

U. S. ARMY CHEMICAL CORPS HISTORICAL STUDIES  
GAS WARFARE IN WORLD WAR I

THE 89th DIVISION COMES INTO THE LINE  
August 1918



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U. S. Army Chemical Corps Historical Office  
Office of the Chief Chemical Officer  
Washington, D.C.

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August 1918**

by

**Rexmond C. Cochrane**

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**Study Number 6**

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HISTORICAL STUDIES**

**U.S. Army Chemical Corps Historical Office  
Office of the Chief Chemical Officer  
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**The 89th Division Comes into the Line  
August 1918**

**Prepared by**

**Rexmond C. Cochrane, Ph.D.**

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**This is an accepted draft study on gas warfare in World War I**



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## Foreword

This is a tentative study of the gas experience of the 89th Division during World War I. This study is not presented as a definitive and official history, but is reproduced for current reference use within the Military Establishment pending the publication of an approved history.

The author was assisted in his research by Mr. Walter O. Moeller, Mrs. Charlotte Bolin and Mr. Guy F. Goodfellow.

Note to Reader: Comments and suggestions relative to accuracy and adequacy of treatment are invited, and may be transmitted to the Chief, U.S. Army Chemical Corps Historical Office, Army Chemical Center, Maryland.

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AUGUST 1918

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THE 89TH DIVISION COMES INTO THE LINE  
AUGUST 1918

The gas attack on the 89th Division on the night of 7 - 8 August while relieving the 82nd was, it was later reported with mingled pride and exaggeration, "unofficially said by an official of the French Research Gas Commission to be the second largest gas attack of the war."<sup>1</sup> It was not that, of course, but for a single punishing bombardment it was certainly one of the most successful mustard gas attacks of the war against American troops.

Although the Germans had introduced mustard gas twelve months before this attack, the necessary gas discipline and defensive doctrine to combat mustard gas had only recently been formulated. Nevertheless, it is probable that all American troops then in the line or training in France were apprised of this doctrine, however much they tended to ignore it until its necessity was proved by experience. The gas attack of 7 - 8 August on the 89th Division is therefore of considerable historical interest as a lesson in "bitter experience," as well as for the number of directives that resulted concerning "the most dangerous thing we have to cope with at the front."

A Gas Mission for the 30th Engineers

Although lost sight of afterwards, the part played by the 82nd Division in the gassing of the 89th was of singular importance. The 82nd, brigaded with the 154th French Division, had come into the line on the southern front of the St. Mihiel salient, near Flirey, on 27 - 28 June, relieving the 26th

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1

History of the 326th FH, 82nd Div, n.d. (Med Dept Box 3897, Folder 22).

American and 65th French Divisions. It was a quiet sector to which new troops that had completed their training in France were sent for experience in trench warfare and final training preparatory to actual combat. There the troops engaged in repairing and deepening their trenches, repairing wire, and constructing new dugouts and trenches. With the French troops, they made daily reconnaissance patrols and occasional offensive raids across No Man's Land and waited out the daily exchange of friendly and hostile artillery fire.

On 18 July the sector where the 82nd Division trained was designated the Lucey Sector, the French troops massed and moved to the left, and command passed to the American headquarters.

The Daily Operation Reports of the 82nd reveal that hostile artillery shelling, exclusive of antiaircraft fire, averaged more than 500 rounds each day, and in the 37-day period between 28 June and 3 August, a total of 21,309 HE rounds were recorded in the divisional sector.<sup>2</sup> Total HE casualties for the period were said to be 16 killed and 108 wounded.<sup>3</sup> Over the same period, a total of 738 gas shells, all apparently nonpersistent gases, were recorded, with the principal targets the Bois de Jury, Bois de la

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2

DOR 1-37, 82nd Div, 28 Jun - 3 Aug (82nd Div Box 6, 33.1).

On the other hand, SOI 1-37, 28 Jun - 3 Aug (82nd Div Box 2, 20.1) indicates 8,748 HE and 859 gas shells in the period, not counting approx 3,000 - 4,000 HE in a bombardment on 16 July and 5,000 HE in a bombardment on 31 July.

Days on which as high as 850 shells fell into the sector were frequently noted as "quiet."

3

These casualties may be taken as fairly accurate. The American Battle Monuments Commission Study of the 82nd Div, p. 56, indicates no casualties before 11 Aug, but it records 106 killed and wounded between 17 Aug - 11 Sep, a 26-day period, when enemy arty may well have been more active, in anticipation of the St. Mihiel offensive.

Hazelle, Lironville, and the vicinity of Beaumont. The operation and intelligence reports show only 5 gas casualties over the 37 days, but 48 are indicated in the field hospital admission lists.<sup>4</sup>

The 82nd Division, like the 26th before it, seems to have had no allotment of gas shells for retaliation, but it had a company of the 30th Engineers (later, the First Gas Regiment) attached. In its first operation after completing training with the British and French gas troops, two companies of the 30th Engineers had fired missions on 18 - 19 June totaling 1,338 phosgene bombs from projectors emplaced in the Bois du Jury and near Fey en Haye, against German camps in the Bois de Mort Mare and the Foret des Venchères. On 8 July the gas troops fired another projector mission with over 400 phosgene and NC<sup>5</sup> drums, totaling over seven tons of gas, into the Bois de la Rappe and Bois de Friere, above Fey en Haye.<sup>6</sup>

A week after this second shoot, in its first gas mission for the 82nd Division, Company C of the 30th Engineers, using the projector emplacements cited earlier in the Bois du Jury, began preparations for another shoot.

"The projectors were laid and loaded, everything made ready - then the wind

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<sup>4</sup> 326th and 328th FH Rpts in Med Dept Boxes 3905, 3908.

<sup>5</sup> NC was a lachrimatory and lethal combination of PS (chloropicrin) and KJ (stannic chloride). It was also used in the No. 7 French shell.

<sup>6</sup> James T. Addison, The Story of the First Gas Regiment (Houghton Mifflin, 1919), pp. 42 - 51, 80 - 81; MS Hist of 1st Gas Regt, Pt. III, Sec. 2, p. 3, in CmlC Hist Off; ltr, Maj Robt W. Crawford, CO Prov Bn, 30th Engr to CG 32nd Fr Corps, 65th Fr Div, 4th US Corps, 82nd US Div, 9 Jul, sub: Rpt on Opns (82nd Div Box 14, 63.33).

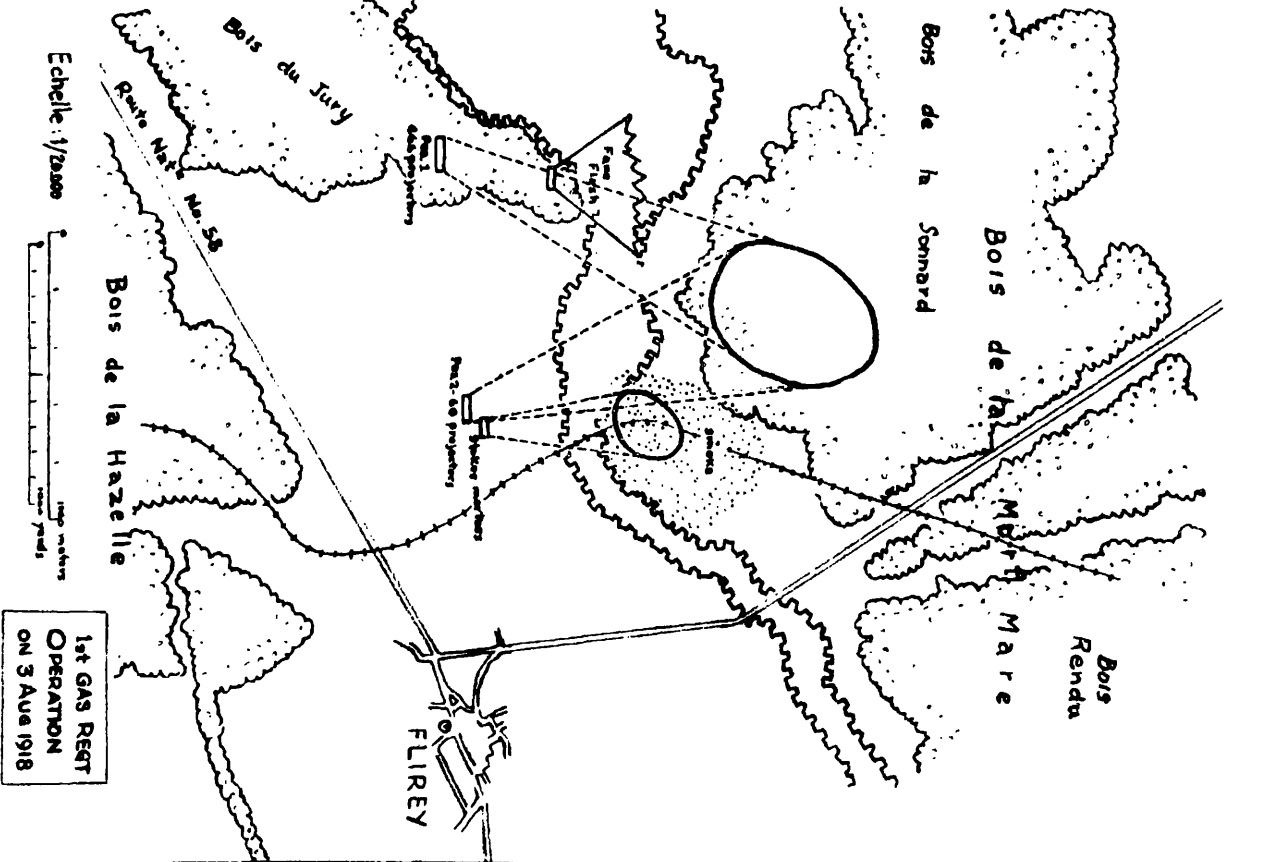
changed! For some two weeks we waited with this undesirable thirty [?] tons of deadly gas intended for the Boche in our own very midst. Heinie either learned or suspected a second attempt to give him a gas bath, for one night he put down a terrific artillery barrage that tore things up generally, and gave us worry for fear our own gas would be blown up."<sup>7</sup> Another week passed before conditions were right. At 0300 on the morning of 3 August, the mission was fired. With a light wind from the southeast, 315 phosgene and 150 NC drums were launched against German positions in the Bois de la Sennard (Map No. 1).

The shoot was accompanied by a fake flash display, simulating a projector discharge, while 4 Stokes mortars put 8 smoke, 72 phosgene, and 48 NC bombs on a troop target southeast of the main target area. Twenty minutes later, the gas troops launched approximately 40 phosgene and 20 NC bombs from a second projector position into the Bois de la Somard. At 0330 heavy fire by the attached French artillery was put down on the gassed area and on enemy battery positions. The effectiveness of the shoot seemed indicated by the light retaliation that followed a half hour later, when about 50 HE, shrapnel, and gas shells fell along the edge of the Bois du Jury, with further light shelling with HE and phosgene at dawn.<sup>8</sup> The next day Company C left the sector.

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<sup>7</sup> Col Frank D. Ely, "The Story of the 327th Infantry," The Atlanta Constitution, 8 Jun 19, Magazine Section, p. 4 (82nd Div Box 1, 11.4).

<sup>8</sup> Addison, pp. 96 - 99; MS Hist of 1st Gas Regt, Pt. III, Sec. 2, p. 4.

