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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO. AD-A164	3. RECIPIENT'S CATALOG NUMBER 844
4. TITLE (and Subtitle) The Battle of Montfaucon		5. TYPE OF REPORT & PERIOD COVERED
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) LtC A Hadley, Majors C Beasley, T Bortner, J Burns, W Chalkley, L Comer, Van Ellis, R Pilcher, E Reeves, C Snyder, C Williams, R Wilson, Capt e Bargewell		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Combat Studies Institute, USACGSC AT7L-SWI, Ft. Leavenworth, KS 66027		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE 23 May 1984
		13. NUMBER OF PAGES 55
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) APPROVED FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES A battlebook prepared by students of the US Army Command and General Staff College under the supervision of Combat Studies Institute as part of the Battle Analysis Program (P651).		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) History, Case Studies, Military Operations, Tactical Analysis, Battles, Military Tactics, Tactical Warfare, World War I, France, Chemical Warfare, Infantry, Artillery.		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The focus of this analysis is the 79th Infantry Division in the Mause-Argonne Campaign. The Battle of Montfaucon is a classic example of what can happen when a poorly trained unit enters combat. There is some analysis on the impact of chemical warfare on the 79th Infantry Division. → to p i		

THE BATTLE OF MONTFAUCON

THE MEUSE-ARGONNE CAMPAIGN--WORLD WAR I

by

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BATTLE ANALYSIS--COURSE P651

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key words: - Section 7473

INTRODUCTION

The overall objective of this study is to analyze an historical military operation and prepare a battle analysis. The Meuse-Argonne Campaign of the World War (WWI) provides an excellent opportunity to study warfare, specifically warfare as to how it was affected by the use of chemicals. Although chemicals in various forms have been used throughout the history of warfare, the extent of use in WWI had never been known before and has not been seen since.

The focus of this battle analysis will be the 79th Infantry Division in the Meuse-Argonne Campaign. The 79th Division arrived in Brest France 15-21 July 1918 and was thrown into the line on 13 September 1918 after less than two months of training as a division.

The performance of the 79th Division in the Avocourt sector of the Meuse-Argonne is placed in the context of the existing chemical warfare doctrine and that unit's preparedness, experience, and training (or lack of it). This battle, sometimes called the Battle of Montfaucon (Mont-Fo-Chon), is a classical example of what can happen when a poorly prepared unit enters combat. Therefore, this analysis concentrates on the battlefield environment experienced by the 79th Division at Montfaucon. The intent was to analyze the factors that contributed most to the 79th's performance, especially the impact of the use of chemicals. It was also necessary to examine the doctrine and policies which affected the 79th's performance.

This analysis concentrated in several areas relevant to accomplishing its objectives. A study of the battle itself was

necessary to determine the 79th Divison's actual role in the battle. The chemical warfare effort in WWI and the 79th's training level were primary to explaining the division's performance. Finally, the medical realities of chemical warfare offer a perspective somewhat unique to the great war (WWI) and the 79th.

The battle of Montfaucon was one of the most significant of the Meuse-Argonne Campaign. Its study is not only important for the reasons already given, but, in a larger context, as the one battle which held up the advance of the entire Allied Expeditionary Force. This battle analysis will conclude whether the 79th Divison faced insurmountable odds or was unprepared for its mission.

SECTION I
THE BATTLE

1. THE TERRAIN (1)(3)

The 79th Division's sector, facing north toward Malancourt, Montfaucon, and Nantillois, covered not only the most impossible terrain in all the Meuse-Argonne area but the 79th was also placed in front of the greatest obstacle in the sector - the village and area around Montfaucon. (Fig 1)

The 79th Division was ordered to relieve a French Division in Sector 304, between Avocourt and Haucourt. (Fig 2) Sector 304 was part of the battlefield of Verdun, fought over by the armies of France and Germany for four years.

Within the Avocourt-Malancourt sector, the Germans held on of their most formidable positions on the entire Western Front. Just 500 meters beyond the division outpost line on the right lay the ruins of Haucourt, and a half kilometer beyond that, Malancourt, another town in name only. The outpost line on the left faced the eastern edges of the Bois de Malancourt, while in between was a pock-marked, shell torn strip. This area, called "No Man's Land", was characterized by numerous (old and new, occupied and unoccupied) mazes of trench systems that zig-zagged across the sector. These trench systems were well prepared with numerous canalizing wire obstacles. Additionally, millions of artillery shells had altered the terrain to such an extent that it was virtually impossible to move a couple of steps without falling into a three to four foot deep crater. To the north, the country rolled in a series of rough, steep hills and ravines, which

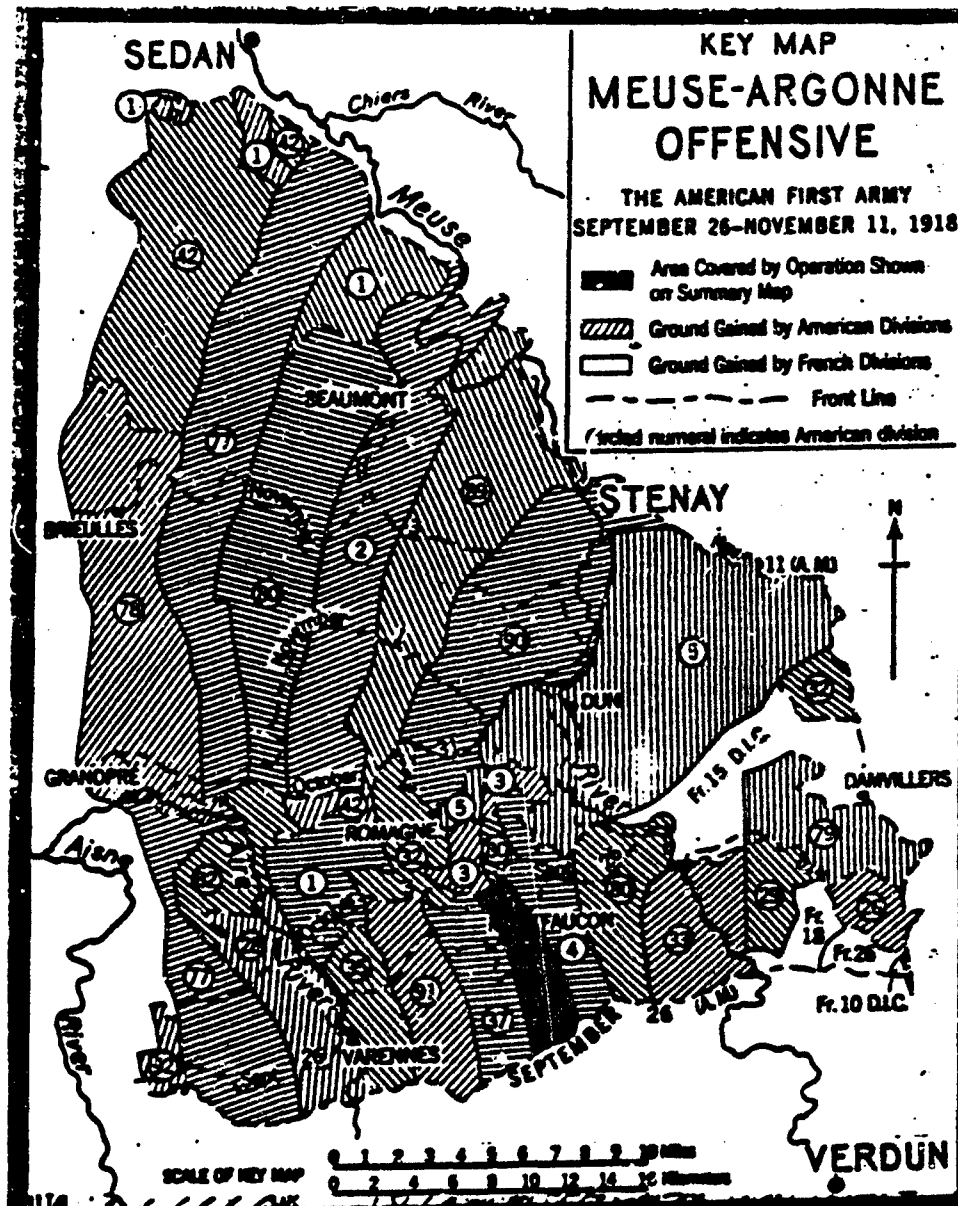


FIGURE 1 (2)



FIGURE 2 (U)

were literally covered with barbed wire entanglements as well as small clumps of trees and underbrush. On the horizon, the dominating heights of Montfaucon (Fig 3) rose threateningly. It was from these heights that the German Crown Prince had observed the futile assaults upon Verdun two years before. So strong was this position (enhanced by superb fortifications, a commanding view, and covered by excellent fields of fire) that the Germans called Montfaucon the "Little Gibraltar" and boasted that it could never be taken. Strong as the enemy positions were by nature, the Boche had rendered them still more formidable by four years of ceaseless labor, constructing trenches, gun positions, entanglements and pill boxes to cover every conceivable approach the allied forces might use in an attack.

This scheme of defense had been organized and constructed in accordance with the best tactical principles of the German High Command. Montfaucon was on the main line of German resistance about six kilometers in the rear of the Boche front line and about several kilometers from the 79th Division's main front line.

