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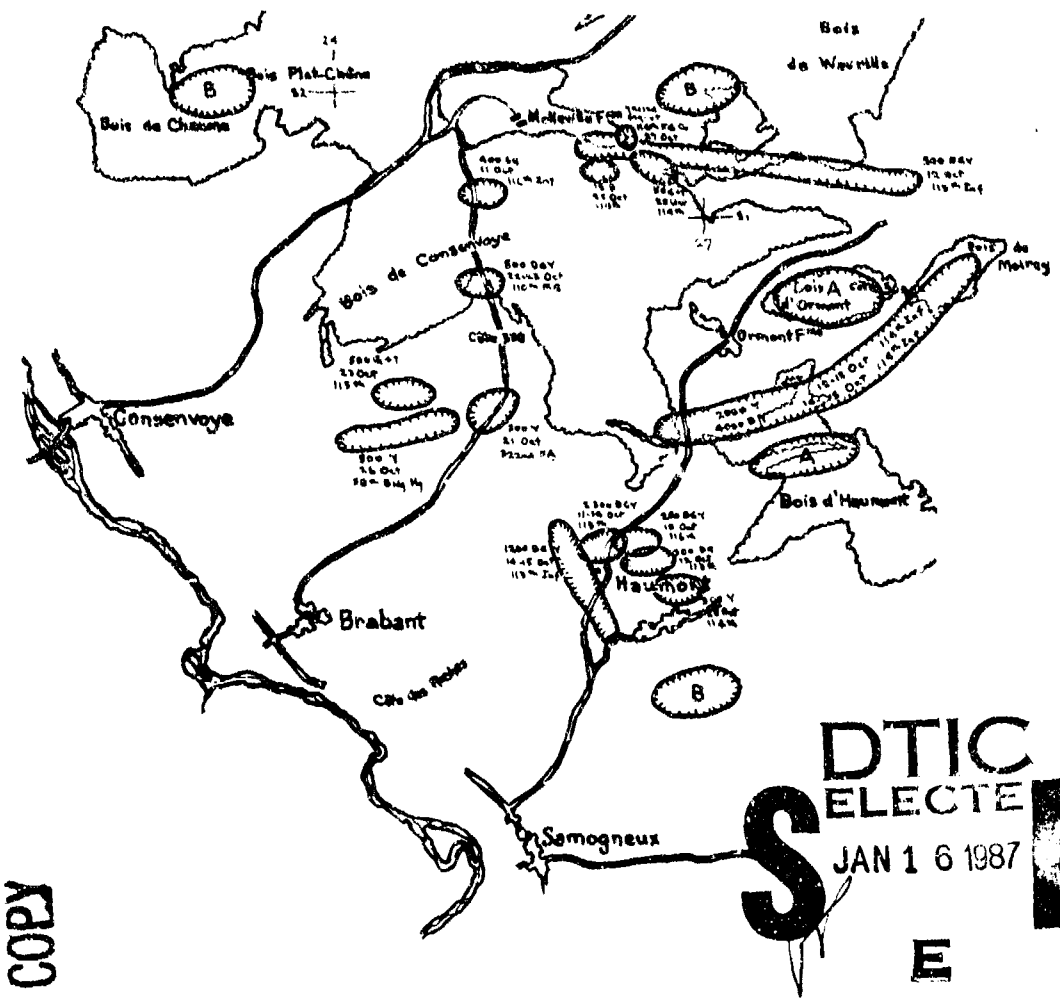
U. S. ARMY CHEMICAL CORPS HISTORICAL STUDIES

GAS WARFARE IN WORLD WAR I

# THE 29th DIVISION IN THE CÔTES de MEUSE
## October 1918

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The 29th Division in the Cotes de Meuse
October 1918

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GAS WARFARE IN WORLD WAR I

Study Number 15

U. S. ARMY CHEMICAL CORPS
HISTORICAL STUDIES

U. S. Army Chemical Corps Historical Office
Office of the Chief Chemical Officer
Army Chemical Center, Maryland

1959

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The 29th Division in the Cotes De Meuse
October 1918

Prepared by

Rexmond C. Cochrane, Ph.D.

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with

U.S. Army Chemical Corps

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

Lloyd E. Fellenz
Colonel, CmlC
Asst CCmlO for Planning & Doctrine

## Foreword

This is a tentative study of the gas experience of the 29th 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 Mrs. Charlotte M. 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.