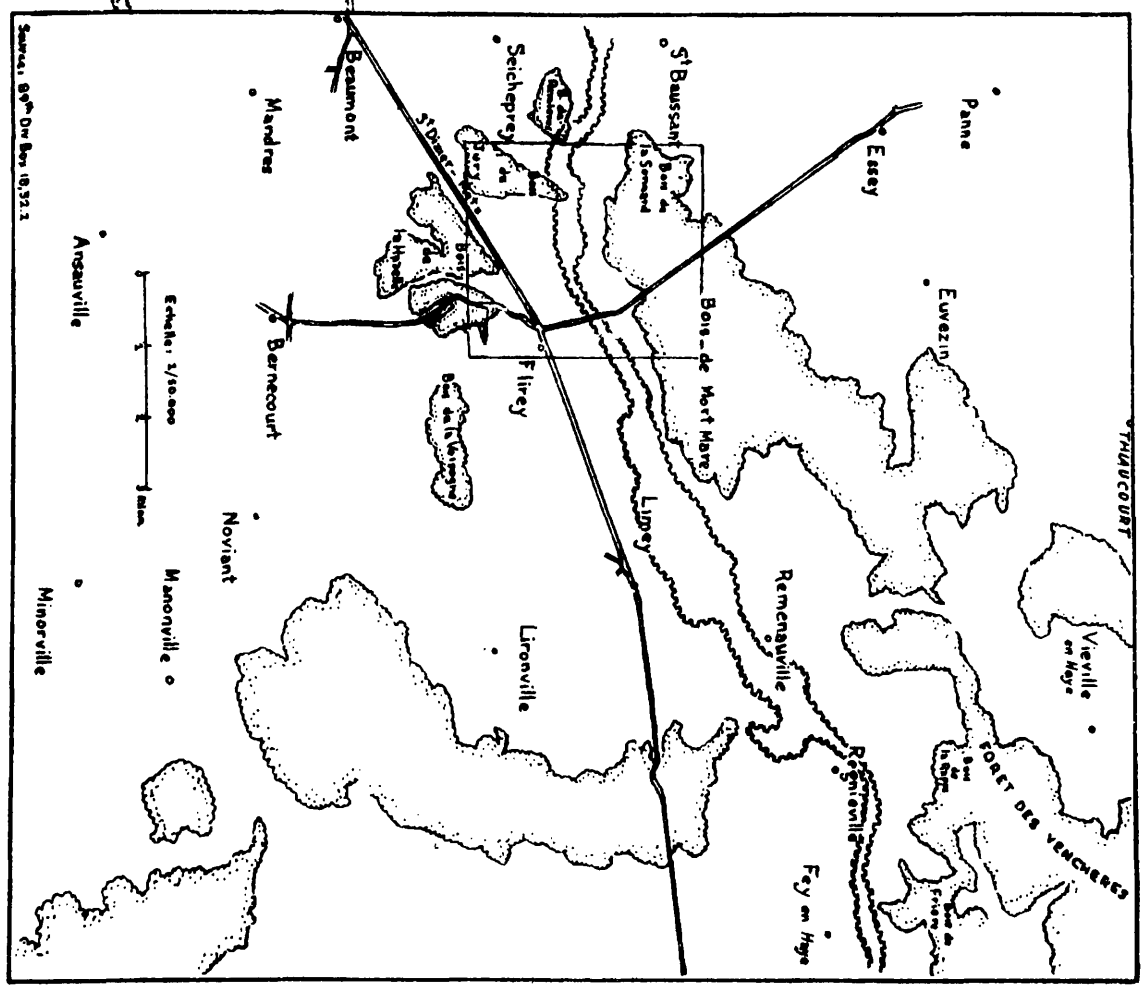


1st GAS REGT  
OPERATION  
ON 3 AVE 1918

Echelle: 1/25000

0 1000 meters

Source: Based on map  
in Archives of the 1st  
Infantry Division, 1918



MAP NO. 1

The 82nd Division reported that "7½ tons of various gasses [were fired in the mission ] and, as was later ascertained from enemy sources, caused many German casualties." "From daylight until 7:00 o'clock no signs of movement were detected in the area covered by gas," and the gas appeared to be still lingering in some parts of the wood. The operations report the next day said: "In connection with Gas Projector attack August 3rd, French observer at Beaumont reports that between 7 and 8 A.M. the same day three ambulances on road southeast from Essey toward Flirey seen going back and forth, and groups of men seen carrying litters."<sup>9</sup> The war diary of Army Detachment C, the element of Army Group Gallwitz holding the St. Mihiel salient, confirmed the projector attack: "Enemy surprise gas attack on Group Gorz cost us 6 deaths and over 40 gas sick; otherwise the day passed quietly."<sup>10</sup>

Even before the firing of this projector attack, the 82nd Division had received word that it was soon to be relieved. This was a matter of considerable concern to Brig. Gen. J. R. Lindsey, commanding the 164th Brigade, since, as he said, his troops had been on that front a whole month and in all their patrols and raids had failed to capture a single prisoner. On

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9

DOR 37, 38. 82nd Div, 2 - 4 Aug; MS Hist of 82nd Div, p. 4 (82nd Div Box 1, 11.4); Daily Intel Rpt, 327th Inf, 2 - 3 Aug (82nd Div Box 19, 33.1). The enemy unit reportedly affected was the 441st Inf, 227th Div, in Group Gorz.

10

WD 3 Aug (Army Det C, 1 Aug - 30 Sep, German Files Box 106). Group Gorz, covering the south front of the salient, was composed at that time of the 227th Div and the 77th Res Div.

3 August, with time running out, he directed that his regimental commanders themselves prepare special patrols for raids the next night in the Richecourt area. Between them, the patrols must capture "at least one prisoner. It simply must be done."<sup>11</sup> To the right of General Lindsey's forces, two companies of the 326th Infantry were also preparing to make one more raid before leaving the sector. A heavy bombardment of the German front would cover the progress and return of these special patrols.<sup>12</sup>

The next day, reporting on the raid north of Flirey, the division said that the patrol of the 326th penetrated 600 meters, saw few enemy troops, and returned without prisoners. The other raids across the front appear to have been no more successful. In the enemy reprisal fire for the bombardment and raids, 20 men were killed and 45 wounded, almost half of the casualties occurring when two shells, falling by chance in trench bays filled with men, killed 17 and wounded 15.<sup>13</sup>

Between the gas shoot on the 3rd and the raids on the night of the 4th, the enemy forces opposite had cause for alarm and retaliation, and it would appear to have been a retaliation for which they had long prepared.

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<sup>11</sup> Memo, Adj 164th Brig for COs 327th, 328th Inf, 3 Aug (82nd Div Box 8, 33.7).

<sup>12</sup> A request on 2 Aug to cancel this opn, despite the long period of training for it, since it was feared known to the enemy, was disapproved by the CofS 82nd Div. Ltr, Cronin CG 163rd Brig to CG 82nd Div, 2 Aug, sub: Revocation of orders for opn, and 1st Ind (82nd Div Box 15, 32.15).

<sup>13</sup> DOR 38, 82nd Div, 3 - 4 Aug; MS Hist of 82nd Div.

### The 89th Division Accepts a Plan of Defense

While the projector attack of the 30th Engineers was in progress, the 89th Division, under Brig. Gen. Frank L. Winn, which had arrived in France late in June 1918, had just completed its four weeks of training in the Reynal area near Neufchateau. That day, 3 August, under orders to relieve the 82nd Division, it began moving northeast through Toul to the front.

On the night of 4 - 5 August, coming up to its position in the line between Bouconville and Remenauville, the 1st Battalion, 355th Infantry, relieved the battalion of the 327th Infantry, 82nd Division, stationed near Beaumont. Advance elements of the 356th, 354th, and 353rd Infantry of the 89th followed the lead battalion into the line on 6 and 7 August, spreading out across a 16-kilometer front (Map No. 2). By the night of 7 August, approximately 2,300 officers and men were in the front line positions.

Like the 82nd Division before it, the 89th on entering the line came under the command of General Passaga's XXXII French Corps, the left element of the Eighth French Army commanded by General Gerard. (In preparation for the St. Mihiel operation, command of the sector would pass to Maj. Gen. Joseph T. Dickman's IV Corps on 20 August.) To the left of the 89th was the 34th French Division, Second French Army, and to its right the 1st American Division.

Opposite the 178th Brigade, commanded by Brig. Gen. Thomas G. Hanson, were the 477th, 417th, and 441st Regiments of the 227th Division. Opposite the 177th Brigade, led by Col. James H. Reeves, were the 257th and 419th



Regiments of the 77th Reserve Division.<sup>14</sup> From their lookout posts on higher ground, these German forces commanded a view of the trenches and rear areas of the 89th, while observation by the 89th was limited to the immediate foreground and the parapet of the foremost enemy trench. Despite this advantage of the enemy, the 89th Division was told that his actions "generally have indicated his desire to maintain a quiet sector, his activity being confined to harassing fire of artillery and minor operations on the part of his infantry."<sup>15</sup>

Coming into the line, the 89th Division took over what had once been an elaborately constructed trench system, with wide belts of wire, deep dugouts, and a maze of communicating trenches. In the course of the war, much of this system had been destroyed by enemy shell fire and more had fallen into disrepair as a result of recent developments in defensive warfare tactics. Where earlier French troops had massed in these trenches and held them against repeated German onslaughts, they were now only an element in the advance position, an area 3 to 4 kilometers wide and 2 to 3 kilometers deep, held by scattered outpost, combat, and support groups comprising a battalion in strength. Four to eight kilometers from the extreme front position was the main line of resistance, held by the support battalions of

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14

It is believed the order of German regts in Map No. 2 is reversed.

15

FO 2, 89th Div, 17 o'clock, 4 Aug (89th Div Box 15, 32.1); Col Geo H. English, Jr., MS History of the 89th Div, Part I (290 pp.), pp. 60 - 61 (89th Div Box 1, 11.4). This is substantially the same as the published History of the 89th Division, U.S.A. (War Society of the 89th Div, Denver, 1920). The MS history will be cited in this study, as such.

each regiment and still undergoing construction as the 89th came into the line. In villages within 20 minutes marching distance of this main line, the reserve battalions were billeted, to rest and continue their training.

The supporting artillery of the 89th was principally French, its units unidentified, together with a battalion of field guns of the 15th FA Regiment, 2nd Division. Approximately a quarter of these guns were in front of the line of resistance, the remainder behind that line.<sup>16</sup>

Although the 89th Division, composed largely of March and April draftees, had received training in gas mask and gas defense drill in the States and again in France, it had not experienced the hazards of actual gas warfare as it arrived at the front. Beside the Division Gas Officer, Capt. Martin B. Chittick, probably few of the gas officers or gas NCOs in the division had as yet taken the special gas courses at the gas schools at Chaumont and Chatillon.<sup>17</sup>

The division had no reason to expect gas in any quantity on this quiet front, and there is no record that it was informed of the recent gas

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16

MS History, pp. 64 - 70. FO 2, 89th Div, said only that the artillery of the 82nd would remain in place. Much of this artillery apparently departed about this time (see pp. 31 - 32), but no record of the fact has been found.

The organic arty of the 89th, the 164th FA Brig, was with the division for the St. Mihiel operation but remained behind when the 89th moved to the Argonne front and did not rejoin until after the war.

17

Telg, Schuyler, Adj 4th C at Neufchateau to CG 89th Div, 26 Jul, stated that in accordance with par 5, GO 90, AEF, the division was to send 5 gas officers to the AEF School at Chaumont on 28 Jul and another 5 every week thereafter. Ten NCOs were to go to the II Corps gas school at Chatillon on the same date (89th Div Box 16a, 32.15).

mission of the 30th Engineers.<sup>18</sup> Enemy gassing during the occupancy of the sector by the 82nd Division had been scattered and ineffectual. Little or no mustard gas had been used, and apparently the 82nd Division had never selected and prepared alternate positions, for the evacuation of troops under sustained mustard gas attack as proper gas tactics demanded.<sup>19</sup>

The sector plan of defense, which had been in force in the 82nd Division and was turned over to the 89th, "expressly provided that the troops [in the forward zone] were to hold their positions to the last and under all conditions unless withdrawn by order of the Army Commander."<sup>20</sup> As Lt. Col. R. E. Beebe, Chief of Staff, 82nd Division, was to say: "In turning over the orders to the 89th Division, stress was laid on the Infantry plan of defense, which required that Combat Groups would not leave their positions but would hold to the last. No modification was mentioned to them in the case of mustard gas. The instructions were simply turned over as they had been given to the 82nd Division by the 154th [French] Division." Nevertheless, he said, with

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18

On the contrary, at the first general staff meeting on 7 Aug, Major Goodman, G - 2, read only the 82nd Div Sum of Intel for 6 - 7 Aug, which made no mention of the gas shoot of 3 Aug and indicated the small total of 161 HE shells falling in the area that date. Recon and surveys of the sector had begun, it was reported at the meeting, but defense plans for the sector, shelter for the men, and information of the observation and intelligence services of the 82nd were on the detailed list of reports that General Winn wanted in his hands the next morning (Minutes of General Staff Conferences, 89th Div, 7 Aug [89th Div Box 18]).

19

See Analysis, pp. 48 ff.

20

MS History, p. 79.

a degree of hindsight, it had "always been part of the instruction of the 82nd Division that troops must be withdrawn from an area containing mustard gas; that there was no other way of combating this gas. An exact order from 32nd Army Corps, however, has never been seen."<sup>21</sup>

Contradicting this statement were standing trench orders, issued in a memorandum of 2 August, which said that "Company commanders will assure themselves that all men understand immediate preventive measures to be taken if gassed, such as building fires in dugouts, fanning gas from trenches, covering with chloride of lime the ground where liquified mustard gas has fallen, washing with soap and water parts of the body which have come in contact with liquified mustard gas, testing for gas before removing masks, etc."<sup>22</sup> There was no word about moving out of a mustard gassed area or about alternate positions. If that was French gas doctrine, it had either been overlooked by the American divisions training with the French or had not come down to them at this time.

The 89th Division took the orders it received literally. When the gas attack came, the division stood fast.

#### Gelbkreuzverseuchungsschiessen

On 8 August the war diary of Army Detachment C reported: "Group Gorz, in retaliation for several surprise gas projector attacks, carried out a

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21

Ltr, Beebe to CG 32nd Fr Corps, 10 Aug, sub: Gas Attacks (82nd Div Box 3, 32).

22

Memo, 164th Inf Brig, 2 Aug, sub: Standing Trench Orders for MG Cos of 164th Inf Brig (82nd Div Box 15, 32.11).

yellow cross contamination shoot [gelbreuzverseuchungsschiessen] against enemy positions around Flirey."<sup>23</sup>

A month later a memorandum issued by a unit of the 82nd Division, which quoted a recently captured German document, was to say that the document "undoubtedly [referred to] the gas that was used against the 89th Division." The date on the document, 7 August, made its pertinence questionable, but its intelligence was to prove all too accurate:

Bombardment with Yellow Cross Shell will be executed preferably between 1 and 4 a.m. At first the bombardment compels the enemy to wear his mask. A few hours later, when the presence of the gas is no longer revealed by the odor, the enemy will probably take off his mask, but will be overcome later, when the sun rises, by the action of the evaporation. For this reason the principal lines of resistance of the enemy - chiefly observation posts which have been located, as well as battery positions - should be bombarded with Yellow Cross Shell whenever the weather permits.<sup>24</sup>

In what may be described as the accepted version of the gas attack, Colonel English, then Adjutant and Operations Officer of the 177th Brigade and later division historian, wrote:

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23

WD, 8 Aug (Army Det C, 1 Aug - 30 Sep, German Files Box 106).

NOTE: Nothing more on this gas attack has been found in the German records in the National Archives. The staff from the Hist Sec AWC who made extracts from the war records in the Reichsarchiv between 1922 - 1938 was concerned principally with those records that pertained to and supplemented major American combat operations.

24

Study made by Chief of the General Staff, II, 93949, 7 Aug, quoted in ltr, IXth Army to 222nd Div, Hofmann Corps, 11 Aug, and reproduced in memo, 164th Brig, 82nd Div, 5 Sep (82nd Div Box 16, 32.15). Also reproduced in CWS Weekly Sum of Info, 4 Sep (WD Hist Box 298).