2. THE ENEMY

The 79th Infantry Division (US) was opposed at Montfaucon by elements of the 117th (German) Infantry Division, which was composed of the 450th Infantry Regiment, 157th Infantry Regiment, and the 11th Grenadier Regiment. Throughout the period 25 September 1918 - 30 September 1918 the 79th (US) Division battled essentially two of the three regiments from the 117th (German) Division; the 450th Infantry Regiment and the 11th Grenadier Regiment. The 117th division had been assigned to this "quiet" sector near Montfaucon to rest and replace



their losses after fighting throughout the summer at the Somme. Consequently, the enemy's divisional strength was considerably depleted at the beginning of the Allied offensive. At this time the 117th had a battle strength of approximately 6,400 officers and soldiers. In addition, the division had been supplemented by two pioneer companies and two Landstrum battalions. The two pioneer companies added another 115 officers and soldiers while the two Landstrum battalions consisted of approximately 150 additional men. In total the 117th Infantry Division had a fighting strength of approximately 6,665 personnel. (2:33) Of this total strength, about one-half was deployed directly in front of the 79th Division during the battle around Montfaucon.

Commanding terrain and veteran soldiers were the enemy strengths that confronted the 79th Infantry Division. The 450th Infantry Regiment and the 11th Grenadier Regiment were deployed in the terrain south of Montfaucon. The veteran soldiers of these units had already seen considerable action and they fiercely defended their positions until ordered to retire.

During the five days of battle between the 79th Division and the 117th Division, the 117th Division lost approximately 40% of its total forces. These losses included "8 officers and 76 men Killed, 23 officers and 411 men wounded, and 39 officers and 2,135 men captured or missing." (2:44) It is estimated that the 79th Division accounted for about one-half of this total.

3. THE BATTLE

The 79th Division was one of nine divisions placed in the

front line of the American First Army for the Meuse-Argonne offensive. Additionally, six other divisions were held in reserve; one for each of the three corps, and three for the army; for a total of fifteen divisions. The 79th Division was assigned the deepest, first-day objective of any division in the army even though it was facing some of the most difficult terrain on the Meuse-Argonne front. (3:129) This mission is surprising considering the fact that the 79th Division had just completed its in-country training and had never been in combat. Historians have found no evidence as to why this "green" division was given such a large role in the army's overall plan, but in retrospect it seems questionable.

On 25 September 1918, the 79th Division occupied Sector 304, which it had taken over from the 157 French Division on 16 September 1918. With the 37th Division on its left flank and the 4th Division on its right flank, the 79th Division's mission was to seize, in succession, Malancourt, Montfaucon, and Nantillois, which was some nine kilometers beyond the German lines. (3:85) Part of the reason for the division's deep objective was the belief that this sector was only lightly defended. As a "square" division, the 79th Division certainly had sufficient combat power to penetrate the German defensive lines and reach its objectives.

At 0500 hours, 26 September, the 79th Division reported it was in position to attack (Fig 4), with the 157th Brigade occupying the front lines with the 313th Regiment on the left and the 314th Regiment on the right. Battalions were placed on line with companies echeloned in depth to provide more penetrating power. (3:85) The 158th Brigade, with its two regiments the 315th and the 316th, was to follow the

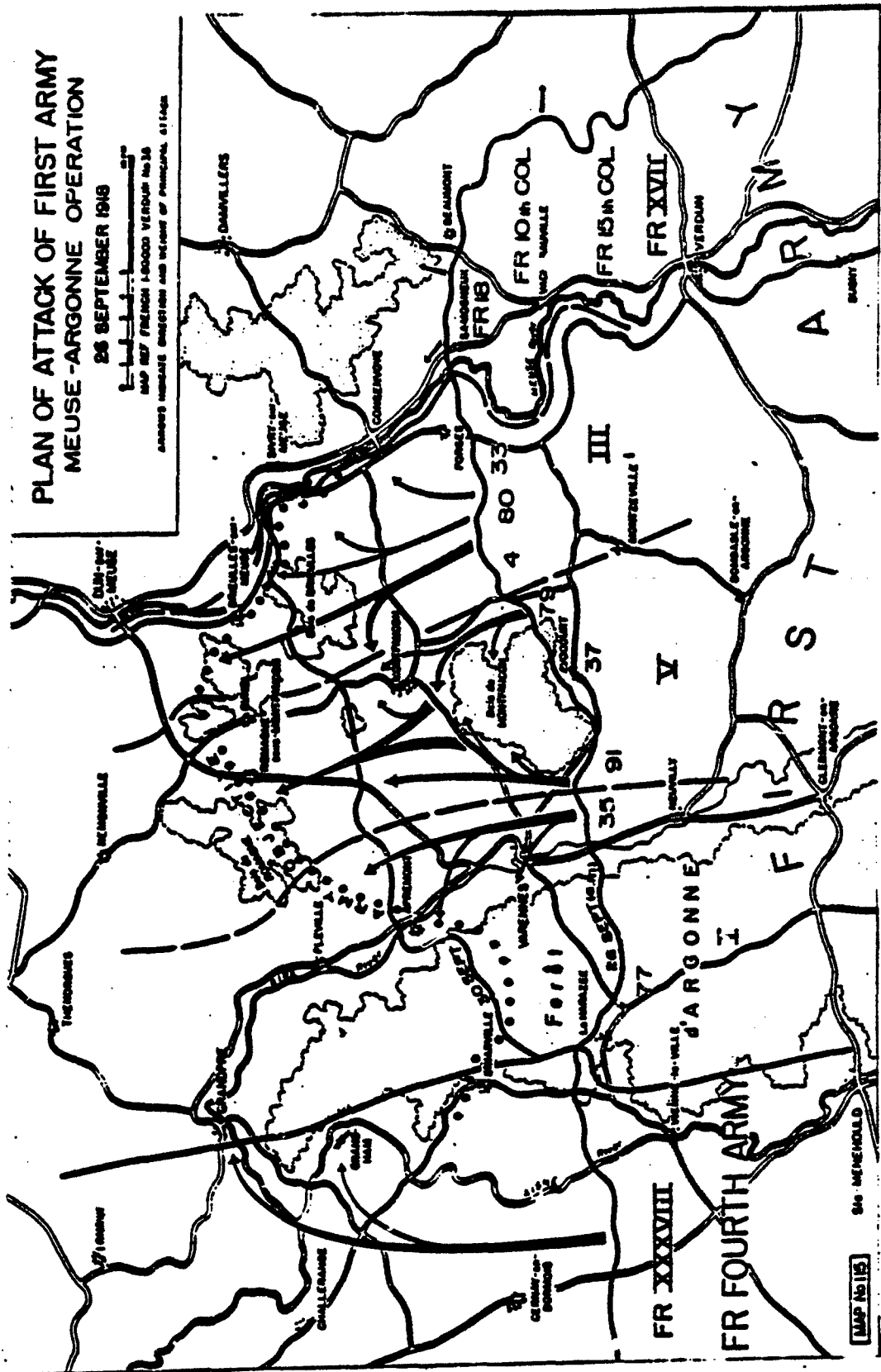


FIGURE 4 (3)

157th Brigade by 1000 meters to provide support as the division reserve. In support of the offensive, a massive field artillery preparation began at 2330 hours, 25 September. The 157th Regiment left its trenches at 0530 hours, under the cover of a smoke screen, to cross "no-man's land", while a concentrated artillery barrage lasted for twenty-five minutes at which time it shifted northward so the Brigade could move behind the rolling barrage. Because the terrain in front of the 79th Division was difficult, the artillery barrage plans allotted five minutes of stationary firing prior to moving on as compared to four minutes for the rest of the front. (3:85)

The 79th Division met little resistance along the German's first defensive positions. The Germans had anticipated the attack and moved most of their forces to fortified positions to the rear. However, once the 79th had penetrated about three kilometers past the German first defensive line, they ran into the strong defenses at the Golfe de Malancourt. (3:86) It was at this point that the extra time allotted for the artillery barrage became insufficient and it gradually fell away from the advancing soldiers, leaving them to meet extremely strong machine gun positions without their greatest offensive weapon. (3:86) This position held up the 313th Regiment for five hours and prevented the capture of Montfaucon on the first day as planned. While the 313th Regiment was delayed in the wooded areas of Malancourt, the 314th Regiment was slowed by extremely difficult terrain in the valley east of the 313th. Again, the rolling barrage rapidly left the troops behind as they moved forward in the thick fog and smoke which had filled the valley. To complicate matters, the smoke and fog caused intermingling of units, and enemy positions were

even bypassed. The 314th Regiment ran into stiff resistance when the fog lifted, at about 1000 hours, and found itself engulfed in machine gun fire from all directions. Additionally, the 315th Regiment, following the 314th at 1000 meters, found itself under heavy fire from the enemy positions bypassed by the 314th. (3:88)

While the 79th Division was being held around Malancourt, the 37th Division and the 4th Division continued to move forward and lost contact with the 79th. At the end of the first day's fighting, it appeared that the 79th was holding up the entire offensive and exposing the flanks of the 37th and 4th Divisions (Fig 5). Two major factors contributed to the 79th's failure to advance as expected. First, the German positions were far stronger than intelligence had predicted, and when coupled with the difficult terrain, it made rapid advance almost impossible, especially without artillery support. Secondly, the absence of lateral and rear communications caused confusion with the 37th and 4th Divisions as well as with Corps Headquarters. The telephone wire provided to the division was poorly insulated and went out when it became wet. Additionally, German snipers were extremely effective in picking off runners sent to communicate with adjacent units. By 1500 hours, on 26 September, V Corps was completely out of contact with the 79th Division and had received erroneous information of its position from adjacent units. (3:95)

