct. 1918.
- <sup>42</sup> *Herald*, 24 Oct. 1918.
- <sup>43</sup> *Herald*, 22 Oct. to 3 Dec. 1918.
- <sup>44</sup> *Herald*, 26 and 30 Oct., 15 Nov. 1918.
- <sup>45</sup> *Herald*, 30 Oct., 6 Nov. 1918, 9 Jan. 1919.
- <sup>46</sup> *Herald*, 26 and 31 Oct., 6 Nov., 21 Dec. 1918; P.A.C., RG 18, vol. 565.
- <sup>47</sup> *The Canada Year Book*, 1918 (Ottawa, 1919), p. 668; J. Castell Hopkins, *The Canadian Annual Review of Public Affairs*. 1918 (Toronto, 1919), p. 574; Dickin McGinnis, p. 8; Antonio Drolet, "L'Epidémie de grippe espagnole à Québec en 1918", *Trois siècles de médecine québécoise* (Québec, 1970), p. 104.
- <sup>48</sup> *Herald*, 23 and 25 Oct., 15 Nov. 1918; Collier, p. 142.
- <sup>49</sup> *Herald*, 9 Nov. 1918.
- <sup>50</sup> P.A.C., RG 18, vol. 567; *Herald*, 18 Nov., 4, 23 and 24 Dec. 1918, 3 Jan. 1919.
- <sup>51</sup> Calgary estimated its cost for flu care had reached \$44,500 by the end of January. *Herald*, 31 Jan. 1919. Minutes, 1914-1919, of Finance, Special and Auditing committees of Calgary Hospitals Board in Calgary Hospital Board Papers 1905-1970, Glenbow-Alberta Institute, Archives.
- <sup>52</sup> *The Canadian Almanac*, 1920 (Toronto, 1921), p. 547 and *ibid.*, 1921, p. 456.
- <sup>53</sup> Louis Dublin, *A Family of thirty million: The Story of the Metropolitan Insurance Company* (New York, 1943), p. 74-5.
- <sup>54</sup> Lapointe, p. 114.
- <sup>55</sup> For example, Calgary. See *Herald*, 8 Nov. 1918 to 8 Jan. 1919. Capetown, S.A. estimated it had 2000 new orphans due to the flu. *Herald*, 4 Nov. 1918.

HISTORICAL PAPERS 1977 COMMUNICATIONS HISTORIQUES

<sup>56</sup> *Herald*, 31 Oct., 15 Nov. 1918.

<sup>57</sup> *Herald*, 4 Nov. 1918.

<sup>58</sup> Balfour and Scott, p. 188.

<sup>59</sup> *Ibid.*, p. 214-5.

<sup>60</sup> *Herald*, 29 Oct. 1918.

<sup>61</sup> Col. H.C. Parsons, "Official report on influenza epidemic, 1918," *C.M.A.J.*, IX (Apr.), 1919, p. 351. Drolet, p. 104. Although Canada certainly did not suffer as the United States in this regard. There 17,000 flu deaths among troops who never left the United States, compared with a total of 50,000 killed in action. See Graves, p. 21. The young hero in Katherine Anne Porter's *Pale Horse, Pale Rider* (New York, 1939) is ordered not to return from leave due to the epidemic in the barracks. He is eventually called back for vaccination, contracts the disease and dies.

<sup>62</sup> Graves, p. 61.

<sup>63</sup> *Herald*, 29 Oct. 1918.

<sup>64</sup> Balfour and Scott, p. 218.

<sup>65</sup> *Herald*, 25 Oct. 1918.

<sup>66</sup> MacPhail, p. 395.

<sup>67</sup> Mary MacLeod Moore, *The Maple Leaf's Red Cross: The War Story of the Canadian Red Cross Overseas* (London, 1919), p. 199.

<sup>68</sup> Along with loss of human life through the war and the appalling degree of physical fitness revealed through medical examination of recruits. See John Murray Gibbon and Mary S. Matthewson, *Three Centuries of Canadian nursing* (Toronto, 1947), p. 342.

<sup>69</sup> Bull, p. 336; and *Herald*, 21 Dec. 1918, 15 and 18 Jan. 1919.

<sup>70</sup> *Herald*, 26 Nov., 3 Dec. 1918.

<sup>71</sup> P.A.C., RG 29, vol. 1192.

<sup>72</sup> *Herald*, 21 Jan. 1919.

<sup>73</sup> Canada, House of Commons, *Debates*, 1919, vol. I, pp. 83, 94-5, 97, 301; and Canada, Senate, *Debates*, 1919, pp. 288-289.

<sup>74</sup> These same causes, along with the flu, can also be applied to the inception of the Dominion Bureau of Statistics, the national laboratory and much tighter narcotic and patent medicine laws which also came in in the immediate post-war period.

<sup>75</sup> P.A.C., RG 29, vol. 19, page 14 of Report.

<sup>76</sup> P.A.C., Records of the Dominion Council of Health, MG 28, Minutes of first meeting, 7-9 Oct. 1919, p. 3-4, microfilm reel C-9814.

<sup>77</sup> A.H.W. Caulfeild and Capt. Donald T. Fraser, "Certain bacteriological and serological aspects of epidemic influenza," *C.M.A.J.*, X (May 1920), p. 436; *The Public Health Journal*, X (May), 1919, p. 236.

<sup>78</sup> Editorial, *C.M.A.J.* X (Apr.), 1920, p. 372.