On the night of the 7th-8th of August....the Division received its first taste of the realities of war, and that in one of its most horrible forms...when the front line battalions in the Bois du Jury, Bois de la Hazelle and to the south and west of Flirey were subjected to a most severe bombardment of gas shells. The first attack started at 10:30 in the evening and continued until midnight. The shelling then ceased until about 1 o'clock and was then resumed for nearly two hours more. Between 9,000 and 10,000 shells were fired during the bombardment. About 95 per cent of the shells were of mustard gas and phosgene, interspersed with many high explosives.

The chief concentration of the shelling was in the vicinity of the headquarters of 1st Battalion of the 354th Infantry in a ravine in Bois de la Hazelle, about a kilometer southwest of Flirey, which from that night on was known as 'Gas Hollow.' Other areas of heavy concentration were in Bois du Jury and the western portion of the Bois de la Hazelle, falling chiefly on the 1st Battalion of the 355th Infantry.<sup>25</sup>

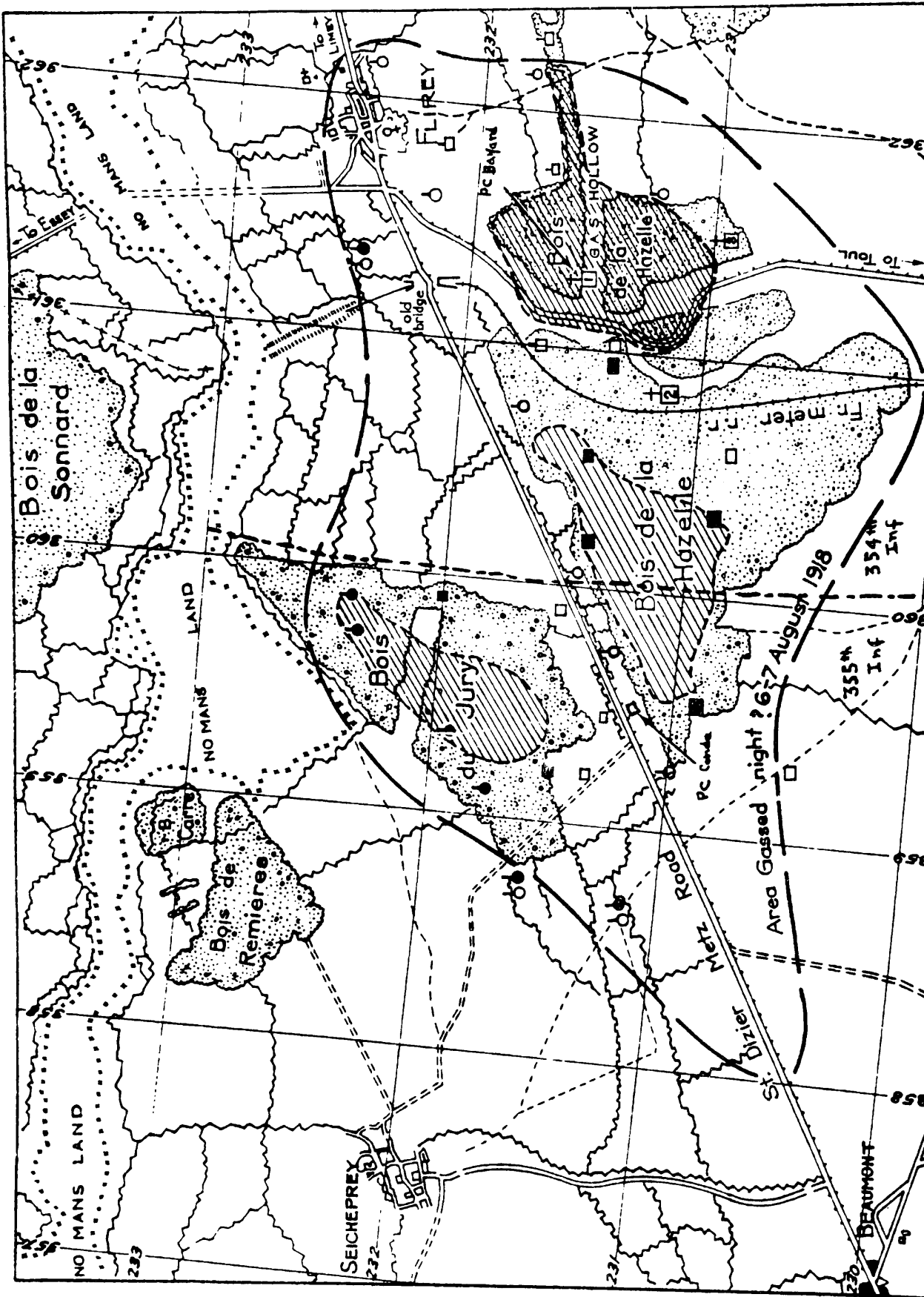
At the time of the attack, the 82nd Division was still in command of the sector, although most of its troops had already left the forward area or were moving back when the gas shells began to fall. T.P.S. (earth telegraph), flashlights, runners, rockets, and telephones were available to the troops in the area under attack, but none of the 82nd or 89th Division officers in command believed the attack was serious enough to get help for the sector or call for ambulances.<sup>26</sup> Word of the gas attack did not reach 355th Infantry headquarters at Ansauville until 0900 on the 8th. It was the first command element to learn of the seriousness of the attack.

Capt. H. J. Sheafe, the 82nd Division Gas Officer, did not hear of the attack until 1100, more than twelve hours after it began, while the

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25  
MS History, p. 78. See Map No. 3, made after the war for the published History of the 89th Div, p. 71.

26  
Minutes of GS Conference, 8 Aug.



① Area of German Mustard Gas Attack  
 night of 6-7 August 1918  
 (kilometer grid)

from Mort Mare  
 (Secret)  
 1-20,000 J.C.H.L.

Map No. 3  
 Source: 89th Div Box  
 18, 32.6

interspersed in the shelling. In the general target area, the enemy had chosen two targets for saturation fire, principally with yellow cross but apparently including a number of yellow cross I shells (dichlormethyl ether [i.e., diphosgene] and ethyldichlorarsine).<sup>31</sup> As indicated on the map attached to the report (Map No. 4), these two targets centered around the road south of the Bois du Jury and the command post of the 1st Battalion, 354th Infantry in the Bois de la Hazelle. In the saturation target south of the Bois du Jury, 1,800 shells were fired, by actual count of the shell holes.

During the bombardment there had been a light breeze from the northwest that dropped to a dead calm at dawn. A heavy mist through the night kept the mustard gas on the ground until about 0800, when a four to five mile per hour wind rose, again from the northwest. Troops in the Bois de la Voisogne were not exposed to direct shelling, but were gassed by vapor blown there by the wind.<sup>32</sup>

#### In the Bois du Jury

Lt. Col. John C. H. Lee, G - 3 of the 89th (later, Chief of Staff) was making an inspection of 355th Infantry forward positions at the time

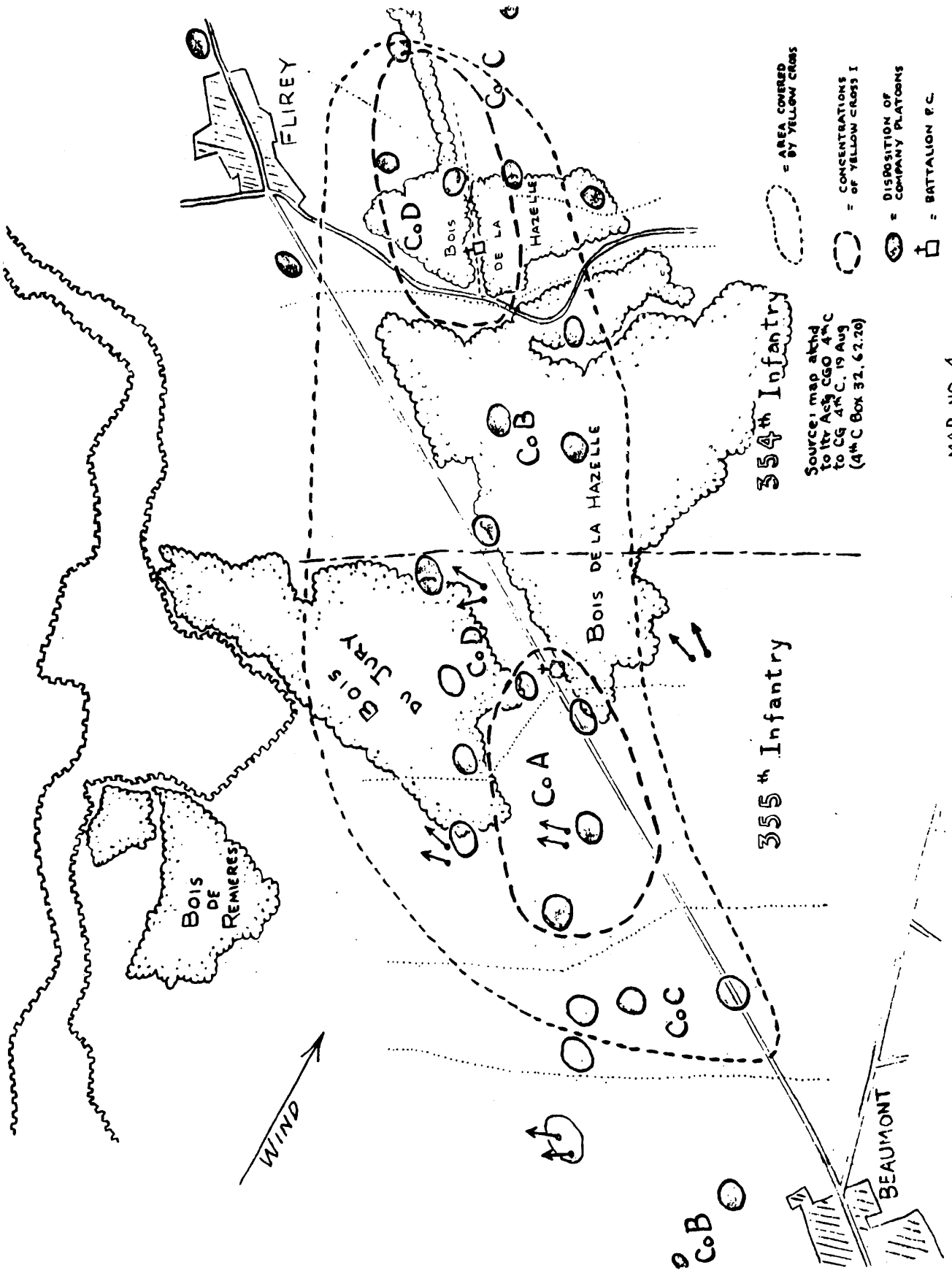
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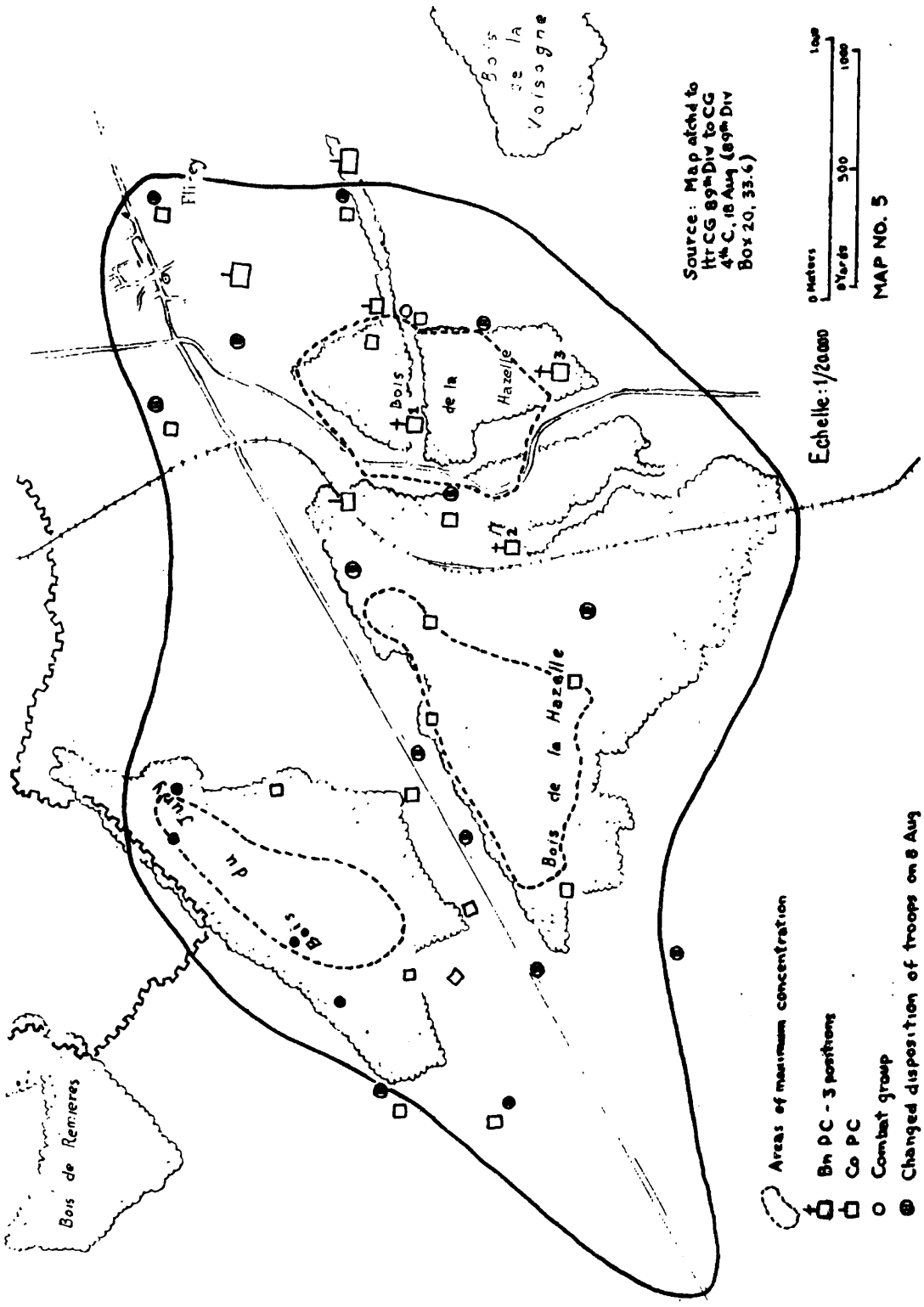
31

In his Report of Gas Attack, 21 Aug (89th Div Box 21), Capt Chittick was to say that green cross (trichlormethylchlorformate) was also used, but that the yellow cross gases probably comprised 75 - 80 percent of the total gas shells.