V Corps sent a message, which was received at the 79th Division at 1450 hours, stating that the Corps Commander "desires attack pushed." (3:100) This message did not reach the 157th Brigade until 1735 hours, and when it did, it went to Col. Sweezey, Regimental

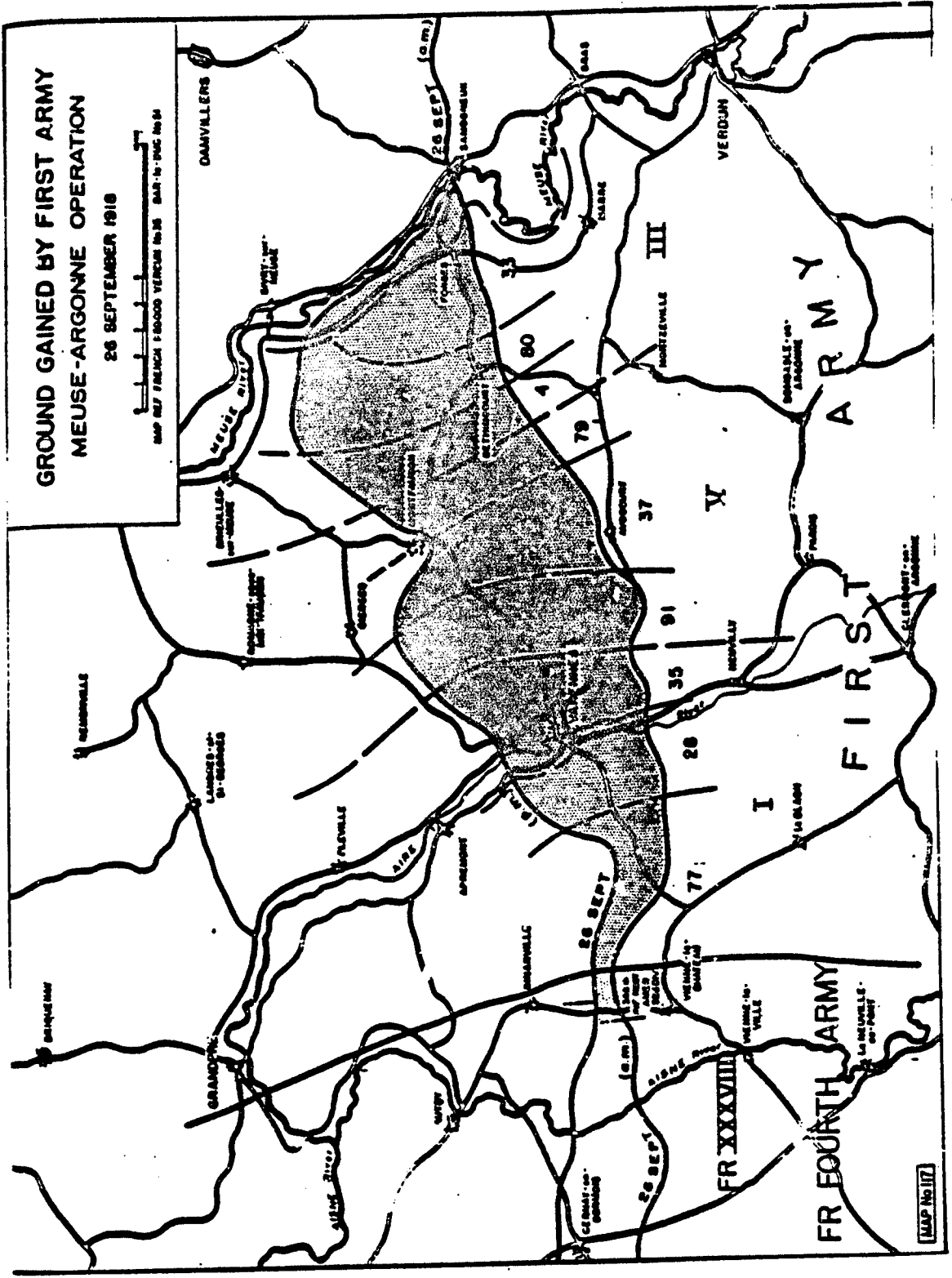


FIGURE 5 (3)

Commander of the 313th. He then launched an uncoordinated attack upon the defenses of Montfaucon and was repelled. Because of the communications problem, MG Kuhn, 79th Division Commander, had no real indication as to the positioning of his forces. It was at this time that the division received a message from General Pershing stating that the enemy was retreating all along the front. The 79th Division was to advance to a position abreast of the 4th Division, in the vicinity of Nantillois. (3:106) At this point, General Kuhn made a decision to reorganize the division to accomplish this mission. He developed a new plan to attack Montfaucon and link up with the 4th Division. He ordered the 158th Brigade to assume command of the 314th and 315th Regiments, located on the Division's right, and attack. This order reached BG Nobel at 0222 hours 27 September. The 157th Brigade was to assume command of the 313th and 316th Regiments, located on the Division's left, and attack Montfaucon. This order reached BG Nicholson at 0515 hours, 27 September. Due to communication and leadership problems, a coordinated attack by the two Brigades was not conducted. The Division Commander relieved BG Noble for failing to attack immediately. At 1145 hours, 27 September, Col Sweezey sent a message that Montfaucon had been taken. The 313th Regiment began consolidating their position around Montfaucon expecting a counterattack which never came. (3:113) At 1530 hours, 27 September, plans were made to continue the attack to Nantillois. But as night fell, the 79th Division was able to secure a line just north of Montfaucon.

By this time, the soldiers of the 79th were tired and hungry. No supplies had reached the front lines since the offensive had begun

and the soldiers had received little rest. The troops of the 313th and 314th Regiments were in desperate need of food and water. (3:120) At this point, MG Kuhn decided to replace the 313th and 314th Regiments with the 315th and 316th Regiments, in order to continue the attack to Nantillois. By now, the resupply issue was of major concern. The road network supporting the entire Corps was inadequate, but to make matters worse, only one road was supporting the 4th and 79th Divisions. The conditions were so bad that only 100 burros had been able to bring their supplies to the front. The impassibility of the roads had caused a tremendous traffic jam in the rear affecting the entire army front. To relieve this problem, roads were declared one-way in certain areas and engineers were rushed to repair damaged ones.

At 0700 hours, 28 September, the relief of the 313th and 314th Regiments was completed, and the 315th and 316th Regiments began their attack on Nantillois. The initial assault was supported by artillery, but by 0730 hours, the artillery support had become ineffective. However, German heavy artillery fire became very intense and Nantillois was not captured until 1050 hours. Both regiments reported heavy casualties due to the artillery fire as reflected in a message from Major Atwood, Commander, Third Battalion, 316th Regiment,

"Being fired at point blank by field pieces. For God's sake get artillery or we'll be annihilated." (3:117)

Both regiments succeeded in pushing their positions north of Nantillois, but were unable to move further because of the intense German artillery fire. At 1640 hours, Col. Knowles, 315th Regimental

Commander, sent a message to division stating that the men of the 315th couldn't advance any further without food. (3:134) The supply trains were still held up below Montfaucon and the food could not be delivered. Heavy rain fell on the night of 28 September adding to the misery of the already hungry and tired troops. Late in the evening some food did reach the forward battalions, but not nearly enough. (3:141)

The 79th Division was ordered to continue the attack at 0700 hours, 29 September, after an artillery preparation from 0600 - 0700 hours. The artillery preparation was inadequate, and when the 315th and 316th Regiments attacked, they were overwhelmed by machine gun and artillery fire. At the time of the attack, Col. Dury, Commander of the 314th Regiment, sent a message to MG Kuhn stating that the lines of the 315th and 316th Regiments were getting thin due to details of soldiers looking for food and others getting lost for various other reasons. (3:150) This was the first indication that the seriousness of the supply problem was effecting the division's ability to carry out its mission. Division in turn replied that it was doing all it could to get the supplies forward. At this point in the battle, the 79th Division was facing some to the fiercest fighting of the entire operation. (3:151) the 79th Division began to receive heavy fire from an area in front of the 4th Division's sector and could not advance until this area had been taken. It was during this time that Col Knowles (315th Rgt) sent a message to MG Kuhn that the troops were exhausted and had no more driving power. (3:153) At 1245 hours, MG Kuhn sent a message to both regiments to reorganize and hold their positions in front of Nantillois at all costs. (3:153) However, before

this message reached the 157th Brigade, BG Nicholson ordered an attack by the 316th Regiment supported by the 313th. This attack proved costly in lives and seriously affected the morale of the soldiers. To the extent that the division was in chaos can be seen in a message from Col. Knowles at 1500 hours:

"...that men of the 316th, 313th, and 314th Regiments are mixed in with us, the 315th Regiment is at about fifty percent, the men are in good morale but badly exhausted because of a lack of food, water and sleep."(3:158)

Still, the division held its position under increasingly heavy artillery attacks. At 1930 hours, 29 September, MG Kuhn sent a message to the V Corps Commander explaining the plight of the 79th Division.

At 0400 hours, 30 September, the 79th Division received word that it was to be relieved by the 3d Division. In view of this order, the 79th Division decided not to attack on the morning of 30 September. By 1800 hours, 30 September, the majority of the 79th Division had been relieved and bivouacked in the vicinity of Montfaucon. By 2 October, the entire division with the exception of the engineers and the field hospital, had gone into camp at Jouy-en-Argonne and were now under the control of III Corps.(3:162) Thus ended the 79th Division's participation in the Battle of Montfaucon.