THE 29th DIVISION IN THE COTES DE MEUSE

October 1918

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THE 29th DIVISION IN THE COTES DE MEUSE

October 1918

The Marylanders and Virginians of the 29th Division fought in a single major engagement in World War I, the attack on 8 October in conjunction with the 33rd Division on the heights east of the Meuse.

When the Meuse-Argonne campaign began on 26 September, the 29th Division was in Army reserve. After the fine advance made on the first day of the campaign, the Army attack slowed down, enemy divisions were hurried in to thicken the line, and the enemy artillery east of the Meuse began to pound the front with flanking fire. Casualties mounted and gains were measured in meters.

Resumed on 4 October, the First Army attack made little progress, owing in large part to the HE and gas fire coming from the heights of the Meuse. Four days later the 33rd and 29th Divisions were put across the river and ordered to advance and clear the heights. The subsequent limited success of their efforts was principally the result of the gas atmosphere that was established and maintained by the enemy artillery in the zone of attack.

The 29th Division was slow to recognize the effectiveness of gas as a weapon or the fact that the cumulative effects of gas could in time be as productive of casualties as a sudden concentration. Its early experience with gas, in Alsace, where several crash concentrations of gas produced large numbers of quick casualties, did not prepare the division for its later

Cont'd

experience in the Argonne. Although as thoroughly trained in gas defense as its Division Gas Officer, Capt. Alden H. Waitt, could make it, the division nevertheless suffered almost three times as many gas casualties as all other battle casualties put together while training in the trenches in Alsace. But because its total casualties were less than a thousand, the possible significance of these statistics seems to have made little impression.

Later, in the three-week campaign in the Côtes de Meuse, under Captain Waitt's successor, the division took almost as many gas as wound casualties. Apparently expecting gas in great concentrations in the Meuse area, the division was lulled at the start by the relatively light and widely dispersed gas fire in the sector. During the first week the Division Gas Officer made no reports at all, and G - 2 said only that gas was used at various points, "but no large concentrations were reported. The enemy is apparently using his gas in order to make us wear masks, rather than...to effect a heavy concentration at any one point." [1]

So ineffective did the enemy use of gas seem that jokes were made about it. By the end of the second week, as corps called attention to the mounting gas casualties in the division, gas ceased to be a joke. Division Gas Officer reports after 20 October, as well as after-action reports and unit histories (but not the official division history), are fairly detailed concerning the enemy use of gas. The records of the 29th Division, though they occupy little space in the National Archives because of the brief

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[1] SOI 4, 29th Div, 11 - 12 Oct (29th Div Box 1, 20.1).

combat experience of the division, are in fact disproportionately weighted with gas data.

Corps orders and the inaction of the adjacent division, said the commander of the 29th, contributed to the limited advance of his division, but in a rare admission, he frankly stated that it was the obstinate defense of the enemy "machine guns and artillery, the latter using gas to a formidable extent," that wore out his troops.

In the present study the narrative of 29th Division operations except as it serves to clarify the action reported in Study No. 8, "The 33rd Division Along the Meuse," has been held to a minimum. What follows is the story of a division made slowly wise to the menace of gas warfare.

## Alsace

The 29th Division, commanded by Maj. Gen. Charles G. Morton, called itself the Blue and Gray division because its 113th and 114th Infantry, 57th Brigade, under Brig. Gen. LeRoy S. Upton, were composed of New Jersey and Delaware National Guardsmen, while its 115th and 116th Infantry, 58th Brigade, commanded by Col. Vernon A. Caldwell (relieved on 12 Oct by Col. John McA. Palmer), came from Maryland and Virginia guard units. These four states, representing the North and South, also supplied the men for its 54th FA Brigade (which did not see combat), as well as the signal, engineer, and medical components of the division.

The division was organized on 25 August 1917 at Camp McClellan, Alabama, and began its gas training in December with the arrival of British instructors.[2] In June 1918 the division began moving overseas. A month later it crossed France to the trenches in the Belfort Gap region, between the Vosges and Alps, on the Swiss border. There its gas organization was established with Capt. Alden H. Waitt as Division Gas Officer. As it began its training in trench warfare, said the division history, "special attention was given to gas tactics." [3]

As in other divisions during their training on quiet fronts, the attention was one-sided. After the first serious gas attack, against the 114th Infantry, Waitt was reported to have said that the "organization had never entered heartily into the matter of gas training since he had been with the Division." Regiments and battalions posted their gas officers to duties far from the front, and when the 114th was gassed, the gas sentries failed to give warning; company officers on the scene proved ignorant of gas; the men put on, took off, and changed their gas masks in confusion and panic; no effort was made either to evacuate or decontaminate the gassed areas; and

