

# Introduction

## THE GAS WAR UNEARTHED

More than eighty years after the end of the First World War, specially trained French demolition experts still pull over nine hundred tons of shells from old battlefields every year. The French *demineurs* (de-miners) estimate that there are still twelve million unexploded shells in the soil around Verdun alone. As they do this work, the demineurs from time to time will find a mouldy, corroded shell that “swishes.” The “swishing” noise is the sound of poison liquid, which, on exposure to air, turns to deadly gas. With shell cases dangerously corroded after decades in the ground, these poison gas shells provoke the most fear among the *demineurs*. Merely handling them can result in terrible burns, blindness, or a slow painful death brought on by having one’s lungs burned out. Although only thirty tons of gas shells are unearthed each year, they cause a fear entirely out of proportion to their numbers.<sup>1</sup>

And so it was with the men in the trenches in 1914-8. To the trench soldier, poison gas also provoked extraordinary fear and hardship. This book examines the nature of gas warfare, the creation of the Canadian Corps Gas Services and its mandate to develop an anti-gas doctrine for the Canadian Corps, the tactical considerations of gas in attack and defensive fireplans, an analysis of the role of gas in selected Canadian battles, and its psychological impact on the soldiers.

The gas war, which effectively began in April 1915 at the 2nd Battle of Ypres, continued to evolve in scope, intensity, and deadliness right up to the last days

of the war. By 1918, all soldiers on the Western Front lived in an environment where gas was a daily fact of life, and where their survival depended on reliable anti-gas equipment and protective doctrines involving common and accepted actions. It should be noted, however, that the gas war affected all soldiers differently. One who was invalided out of the war by May 1915 would have a vastly different perception of poison gas than an infantryman who had to advance through the gas environment of the Last Hundred Days. Despite the fluctuating nature of gas, it remained a dangerous weapon that hounded soldiers at the front.

Even though poison gases caused over a million casualties, were used in coherent offensive and defensive tactical doctrines, and were powerful psychological weapons, the gas war has been relegated to the periphery of First World War history. In most comprehensive works, only a few concerted pages deal with gas – generally focusing on the gas cloud attacks at 2nd Ypres and the British retaliation at Loos – with sporadic additional references. In no general history has there ever been an attempt to integrate poison gas into the larger perspective of the war. As a result, when reading the history of the Great War, one is left with the perception that gas was barely used after its initial battlefield experiments. Yet by the last half of the war, gas was used in every engagement – from company-sized raids to planned advances involving corps – and was delivered in intricate artillery fireplans to accomplish a variety of tactical purposes. When gas was stigmatized as an immoral weapon during and after the war, the official historians, writing in the anti-war climate of the 1920s and 1930s, conveniently relegated gas to an unimportant role. The nuanced role of gas as a psychologically and physically debilitating agent was ignored in favour of the uncomplicated but commonly held view that chemical agents were contained and beaten by issuing respirators. The numerous causes for this historical neglect will be examined later in the text, but one of the most compelling observations was given by Brigadier General Harold Hartley, who held numerous high-ranking appointments in the British Gas Services during the war. While speaking at the Royal Artillery Institution in 1919, he remarked that “gas has very few friends, people are only too ready to forget it.”<sup>2</sup>

Many soldiers and civilians during the war, moreover, believed that gas was an unfair and unsoldierly method of fighting, amounting to the reduction of warfare to suffocation by chemical agents. Of course, vast artillery bombardments and the machine gun had already reduced battles to mass murder, as anyone who survived the first months of the war could attest. But gas was viewed as the more villainous weapon system, because it denied soldiers the chance to stay alive by using their battlecraft skills and pitting themselves against the enemy. With gas there was no bravery, and there were no heroics; men fell to their knees clutching their throats as they slowly asphyxiated. It was a torturous death, and there was no escape.

Or at least so it seemed. For as we shall see, the reality of the gas war could be, and sometimes was, different from this starkest of all images: the helpless soldier retching away his life. Yet although counter-measures were eventually developed – some more effective than others – the stigma attached to the gas war survived long into the postwar years, and even into the Second World War, when gas was manufactured and carried on campaign by all the major belligerents, but – for many reasons – was never used.