What conclusions can be drawn from the collapse of the 79th Division after four days of fighting in the Meuse-Argonne Offensive? Four factors directly contributed to the breakdown of the 79th

Division. First, intelligence underestimated enemy strength which may have caused a false sense of security among the command. This probably frustrated the leaders to do more, especially with General Pershing's comment that the 79th Division was holding up the entire front. (3:173) Secondly, communications was a problem from the beginning of the offensive. It caused the Division Commander to wonder where his units were at the end of the first day and to wonder what delayed the order to hold at Nantillois which might have prevented the 313th from attacking thru, preventing unnecessary loss of life. Thirdly, the artillery support, although well planned at the beginning of the offensive, soon lost its effectiveness; there was no way to adequately control it. On 28-29 September the artillery support was almost nonexistent, while the German artillery wreaked havoc on the division. Lastly, and most importantly, was the inadequacy in logistical support for the troops. The 79th Division fought well under the circumstances, but the lack of food and water siphoned the division's ability to continue to operate. Poor planning that caused two divisions to use the same supply route, in conjunction with the heavy artillery fire on the route, caused the collapse of the 79th's fighting ability. It was a credit to the leaders and soldiers of the 79th Division that they held the unit together to conduct an orderly relief and not give up ground they had already taken. But the most important thing to remember is the division did accomplish its mission by capturing Nantillois, eventhough it did not do so on the first day.

SECTION II

WERE WE READY FOR GAS?

1. CHEMICAL WARFARE IN WWI.

On the evening of April 22, 1915 at the Belgian village of Ypres, near Ypres, the Kaiser's army launched the world's first large-scale chemical attack. Panic ensued and five thousand men, mostly Canadians and French died.

Man's inhumanity to man, however, had been practiced with chemical and biological arms from the earliest days of recorded history. Six hundred years before the birth of Christ the soldiers of Kirrha mysteriously began toppling over in droves. They did not know that their foes, the troops of Solon of Athens, had poisoned their drinking water. Solon won the battle.

In fact, the German use of gas at Ypres was not the first use of this type of weapon in WWI. In August 1914, the French first used the gas weapon when they transported thirty thousand gas grenades to the field. These grenades were filled with ethylbromacetate, an eye irritant. Evidence to indicate the impact that these grenades had on the battlefield is scarce. However, they did provide a basis for an increase in experimentation on both sides at this time.

German gas doctrine and direction came primarily from the scientists who developed the gas, while the allied doctrine came from the military. Initially, this difference gave Germany a significant lead in gas warfare because of their familiarity with the capabilities and characteristics of gas. The allies, however, began to cut into this lead in the last half of 1915 using the assets of both the

military and scientific communities.

The major constraint on both the Germans and the allies was the availability of weapons. This dictated the tactics of gas warfare. The Germans used chlorine cylinders because the cylinders provided the best method of placing large quantities of an agent on a nearby enemy. Toxic fillings in artillery shells were not immediately effective because of problems of containing a liquid, corrosive toxic under pressure and because liquid fillings required ballistic re-engineering. Moreover, an artillery shell contained a relatively small amount of agent. Most of the early German and British attacks thus took the form of the chlorine cloud of Ypres.

These early attacks and subsequent gas attacks proved very effective. One hundred thousand persons on both sides were killed by poison gas during WW I. In all, some 125,000 tons of toxic chemicals, including chlorine, phosgene, and mustard, were used. One million three hundred thousand casualties were reported. Many of these casualties had been sustained prior to the 79th Infantry Division landing in France, in 1917.

In hindsight, therefore, it is difficult to understand why the U.S. Army was unprepared for chemical warfare even though it had been waged in Europe for over two years. The nation had no gas weapons, no toxic agents, no military gas organization, and no protective clothing. Gas responsibilities were apportioned among the Ordnance and Medical Departments and Corps of Engineers.

The great paradox of America's wartime gas experience is that in WWI, when the nation was unprepared for it, gas was used, and in WWII, when the nation was prepared, gas was not used.

The first step taken by General John J. Pershing to overcome the obvious shortfall was to establish a Gas Service. Colonel Foies, the first commander, had to rely on allied, especially British help and experience, to organize and train American troops.

Colonel Foies felt that his most difficult problems were to persuade commanders to employ gas and to educate troops to take adequate protection against gas. U.S. Officers had to be won over to the usefulness of gas warfare. There was a case of the operations officers of a U.S. Corps demanding written assurance that gas used in support of an attack in the Argonne would not cause a single friendly casualty. Some U.S. officers were reluctant to use gas because of the possibility of retaliatory fire.

The major concern in the 79th I.D. was to procure gas masks and to train all personnel in defensive techniques. By the middle of August 1917, 20,000 gas masks were received by the AEF. After they were issued to the divisions, it was learned that these masks had failed to afford adequate protection in British tests. It became necessary, therefore, to adopt the British small-~~base~~^{ox} respirator as the standard American mask. U.S. troops were also required to carry the French M2 mask for emergency use in event the British mask was lost or became no longer wearable.

Gas training was also conducted in the division. Both the British and the French has supplied advisors and limited equipment to assist in training prior to leaving America. In-country instruction was an extension of lessons learned previously by the allies. Numerous instructions, guides, and training notes were distributed within the Division but had little impact because a lot of the leaders

did not comprehend the realities of gas warfare. Unfortunately, training was not conducted to realistically defend against the volume of gas expected from the Central Powers.

2. HOW EFFECTIVE WERE INTELLIGENCE EFFORTS IN PREPARING THE ARMY AND THE 79TH INFANTRY DIVISION FOR GAS WARFARE?

The intelligence efforts at the 79th Division's level were satisfactory; however, the 79th Division did not heed the intelligence developed by higher headquarters before and during the Meuse-Argonne Operation (26 September-11 November 1918). This examination will look at the intelligence efforts of the Allied Forces, The First Army, American Expeditionary Forces (A.E.F), V Corps, and finally the 79th Division. It is easy to conclude that no precautions were taken by the 79th Division. All records of the battle have a propensity in that direction.

The Allies knew that the Germans were using toxic chemicals prior to the Americans entering the war. The Western Allies should have been aware of large scale German uses of toxic chemicals on the Russian front. The 79th Division should not have been taken by surprise.

The statement that "Trench-Warfare has its own rules, rhythms, and customs" underscores the unique problems of gas warfare intelligence. It is difficult to differentiate between conventional and the non-conventional (chemical) warfare; this is due to the simultaneous use of both high explosive and toxic chemicals. Because of this difference, intelligence officers did not try to separate the two, but included both as one.

Prior to the start of the battle of Montfaucon, the situation as seen by the First Army AEF clearly indicated the use of "Gas". Intelligence summaries stated the enemy's use of toxic chemicals prior to the start of the battle. The G-2 summarized the day prior as stated below:

"Between the MOSELLE and the MEUSE, no infantry activity of importance. The usual harassing, artillery fire with GASFrom the MEUSE to the ARGONNE, the enemy's resistance stiffened, mainly by reason of action of several strongpoints occupied by machine guns....."(4)

In the above summary, the enemy, weapons, and terrain played an important part in the AEF assessment of the situation. The summary clearly indicated that the Germans used gas quite extensively every day. Therefore, it can be assumed that the use of chemical weapons was likely. The AEF should have expected gas during the MEUSE-ARGONNE operation.

Adequate preparation for chemical warfare included intelligence and training.

"In our own teachings, tactical protection against gas included chemical warfare intelligence; chemical warfare reconnaissance; selection of routes of march, camp sites, and battle positions; the protective disposition of troops to avoid enemy gas; and offensive action to forestall or disrupt enemy chemical positions....."(5:231)

If the above statement is correct, then one can say that the

79th Division had received the necessary chemical intelligence; however, this is not the complete intelligence story.

"It almost goes without saying that the security of the army depends to a large extent on information. A careful intelligence scheme is demanded in order that the information may be timely, complete, and accurate. So far as chemical warfare is concerned, it is of such a technical nature that special knowledge and training are required in the interpretation of chemical data..."(5:231)

These facts present a different side to the intelligence effort because it gives a technical perspective to chemical intelligence. Nevertheless, the intelligence efforts of the 79th division will be scrutinized.

The intelligence summaries prior to the battle indicated the heavy use of chemical weapons by the Germans. The enemy's activities leading up to the battle of Montfaucon created a definite scenario which included the use of "gas" weapons. This excerpt from the 1st Army, AEF summary of intelligence, clearly shows the German's intent:

"Except in the region immediately west of the MOSELLE and immediately west of the MEUSE, the enemy plainly indicated a desire to interfere with our circulation by increasing his use of harassing fire and GAS ."(5:231)

Although this is a day prior to the start of the battle, this type of information is prevalent in the summaries. The enemy activity

on 25 September "West of the MOSELLE", included hostile artillery.... much of this shelling was with heavy caliber pieces. Yellow and blue-cross gas shells were freely used. Sixty-four batteries are reported as active. (6:5) It is safe to say that the Headquarters A.E.F. knew the Germans used chemical weapons prior to and during the battle.

These intelligence summaries indicated to the 1st Army, AEF that the enemy was likely to use gas. The question remains as to whether or not V Corps and, in particular the 79th division, expected its use. The 1st Army, AEF had all the indications that the Germans would use gas.