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2 Lt Col John A. Cutchins (G - 2), History of the Twenty-Ninth Division, assisted by Lt Col Geo. S. Stewart Jr (Div Adj) (Philadelphia, 1921), fn. p. 22. Unpublished memorabilia bulks large in this 271-page narrative, hereafter cited as History. See also Capt G. Murfitt, Brit Mil Mission, "Anti-Gas Drill and Instruction" (with note, "pending issue of WD pamphlet on gas defense"), 12 Dec 1917 (29th Div Box 5, 50.4).

3 Bulletin 80, 29th Div, 3 July (29th Div Box 125, 470.6); History, p. 86.

Waitt himself was not notified of the attack until eight hours after it had ended.[4]

The attack on the 114th Infantry occurred in mid-September, after almost six weeks of relative quiet in the sector, marked only by occasional raids and minor fire-fights. Little gas had been used by the enemy and the troops had reason to think gas was no great danger on that front.[5] The general attitude of the troops towards gas training and gas discipline seems to have angered Captain Waitt, for early in August he prepared a long memo on "Warfare Gases," concluding with the statement that

> Theoretically all gas casualties are avoidable and practically there are very few cases where this is not true. It is quite safe to say that someone is to blame for every gas casualty that occurs and this someone is not the enemy who has sent over the shell. In this Division every effort will be made to find out where to place the blame.[6]

Following the St. Mihiel operation to the north on 13 - 15 September, said the division history, "the enemy began using an enormous number of gas shells in his daily bombardments." In an attempt to allay apprehensions

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4 Memo, Capt E. E. Corry, VII CGO for CG VII Corps, 18 Sep, sub: Enemy Gas Attack against 114th Inf (GAF-29th Div and 29th Div Box 9, 33.6).

5 Ltr, DGO 29th Div to Dep Ch CWS, 19 Jan 1919, sub: Rpt...Circ Ltr No. 89 (GAF-29th Div), rptd a total of 69 gas shells in 6 gas attacks, no casualties, between 27 Aug - 5 Sep. Cf. SOI 29 - 49, 29th Div, 27 Aug - 16 Sep (29th Div Box 1, 20.1).

6 Instructions, 2 Aug (29th Div Box 5, 54.3). See corresp on gas discipline incidents in 29th Div Box 125, 470.6.

after a severe gas shelling of nearby French troops, the 57th Brigade commander on 14 September issued a memo to his troops on the nature of gas attacks and the defense against them. The memo concluded:

> All organizations in their first service in the trenches have suffered from gas panic, false alarms and a general unnecessary fear of gas. This memorandum is published in the hope that this Brigade will get over this gas nervousness and treat gas discipline in a common sense and efficient manner.[7]

The appeals to fear of punishment and to reason failed when on the early morning of 16 September a reported 2,500 yellow cross (mustard gas) and HE shells crashed into Bannholz wood where 300 men of the 114th Infantry were bivouacked. Twelve hours after the attack, officers, non-coms, and men were found without the facepieces of their masks on, assisting in the evacuation of the severely gassed and trying to restore order at the command post. One hundred and eighty-two officers and men were carried out of the wood that day. Within three days, three men had died and a total of 256 had been hospitalized.[8]

That night, beginning at 2100, an unlikely total of 3,500 77-mm. yellow cross shells was said to have fallen in nearby Stockete wood among 250 men

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7 History, p. 124; Memo 57th Brig, 14 Sep, n.s. (29th Div Box 125, 470.6).

8 Rpt on Gas Attack, 19 Sep; Memo, Capt E. E. Corry, above; ltr, 2nd Lt N. D. Hyde, Asst DGO to DGO, 16 Sep, sub: Invest of Mustard Gas Attack on Co E 114th Inf (all in GAF - 29th Div). Cf. Spencer, "History of Gas Attacks Upon the AEF" (15 Feb 1932), II, 269 - 71. SOI 50, 29th Div, 16 Sep, rptd 1400 77-mm. shells "mostly gas" between 0330 - 0414 "in a continuation of the bombardment of 15 - 16 Sep."