32

Ltr, 1st Lt Edw Mack, Actg CGO 4th C to CG 4th C, 19 Aug, sub: Enemy Gas Shell Bombardment (4th C Box 32, 62.20). Cf map atchd to ltr, Winn, CG 89th Div to CG 4th C, 18 Aug, sub: Data concerning recent gas attack (89th Div Box 20, 33.6) (Map No. 5).





of the attack and sought refuge in the trenches of Company C, southwest of the Bois du Jury, until about 0100, when he crossed the front to the battalion command post in the 354th Infantry sector. Aware of the intense shelling in the Bois du Jury, he thought the gas around Company C had blown down from the woods, when actually the wind was from the opposite quarter. His report indicated that only about a third of the men in the 355th sector had any kind of shelter and their only protection against gas was the gas signal and gas sentinel.<sup>33</sup>

A signal officer with his detachment, who left Ansauville an hour before the attack began, to relieve the 327th Infantry signal platoon at the front, said that,

We were between Condé [the command post of the 1st Battalion, 355th Infantry] and Beaumont, when shells started falling around us. At first they were mostly gas shells and all of us put on masks. The gas shells continued to fall for a short time when high explosive shells began falling all around us.

I started with my men to the nearest dugout, but so much dirt, gravel and smoke was in the air that with the mask on I could not find my way so was compelled to remove mask from my eyes. We reached a dugout and replaced masks over our faces but had evidently inhaled some gas as I and a number of the men became sick and vomited in our masks. I threw up in mine three times and was forced to empty same.

They went on, relieved the 82nd Division signal platoon, and remained for twelve hours in the signal dugout at Condé. "During the twelve hours, beside keeping signal equipment working, [we] cleaned out gas several times and worked continuously to make the dugout gasproof by putting new

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33

Insp Rpt of X Center of Resistance, Lucey Sector, 8 Aug (89th Div Box 22, 37). Despite the "X," Lee's map attd to the report shows disposition of troops in Zone V, above Beaumont.

curtains etc."<sup>34</sup>

"Although the gas guard had never heard a gas shell before," the infantry mortar platoon in the Bois du Jury reported, "the first one was recognized instantly. The Stokes mortars remained fully manned through four hours of heavy shelling and a deadly concentration of gas." Sometime after daybreak, the platoon was ordered out of its position and all guns and ammunition were evacuated, along with six casualties.<sup>35</sup>

The commander of the 1st Battalion, 355th, at Condé said that liaison with the companies "continued to be very good the entire night [with] frequent reports coming in that all was well and only two cases of slightly gassed reported, and they...not...at all serious." Gas masks, he said,

were worn from about 10:00 P.M. the 7th until about 4:30 A.M. the 8th. When I started on my rounds in our sub-sector on the morning of the 8th, I found the number of gas cases which had developed to be about 150, most of which seemed to be very slight. It seems that the cause of so many gas cases was due to the fact that when one sniffs this particular kind of gas a few times, he loses all interest in its presence [and] does not notice it so much. It is believed that everyone thought the danger was over and removed gas masks and since this gas is accumulative, they were gassed by laying around in the vegetation and by using dugouts that had been burned out.<sup>36</sup>

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34

Quoted in ltr, CO Hq Co, 355th Inf to CO 355th Inf, 10 Aug, sub: Rpt on gas shell bombardment on 355th Inf (89th Div Box 148).

35

Hist of Hq Co, 355th Inf (89th Div Box 31, 11.4).

36

Ltr, Capt Wirth to CO 355th Inf, 10 Aug, sub: Rpt of Gas Atk (89th Div Box 148.)

The commander of the 355th Infantry, at Ansauville, also learned about "the working of the gas" that night, when "a graduate of the Gas School" told him that mustard gas sickness, after a night bombardment, started to develop the next morning -- "the idea being that the sun starts to volatilize the acid and the wind scatters it." At the time, however, he reported that at 0430, an hour after the gas attack ceased, there were only two slight gas cases, "but new cases began rapidly developing at about 8 A.M., well after the danger had apparently ceased." He believed there were "upwards of two hundred of the command who suffered more or less inconvenience."<sup>37</sup>

At 0930, more than six hours after the bombardment ceased, General Lindsey of the 164th Brigade made a tour of inspection with his successor, General Hanson, commander of the 178th Brigade, 89th Division.

On reaching CONDÉ this morning [I] noted a number of men lying around suffering from the effects of gas and was informed by the Lieutenant (Surgeon) in charge of evacuation that there were about 60 men there then that should be evacuated and that ambulances had already evacuated a good many others. I estimated that about 100 men had been gassed, principally from Co. A, 355th Inf....The other companies were but slightly affected. I immediately telephoned...headquarters for additional ambulances and directed that a company from the 2nd line be moved up to replace those evacuated.

Again referring to A Co., report indicated that groups located [in the west edge of Hazelle woods and those above the road to their left] were worse affected. I understand that groups in the adjacent sector in the north edge of BOIS de la HAZELLE were badly gassed. The company in JURY WOODS...was but slightly affected - about 5 cases reported.<sup>38</sup>

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<sup>37</sup> Ltr, Col McMaster to CG 89th Div, 9 Aug, subs: Advance rpt on shelling of Jury Woods (89th Div Box 25, 63.33).

<sup>38</sup> Ltr, CG 164th Inf Brig to CG 82nd Div, 8 Aug, subs: Gas Atk Night of Aug 7/8 (82nd Div Box 16, 66.1).

Earlier, in the absence of the 355th Infantry commander, Colonel Ely of the 327th Infantry had begun directing the removal of gassed troops from the Bois du Jury, until he himself was affected by the gas.<sup>39</sup> It was 1130 when Company G, marching from Mandres to the Bois du Jury with their masks on, came up to relieve Company D and part of Company A, badly gassed after spending the night in the dugouts along the Beaumont-Flirey road.<sup>40</sup>

Sometime around 1500 on the 8th, Captain Chittick and Captain Sheafe visited the gassed area in the 355th sector and Condé, the command post dugout.

We found men along the road sitting in the grass and in the ditches, taking no precaution whatever. We suggested that they get out of the gassed area and on to the open road. We visited a dugout and found about twelve men in there. We called their attention to the fact that they should get out of there and on to the road.

[Around midnight that night, upon returning to this same dugout,] we found about fifteen men in there with their masks off. We warned them to get out (all who were not required to remain there) and warned the guard on the outside. We warned the men who were sitting down on the ground that they were doing just exactly what they had been told not to do, and went on up and informed Captain Wirth.<sup>41</sup>

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39  
Ltr, McMaster, above; Ely, "The Story of the 327th Inf," The Atlanta Constitution, above.

See Memo, Adj 164th Brig for Ely, CO 327th Inf, 8 Aug: "You will... withdraw the company in [the Bois du Jury]....The company in the north edge of Bois de la Hazelle sector is being temporarily withdrawn leaving one group in open....The Beaumont-Flirey Road between Condé and the sub-sector boundary must be frequently patrolled" (82nd Div Box 18, 32.15).

40  
Hist of 355th Inf (89th Div Box 36, 11.4); War Diary, 355th Inf (ibid., 33.5).

41  
Min of GS Conf, 9 Aug.

The 355th Infantry Medical Detachment at Conde continued all that day without a break to evacuate gassed troops. By 1900 it had evacuated almost 350 casualties, as other troops came into the area to hold the line. An officer and eight corporals were themselves badly gassed before the day was over.<sup>42</sup>

#### In the Bois de la Hazelle

On the right, in the 354th Infantry sector, a patrol of 43 men from Company A, with 82nd Division men as guides, were coming back from a reconnaissance of the enemy trenches when the enemy artillery "opened up with shrapnel, H.E., mustard and phosgene gas. It was a dark night and very cloudy. For fear they would lose their way, only the nose clip and mouth piece of the gas mask was used." Practically all in the patrol were gassed.<sup>43</sup>

The commander of the 326th Infantry, 82nd Division, estimated that "several thousand gas shells" fell in the Flirey sector, mostly in the ravines to the north and south of the battalion command post [Bayard], but also in the ravines and woods to the west of Bernecourt Road.<sup>44</sup>

Maj. Nathan C. Shiverick, who had just assumed command of the 1st Battalion, 354th Infantry, on the afternoon of 7 August, was seriously

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Hist of Med Det, 355th Inf (89th Div Box 31, 11.4).

43

Hist of Co A, 354th Inf (89th Div Box 30, 11.4).

44

Ltr, Col J. C. McArthur to CO 163rd Brig, 8 Aug, sub: Enemy Gas Atk (82nd Div Box 18, 33.6).

gassed that night while inspecting his troops. He was to report that the gas shells came in

at the rate of from 30 to 35 per minute. The gas alarm was sounded by the use of a mechanical horn which could easily be heard 1500 yards away. This alarm was sounded immediately after the explosion of the second shell, when the odor of gas was plainly detected. Gas masks were ordered [on] and worn when considered necessary throughout the night.

Just prior to daylight, the first gas casualties occurred. The gas lay in a cushion in a gulch, the north side of this gulch being occupied by the battalion P. C. Both banks are heavily wooded and mixed in with the gas shell there were some shrapnel and high explosive. I believe the high explosive shells had a tendency to break up the gas cushion and spread the gas among the trees.<sup>45</sup>

Major Morrison, whom Major Shiverick had relieved as battalion commander, waited out the gas attack at the P. C. dugout. Through his and Shriverick's efforts, the troops in the area kept their gas masks on until about 0500 when "it was impossible for the men to keep them on any longer." Morrison's statement that sometime after five there was an enemy attack between the 354th and 355th platoons that was repulsed is uncorroborated. It was about 0600 when, "having taken a good deal of gas off and on while using the phone," Morrison was at last overcome.<sup>46</sup>

Although regimental headquarters at Noviant learned of the gas attack shortly after it began, and heard that as many as 64 shells in one minute

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45

Ltr, Maj Shiverick to CG 89th Div, 19 Sep, sub: Rpt on gas atk at Bn P. C., Aug 7 - 8 (89th Div Box 21). Maj Shiverick was so badly burned that after long hospitalization he was returned to the States (MS History p. 80).

On p. 70 in the published History of the 89th Div is a picture of the 1st Battalion P. C. in the Bois de la Hazelle.

46

Interv at 10:30 a.m., 8 Aug, in memo, Col Jas H. Reeves, CO 353rd Inf for CG 89th Div, 8 Aug, sub: Gas Atk (89th Div Box 148).

had been counted coming in, no great concern was felt until after 0800 when the first serious gas cases were reported. As Colonel Mitchell, the 354th Infantry commander, said, the troops simply had no idea they were in a deadly gas atmosphere. Many of them, after having been on the alert during the first bombardment, went into their dugouts and, believing the area cleared of gas, removed their masks and went to sleep.<sup>47</sup>

The greatest number of severe casualties in the 354th occurred in the valley where 1st Battalion headquarters [P. C. Bayard] was located. There, Colonel Lee, Majors Shiverick and Morrison, and at least 13 other officers and 134 men were gassed. The severity of their gassing may have been partly the fault of the Battalion Gas Officer, who, about 0130, between bombardments, reportedly advised the officers and men at the P. C. to remove their masks.<sup>48</sup> "At daybreak, all men on duty at the P. C., except those on duty with the surgeon and at the switchboard, were ordered to higher ground east of the P. C." But by then it was too late. Almost every officer and man at the P. C. had been gassed.<sup>49</sup>

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47

Ltr, CO 354th Inf to CG 89th Div, 10 Aug, sub: Gas Atk (89th Div Box 30, 63.3).

48

When this incident was revealed several weeks later, General Winn learned from Capt Chittick that the gas officer had had no gas instruction at the AEF gas school. He was scheduled to go on August 9, but was then in the hospital with severe mustard burns. Memo for Record, re Gas Atk of Aug 7 - 8, F. L. Winn, 22 Aug, and 2 Inds (89th Div Box 25, 63.3).

49

Ltr, Shiverick, above; ltr, Mack, 19 Aug, above.

Most of the casualties in the two regiments resulted from the order to hold fast. Remaining in the gassed area, "the men struggled in their masks for over six hours and many fainted or were unable to wear the masks longer."<sup>50</sup> Traversing the gassed area between 0500 and 1000 and again later in the day, the medical officer of the 354th reported that

men were seen...working without gas masks. Officers worked without their masks, claiming that it was impossible to do what they had to do with their masks on, [and] the men of course seeing the officers without masks thought it proper to leave theirsoff....It seemed not to be serious gas as the men were not very sick at first, only eye conditions, but later on vomiting began.