Given that chemical warfare was not used at the tactical level in the Second World War, this work focuses on the Great War. The initial shock of poison gas had soldiers, civilians, and politicians immediately labelling it as a barbarous method of waging war. During the history of warfare there have been relatively few occasions when one side has been able to introduce a weapon to which the other had no reply.<sup>3</sup> This was the case, however, at 2nd Ypres, where the Germans unleashed chlorine gas for the first time and routed two French Territorial Divisions. While the French ran, the Canadian Division, whose position albeit was not in the direct path of the gas cloud, did not break. This heroic stand has been mythologized through time and history: how the 1st Canadian Division grimly held off the German advance until British reinforcements could be rushed to fill the gaping hole in their line. Accordingly, it was the initial use of gas that became ingrained in Canadian history, overshadowing all other aspects of the gas war.<sup>4</sup> In fact, one would be hard pressed to find poison gas mentioned again in most standard Canadian texts. Despite holding the line against overwhelming odds and a sickening new weapon, the full story of the Canadian Corps and the gas war was one of constant adaption and training.



The 2nd battle of Ypres.

The employment of gas was not a question of changing an existing tactical doctrine and adapting it to the realities of the war; rather, it involved, for most soldiers, working with a weapon altogether different from anything previously conceived. After the surprising success of chlorine gas at 2nd Ypres, all belligerents believed they had found a method to break the “riddle of the trenches.” But, as quickly as it was viewed as a potential war-winning weapon, gas was almost completely rejected due to its unstable nature and the evolution of more effective gas masks. With the introduction of deadlier gases and superior delivery systems in 1916, however, gas was reborn, this time as an effective harassing weapon, and eventually integrated into coherent offensive and defensive tactical doctrines. As a result, Canadian soldiers were confronted by phosgene and later mustard gas, delivered in artillery shells and projector drums; the question remained as to how new methods and doctrines were going to be implemented to protect Canadians from the increasingly lethal nature of the gas war. Filling that void was the Canadian Corps Gas Services.

The de facto creation of the Canadian Corps Gas Services in May 1916 mirrored the development of the Canadian Corps in many ways. Although the Canadian Corps developed into one of the finest fighting formations on the Western Front – and by 1918 was known, along with the Australian Corps, as the “shock troops” of the British Expeditionary Force (BEF) – its professionalization did not occur overnight. Indeed, one British officer, on seeing the 1st Canadian Division arrive in England in 1914, had frankly remarked that the Canadians would make excellent soldiers if all their officers were shot. The eventual success of the Canadian Corps, especially as a result of its attack doctrine of combining infantry and artillery, was developed and refined throughout the war. The Gas Services followed a similar evolution.<sup>5</sup>

Surviving the gas war was very similar to surviving the regular hardships of the trenches; it required learning through mistakes (one’s own, but preferably those of others) and the constant re-examination of training. Yet even with the development of anti-gas appliances, especially gas respirators, the battle against gas was not over, as some historians have implied through its exclusion in their writing. To be sure, the possession of a gas mask was a step toward protection, but learning how and when to use it, how to identify various poisonous gases and their harmless substitutes, and how as a consequence to adjust one’s mask quickly or to take it off, were equally important. It took some time to develop the right technology to protect against poison gas; it took even longer to set a proper doctrine, and longer still to implement it and have it accepted by the soldiers. All this, however, was taught by the Gas Services. Without the Gas Services, then, attempting to protect the soldiers of the corps against gas through “trial and error” would have resulted in a vast increase in the number of Canadian gas casualties. Moreover, the creation of a central agency meant

that individual units did not have to find solutions on their own; instead, once one unit of the Canadian Corps or even the whole BEF encountered a new gas or new delivery system, the Gas Services quickly and (eventually) efficiently implemented a system of training and warning.