of the 114th, resulting in 60 additional gas casualties (Map No. 1).[9] Some hours later when Captain Waitt arrived in the wood, he found the disinfecting squad, which he had set up earlier in each battalion, showing "complete disregard...for mustard gas [by] sitting there on the ground, with their masks off." [10]

General Upton, the 57th Brigade commander, admitted that after both attacks his men had taken their masks off too soon, owing to "ignorance of the officers as to the persistent nature of the gas present and the deadening of the sense of smell by breathing gas. Most organizations in their first experience with mustard gas go through the same experience and the 2nd Division had many casualties in identically the same manner in June 1918. It is easy to criticize after the happening, but I am of the opinion that the 2nd Battalion, 114th Infantry, was well handled in this, its first experience." [11]

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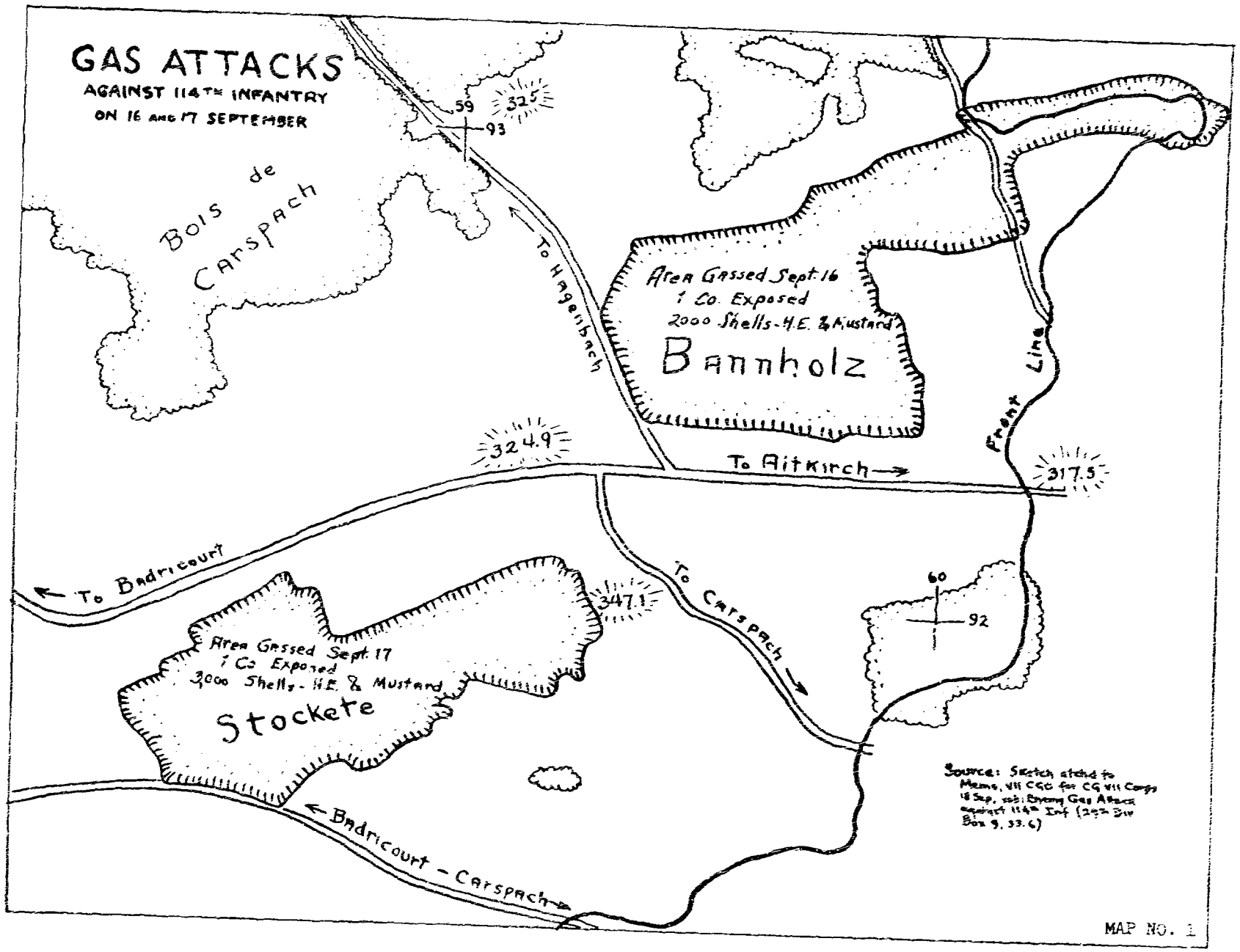
9 Wagoner Ralph J. Robinson, Ambulance Company 113, 29th Division (Baltimore, 1919), p. 89, reports that "325 horribly gassed patients [were evacuated in those two nights and days]...to the base at Hericourt, twenty miles to the rear." Spencer's rpt (II, 272) that bursting HE prevented the troops from knowing they were being gassed, suggests that 350 rather than 3,500 mustard gas shells may have been fired.