The first officer to be gassed was a gas officer. Most gas officers had had no experience in gas [and] did not know how to detect it.<sup>51</sup>

Kitchen details and ration carriers in both infantry regiments were said to have continued their duties immediately after the bombardment and all became casualties. Large supplies of open food were reportedly ordered destroyed the next day because of assumed gross contamination.<sup>52</sup>

Despite the reported work of the medics from 0300 on, it was not until after 0800 that the seriousness of the attack became apparent and the call went out for ambulances. Soon after, an emergency dressing station was set up in Rohanne woods. From there the ambulances of the 82nd Division began taking the gassed men to the gas hospital near Royaumeix, ten kilometers

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<sup>50</sup> Hist of the 354th Inf (89th Div Box 30, 11.4).

<sup>51</sup> Memo, Maj R. H. Meade 354th Inf for Div Surg, 16 Aug (89th Div Box 148).

<sup>52</sup> Minutes of GS Conf, 9 Aug.

from the front line. At noon, the first of the 89th Division ambulances arrived at Andilly "and immediately the first five machines were sent to Flirey woods to handle gassed patients." Another ambulance company was to say it arrived from St. Nazière "in time to help the 82nd Division with their evacuations in the big gas rush of August 8. A call was sent out for volunteers to go into Gas Hollow (about one-half kilometer north of Flirey ... ) to litter the patients to the road that was accessible to the ambulances. This was our men's first experience in litter work with gas masks on."<sup>53</sup>

That night the commander of the 326th Infantry, 82nd Division, described the effort that had been made that day to reestablish the front lines in the 354th Infantry sector. Although the terrain was thoroughly contaminated and further gassing was expected, all front line positions had again been manned, with "platoons averaging approximately 50... somewhat stronger than before replacement of casualties. All positions are occupied on and in front of the METZ road. Counter attack platoons are slightly further south on top of the hill in the BOIS de HAZELLE. There seems no probability of danger to forward units and those in the rear will be drawn further back if gas appears at the present locations." A temporary command post had been established southwest of the gassed-out post (it would have to be moved again the next day), but connection was being maintained with Bayard, the old post, where a signal crew continued to man the switchboard. There was satisfactory liaison with the troops along the

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53

Hist of Ambulance Co 354, 314th San Tr, 14 Feb 19; Hist sketch, Ambulance Co 353, 9 Feb 19 (Med Dept Box 3969, Folders 14, 13).

Metz road, but none could be established with the 355th Infantry to the left, although five men had been badly gassed trying to do so.<sup>54</sup>

At the general staff meeting at 2030 on the evening of the 8th, General Winn told his brigade commanders that the replacement troops sent into the gassed areas should be moved out. His G - 3, Colonel Lee, insisted that the combat groups in the Bois du Jury and Hazelle must maintain their ground at all costs, for the whole plan of defense depended on it, and that counter-attack troops must be brought up to support them and stop any attempted assault through those woods.<sup>55</sup> General Winn, he said, would be open to criticism if he permitted the forward troops to evacuate their positions without consultation with corps.<sup>56</sup>

Even though no attack came, it was almost two weeks before the last troops were withdrawn from the gassed area.

#### The Casualties

The first reports of casualties came from 82nd Division sources. The commander of the 321st MG Battalion reported 17 gas cases in his section

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Ltr, Col J. C. McArthur CO 326th Inf to CO 163rd Brig, 10:45 p.m., 8 Aug, sub: Enemy Gas Atk (82nd Div Box 18, 33.6).

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Although reports of the preparatory gas attacks made for the German offensives beginning on 21 March 1918 indicated that enemy troops bypassed terrain they had contaminated with mustard gas, no conclusions were drawn from these repeated observations (see CWS Weekly Summaries of Information, War Dept Hist Box 298). On the contrary, late in August, General Gerard (CG, Eighth French Army) was reported to have said that the Germans had a special mask permitting them to occupy ground covered by yperite, and used such masks to follow up their yperite attacks. Ltr, Winn CG 89th Div to DGO, 22 Aug, sub: German gas mask (89th Div Box 148), asked the DGO to investigate this report. No reply has been found.

56

Minutes, 8 Aug.

stationed west of the Bois du Jury north of the Rambucourt-Flirey road. It was relieved after the bombardment and, detecting no gas, proceeded to Beaumont without masks on. The first effects were noticed upon arriving that afternoon at Rangeval.<sup>57</sup> Shortly after noontime on the 8th, the 326th Infantry reported that "184 casualties [had been] evacuated through NOVIANT; 138 of the 354th Inf., 18 of the 326th Inf., 28 from the 320th M.G. Bn [82nd Div]. This is believed to cover practically all casualties in [the zone of the 354th Inf], as most, if not all men evacuated via BERNECOURT were from the 355th Inf. and 327th Inf."<sup>58</sup>

Ambulances from Bernecourt and Noviant converged on the field hospital near Royaumeix. The gas hospital of the 82nd Division, the 326th Field Hospital (FH), was set up about half way between Royaumeix and Minorville, on the Noviant road, ten kilometers from the front, and was joined there by the 355th FH of the 89th Division on 6 August. It was preparing to leave on the morning of the 8th when the first gas casualties arrived. By noon, there was a steady relay of ambulances coming in to Royaumeix, and as they arrived the patients were bathed, their hair clipped, clothing salvaged and degassed, and venesection and other emergency treatment was administered. The hospital became jammed and the patients were evacuated to the 327th and 354th Field Hospitals at Toul, fifteen kilometers south of Royaumeix. Detachments from the ambulance

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57

Ltr, CO 321st MG Bn to CG 164th Inf Brig, 8 Aug, sub: Gas Casualties (82nd Div Box 16, 66.1). An MS History of the 82nd Div (82nd Div Box 1, 11.4), p. 4, was to say these were the only casualties in the division.

58

Ltr, CO 326th Inf to CO 163rd Inf Brig, above.

companies and engineer troops were brought down to aid in the evacuation, many of them working sixty hours without relief.

By 0200 on the 9th, almost 700 gas casualties had been received and evacuated and only 18, too severely gassed to be removed, remained at Royaumeix. Only one patient was received who was not severely gassed.<sup>59</sup> At the 800-bed hospital at Toul, operated by the 327th and 354th Field Hospitals (82nd and 89th Divisions), "331 gassed cases were admitted within six hours' time" on 9 August.<sup>60</sup>

On the morning of 9 August, the 82nd Division operations report said that the ravine in the Bois de la Hazelle had again been shelled with gas from 1745 to 1815 hours the previous evening, although Intelligence that same date reported enemy artillery fire noticeably quiet, with a total of 157 shells, all presumably HE, falling in the sector.<sup>61</sup> But the ravine at Condé was gassed again on the evening of the 9th, with between 50 and 70 mustard gas shells. Colonel Kilbourne, the Chief of Staff, said he visited the area and judged the road safe provided the men wore their masks. He

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59

Hist of 326th FH, 307th San Tr, n.d. (Med Dept Box 3897, Folder 22).  
Note: On p. 72 of the published History of the 89th Division is a picture of gas patients outside the hospital near Royaumeix.

In his report, Col L. P. Williamson, Activities of the Med Dept, 89th Div, 21 Mar 19 (Med Dept Box 3968, Folder 1), said some 800 gas cases, including 50 later deaths, passed through the 355th FH.

60

Hist of 354th FH, 314th San Tr, 12 Feb 19 (Med Dept Box 3969, Folder 19).

61

DOR 43, 82nd Div, 8 - 9 Aug; SOI 43, 82nd Div, 8 - 9 Aug. Bull of Inf 276, 32nd Fr C, 10 Aug, reported 405 shells with some gas over the 89th Div front from Beaumont to Lironville (French Files Box 102, 20.2).

nevertheless found "a good deal of laxity in discipline there." A captain had to be ordered to put his mask on, and a machine gun company was found still drawing water from the ravine.<sup>62</sup>

A revised issue of the 82nd Division operations report of 9 August included an incomplete report from the Division Surgeon showing that a lieutenant colonel, 2 majors, 3 captains, 15 1st lieutenants, 11 2nd lieutenants, and 668 men (including 124 from the 354th Infantry and 266 from the 355th Infantry) - a total of 699 - had been treated so far by the Medical Department.<sup>63</sup> Sometime that same morning, Captain Chittick, the 89th Division Gas Officer, telegraphed General Fries, Chief of the Gas Service, at Tours: "...from 10:00 P.M. to 4:00 A.M., 7 - 8 Aug, 8000 shells of 75, 105 and 155 calibre containing mustard gas, chlorpicrin and diphenylchlorarsine...resulting in 650 casualties, no deaths."<sup>64</sup>

### Cause Célèbre

By the morning of the 9th, the gassing of the 89th Division had become a cause célèbre. General Passaga, XXXII French Corps commander, and Col. Stuart Heintzeman, Chief of Staff, IV Corps, had arrived at

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62

Min of GS Conf, 10 Aug.

63

Also reported in a 1000 hours message from 82nd Div, per Memo, G - 2 4th C for CofS 4th C, 9 Aug (82nd Div Box 2, 12.3).

64

GAF-89th Div, Gas Atks. Capt Sheafe's Telg reported 60 casualties in the 82nd Div.

division headquarters. A conference was held that afternoon at which Colonel Heintzelman ordered a complete study to be made of the gas attack. Even though the necessary information "should be furnished as a matter of routine by report of the Division Gas Officer...the importance of this case appears to warrant the necessity of having every possible means taken to secure a full and complete report of the...facts."<sup>65</sup>

No record of this conference has been found, but the most important question raised undoubtedly concerned the evacuation of troops from mustard-contaminated terrain. Lt. Col. Beebe, Chief of Staff, 82nd Division, said he believed he had such a directive from XXXII Corps and that it had been turned over to the 89th Division with the other sector orders and plans. The next day he retracted his statement; there was no such directive in his dossier.<sup>66</sup>

So there would be no further question, on the night of the 9th, General Passaga issued a corps memorandum prefaced by the statement that 538 men had been gassed in an yperite bombardment when they removed their masks four hours after the shelling began. Without indicating whether or not it was standard procedure in the French Army, he directed that ground shelled with a "lasting gas" must be evacuated immediately and reoccupied no sooner than eight days later unless thorough decontamination could be performed. Under

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<sup>65</sup> Ltr, CG 4th C to CG 89th Div, 10 Aug, sub: Data Concerning Recent Gas Atk (4th C Box 25, 50.1).

<sup>66</sup> Ltr, CofS 82nd Div to CG 32nd Fr C, 10 Aug, sub: Gas Atk (82nd Div Box 3, 32).

yperite attack, troops in the most forward positions, however, were to leave only when the shelling was completely over, and were then to move to prepared positions on the flank or rear of the yperited zone. The experience of the 89th was his model for the evacuation of an yperited zone (Map No. 6).<sup>67</sup>

Under a separate directive from Passaga, orders were issued on the 10th to evacuate the most heavily gassed areas and wire them off. Each combat group was also ordered to select at once three alternate positions in case of further gas attack, the selection to be governed by wind direction at the time of attack.<sup>68</sup> Thus not until forty hours after the bombardment were all troops, except a few patrols, withdrawn from the most dangerous areas, the ravine in the Bois de la Hazelle and the saturated portions of the Bois du Jury, Bois de la Hazelle, and the Beaumont-Flirey road. These areas were then wired off and posted. Elsewhere in the gassed area, however, the gassed troops held their positions.

It seems possible that the failure of the divisional artillery to attempt to counter the enemy gas bombardment may have come up at the conference. At the staff meeting the night before, it was said that not until late in the day was the divisional artillery "asked to counter-battery this Boche firing. They have promised to [do so] with their four guns, but state that so few

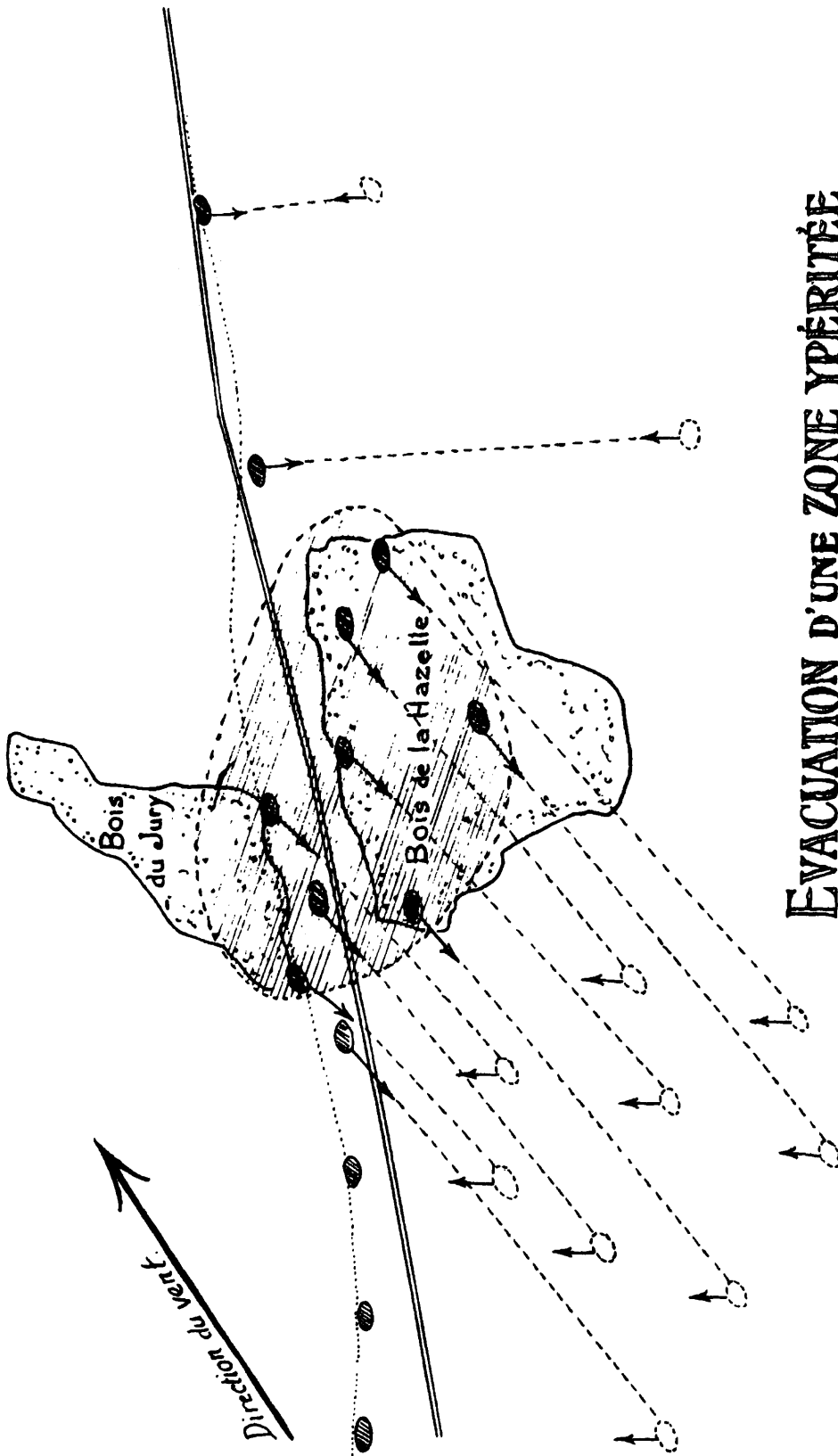
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67

3rd Bur Memo, 32nd C, VIII Army, 9 Aug, sub: Shelling with Gas Shells (89th Div Box 18, 32.7).