Intelligence within the 79th Division presents a startling picture. Little did the division know that another intelligence act outside of the division area would have an impact on the battle of Montfaucon.

"G.H.Q. (General Headquarters) prepared and executed an elaborate cover plan aimed to dupe the Germans into believing that the next thrust would be either toward METZ or in ALSACE. It produced some early marginal benefits - but the Germans weren't easily fooled. Their wireless station East of Verdun intercepted several coded American messages, which their experts promptly deciphered.... on this one they (Germans) bit hard, not suspecting that it was but one more extension of the cover plan." (7:426)

This account seemingly adds to the efforts of intelligence in

the form of deception.

"From 26 September to 11 November 1918, the American First Army was totally involved in the MEUSE-ARGONNE CAMPAIGN... all delivery systems were employed with great regularity as a total of 81 separate gas and smoke operations were conducted." (5:231)

Not all reports pointed to the strict use of toxic chemicals on the 79th division. The interrogation of a battalion commander of the 398th Regiment, 15th Division, captured September 12, 1918, gives some revealing insights to a definite change in the war.

"The battalion commander gave us his personal opinion that the Kaiser's changeability, and his, at times, misplaced sentimentality such as his hesitation in using liquid fire, in pushing the U-boat warfare, etc., is responsible for considerably prolonging the war." (6:5)

The use of toxic chemical weapons against the 79th Division should not have come as a surprise. Chemical weapons had been used on the Allied Forces prior to the 79th entering the war. Additionally, it is a valid assumption that the 79th Division had anticipated the use of toxic chemicals because the operations order included the use and employment of chemical weapons. More importantly, all intelligence summaries prior to the battle indicated that the Germans would use "chemicals". The 79th should have been prepared.

3. THE US ARMY'S POLICY ON CHEMICAL WARFARE AT THE TIME OF MONTFAUCON.

None of the Allied Powers had an effective chemical warfare policy when they were first attacked by German chemical agents in April 1915, but of necessity they soon developed both chemical defensive and offensive measures. The United States, however, was slow to follow. This slowness may be attributed to two factors: (1) It was still hoped that the United States would be able to stay out of the war; and (2) defensive measures began to reduce the effectiveness of chemical munitions as competitors with conventional munitions. Accordingly, it can be said that the allies' earlier experience with chemical warfare did little to provide assistance in developing US policy (8:2-3).

As previously alluded to the United States entered World War I with no chemical warfare policy (8:2). By late 1915, several months after the first widely know use of chemical weapons had killed more than 5,000 soldiers and injured 10,000 others (9:6), the U.S. War Department began to consider the problem of gas defense, but it was not until early 1917 that specific action was taken to provide the forces with gas masks (8:2). Offensively, it was the Bureau of Mines rather than than War Department which started research and production of toxic agents and it was not until the war was nearly over that the U.S. began to supply chemical weapons to the American Expeditionary Force (8:2).

It was in September 1917 that the War Department finally announced that the United States would employ toxic agents in the war with the justification that "The use of such methods by the enemy forces the United States to retaliate with similar

measures" (10:6). Prior to this announcement, in May 1915, President Wilson proposed "discontinuence" of the use of poison gas but (the majority of) both sides refused the offer. On February 6, 1918 another attempt to halt the use of chemicals was made by the International Red Cross. This appeal was also rejected by both sides (9:11).

On February 25, 1918, United States forces were first attacked by chemical weapons. In June 1918, the United States forces first retaliated with use of chemical weapons (9:11). Thus, by the time the battle of Montfaucon took place the United States had established a policy of retaliation and had exercised that policy. Gas warfare became a normal part of the WWI battlefield.

It is interesting to note that a resolution to "abstain from the use of projectiles, the sole object of which is the diffusion of asphyxiating or deleterious gases" was passed over United States' objections at the Hague Conference of 1899. This conference was the first international attempt to limit the use of chemical warfare (11:21). Also of interest is that immediately after WWI General March, Chief of Staff of the Army, was vehemently opposed to chemical warfare and ordered the

"complete demobilization of the Chemical Warfare Service, and that no poisonous gas should be used, manufactured or experimented with and no researches made; and that the defensive work, and such research as might go with it, should be turned over to the Engineers." (8:5)

4. TRAINING: EFFECTIVENESS OF ORGANIZATION AND PERSONNEL ON GAS WARFARE READINESS.

Even though by 1915 the War Department began to consider the

problem of gas defense, it was not until early 1917 that specific action was taken to provide the forces with gas masks. When US masks proved inadequate, it was necessary to purchase British and French masks (8:1).

American slowness to respond to the Chemical Warfare threat as it developed in 1915 may be attributed to US desires to stay out of war and the initial shock following the first use of gas in 1915. Additionally, defensive measures taken by both sides began to reduce the effectiveness of chemical munitions when compared to the effects of conventional munitions (8:2). But after the introduction of mustard gas in mid-1917, the Chemical Warfare problem became immediate and real for the US.

The rapid introduction of new weapons and methods made the standards of training prior to WWI insufficient. All soldiers had to receive instruction in the new and special branches. Appropriate amounts of training had to be given to units in all general and special areas, but the US had no qualified instructors for special training. As soon as competent instructors could be trained overseas, they were to be returned to the US to conduct schools there. Until that time, the use of British and French officers and NCOs as advisors was recommended, one to each of our sixteen training areas. It was recommended that the British provide advisors for anti-gas warfare (12:76). As the basic British divisional training manual pointed out, "Since attackers will use gas to demoralize their enemies, proper defensive measures will include protection against gas." (13:7) While not specifically addressed, it can be assumed that the British advisors to our training camps applied the same general

priority to their training recommendations for US programs.

There was general disagreement between General Pershing and General Petain concerning training and employment of American divisions. General Pershing wanted a certain amount of work with French troops and the use of British and French instructors, but was adamantly opposed to amalgamation (integration) of American units into French units, except in an emergency. The French Commander-in-Chief favored such amalgamation and emphasized the training benefit American units would derive, reducing their training time. Marshal Haig also voiced the possibility of amalgamation with the British (14:106). Pershing's objections were that troops would lose their national identity, probably could not be later withdrawn, and training and instruction in both armies were very different from our own and would produce confusion. He felt his staff had arranged the best and most expeditious training possible, including trench training by Brigade (14:132). Statements on several occasions made by General Bliss, American Chief of Staff, supported this concept of temporary integration for training or emergency use only (14:214).

In the United States, the schedule of instruction for units of the A.E.F. provided for the allotment of time to various types of training based on a minimum of six hours per day, Sundays and holidays excluded. Training was on a four week cycle and hours depended on the type of unit trained (See Chart 1). Gas training was conducted using the manual Defensive Measures-Gas Attacks. (14:299-312)

WEEKS OF TRAINING CYCLE	1st	2nd	3rd	4th
TYPE OF UNIT TRAINING	HOURS/WEEK			
Infantry Regiments	2	2	2	2
Field Battalion, Signal Corps	3	3	0	0
Sanitary Units and Bands	6	2	2	2
Engineers	2	2	2	0

CHART 1

Training Circular No. 5, Infantry Training, prepared at the Army War College for the War Department (Document No. 849) in August, 1918, showed 10 hours of gas training in a four week cycle for the Rifle and Machine Gun Companies and none for the Headquarters Company [pp 19-22]. However, it did further specify gas warfare as a suitable general subject for all arms.

Training Circular No. 8, Provisional Infantry Training Manual, August 1918, War Department Document No. 844, prescribed minimum specifications for trained Infantry (See Chart 2). It included gas under the subject of "gas, sanitation, etc."

1. Describe effects of various kinds of gas.
2. Describe how gas is recognized.
3. Describe measures of gas defense.
4. Demonstrate standard efficiency in putting on gas masks.
5. Pass through gas chamber wearing protective mask.
6. Describe methods of dispersion of gas.
7. Double time 4 minutes wearing gas mask.
8. Wear gas mask one hour. [111]

CHART 2

Granted, these were established as minimum standards; however, it is unlikely that the 79th ever had even this much training, and certainly most never had it before they arrived in France.

(NOTE: Both of these training circulars are available in the CGSC Library, call number M9403B15, Box 9, General Training.)

Pershing cabled Washington on several occasions stating that

in view of the urgency of the situation, there was no time to drill raw recruits in France in elementary work, and therefore, requisite training should include at least four months intensive training, and that information be sent regarding what instruction had been carried out (14:344). Training in France was normally done by one depot or training division supporting several combat divisions. To ensure combat experience, a rotational cycle was established so that depot divisions had a complete turn-over of officers and NCOs every five months. While this method certainly shared the combat experience, it must certainly have played havoc on any semblance of continuity in training programs.

In June 1917, the French general scheme for training was, for infantry units, to billet a French and American unit together--the French unit to assist in instructing the American unit for two months. Then small units would serve in the line for short service with French units for one month. Artillery brigades were to complete technical training at artillery training centers, such as Valdahon, and then be integrated into the lines in a manner similar to the infantry. Once both arms were completely trained, entire divisions would be concentrated on the line for divisional training for one month (14:241).

However, by January 1918, leaders on both sides realized this training would have to be completed more quickly (15:258,259). By summer, the previously mentioned four-month process had been reduced by at least one month (15:303,308) (NOTE: While the type of training actually shortened was not evident, surely all types must have suffered.) Specifically, the

training of the 79th (and 91st) was directed to be further intensified on 27 August 1918, as the A.E.F. prepared for operations (15:350).