10 Rpt on Gas Attack, n.d. (GAF - 29th Div). Bul No. 87, 20 Jul, established the decon squads. See also Bul No. 92, 27 Jul, sub: Standing Orders for Defense Against Gas (29th Div Box 125, 470.6).

11 2nd Ind, FC 57th Brig to CG 29th Div, 26 Sep, on memo, Correy, 18 Sep, above.


GAS ATTACKS
AGAINST 114TH INFANTRY
ON 16 AND 17 SEPTEMBER
Bois de Carspach
59
93
325
To Hagenbach
Area Gassed Sept. 16
1 Co. Exposed
2000 Shells - H.E. & Mustard
Bannholz
Front Line
324.9
To Altkirch
317.5
To Badricourt
347.1
To Carspach
60
92
Area Gassed Sept. 17
1 Co Exposed
3000 Shells - H.E. & Mustard
Stockete
Badricourt - Carspach
Source: Sketch atchd to Memo, VII CGC for CG VII Corps 18 Sep. 1918: Enemy Gas Attack against 114th Inf (29th Div Box 9, 33.6)

MAP NO. 1

On the night of 17 September it was the turn of the 115th Infantry, on the left of the 114th. Although General Upton in an earlier memo had said that cloud and projector gas attacks were not likely on that front, it was a rifled projector shoot with almost 200 156-mm. shells filled with pumice soaked in phosgene, accompanied by minenwerfer fire, that hit the company, and in the panic that followed five men died of the phosgene. An additional 12 men were said to have been hospitalized. "Causes of casualties," said Captain Waitt, "seem to be principally due to the elements of surprise and ignorance. Although the men seemed to know better...under heavy shelling [they] did not act as instructed." [12]

There were probably many more casualties resulting from the projector attack, as well as from the earlier yellow cross shell attacks, since the total of 336 gas casualties accounted for in Captain Waitt's reports is far from agreeing with the statement in the official history that "Of the 923

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12 Rpt on Gas Attack, 18 Sep; Memo, Waitt, 19 Sep, sub: Projector Attack on 115th Inf (GAF - 29th Div); Spencer II, 274 - 77.

See Raymond S. Tompkins, Maryland Fighters of the Great War (Baltimore, 1919), pp. 45 - 46. This Baltimore Sun correspondent with the 29th said mustard gas was used against the 115th Inf in Holzberg wood, resulting in 24 casualties including 7 killed. He says this was the first gas used in the sector, since "gas had been prohibited on both sides for the sake of the villagers, who were still living close to the front." The earlier gas attacks on the 114th Inf are not mentioned.

casualties while in the Alsace Sector, 586 were from gas." [13]

The result of the panic caused by these gas attacks is described in a report of the Division Ordnance Officer: "The gas attacks launched against our lines in the center sector, Haute Alsace, shortly before being relieved...created a serious shortage [of equipment] in several companies, which could not be replaced before entraining for the north." A large number of rifles, small arms, automatic rifles, and personal and company equipment was salvaged in the area, he said, and brought along in the train to be later reissued at Verdun.[14]

## "A Source of Amusement"

On 23 September, as Captain Waitt was relieved by order of General Fries, Chief of the Chemical Warfare Service, AEF, and Capt. L. A. Maynard became the Division Gas Officer,[15] the division left the sector and proceeded to

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13 History p. 124. On p. 304 the casualties in Alsace are listed as 31 killed, 11 died of wounds, 197 wounded, 579 gassed, 7 died of gas, 6 accidentally killed, 84 accidentally wounded, and 7 died of disease, or 923.

Ltr, DGO 29th Div to Deputy C CWS, 13 Jan 1919, sub: Rpt...on Circ Ltr No. 89, and Ltr, DGO to G - 2 29th Div, 14 Mar 1919, sub: Data on Enemy Gas Opns (GAF - 29th Div), both report, on the basis of SOI's of the period, a total of 1,730 gas shells in five attacks, on 15, 17, 18, 19, 21 Sep. Monthly Rpt of Gas Casualties for Sep (atchd to ltr, 13 Jan) shows a total of 390 gas cases, 8 gas deaths.