68

Memo, CG 32nd Fr C for Col Kilbourne, CofS 89th Div, 9 Aug, (89th Div Box 22, 42.7); MS Hist, p. 82; Min of GS Conf, 10 Aug.



# EVACUATION D'UNE ZONE YPÉRITÉE

Source: sketch by Sector Memo, 3d Bureau,  
 32nd Fr Corps, 9 Aug 1918  
 (see Div. Bois 10, 32.7)

MAP NO. 6

guns will not be effective."<sup>69</sup> No one seems to have thought to call corps for counterbattery fire, but an inquiry at the conference concerning the use of corps artillery to stop gas shell fire seems to have brought the reply: "It is a matter of certainty that a powerful counter battery has good opportunities for preventing the continuation of enemy gas shell fire . . . . Should the 89th Division wish corps heavy artillery for counter battery fire, retaliation, or counter preparation offensive, the Commanding General has only to make his wishes known to the group in his sector."<sup>70</sup> There was, however, to be no counterbattery or retaliatory bombardment by the 89th until the St. Mihiel artillery preparation.

Two other subjects that may have come up during the conference were plans for the decontamination of the gassed area and the condition of the dugouts in the sector. All 82nd Division gas officers and gas NCOs had agreed to remain for a day or two to help clean up the area. Decontamination of the gassed areas outside the wire was reportedly begun about 1300 on the 8th, and the work was said to have been completed on the 19th.<sup>71</sup>

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69

Min of GS Conf, 89th Div, 8 Aug. After the war, in the 1st Ind to ltr, C CWS to CGO 4th C, 13 Jan 19, sub: Gas Atk, Aug 7 - 8 (GAF-4th C), Capt Mack said he believed there was no corps arty and very little divisional arty in the Menil-la-Tour sector.

Even with the attachment of the 58th FA Brig (33rd Div) in mid-August, the 89th had only an allowance of "about 200 shots per day" (Memo, CG 89th for CG 4th C, 31 Aug [89th Div Box 16a, 32.15]).

70

Ltr, Arty Comdr, 32nd Fr C to CG 89th Div, 16 Aug (89th Div Box 18, 32.7).

The same question was similarly answered in the 90th Div which came in to the right of the 89th on 22 Aug. See Memo, CofS 90th Div for COs brigades and regts, 26 Aug, sub: Possible Arty Action in Case of Gas Atk (90th Div Box 6, 32.15).

71

Chittick, Report of Gas Atk, 18 Aug [sic] (GAF-89th Div).

Much of this work went for nothing, however, since the major portion of the area inside the wire was still heavily contaminated.

None of the dugouts left by the 82nd Division, said Captain Chittick at the staff meeting on 9 August, were gas proof. All were gas traps. The Engineers were ordered to start gas proofing at once, and on 14 August, the Division Engineer reported that work on about 75 dugouts had been completed. The last of the dugouts in the forward area was pronounced gas proof on 19 August, when the order came to move the first line of defense below the gassed area. The work of gas proofing was begun again in the new area.<sup>72</sup>

#### Aftermath of the Gas Attack

For a time, confidence was lost in the small box respirator (the British SBR) with which the division was equipped. Again and again it was reported that the nose clip and mouthpiece resulted in exhaustion after six or seven hours. Further, there had been no training in the 89th, as apparently there was in the 82nd Division, in "wearing of masks for continuous lengths of time," in "how to vomit in the mask," and "how to swallow saliva instead of slobbering."<sup>73</sup>

At the first staff meeting on 8 August, the Chief of Staff, Col. Charles E. Kilbourne, said that an effort must be made to secure French gas masks, presumably because they were easier to wear. But the AEF had stopped

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72

Min of GS Conf, 8 - 20 Aug.

73

Gas Memo 1, 157th FA Brig, 82nd Div, 29 Jul (82nd Div Box 25, 54.4).

the issue to combat troops of the M-2 French masks the month before, as Captain Chittick told Kilbourne the next day, because troops lost confidence in their masks when they had a choice and too many became casualties changing from one mask to the other.

Much interest was expressed when, early in September, Col. E. J. Atkisson of the 1st Gas Regiment visited 89th Division headquarters with a model of the recently developed American mask. The canister and case were the same as the SBR, but the facepiece had no nose clip or mouthpiece. It could be worn, said Colonel Atkisson, for as long as 29 $\frac{1}{2}$  hours, even while sleeping. Every effort was being made to get these masks to France as soon as possible.<sup>74</sup>

With the departure of the 82nd Division from the sector on the 10th, the 89th Division assumed command and issued its first daily reports. Enemy artillery in the week that followed was quiet, with fewer than 300 shells each day. Although 70 105-mm. gas shells were reportedly fired into the Bois de la Hazelle on the night of 12 - 13 August (not confirmed by Intelligence), it could not be proved that the 13 gas casualties the next morning had been caused by this shelling, or like the other gas casualties reported each day, had resulted when troops approached down wind of the heavily gassed areas or even entered them in taking short cuts. Troops were stationed in unposted areas of the bombed sector, and it is clear from the records that despite warning orders and wire, they crossed

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74

Min of GS Conf, 5 Sep.

the posted areas on occasion.<sup>75</sup>

This was the conviction of the Division Surgeon who reported ten new gas casualties on 10 August, an unspecified number of new cases on the 11th, and 24 more on the 12th, making a total of 736 gas casualties in the 82nd and 89th Divisions as of that date. So far, 30 men had died, 590 had been evacuated to Toul, and 116 remained at Royeumeix. By midnight of the 16, new gas cases and deaths among the severely gassed had brought the totals to 49 deaths and 713 hospitalized, for a total of 762 casualties.<sup>76</sup>

For two weeks or more after the attack, rockets, lights, flashes, and signalling lit up the sky almost nightly along the German front and false alarms sounded throughout the 89th Division sector. Said one history: "Gas alarms became a nightly experience; sometimes two or three were in order [but] only once were we compelled to leave town [Noviant] for higher ground. We had a terrible dread of gas, as we lost a number of men the second night we were in the trenches."<sup>77</sup> A company arriving in its support position in front of Manonville on the night of the 16th later graphically described the general state of nerves:

The men had been hearing hair raising tales of German gas and its horrors, so that all nerves were keyed high. Gas sentries armed with klaxon horns were posted and everybody waited for the dreaded alarm. The

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75

DOR 1-11, 89th Div, 9 - 20 Aug; SOI 1 - 8, 89th Div, 9 - 17 Aug; message, CG 89th Div to CO 177th Brig, 13 Aug, and atchd papers (89th Div Box 26, 12.3).

76

Min of GS Conf, 10 - 12, 17 Aug.

77

Hist of Hq Co, 354th Inf (89th Div Box 30, 11.4); Hist of Co. M, 353rd Inf (89th Div Box 28, 11.4).

first night passed quietly enough, but the second night along in the early hours, the blare of a klaxon was heard followed by cries of 'Gas! Gas!' from all parts of the company area. Instantly every man was awake and into his mask. After an hour or so it was discovered that the alarm was false and and masks were removed.<sup>78</sup>

On 12 August and again on the 18th, staff members of the XXXII French Corps, in company with Captain Chittick and Lieutenant Mack of IV Corps, made inspections of the gassed zone to see whether it could again be fully occupied. The area covered by the tour on the 18th, indicated in Map No. 7, included the flash and sound ranging post, the command posts Condé and Bayard, and the trail in the Bayard ravine as far as 618.316.

The two principal gas zones that had been distinguished as dangerous on 12 August (see map) were found still heavily "infected" with mustard gas, the smell of the gas, owing to weather conditions, even stronger than when visited earlier. The ravine in the Bois de la Hazelle, previously found gas free, was now filled with wind-blown mustard fumes, and field kitchens that had been set up there were ordered out at once. On the other hand, the western part of the Bois du Jury was almost free of mustard fumes.<sup>79</sup>

The French members of the party agreed that the heavily gassed zones could not of course be decontaminated, but remarked that little effort apparently had been made to complete the decontamination of the principal

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78

Sgt S. A. Johnson, Hist of Co K, 353rd Inf (89th Div Box 28, 11.4).

79

Lt Mack himself reported that a 10-mile wind from the NW "was blowing gas from the Co A, 355th Inf area, where the heaviest shelling occurred, into the SW corner of the Bois de la Hazelle.....showing how remarkably persistent Mustard Gas is" (Ltr, Mack, 19 Aug).



road and the paths through the area that had to be used.

Appended to the report was General Passaga's decision that the 89th was to occupy none of its former positions nor any part of the gassed zone until subsequent inspections found it free from gas.<sup>80</sup> In accordance with this decision, a new first line of resistance of the 89th was ordered constructed below the gassed area, the troops moving down and beginning construction of the new line on the night of 20 August.<sup>81</sup>

There seems little doubt that though the division stood up well the night of the gas attack, it was an unsettling experience for an untried division, and the effects persisted for several weeks after. Some evidence of confusion may be seen in the fact that following Field Order No. 2 on 4 August, the division did not issue Field Orders 3, 4, or 5.<sup>82</sup> Field Order No. 6 appeared on 19 August, directing the organization of the new position of resistance along Raulecourt-Hamonville-Noviant-Lironville, approximately three kilometers below the original Bouconville-Remenuville line.

As it came into the line on 4 August, the 89th Division was apprised of General Passaga's insistent requests for the capture of prisoners on that front and of the failure of the 82nd to achieve them. But with

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80

Compte rendu [Report] 594, 1er Bureau, XXXII Corps, 20 Aug (French Files Box 102).

81

Min of GS Conf, 19 Aug (89th Div Box 18). See Chittick's report of the inspection tour in the Minutes, 20 Aug.

82

See note on omission of these FO's in 89th Div, Box 15, 32.1.

widespread contamination over the center of the sector, patrolling was restricted to small flank forays, without contact with the enemy. No effort was made to carry out a raid. It was the night of 13 - 14 August before a 26-man patrol from the 2nd Battalion, 356th Infantry made its way across No Man's Land and captured prisoners. It encountered two enemy patrols attempting to penetrate the outpost line then maintained above Bouconville, and in the fight that followed it took four of the enemy.<sup>83</sup>

It cannot be proved that the holding operation to which the 89th Division was limited in the St. Mihiel operation was a consequence of the gas attack the month before. Such was the division historian's interpretation of the orders for the attack, which limited the 89th to a 4-kilometer front and directed it merely to support the advance of the rested and veteran 42nd and 2nd Divisions to its right and left. He suggested that the reasons for the limitation of effort was that the 89th was untested in actual battle and had been nearly six weeks in the trenches without rest or refitting. Much was made in the history, under the circumstances, of the probability that the reduction of the formidable enemy stronghold, the Bois de Mort Mare, by the 89th on the first day of the attack was an accomplishment beyond the expectations of either corps or Army.<sup>84</sup>

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83

MS History, p. 85. Min of GS Conf, 13 Aug, said that a machine gun unit that night "undertook to carry out their first harassing fire, in the vicinity of Regnieville," on the far right flank of the line.

84

MS History, pp. 98 ff., 106, 125 - 127.

## ANALYSIS

### The Final Count of Casualties

The study of the gas attack, ordered by IV Corps at the conference on 9 August, for the information of the Chief of the Chemical Warfare Service and the Chief Gas Officer, First Army, was ready on 19 August. Its most important information, aside from that incorporated in the narrative of this study, was its report on casualties.

Approximately 2,300 men of the 89th and 700 of the 82nd Division had been exposed during the attack. Most of the 82nd Division troops were around the company and battalion command posts or were acting as guides to the 89th Division. The count of casualties was still not complete, but as of 18 August the total was 806 in the two divisions, including 50 deaths:

<u>89th Division</u>		<u>82nd Division</u>	
353rd Inf	6	325th Inf	5 and 2 deaths
354th Inf	214 and 1 death	326th Inf	28
355th Inf	324 and 39 deaths	327th Inf	25 and 5 deaths
356th Inf	3	328th Inf	2
342nd MG Bn	19	319th MG Bn	42
314th Sig Bn	20 and 3 deaths	320th MG Bn	33
Other units	4	321st MG Bn	19
		307th Sig Bn	11
		Other Units	1
	<u>590</u> and 43 deaths		<u>166</u> and 7 deaths <sup>85</sup>

85

Ltr, 1st Lt Edw Mack, Actg CGO 4th C to CG 4th C, 19 Aug, sub: Enemy Gas Shell Bombardment (4th C Box 32, 62.20). These are the figures reported in Spencer's account of the attack, III. 518 - 529.