The situation was so strained that in June 1918, General Pershing agreed with General Foch and Lord Milner that combatant troops (to be dispatched in July) may have to include troops which had insufficient training. This temporary and exceptional departure by the US from sound principles of training may have been necessitated by shortages of primarily infantry and machine gunners (16:379). On 29 July 1918, Pershing requested the French withdraw their training officers and NCOs as the size of the American forces had become such that it was too great of a drain on French resources (14:554). It appears that this request was modified somewhat and only included those units actually in France.

5. GAS TRAINING AND EMPLOYMENT OF THE 79TH DIVISION.

In November 1917, Fort Meade and the 79th Division received attachments of French and British officers and NCOs, specialists in modern warfare, to include those to instruct classes in gas warfare. (3:30)

"During the spring months a great deal of stress was laid upon the subject of gas training and gas discipline. Certain officers and NCOs were selected from each regiment to take a special course of training at the Division Gas School, in order that they might serve as instructors in their respective units. (NOTE: This was the training conducted by the British officers and NCOs provided to our training areas, as mentioned earlier.) Returning from the Division course of training, they lost no time in explaining the dread effects of German gas, to which

explanations their comrades listened with broad, sickly grins, and learned to don the gas mask in less than five seconds. As a grand finale to the general course of gas instruction, each company was required to visit the gas chamber, located in a ravine near the southwestern edge of the reservation, and there spend a certain amount of time in a room filled with lachrymatory gas." (3:36)

With the departure of the French and British contingents, gas training continued under Maj. Edgar S. Linthicum, Division Gas Officer (replaced in April by 1st Lt. Edwin L. Frederick and by Capt. Arthur B. Clark when the division left for France). Gas exercises during so-called field maneuvers were devoted entirely to trench discipline under simulated cloud gas attacks, with the emphasis on gas mask drill and clearing the trenches of gas. Mention was made of gas shell bombardments, but no word of mustard gas reached the men, as is evident from their instruction material and the standing order that "if no infantry attack develops [after a gas attack], get the men out of their respirators as quickly as possible." (2:3)

But these soldiers who were at least trained in the basics of such things as gas warfare were not to be among the majority who embarked with the 79th for France in June and July, 1918. The War Department had called upon the 79th on numerous occasions to provide soldiers to other units and encampments. Of the some 27,000 men who were to move overseas with the 79th, about 15,000 were men selected for military training in June 1918. In the time allotted before sailing, it was impossible to do much training or preparation. And so it was that about 58 percent of the Division secured their equipment, learned rudimentary movements, had a brief session or two in the use of the gas mask

and departed for France. (3:37-38)

One of the most important duties of the U.S. Chemical Warfare Service (CWS) was to ensure the equipping of our troops with a safe and comfortable mask and the instruction of the personnel in the use of this protection. (16:402) The CWS came into being as the gas service on 3 September 1917, but with personnel simply "on loan" from other departments, it could not accomplish much effective work. The War Department approved the CWS on 16 July 1918 to bring together all elements concerned with the Gas Service. (12:130) However, this organization could have had little impact on training the 79th, or any other WWI division, for that matter.

The main body of the 79th, which arrived at Brest, France, 15-21 July 1918, was to move into the 12th Training Area. However, new orders diverted their assignment to the 10th Training Area [Prauthoy], in the Haute-Marne, where they arrived in late July 1918. By the 1st of August, eight hours a day were devoted to training and the French were to provide many specialists to that end. Other personnel, including gas officers and NCOs, were trained at schools apart from the Division. For the many men who had arrived in the June draft, this was their first opportunity to practice basic skills. (3:31) The 79th trained throughout August until their move on 7-9 September 1918 to the Robert-Espagne Area, from which they proceeded to relieve the French 157th Division in the Avocourt Sector during 13-16 September. On 5 August, the 79th Artillery Brigade and ammunition train moved to Montmorillon for training, and on 5

September, to LaCourtine for further training. These units did not rejoin the 79th until after the Armistice. (15:720-723)

After a day or two on the line, the first apprehensions of being gassed subsided in the 79th Division's green troops. Gassing was more feared than most dangers on the battlefield. This was probably due mostly to the apprehensions instilled in training, rumors at the front, and the unknown (most had not been gassed much in training and had not yet been gassed by the Germans during their brief time at the front from 15-25 September). (3:6-11)

Evidence of the extent of training can be highlighted by the example cited by Captain Glock, a Regimental Adjutant of the 158th Brigade, who had to assist his Regimental Commander, Colonel Oscar J. Charles, in properly donning his gas mask. (3:17) Whether this was due to the traditional tendency of certain personnel (especially officers and NCOs) to not participate in certain training, or to the overall state of training of all soldiers, is not known. Regarding the overall adequacy of masks: "...perspiration and moisture condensed on the eyepieces, and I could see only a dancing of green flashes as I pushed on....." was a comment by one officer. (2:17)

The following is a summary of major operations undertaken by the 79th following their departure from the 10th Training Area (Prauthoy) on 9 September until their relief from the front on 30 September. Records of training show little experience with any of these operations, especially those extremely difficult tactical operations. Such complicated maneuvering is difficult with seasoned, experienced leaders and soldiers, and, as the 79th

demonstrated, almost impossible with less proficient personnel.

13-16 Sep -- relief in sector; 79th relieves French 157th Division in Avocourt sector

21-22 Sep -- relief in sector and consolidation; 37th Division relieved left half of 79th in sector to consolidate front for the upcoming attack

22-25 Sep -- sometime during this period the 157th Brigade replaced the 158th Brigade on line (to reach the order of battle configuration for the attack).

26 Sep -- 79th advances behind a rolling artillery barrage, and a smoke screen provided by one company of the First Gas Regiment

27 Sep -- 79th order of battle reorganized and provisional brigades established

28 Sep -- 79th order of battle reorganized and reserve regiments resumed the attack

29 Sep -- Passage of lines within the right (158th) provisional brigade as the lead regiment (315th) retired through the following regiment (314th)

29 Sep -- Passage of lines within the left (157th) provisional brigade as the following regiment (313th) passed through the lead regiment (316th)

6. WHO WERE THE GAS OFFICERS OF THE 79TH ID AND WHAT WAS THEIR IMPACT?

According to Maj John W. N. Schulz in the Textbook on the Chemical Science "Regimental and battalion gas officers . . . are appointed to aid in seeing that all anti-gas measures are efficiently carried out. It is their duty to bring any deficiency in gas discipline or protection to the notice (attention) of the proper Commanding Officer." (17:143) These gas officers were required to take a course of training at an authorized gas school. Their duties included "assisting commanders in all matters pertaining to chemicals, responsibility for taking all needful steps to minimize the effectiveness of the enemy's use of poisonous gases, and to assist in securing, on our own part, the safe and most effective use of chemical substances." (17:191)

They were assigned duties intended principally for gas

defense work to include assisting in the training of their organization (here meant to be their sections and units of assignment) in the installation, maintenance, and use of gas proof shelters, respirators, alarm systems, etc., in the guarding and disinfecting of gassed areas, and the taking of other measures of protection against gas (17:241). They performed their duties under the technical supervision of the division chemical officer.

Division chemical officers functioned primarily under the ACoFS G4 and G3, and to some extent, because of the intelligence and targeting requirements, worked with the G2. The operational aspects of employment, training, and protection of gas warfare made necessary close working relationships with the G3 sections. The division chemical officer assisted the division CG in "making provisions for the fullest protection against gas attacks and maintaining the efficiency of gas discipline. They were required to provide new officers and men adequate instructions and drills in methods of protecting against gas, and arrange for thorough training of officers and NCOs assigned to the work of gas defense." (17:197)

Although the Textbook on the Chemical Service was published in 1922, its thoughts were the results of experiences recorded in AEF regulations and publications [AEF Pub 1433]. Upon examination of AEF publications from WWI we find that chemical "doctrine" of 1922 was the compilation of procedures followed by the AEF in WWI. In fact, the wording of much of the 1920 era publications is identical to that of AEF publications.

Who then were the gas officers of the 79th Infantry Division during the battle for Montfaucon? Records indicate that Captain Arthur B. Clark was the division chemical officer. Records further indicate that the division's regiments and battalions had assigned/appointed gas officers. Additionally the division was assigned a medical gas officer whose principle duties were related to the medical aspects of chemical contamination. (2:45-46)

Although gas officers were assigned throughout the 79th ID, their abilities to impact on the chemical threat during Montfaucon were seriously degraded because of their assignment to other duties and the apparent lack of command emphasis on gas training and protection throughout the division. In a later report (9-10 Oct '18) which summarized the impact of gas attacks suffered by the 79th ID at Montfaucon, Cpt Clark stated that "...regimental and battalion gas officers during the advance had been almost wholly occupied with other than gas duties." (2:46) Further support of this conclusion can be found in a later statement made by Clark. In it, Cpt Clark stated that "The failure to apply gas training techniques and equipment were primarily the result of gas officers and NCOs being assigned to other duties, and the poor cooperation generally from their commanding officers." However, Cpt Clark remained "hopeful" that the recent renewed vigor of German gas attacks would "add interest to gas training and a knowledge of its effects. Commanding officers are realizing its importance." (2:60) (This statement was made following the Montfaucon battle but with obvious reference to that battle)

7. CONCLUSIONS.

The idea of gas warfare was basically abhorrent. There was moral rejection to its use, and it was barbaric, unchivalrous and not in keeping with the soldiers' code of honor.