From the outset, the Canadian Corps Gas Services knew that it could not stop all gas casualties, and thus its aim was to control and reduce the attrition of the Canadian Corps from gas. In addition, the Gas Services emphasized the defensive aspect of the gas war, largely because of the enemy's initial superiority in offensive battle gases, but also because, until April 1917, the British Army in France reserved the right to control its chemical attack operations.

German trench soldier Rudolf Binding believed that the true nature of the First World War would never fully come across in histories because "Those who could write it will remain silent. Those who write it have not experienced it."<sup>6</sup> Considering this, one of the most interesting aspects of the historiography of the gas war is its almost total silence on the psychological impact on the trench soldier. As a weapon, gas went through many transformations throughout the war, but as illustrated through the writings of the soldiers in the trenches, it was an ever-present factor in their lives. The British poet Wilfred Owen wrote one of the most powerful evocations of the war, while convalescing in hospital in 1917. Titled "Dulce et Decorum Est," it conveys the inhumane horror of the new gas warfare, and how alien it was in contrast to everything previously associated with the allegedly chivalrous conduct of war.

Bent double, like old beggars under sacks,  
 Knock-kneed, coughing like hags, we cursed through sludge,  
 Til on the haunting flares we turned our backs  
 And towards our distant rest began to trudge.  
 Men marched asleep. Many had lost their boots  
 But limped on, blood-shod. All went lame; all blind;  
 Drunk with fatigue; deaf even to the hoots  
 Of gas shells dropping softly behind.

Gas! GAS! Quick, boys! – An ecstasy of fumbling,  
 Fitting the clumsy helmets just in time,  
 But someone still was yelling out and stumbling  
 And flound'ring like a man in fire or lime ...  
 Dim, through the misty panes and thick green light,  
 As under a green sea, I saw him drowning.

In all my dreams, before my helpless sight,  
 He plunges at me, guttering, choking, drowning.

If in some smothering dreams, you too could pace  
 Behind the wagon that we flung him in,  
 And watch the white eyes writhing in his face,  
 His hanging face, like a devil's sick of sin;  
 If you could hear, at every jolt, the blood  
 Come gargling from the froth-corrupted lungs,  
 Obscene as cancer, bitter as the cud  
 Of vile, incurable sores on innocent tongues, –  
 My friend, you would not tell with such high zest  
 The old Lie: Dulce et decorum est  
 Pro patria mori.<sup>7</sup>

Terror, revulsion, and grotesque pain are interspersed throughout the poem as they were throughout the gas war. The true face of poison gas was shown starkly by Owen. In addition, however, throughout the hundreds of diaries, letters, and memoirs of Canadian soldiers held in archival repositories, if one takes the time to look, poison gas is depicted, if not as skilfully as Owen, then as passionately. Through these testimonials, and a reinterpretation of archival documents, this “hidden” gas war can be reclaimed.

This work has two decidedly different aspects to its research: the role and development of the Canadian Gas Services and the integration of poison gas into the attack doctrine and, against that context, the evolution of the Canadian Corps as the storm troopers of the BEF within the growing gas environment. Among the areas of examination are: the development of gas as a battlefield weapon; the creation of the Canadian Corps Gas Services and its evolution in developing both an offensive and defensive gas doctrine; the unique aspect of soldiers living and surviving in an ever-increasing gas environment; the effects of gas on the battlefield; innovations in both medical and weapons technology; the importance of artillery and the development and then refinement of a gas shell tactical doctrine; and finally, the hidden factor of fear as told by the soldiers.

The focus of this work is gas; other chemical agent activities, such as flame-throwers and the employment of smoke, have been ignored. The perception of the gas war on the home front in Canada is also beyond the scope of this work. Research remains to be done on the role of gas in wartime propaganda, on the diplomatic and political protests over its use, and on the concerns and fears of society and of family members, who generally could only imagine what their husbands, brothers, and sons were being subjected to by this new terrible weapon.

John Keegan, in his masterful work *The Face of Battle* (1976), wrote that much of military history in the past has been “a highly oversimplified depiction of human behaviour on the battlefield.”<sup>8</sup> Following the methodology espoused by

Keegan, and combining it with the one of the most recent and best additions in Canadian military historiography, Desmond Morton's *When Your Number's Up* (1993), this work attempts not only to understand the gas war and its many nuances, but also to delve into the minds of the men who were there: the men who stood their ground as half-mile-wide clouds rolled over their positions or lethal shells spewed their deadly cargo into the trenches.