In his reports on the gas attack on 18 and 21 Aug, Capt Chittick said 2,300 men in the 89th Div (7 companies, signal and MG dets) had been exposed, with 514 casualties including 43 deaths, or 22 percent of those exposed. Cf. Chittick's Memo for G - 1, 89th Div, 16 Aug (4th C Box 25, 50.1) reporting 547 casualties in the 89th.

Capt Sheafe's report of 12 Aug said that of 566 men of the 82nd Div exposed, 158 or 28 percent became casualties, because they were not moved out of the gassed area promptly (ltr, DGO to CG 82nd Div, in 1st A Box 341).

This total of 806 gas casualties, with 633 in the 89th Division, was twice corrected, first by Lieutenant (then Captain) Mack himself and later by the 89th Division Surgeon. In a recapitulation and commentary on the gas attack two months later, Mack estimated that in the two divisions 2,500 men had been exposed, of which 728 (29.8 percent) - "an inexcusably high number" - had become casualties.<sup>86</sup> Records of the Division Surgeon, examined after the war, were to show 557 gas casualties in the 89th Division for 8 August and 52 more between 11 - 19 August, for a total of 609 in the division.<sup>87</sup>

An actual count of casualties admitted to the field hospitals of the two divisions on the three days following the gas attack reveals the following:

	<u>9 August</u>	<u>10 August</u>	<u>11 August</u>	<u>Totals</u>
353rd Inf	3	2	1	6
354th Inf	30	186	3	219
355th Inf	58	255	0	313
356th Inf	5	7	0	12
Other 89th Units	18	35	1	54
All 82nd Units	44	125	0	169
	<u>158</u>	<u>610</u>	<u>5</u>	<u>773</u> <sup>88</sup>

<sup>86</sup>

Rpt Actg CGO 4th C, 8 Oct, sub: Enemy Gas Opns from Aug 1 to Aug 31 (GAF-4th C).

<sup>87</sup>

Cited in ltr, Rowan, DGO, 89th Div to C CWS, 13 Feb 19, sub: Rpt in compliance with Circ Ltr 89 (89th Div Box 25, 63.3).

Both the MS and published history of the division were to report 556 casualties, "most of them light," including 42 deaths, up to 21 Aug. Casualties of the 82nd Div were said to be 150. MS History, p. 78.

<sup>88</sup>

Med Dept Box 3905 (326th FH), Box 3908 (328th FH), Box 3976 (353rd FH), Box 3978 (355th FH).

There is evidence of considerable confusion in the recording sections of the divisional field hospitals as the patients were transferred again and again because of overflow. Nevertheless, care was taken to prevent duplication in the count and the figure of 773 may represent a minimum count. No hospital recorded casualties on the actual day of admission.

The narrative (pp. 34 - 35) would indicate that there were at least 40 additional gas cases in the 89th Division between 12 - 16 August, indicating a total exceeding the incomplete one arrived at by Mack on 19 August. It may be assumed that the gas attack on 7 - 8 August produced approximately 820 casualties.

In the complete absence of German gas data, and in view of reports estimating gas shell totals between 376 and 8,000 to 10,000, it is probable that considerably fewer than 8,000 gas shells fell during the bombardment. The mounting casualties, even though the result of ignorance and carelessness, would tend to suggest to estimators that more gas shells had fallen than actually did. On the basis of 8,000 shells, however, the total casualties of over 800 represent slightly more than one casualty for every ten gas shells.

A basis of doubt concerning the total of 8,000 - 10,000 gas shells is available in the data for the gassing of the 1st Battalion, 355th Infantry. By actual count of shell holes (it is not made clear that they were all gas shell holes), 1,800 shells fell in the saturation target south of the Bois du Jury (narrative, pp. 15 - 16). The battalion of the 355th in the trenches and dugouts in this target area suffered a minimum of 363 casualties, or 1 for each 5 gas shells. The proportion is only slightly

reduced when the 30 casualties of the 327th Infantry, 82nd Division, are included.

The 82nd and 89th Division field hospital admission lists show that six men were wounded by shell fire on the night of 7 - 8 August. The final estimate of 400 - 500 HE shells that night would indicate that between 70 and 80 rounds of HE were required to produce a single HE casualty. This proportion was greatly exceeded by the experience of the 82nd Division from June to August (narrative p. 2), when over 170 HE shells were required to account for each shell wound casualty over that 37-day period.

One point in the attack of 7 - 8 August merits special comment -- the high incidence of vomiting among the troops evacuated from the two mustard-drenched areas, attributed to the arsene gases used in the bombardment. Some blue cross and yellow cross I gases were unquestionably included in the bombardment, as the cases of immediate vomiting indicate (narrative p. 17). But the duds and shell fragments found later were all yellow cross. No blue or yellow cross I fragments were found.<sup>89</sup> The residue of white powder on contaminated foliage, earth, and water, said Captain Chittick on 9 August, indicated "arsene," but subsequent analyses at the Army Laboratory proved negative.<sup>90</sup> It is improbable that there were enough arsene shells to account for the later widespread distress.

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89

Ltr, Mack, 19 Aug, above.

90

Min of GS Conf, 9 Aug; ltr, Chittick to CG 89th Div, 21 Aug, sub: Rpt on Gas Attack (GAF-89th Div).

The severity of symptoms among so many men and the number of deaths point to systemic mustard gas poisoning - unmentioned in any of the medical reports, because it was then unknown. All conditions were favorable. No report of air temperature has been found, but it was early August and many of the accounts speak of the high humidity through the night and morning of the gas attack. Troops who did not spend the night in mustard vapor-filled dugouts remained that night and even through the next day in the mustard-drenched areas. The long delay in reporting the true nature of the gas attack, in evacuating the casualties, in caring for them at the overworked dressing stations, while they lay in their contaminated clothing, was highly conducive to systemic poisoning.

As a disaster compounded by suppression of vital information and ignorance of the effects of mustard gas, the bombardment of the 82nd and 89th Divisions invites comparison with the Bari disaster in World War II, when over 80 fatalities occurred within two weeks among more than 600 victims of systemic mustard gas poisoning. These resulted when ships of a convoy in the harbor at Bari, Italy, were sunk by German planes on the night of 2 December 1943. Moored close to several oil tankers was a freighter laden with a cargo of high explosives and mustard gas bombs. The explosion of the freighter by a direct hit ruptured the tankers.

Much of the mustard gas was destroyed by the explosion and subsequent fire but the remainder was mixed and dissolved in the surface oil spilled by the tankers. Survivors of the wrecked ships in the vicinity swam through the oil slick, and when rescued were wrapped in blankets and left, coated in mustard-in-oil, for as long as 12 to 24 hours, while the

obviously injured survivors were cared for. The chemical cargo on the freighter was top secret, and not even the superficial symptoms of mustard gassing were recognized in the survivors by their medical attendants until the nature of the cargo was later revealed.<sup>91</sup>

#### Reappraisal of the Gas Defense Organization

As soon as the 82nd Division cleared the sector following its delayed relief, Captain Sheafe and his assistants at once instituted a series of lectures for all officers and troops on gas defense in general, mustard gas in particular.<sup>92</sup> In the 89th Division, daily gas instruction in the regiments was begun on 10 August.

At the staff meeting on the evening of the 9th it was agreed that the discipline of the troops while under attack had been remarkably good. There had been no panic, although one NCO was reported to have brandished his pistol to keep his men masked through the bombardment.<sup>93</sup> "The terrible results," said Colonel Lee, "were due to ignorance." The Division Surgeon added, "The greatest trouble was that we never realized what the gas was and not enough attention had been paid to the instructions given on the subject before entering the area." The Gas Defense Department, he said, had gotten out "a very fine manual on Gas Defense," which had been

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91

Ltr rpts in files of Med Labs, EA.

92

Ltr, DGO 82nd Div to CG 82nd Div, 12 Aug, sub: Rpt of Gas Atk (1st A Box 341).

93

Said of an 89th Div corporal in ltr, CG 164th Brig to CG 82nd Div, 8 Aug, sub: Gas Atk, Night of 7/8 Aug (82nd Div Box 16, 66.1).

distributed to all the officers of the division - but he did not make it clear whether the manual was distributed before or after the attack.

The Corps Gas Officer was to say later that the troops simply did not know "it is impossible to stand up against Mustard Gas as against other gases." Had they been immediately withdrawn, casualties would not have been higher than 200 - 250, with very few deaths. It was a lesson which all new divisions must learn, either from the experience of other divisions or from their own bitter experience. "It is a matter of the utmost difficulty to impress their [new divisions'] operations officers and their line officers with the extreme...and insidious danger of Mustard Gas. It seems to require the actual experience to convince them."<sup>94</sup>

An investigation by the Division Inspector was made to determine the state of training in gas discipline and the reasons for the heavy casualties. His report was to say nothing of the fact that gas officers and gas NCOs of both the 82nd and 89th Divisions were regularly assigned other duties and that most of them were engaged in these duties in the rear areas at the time of the attack. Nor did he offer as a reason for the surprise attack the fact that the 82nd had fired a highly successful gas shoot three days before and had failed to tell the incoming 89th that it might therefore expect gas retaliation. (Until Colonel English wrote the history of the division, only one of the many reports on the disaster mention this projector shoot. It is in the report on 9 August

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94

Rpt, Capt Edw Mack, Actg CGO 4th C, 8 Oct, sub: Enemy Gas Opns from Aug 1 to Aug 31 (GAF-4th C).

of Colonel McMaster, commander of the 355th Infantry.)

The principal reason for the heavy casualties, said the Division Inspector, was the inability of officers and men alike to detect the presence of gas and to appreciate its dangers, "showing incomplete instruction in gas defense." Their general ignorance of gas discipline was exhibited by the numbers of officers and men found sitting on contaminated ground, staying in gassed areas for fear of violating the order to hold fast, and removing their masks on entering non-gas proof dugouts.

The inspector's conclusions were rather remarkable. He recommended that in the event of another heavy attack "all officers within the division having special knowledge in gas defense should be ordered post haste to the point attacked. It will not do to rely upon rather inexperienced regimental gas officers when the division has medical officers and perhaps other specially instructed officers who can give valuable instructions to the men and officers as to what to do themselves and who can assist in clearing the areas of gas." Finally, no disciplinary action was recommended, "for the reason that the officers are believed to have done the best that they knew how to do."<sup>95</sup> Their experience was justification for their conduct.

Hard won experience was also difficult to retain. Capt. Hugh A. Rowan, who was transferred from the 5th to the 89th Division as Division Gas Officer on 3 September and three weeks later replaced Captain Chittick,

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95

Ltr, Maj Henry Davis, Actg Div Insp to CG 89th Div, 21 Aug, sub: Gas attacks of Aug 7 and casualties resulting therefrom (89th Div Box 25, 63.3).

reported that in a gas attack on the division in late September, resulting in almost a hundred casualties, neither he nor the regimental gas officer concerned were notified until 24 hours after the attack occurred, and that regimental and battalion gas officers, "practically without exception [were, at the time,] assigned other duties in the back area."<sup>96</sup>

In this same report, dated 28 September, Rowan stated that for the first time "there has been inaugurated the basis of a very effectual system for gas discipline and control in this Division and it now remains to get this system firmly established and properly developed."<sup>97</sup> Most important of all, said Rowan, through his efforts the division that day had issued General Orders 76. These orders spelled out the AEF General Orders of 27 May by emphasizing that even regimental and battalion gas officers and gas NCOs in the 89th Division were henceforth to be relieved of all other duties.<sup>98</sup> The new order also set up a system of gas alarms for all troop areas, forbade the repeating of gas alarms from neighboring units, and ordered daily inspection of gas masks and daily gas mask drill,

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96

Ltr, Rowan to C CWS, 28 Sep, sub: First Report (89th Div Box 148).

97

Ltr, Rowan to C CWS for Def Div, 28 Sep, sub: First Report (89th Div Box 148.) See also ltr, Mack Actg CGO 4th C to C CWS for C Def Div, 4 Sep, sub: Gas Officer, 89th Div (1st A Box 341).

98

A month earlier, the DGO of the 90th Div had also invoked AEF GO 79, saying that two of his RGOs were also Munitions Officers, another was also a platoon leader, and a BGO was both Town Officer and Munitions Officer (ltr, DGO to G - 3 90th Div, 25 Aug, sub: Gas Officers, 90th Div Box 87).

including wearing the mask a half hour once each week while performing normal duties.<sup>99</sup>

### The Reevaluation of Mustard Gas

Repurcussions of the conference of corps and division staff officers held at Lucey on 9 August were immediate. The next day the division issued Sector Memo No. 7, repeating the corps authorization for the evacuation of combat troops from "gas shelled areas." Unlike Passaga's order, which specified "yperited areas," the ambiguity of "gas shelled areas" was nowhere cleared up in this memo, nor in Sector Memo No. 11, on 11 August, which described in further detail the selection and occupation of alternate positions. (Only front line troops were to go to the rear; all others to flank positions.)<sup>100</sup>

Indicative of the shock produced by the gas attack was the series of special memos that followed the sector memos, all for "complete distribution." One on 10 August described "how to recognize a gas attack," and under "Defense" repeated the dangerous ambiguity that "troops should not remain in gassed areas." It said that gas instruction must be given "DAILY" in the regiments by the unit gas officers, and that the AEF pamphlet, "Defensive Measures against Gas Attacks," must be studied so as to

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99

GO 76 is in 89th Div Box 25, 64.2. In the 26th Div, troops were ordered to wear the mask for three half-hour periods a week, per memo, 104th Inf, 23 Aug (26th Div Box 248).