14 Ltr, Div Ord O 29th to CofS 29th Div, 21 Dec, sub: Ordnance property, Argonne-Meuse Opn (in Suppl Rpts, 29th Div Box 4, 33.6). Note: See Analysis, p. 61, concerning these Supplementary Reports.

15 See corresp and orders in 29th Div Box 125, 470.6, and 1st Army Box 340.

the First Army area where preparations were under way for the Meuse-Argonne offensive. In reserve until 3 October, it was then ordered to Claudel's XVII French Corps, on the right wing of Pershing's First Army. The corps, immediately east of the Meuse, had remained in place when the offensive began on 26 September, but the events of the first week of the attack now required its help. With reenforcements, it was to attack due north, in order to silence the heavy flanking fire on First Army coming from the heights above the corps sector.

On 5 October, as the 57th Brigade, 29th Division, went into corps reserve, the 58th Brigade moved up from Vacherauville to Samogneux and entered the line on the left of General Andlauer's 18th French Division. Supporting the infantry brigade was the 158th FA Brigade (83rd Division) under Brig. Gen. Adrian S. Fleming.[16] From division headquarters at Vacherauville, the heights of the Meuse extended some 22 kilometers to the north and almost 8 kilometers east of the Meuse, the heights themselves a series of ridges and valleys running generally east and west.

Occupying the heights immediately opposite XVII Corps was the 1st Austro-Hungarian Division, on a nine-kilometer front, and the German 15th Division, on a four-kilometer front. For the defense of their positions in the sector, the Brabanter, Hagen, and Volker Stellungen, these

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16 FO 16, 29th Div, 1715, 3 Oct (29th Div Box 2, 32.1); History, pp. 127 - 133.

two divisions reportedly had nine battalions of infantry and forty batteries.[17] Above these positions was the partially completed Giselher Stellung, east of Sivry, and beyond that the Kriemhilde Stellung (Map No. 2)

The mission of the 18th French Division, to which the 58th Brigade of the 29th Division and elements of the 33rd Division were attached, was to deprive the enemy of his artillery positions on the immediate front by taking the heights in the Bois d'Haumont, Bois d'Ormont, and Bois de Consenvoye. Exploiting then to the north and northeast, the French and Americans would command the ground overlooking the principal enemy organization in the valley of Damvillers, some nine kilometers distant.

Returning from a conference on the attack, Colonel Cloman, Chief of Staff, 29th Division, said: "The object of the advance is to capture the KRIEMHILDE line which will probably be done on the 3rd day....The 33rd Division will...occupy Consenvoye and Sivry." He thought it unlikely that the 57th Brigade would be needed during the advance.[18]

Without prior preparation, all guns of the corps opened fire at 0500, 8 October, as the attack waves of the 115th and 116th Infantry went forward.