All information on the Gas Services has had to be gathered and reconstructed, based on archival research in the voluminous records of the Departments of Militia and Defence and of National Defence, in the custody of the Government Archives Division at the National Archives of Canada (NAC). Numerous private papers have been examined in the Manuscript Division at the NAC and in published memoirs in order to depict the individual Canadian soldier's perspective on the gas war. In addition, the transcribed notes of the 1964 Canadian Broadcasting Company radio show, "In Flanders Fields," in the Government Archives Division of the NAC, helped to flesh out the gas war as experienced by Canadians. In keeping with the old military truism, "on the actual day of battle naked truths may be picked up for the asking; by the following morning they have already begun to get into their uniforms," oral history can be a tricky form of documentation.<sup>9</sup> That is understood, especially with memoirs written or interviews occurring years after the original experience. Yet such sources are still useful and, indeed, are essential to reflect the feelings and emotions of what occurred at the time, rather than the hard facts of names, dates, or specific places that can blur in the memory in a way that searing emotions do not.

Although it is only through the personal reflections of soldiers who were there that the true psychological role of gas can be fully comprehended, archival sources abound on the complicated role of gas on the battlefield. What is more, the development of the Canadian gas doctrines can be viewed as a microcosm of how attack and defensive doctrines evolve in times of war, when lives are at stake. There are also comparisons to be made. The American Expeditionary Force, for example, fared very poorly with gas (and almost crippled their fighting efficiency in the process), while the Canadian Expeditionary Force was able to survive and fight through the chemical battlefield. Nevertheless, throughout the war poison gas was an agent that caused over a million casualties, inflicted immeasurable psychological stress, and forced commanders to be aware of the tactical and strategic limitations imposed on their men by gas, which by 1918 was used in every offensive and defensive operation on the Western Front.

The lethal effects of gas were initially (and reasonably effectively) contained with the introduction of efficient gas masks in early 1916. But following the introduction of gas shells and disabling agents like Blue Cross and mustard, the gas war entered a new era in which its major effect was to reduce fighting efficiency, cause a steady stream of physical and psychological injuries, and kill

the careless. As a result, the psychological aspect of gas was never truly quelled. There remained, in every trench soldier, intense fear as the gas alarms clanged. Will my respirator work? Is there a rip in it? What happens if my mask is knocked from my head? Can I still perform my duties? Such fears played in every soldier's mind, and it is this aspect of the gas war, previously unexamined, that will rise to the surface in this work.

Despite the importance of understanding the human nature of war, military historians have tended to analyze the operational performance of armies, corps, and divisions in attempts to understand broad themes and patterns. This work examines what has been neglected – the training and discipline that was needed before great battles could be won. The common image of the First World War soldier, lurching zombie-like from one disaster to the next, simply waiting for a bullet or shell to put him out of his misery, is inaccurate. For as Bill Rawling has illuminated, the *frontsoldaten* on all sides attempted to find methods of survival within their environment, and it is in that light that we must see the development of an anti-gas doctrine and its acceptance by the common soldier. Though unschooled in chemistry, he quickly realized that constant learning, re-examination, and drill would allow him to adapt to and, eventually, overcome most aspects of the gas war.

This work is essentially chronological, but there are instances where chronology must defer to the examination of such themes as gas tactics and technology, the development of new battlefield gases, training in England, and the evolution of the medical services. Of course, the analysis of the Canadian Corps and the battles in which it took part is critical in judging the use and role of gas on the battlefield, but the intervals between the great battles must also be examined in order to appreciate the full difficulty of surviving on the chemical battlefield.

Just as gas shells continue to be pushed to the top of European soil by winter frost, so too will the role of the Canadian Corps and its gas war come to the surface in this work. The part of the Canadian Corps and its place in the gas war has been buried and forgotten in Canadian historiography. Now it too is unearthed.