100

Memos in 89th Div Box 16a, 32.15 G - 3. Sector Memos became a part of the dossier turned over to the relieving division.

become familiar to all. Finally, it directed attention to GO 79, GHQ AEF, 27 May 1918, presumably relative to all three of its sections concerning 1) the duties of army, corps, and division gas officers; 2) the relief of gas personnel from all duties interfering with their gas duties; and 3) the requirement that all gas personnel take special training at the AEF or Corps gas schools.<sup>101</sup>

Another special memo, of dubious value, was a 2-page guide to gas discipline for the troops, prepared on 17 August by Capt. Rutherford B. Irones.<sup>102</sup> It spoke repeatedly of "the gas," "this gas," and "this substance," without once saying mustard gas -- but perhaps at this time the 89th Division was not interested in any other gas. The memo was not particularly helpful in recommending, apparently as a good general practice, that "Where chloride of lime is available, rub your hands with it frequently," or saying that "Men are liable to lose genital organs from gas burns."

It seems possible that as a result of this memo of 17 August chloride of lime became a panacea for all trench ailments and inconveniences in the 89th Division, for a memo on 11 September declared that continued use of the division supply of chloride of lime for unauthorized purposes must stop. Except for warnings that the enemy was using a new persistent

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101

See GO 79 in 89th Div Box 148. Special memos in 89th Div Box 24, 55.

102

Serious question was raised on 11 Aug by the Div Surg about making Capt Irones a gas officer and the order was stopped (Min of GS Conf, 11 Aug). Yet he apparently became Division Medical Gas Officer sometime after 29 Aug, when that office was created, since the MS Hist refers to him as such.

phosgene (this was probably the phosgene-pumice mixture reported by the French), and that gas alarms were not to be sounded in the sector every time some distant klaxon was heard, but only when the area was directly shelled, the remainder of the long memo was a reprint of CWS instructions on the proper use and limitations of chloride of lime.

Passaga's directive for the immediate evacuation of troops from mustard-contaminated areas to alternate prepared positions (narrative pp. 29 - 30) was new doctrine only in the sense that it was recent and neither the 82nd nor 89th Divisions seem to have been aware of the necessity or authority for such action.

A review of American defensive doctrine concerning mustard gas is enlightening. French and British experience was the source for the principle of evacuation that first appeared in AEF Pamphlet 253, "Defensive Measures against Gas Attacks," prepared by the Gas Service and issued in October 1917. There it stated that mustard gas rendered an area dangerous for as long as two days. Troops must rely on gas-protected dugouts and their gas masks for protection while under such gas attacks. However, "dugouts and shelters into which gas has penetrated...should, if practicable, be temporarily evacuated...When it is impossible to withdraw men from an infected area, respirators will be worn until the ground is clear."<sup>103</sup>

Revaluations of mustard gas, with amplification of the principle of evacuation, based on American experience, appeared thereafter in the CWS

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103

Pamphlet 253, pp. 2, 13 (GHQ AEF Box 1727, Folder D).

intelligence bulletins, "Weekly Summary of Information."<sup>104</sup> The bulletin of 10 April reported the first serious mustard gas attack on American troops, that against the 42nd Division in the Luneville sector, where, on 20 - 21 March, the division was bombarded with between 1,500 and 4,000 yellow cross shells, resulting in 542 casualties, mostly among the infantry. The large number of casualties was said to be chiefly caused by ignorance of procedure while in the gassed area and to improper gas discipline.

The same bulletin, reporting on proper defensive measures for the artillery, recommended that gunners withdraw to gasproof dugouts outside the gassed area, entering the area in masks and gasproof clothing only to clean their guns or fire SOS calls. In some cases it might be possible to withdraw their batteries to alternate positions, but when impossible the gunners were to be relieved at frequent intervals.<sup>105</sup>

The attitude of the CWS concerning evacuation was clear from its approval, in the 22 May bulletin, of the reported action of French troops under mustard gas attack who took shelter in dugouts during the bombardment and when it was over withdrew upwind of the gassed area.

However necessary the evacuation of troops from contaminated ground appeared to the CWS, the General Staff, AEF, and the officers in the field were to accept the principle only after grim experience and then with

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104

The 89th Div file of these WSIs is poor. See the complete set, beginning 29 Jan 1918, in WD Hist Box 298.

105

Similar directions by the French for their artillery were reported in CWS WSI, 1 May.

qualifications. Their attitude was all too evident in the bulletin of 25 May which reported on the use of gas by the German armies in the recent spring offensives and on the evacuation by the British of some of their positions made untenable by yellow cross gas. Appended to the study was the "comment by the General Staff, AEF" that AEF gas plans must include "elaborate measures for defense, in order that it may not be necessary to evacuate important positions on account of mustard gas."

Since to the General Staff and line officers all positions were important, the onus for the protection of troops under mustard gas attack was thus put on the CWS, the division gas officers, and the individual soldier himself. It was necessary for the 2nd Division at Belleau Wood to absorb crippling casualties through the month of June before corps finally recommended temporary or even permanent evacuation of the mustard-drenched ground there, and frequent relief of the troops required by the situation to remain in the contaminated areas.<sup>106</sup> To the end of the war, the American Army was to be loath to give up an inch of ground it occupied or captured, however untenable.

The belated recommendation of I Corps appears to have been based on a recent CWS pamphlet entitled "Defense Against Gas," apparently a major revision of AEF Pamphlet 253. Although not formally issued until sometime in July, it was made available to the corps and divisions early in

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106

See Study No. 1, Gas Warfare at Belleau Wood, and mimeo ltr, Adj I Corps to CG 2nd Div, 3 Jul, sub: Precautions against "Mustard Gas" (2nd Div Box 106).

June,<sup>107</sup> and said that "Except for urgent military reasons a position extremely bombarded by the most persistent gas, namely mustard gas, must be temporarily evacuated. For this reason alternative positions will be prepared in advance, and complete plans made for immediate removal to such positions....Frequent reliefs should be established [ for troops required to remain in the gassed area ]."<sup>108</sup> This important statement also appeared earlier in the pamphlet: "In general, the best protection against mustard gas is evacuation of all ground infected by it, if the tactical situation permits, and alternative positions should be prepared or selected in advance....If not possible to evacuate, frequent reliefs...will alone prevent numerous casualties."<sup>109</sup>

Possibly intensifying its efforts to make information on the potentialities and limitations of individual mustard-gas protection available to division gas officers, on 9 July, CWS intelligence reported on the difficulty of detecting mustard gas odor after once being exposed, and on 31

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107

There is no date on the only mimeo cpy that has been found, in GHQ AEF Box 1727, but it cites AEF GO 107, 2 Jul, and therefore could not have been issued before that date. Since verbatim quotation of the paragraph below appears in GO 19, 5th Div, 19 Jun (5th Div Box 16, 64.2), it must have been in the hands of the divisions in draft form before that date. No similar order has been found in the records of the 82nd or 89th Divisions.

108

"Defense Against Gas," pars 125 - 126, pp. 25 - 26, and GO 19, 5th Div, 19 Jun.

109

Par 26, p. 7. Ltr, C CWS to all gas officers, 29 Nov, sub: Modifications in the New Gas Pamphlet, said that in par 26 the words "if the tactical situation permits" were also to be underscored in the coming revision of the pamphlet (GHQ AEF Box 1727).

July there was a note on the penetration of mustard gas even into protected dugouts. The latter bulletin also observed that mustard gas was never used where the enemy intended to make an attack (cf. narrative, p. 26 and note). The bulletin of 24 July, reporting on excessive casualties caused by mustard gas during the previous week, said: "As soon as mustard gas shells are fired, very prompt search should be made for [gas free] areas...and guards should be immediately stationed around [the gassed areas]. Troops must not occupy such areas until they become safe." Commenting on the high casualties sustained when troops held their positions in contaminated areas, the bulletin for 31 July said: "It is legitimate to pay this price only when the tactical value of the position is sufficient to warrant it."

The substance of this statement was repeated in the bulletin of 16 August, which reported on 36 gas attacks against American troops between 9 April and 26 June, wherein most of the casualties had been caused by surprise and by ignorance of the characteristics of the gas, especially mustard gas. Again it was suggested that "Mustard gas infected areas should be evacuated whenever the tactical situation permits."

The gas attack of 7 - 8 August was reported in the bulletin of 21 August but without comment on the failure to evacuate the position. But it did underscore the fact that the Division Gas Officer was not notified until seven hours after the attack, and that the RGOs and BGOs engaged in patrolling and billeting duties at the time.

Two weeks later, on 7 September, CWS Intelligence issued an eight-page bulletin, NOTES ON MUSTARD GAS, which said that 75 percent of recent gas casualties had been the result of ignorance or neglect of proper

defensive measures against that agent.<sup>110</sup> It stated that "alternative positions (when practicable with protected dugouts) should be selected, to which troops or headquarters can move if an area becomes untenable." And for the first time it said that "Troops cannot be expected to wear respirators with nose clip and mouthpiece for more than eight hours." Therefore they must be evacuated, and those troops required to remain in mustard-gassed areas must be relieved after eight hours.

The study clearly reflects the experience of the attack of 7 - 8 August, and as clearly compromises with Passaga's drastic order for the immediate evacuation of troops from gassed areas.<sup>111</sup> Whether Passaga's order represented standard doctrine in the French Army has not been determined, but the experience of American troops in proximity to French units would indicate that the French had far more respect for contaminated terrain than did the Americans.

It was mustard gas, and it may well have been the gas attack of 7 - 8 August in particular, that led to General Orders 144, issued by GHQ AEF

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110

New gas intelligence appears to have reached the field well before the Army Gas School got it. This bulletin of 7 Sep, for example, was not reproduced at the school until 10 Oct (GHQ AEF Box 1725, File Ta).

111

Within a month after the French introduced yperite in June, the German Army seems to have accepted the fact of its special hazards. A German order of 8 July said that where neither temporary nor complete evacuation of yperited ground was possible, for tactical reasons, the men must be relieved regularly (CWS WSI, 7 Aug). Other German orders on 8 July and 15 July said batteries under yperite attack were to withdraw as soon as practicable to alternate positions (CWS WSI, 4 Sep and 25 Sep). Another order on 15 July said troops under yperite attack were to move to the flank or rear, since the enemy would not attack over gassed terrain (CWS WSI, 24 Jul).

on 29 August. "Because of the great importance which the use of poisonous gas has acquired in warfare," the orders began, each division in the line of battle was to be equipped with two mobile degassing units, and a specially trained medical gas officer was to be appointed in each division to supervise the operation of these units and instruct medical personnel in the treatment of gas patients.<sup>112</sup> It is a small irony that the 89th Division did not receive its degassing units until after the war.

### "Bitter Experience"

It is obvious that the 89th Division, and to a degree the 82nd Division, both of which received the prescribed training in gas defense before being committed to the line, came in with little real comprehension of the hazards of mustard gas. It is also evident that neither the AEF manual on gas defense nor the CWS intelligence bulletins had been read by the troop commanders, or heeded if read. The attack of 7 - 8 August was the "bitter experience" required by a new division before its command understood the necessity of proper gas procedure and demanded more intensive individual gas defense training in the ranks. And because of the sensational aspects of the experience, it was also to cost, temporarily, the head of the division commander, and that of the division gas officer.

But it cannot be said that the troops, other than those directly affected in the attack, learned their lesson. As Captain Rowan was later to

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See GO 144 in 89th Div Box 148. Ltr, No. 72, C CWS AEF to DGOs, 25 Oct, sub: Orgn of Gas Med Dept, said DMGOs were appointed by order of the Chief Surgeon AEF on 7 Sep (same file).

say, the 354th and 355th Infantry became wise that night. Not until the 356th took high casualties in a series of gas attacks early in October did the gas discipline in that regiment markedly improve, and in the Bois de Bantheville in late October, the 353rd Infantry had to learn its lesson in proper defense against mustard gas.<sup>113</sup>

Overriding the consideration of individual gas discipline, however, was the insistent demand of troop commanders and higher headquarters that troops hold all ground they gained, whatever the circumstances. Both division gas officers and the CWS itself had to accept this policy, despite their continued counsel for the evacuation of ground made untenable by enemy gassing. On 11 September, CWS intelligence reported heavy mustard gas casualties in a division that week, attributing them to "gross violation of standing orders," and to the fact that the "officers and men [were] prone to underestimate the danger of low concentrations of gas, and to 'take a chance'." Elsewhere in the account was the remark that "It was impracticable to evacuate the infected area for tactical reasons."

Although much was made in the CWS intelligence bulletins of instances where prompt evacuation resulted in diminished casualty rates, all bulletins to the end of the war indicated that the CWS had continuous cause to inveigh against careless discipline in the face of mustard gas and to insist on the necessity of evacuating contaminated terrain. As the last issue on 13 November declared: "New troops are reluctant to evacuate recently shelled

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Ltr, DGO 89th Div to C CWS, Def Div, 20 Oct, sub: Monthly Report for Oct; ltr, DGO to C CWS, 13 Feb 19, sub: Rpt in compliance with Circ Ltr 89; ltr, DGO to ACoFS G - 3, 89th Div, 9 Oct, sub: Gas Disc, Tng and Control in the 177th and 178th Brigades (89th Div Box 148).

areas...[as reflecting] on their ability as fighters. This attitude is entirely wrong, as it is of the utmost importance to evacuate areas infected with mustard gas, if the tactical situation permits....It should be remembered that the enemy will not occupy terrain which is infected with mustard gas." The tactical situation seldom permitted evacuation. Even the Division Gas Officer was to say of the stand of the 89th in the Bois de Bantheville: "It was worth 400 gas casualties not to have to evacuate the position that was won with such difficulty."<sup>114</sup>

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<sup>114</sup>

Ltr to C CWS, Def Div, 2 Nov, sub: Gas Attack on Bois de Bantheville (89th Div Box 148).