It is indeed interesting to note that in General Pershing's final report to the War Department on American Operations in the World War, he did not specifically address training or lack of it. While he alluded to this inadequacy in addressing shortages of personnel as replacements, he never once mentioned training as a contributor to this problem. (16:399) This could have occurred due to his efforts to be somewhat brief in his report rather than an oversight of the inadequacy of training in certain units.

Although training was an obsession in the AEF, it apparently did not extend to the 79th ID. Likewise the posture of chemical defense throughout the division was lacking. The 79th ID never trained as a division and subsequently never fought like one.

For a division with "more that half its strength made up of draftees of not more than four months' service and considerably less of actual training," said General Kuhn at Malancourt, "it had done well to advance almost ten kilometers and take 905 prisoners." (3:43)

In the words of Captain Clark, 79th Division Gas Officer, "Gas training and discipline . . . cannot be adequately determined, as only subjection to gas of some severity and for some time can develop just what had been accomplished in this respect." (2:46) The 79th had been untrained for battle and gas warfare. The failure of the 79th was the result of a lack of

training. Gas warfare and its effects on the untrained 79th were the culminating factors closing the door to success.

SECTION III

MEDICAL REALITIES OF CHEMICAL WARFARE

1. INTRODUCTION

In examining the medical reality of chemical warfare, an epidemiologic approach is not only useful but becomes mandatory. Mandatory not because the discipline lies solely in the medical realm but because its focus is upon the study of factors that determine the occurrence of disease in populations. No one should be able to argue with the fact that chemical death is an ultimate endpoint of disease.

What then are the components of this approach? Disease, in its broadest sense, is the departure from health. Therefore, there are only three; agent, host, and environment. The agent is defined as that which causes disease, the host is that whom the disease affects, and the environment is the physical circumstance in which the host and the agent interact. Intervention of the disease process can occur along three routes; better prevention, better treatment, and earlier, and or better, diagnosis.

Although the theoretical constructs have been laid down, there is a limitation that must be made before proceeding with the medical analysis of the 79th. That limitation is that this account will be not be history per se but rather will be historiography. History, differing from an encyclopaedia, is a selection of facts. Historiography is the interpretation of those selected facts. The excellent account of the 79th at Montfaucon done by the U.S. Army Chemical Corps Historical Office need not be redone. What needs to be known is the why.

2. MEDICAL OPINION OF CHEMICAL WARFARE IN 1917

The Medical Corps did not drive doctrine, did it assign troops, nor was it responsible for their training. Nevertheless, "Chemical warfare preparedness for Britain and the United States, according to the published field manuals was well adapted to what was correct in 1918." (18:6) Indeed, prevention was stressed, and the troops could don their masks in less than 5 seconds (2:2).

The obvious difficulty was that the trained troops were, in the case of the 79th, left behind as cadre, and the less trained troops were deployed (2:4). The "train as you fight doctrine" was reversed. Perhaps, the commanding officer of the medical regiment and division surgeon could be held somewhat responsible. A colonel should have been vociferous in his objection in sending untrained troops to battle—he would have to care for them later. Perhaps, even this egregious fault by Pershing of sending the untrained could have been somewhat alleviated if the front line medics had been superbly trained and could have set the example.

3. MEDICAL ORGANIZATION FOR TREATMENT

The preceding chapter showed how the host threw away the greatest tool in reduction of disease, the tool of prevention. Faced now with the two possibilities of early diagnosis and better treatment, did the deployment of medical personnel aid or hinder the 79th's efforts? With regard to early diagnosis, mustard gas (yellow cross) had two distinct disadvantages. First, its effects were delayed, had no smell, and came on some eight hours after exposure. Secondly, its effects were cutaneous and, therefore, bypassed the mask. Early diagnosis did not have a chance then.

Better treatment was also not available. A British manual on injuries and diseases of the war, written in 1915 and revised in 1918, omits any discussion of gas (Sloggett, passim). On the other hand, the French had an excellent manual, which emphasized prevention (I.P., passim). The Americans seemed to have followed the British example. In one manual, gas warfare is neglected in entirety but the distribution of prophylactics is not (19:Chap4). Still, there was no good treatment for chemically induced pneumonitis. Even today, it takes an intensive care unit to deal successfully with "shock lung."

Doctrinally, the medical units were deployed as they are today. Intensity of treatment progressed from the front to the rear. Patients, or casualties, had easy access to the evacuation system. This ease may have been too great. At one point in the Montfaucon conflict, the surge of evacuation had to be stemmed by order. The order was that the potential casualty had to be examined by the division gas officer before the evacuation could be begun. While it is true that command has the ultimate responsibility and that command can certainly alleviate the difficult problem of battle fatigue, it is noteworthy that the the 314th went through a woods saturated with mustard gas. Where was the division chemical officer then?

From these facts, the Medical Corps should not be held responsible for the gas casualties of the 79th. They were deployed far forward and no mention is made of their lack of effectiveness in Cochrane's account (no mention is made of their superlative performance of duty either). So who then takes the blame? Probably, it is collective sharing. When doctrine is that underground shelters will protect soldiers from gas, and it is well known that mustard gas is heavier than air, many must share in the blame.

4. DID THE EXPERIENCE OF THE 79TH SHAPE MEDICAL DOCTRINE?

It would be nice and convenient to say that the Army learned the consequences of being unprepared for chemical warfare. Unfortunately, one can not make the slightest case for this argument. While it may be true that the Army has better chemical detection devices, offering better warning, the training is still deficient, the clothing difficult to use, and the toxicity and lethality of the gases increased.

There are a myriad of reasons why gas should not have shaped medical doctrine. First, command does not stress the issue. To them, there are only two issues--firepower and maneuver. Secondly, who learns about chemical warfare in medical school? Hospitals don't even want to take war casualties because the willingness to do so would indicate, de facto, their stand against peace. What about national concern? The populace does not want a toxic spill, and treaties are signed that withdraw our production and research. Chemicals are viewed as evil; somehow they, like the invention of gunpowder, demean human combat. It is against such a background that today's captain and doctor enters the medical corps.

With hindsight there are two striking lessons that the 79th taught us, although, for the reasons cited above, they go unrecognized. First, is the tremendous extra burden that gas preparedness places upon the soldier. The result, quite naturally, is animosity. "Already blinded with sweat, the men cursed their gas masks and stumbled on through the darkness" (2:62). Remember, that this is Europe. The Middle East or Latin America, with its increased heat load, will undoubtedly increase the cursing.

Secondly, and most importantly, is the ability of this extra load to be sufficient to cause panic. The analogy of the "straw that broke the camel's back"

could be used. When three quarters of the gas casualties are doubtful cases and when the Inspector General of the AEF investigates, and the results of that investigation result in an order that the Division Gas officer certify each casualty, there is evidence of tremendous psychological influence acting upon the soldier (2:46). The fear of the unknown is terrifying indeed.

5. THE 79TH'S CASUALTY RATE IN PERSPECTIVE

Having learned nothing, it is hard to place anything in perspective. The latin dictum that out of nothing, nothing can be made is applicable to the 79th. Cochrane seems embarrassed and carps "there is nothing in the Division history to justify the total of 460 wounded." Why not, who makes the diagnosis? Cochrane then makes a fundamental epidemiological mistake, and corrects the medical count of 359 gassed to 799 because of the hospital list (2:88). What happened to all those that said they were gassed? With all the troubles that the 79th had, is a scapegoat necessary?

With this correctional factor in mind, a casualty would occur every 16 shells as opposed to an HE casualty every 45 shells. The number of gas victims roughly parallels the number killed (2:84). This fact should not be surprising. The lack of gas discipline, the lack of equipment and training to use it, the underground shelters, and direct disobedience to gas orders should provide substantive evidence as to why the casualty rate was so high (20:25).

The 79th provided a epidemiological model that no one heeds. The host could have prevented the effects of the agent. Instead he chose not to. The he is not the individual soldier, but rather the he is one that can affect policy. The United States should be ready to use chemical weapons. Failing that the military must

recognize that superior quality of training and equipment may be worth thousands of tons of gases on the other side (18:5).

CONCLUSIONS

The United States entered World War I with no chemical warfare (CW) experience or policy. None of the allied powers were prepared for the introduction of gas warfare when the Germans released a cloud of chlorine against the French sector at Ypres, France on 22 April 1915. By late 1915, the U.S. War Department began to consider the problem of gas defense, but it was not until early 1917 that specific action was taken to provide U.S. forces with gas masks. (8:1) In September 1917 the War Department announced that the U.S. would employ toxic agents in the war with the justification that "the use of such methods by the enemy forces the United States to retaliate with similar measures..." (10:6) Additionally, minimum standard specification for gas training were not published until August 1918. (21:19-22)

Training in general and training for chemical warfare in particular were subjects of great controversy in the U.S. Army during the AEF's early days in France. Also, the type of training, accomplishment of that training, and eventual employment of forces of the AEF were causes of concern between General Pershing and the allied Chiefs of Staff (or heads of their ground forces). This concern, sparked by a new concept, coalition warfare, spread throughout the force and impacted on all units, to include the 79th Division. As the situation in France deteriorated in 1917-1918, divisions were prepared for combat insertion without having the minimum prerequisite training.