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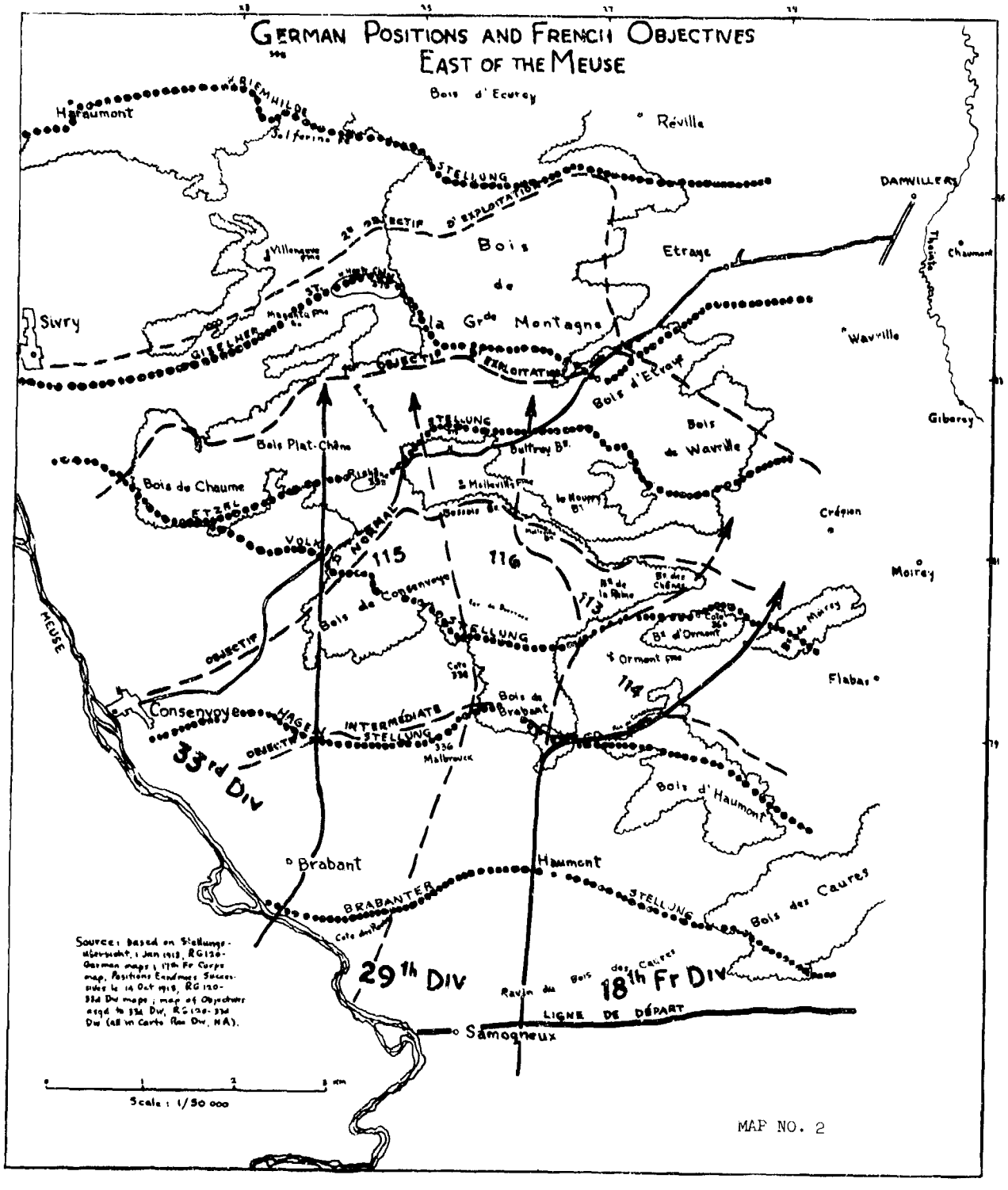
17 Rpt, CG 29th Div, 25 Apr 1919, sub: Services of the 29th Div with the AEF (29th Div Box 1, 11.4); History, p. 140. Organization charts in Italian Files Box 2 (1st A - H Div), German Files Box 167 (15th Div), and German Files Box 115 (Maas Ost) indicate approx 21 battalions and 76 batteries in the sector as of the first week of Oct. Note: German Files Box will hereafter be abbreviated to GFB.

18 History, pp. 144, 277; Office memo, CofS 29th Div, 5 Oct (in French Files Box 89, 30.9/914).


GERMAN POSITIONS AND FRENCH OBJECTIVES
EAST OF THE MEUSE
Bois d'Ecurey
Réville
Haraumont
STELLUNG
DAMVILLERS
Bois
de
la Grde Montagne
Etraye
Sivry
Wavrille
Giberey
Bois d'Etraye
Bois Plat-Chêne
Bois de Wavrille
Bois de Chaume
Crégion
Moirey
115
116
113
114
MEUSE
Bois de Consenvoye
Consenvoye
Flabas
Bois de Brabant
33rd Div
Bois d'Haumont
Brabant
Haumont
BRABANTER
Bois des Caures
29th Div
18th Fr Div
LIGNE DE DÉPART
Samogneux
Scale : 1/50 000
MAP NO. 2

The first two enemy positions were quickly breached and not until about 0930, as the troops approached the Volker Stellung, were the advancing lines brought to a stop. A half hour earlier three battalions of the 33rd Division had crossed the Meuse at Consenvoye, joining the left flank of the 115th Infantry. At nightfall 33rd Division forces were along the south edge of the Bois de Chaume, and the brigade of the 29th Division, having advanced almost five kilometers, dug in just short of the Normal Objective, in the Bois de Consenvoye, its right refused to maintain liaison with the 18th French, held up in the Bois d'Haumont.[19]