How did this impact on the 79th Division? As previously

stated, roughly 58 percent of the 79th departed for France with less than rudimentary training accomplished. (3:37-38) If that is true, not only was the 79th unprepared for conventional combat operations, it was even less prepared for the chemical environment it would soon face. Although the 79th Division did some training in August 1918, it is highly improbable that it ever accomplished the minimum four-months prerequisite combat preparatory training directed by General Pershing. What led to this gross departure from doctrine and policy has already been summarized. The fact remains that the severity of the situation in France warranted an expeditious buildup of combat power.

One aspect of the war that has been alluded to but not covered in detail was the psychological impact the use of chemical weapons had on AEF troops. Gas attacks were the most feared dangers on the battlefield and that fear was prevalent among the 79th Division Soldiers. (3:6-11) Since the level of chemical training in the division was far below norms (and those norms were below accepted Army levels) little could have probably been done to identify this psychological fear, let alone render a solution for it.

With preparations underway for offensive operations in the Meuse-Argonne Campaign, one must wonder why General Pershing put his rawest division, the 79th, in front of the greatest obstacle in the sector. With untrained and unseasoned troops and staff, operating over difficult terrain, the odds (of success) were insurmountable. (2:1) Our conclusion is that Pershing was intent on keeping the AEF intact as a fighting force in contrast to the allied desires to amalgamate American troops into French and

British Divisions, and he was determined to fulfill a "prophecy" of ending the war, an end sworn to be accomplished with the introduction of the AEF. (Remember the verse "Overthere...we're going over, and we won't be back 'til its over overthere.")

Although the 79th Division relieved the French 157th Division in the Avocourt sector on 16 September 1918, the division did not see concentrated combat until 26 September. The division met no serious gas that first day, little the second, and not much more the next two days, but it was enough to complete the total disorganization of the division. After its withdrawal, it took two weeks to reconstitute. (2:1)

The gas attacks on the 79th Division during the Battle on Montfaucon were indicative of most gas attacks on American troops during WWI. The primary cause of casualties was due to a lack of adequate training and a failure to realize the importance of such training. When the U.S. entered the war in 1917, they were not prepared in organization, information, or material for the most far reaching development of modern warfare--the use of gas. Little preparations had been made during the two years that had passed between the first introduction of gas and our entry into the war. But even more importantly, our troops had had little gas training and there was no one in the U.S. with sufficient knowledge of gas training to implement a program.

Standing orders (pertaining to gas) were disobeyed and disregarded and there was a general lack of gas discipline at all levels. In fact, numerous records state that most Americans were inclined to be scornful of gas and were ashamed to be seen

wearing the mask for fear of being called cowards, an attitude which was later overcome simply by education. (22:3-8)

On the offensive side, the 79th Division had the capability to employ gas, but, as in numerous other instances during WWI, American commanders were very reluctant to use gas. This reluctance was based on three reasons: (1) lack of trained gas personnel; (2) lack of knowledge in combat units on its tactical employment and the methods and care required to protect themselves; and (3) a fear of enemy retaliation. In sum, Americans found the use of gas abhorrent and never really grasped the realities of the chemical battlefield.

The 79th Infantry Division failed at Montfaucon. It failed because it was thrust into the "breach" of battle against a tough, combat-seasoned enemy. The 79th Division was totally unprepared to engage in conventional ground combat. It was untrained, disorganized, and unfit for the missions it was given. Although it endeavored to sustain against a superior enemy, it was just not prepared to meet the challenge. The use of chemicals against the 79th was not the deciding factor for the division's defeat. It was, instead, simply one of many contributing factors. Had the battle been fought without chemical agents, we believe the 79th Division would have suffered the same end, defeat.

EPILOGUE

The 79th Division's conduct during the Battle of Montfaucon was probably the worst of any American unit in France in 1918. Its reaction to the conventional and chemical environments of the day should have been predicted by the leaders of the AEF. Had this reaction been foreseen, had the morale and psychological aspects of the battlefield been considered, and had the intelligence efforts of the AEF been functioning correctly, the AEF would probably not have used the 79th as it did. There were other divisions available which were not as 'green' as the 79th. What prompted Pershing to order the 79th into sector can only be speculation.

But of greater importance, what did the U.S. learn from the toxic battlefield of WWI? "Immediately after the November 1918 Armistice, the Chief of Staff of the Army, General March, who was vehemently opposed to chemical warfare, ordered the 'complete demobilization of the Chemical Warfare Service, and that no poisonous gas should be used, manufactured or experimented with and no researches made; and that the defensive work, and such research as might go with it, should be turned over to the Engineers'." (8:5) Luckily, Congress, through the National Defense Act of 1920, established the CWS as a permanent branch of the Army over the almost unanimous objections of the Army leadership and the Secretary of War.

The inter-war years found the U.S. propagating, at least on the surface, a credible chemical warfare policy. Perhaps the lessons of WWI, combined with U.S. determination to retaliate-in-

kind, prevented large scale use of gas in WWII, Korea, and Vietnam. The Geneva Protocols of 1925 also probably contributed to the lack of toxic munitions in those wars.

But what of today? "Formal U.S. chemical warfare policy objectives are four-fold: to deter the use of chemical weapons against the U.S. and its allies, and, should deterrence fail, retaliate with chemical weapons to encourage cessation of chemical warfare at the lowest possible level of intensity; to expedite modernization of the U.S. deterrent retaliatory stockpile with binary chemical munitions, in order to establish credible and effective non-nuclear deterrence and gain leverage in the area of chemical weapons arms control; to be able to conduct sustained operations in a chemical environment; and to support the eventual objective on concluding a verifiable arms control agreement prohibiting chemical weapons." (23:80)

It has taken almost 60 years for the U.S. to realize that chemical warfare will not go away by turning a shoulder to it. Hopefully, we will never again have to experience the horror that was the battlefield of WWI. And, through modern, realistic training programs and evaluations, perhaps we will never see another U.S. division respond to the toxic battlefield as the 79th Division did.

BIBLIOGRAPHY

1. Terrain Photographs--American World War Battlefields in Europe; 79th Division, Avocourt Sector, Sept 13-25, 1918; Meuse-Argonne Offensive Sept 26-Oct 3, 1918; The American Battle Monuments Commission.
2. Cochrane, R. C.; The 79th Division at Montfaucon, October 1918; Army Chemical Center, Maryland; 1960. (DTIC Ref No. AD A075654)
3. Barber, J. F., Chairman History Committee, 79th Division Association (Compiled and Edited); History of the Seventy-Ninth Division AEF During the World War; 1917-1919; Steinman & Steinman, Lancaster, PA. Undated.
4. Summary of Intelligence; HQ, 1st Army, AEF; 27 Sept 1918.
5. Waitt, Col A. H., Chemical Warfare Service, U.S. Army; Gas Warfare; The Chemical Weapon--Its use and Protection Against It; Duell, Sloan, and Pearce; New York, 1942.
6. Summary of Intelligence, HQ, 1st Army, AEF--Part II--20 Sept-11 Nov, 1918; 24 Sept 1918.
7. Marshall, S. L. A.; World War I; American Heritage Press, New York; 1964.
8. Burt, R. et. al.; Evaluation of Chemical Warfare Policy Alternatives--1980-1990; OSD, Pentagon, Washington, D.C.; Feb 1977. (DTIC Ref No. AD A045344)
9. Leonard, J. E.; Chemical Warfare--An Urgent Need for a Credible Deterrent; Army War College; Carlisle Barracks, PA; Apr 82. (DTIC Ref No. AD A116271)
10. New York Times; p. 6; 21 Sep 17.
11. Kelly, Maj J. B.; "Gas Warfare in International Law"; Military Law Review, Volumes 1-10; DA Pamphlet 27-100-1-10; pp 469-435; October 1965.
12. U.S. Army in the World War 1917-1919 Volume I, Organization of the American Expeditionary Forces; Historical Division, Department of the Army, U.S. Government Printing Office; 1918.
13. The Training and Employment of Divisions, 1918; Authored and Issued by The General Staff, The British War Department; Army Printing and Stationary Services, France; 1918.
14. U.S. Army in the World War 1917-1919 Volume II, Policy-Forming Documents; Historical Division, Department of the Army, U.S. Government Printing Office; 1918.

15. U.S. Army in the World War 1917-1919 Volume III. Training and Use of American Units with British and French; Historical Division, Department of the Army, U.S. Government Printing Office; 1918.
16. Harper's Pictorial Library of the World War, Vol. V, The United States in the War; Harper and Brothers, New York; 1920.
17. Schulz, Maj J. W.; Textbook on the Chemical Service; Ft. Leavenworth, KS; 1922.
18. Wachtel, Curt; Chemical Warfare; Chemical Publishing Co., Brooklyn, NY; 1941.
19. Shockley, Maw; An Outline of the Medical Service of the Theater of Operations; P. Blakiston's & Co., Philadelphia, PA; 1922.
20. Gilchrist, Harry L. and Matz, Philip B.; The Residual Effects of Warfare Gases, Chlorine and Mustard; Washington, U.S. Government Printing Office, 93pp; 1933.
21. Training Circular No. 5, Infantry Training; U.S. Army War College; Document No. 849; August, 1918.
22. Gilman, Cpt E. D.; Chemical Warfare Bulletin; Vol 8, No 5; 15 May 1922.
23. United States Military Posture, FY 83; The Organization of the Joint Chiefs of Staff; 1982.