At a cost of 20 dead and 180 wounded that day, the 29th Division reported, it had "killed, captured or dispersed" all the 1st Austro - Hungarian troops on its front, "and the division was practically put out of the fighting." That night the German 228th and 32nd Divisions came in to fill the gap torn by the 33rd and 29th Divisions, their artillery ordered to make "the widest possible use of gas ammunition... of H.E., slight" (Map No. 3).[20]

A massive enemy counterattack across the corps front through the

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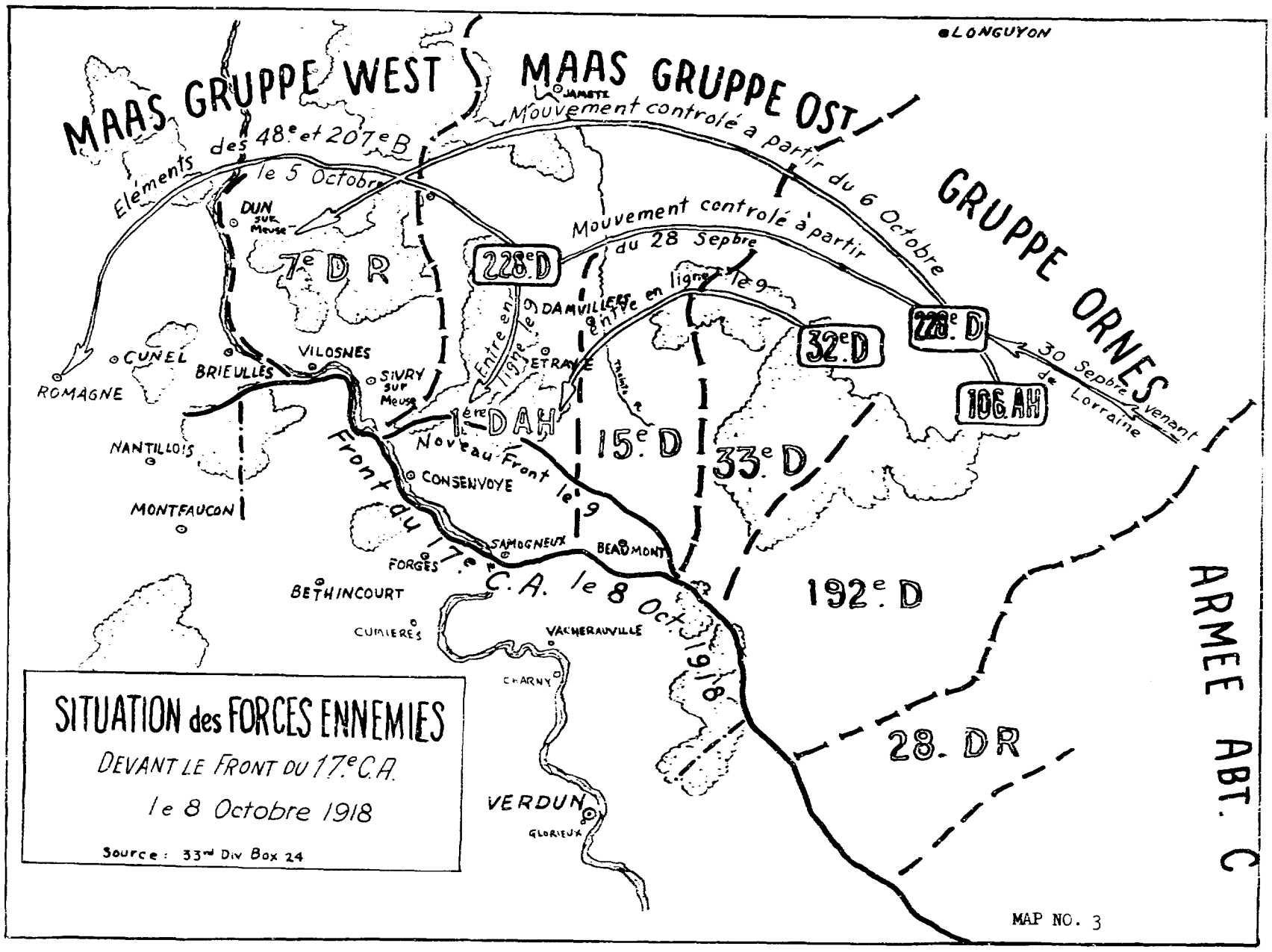
19 History, pp. 148 - 49. Cf. FO 18, 29th Div, 1030, 7 Oct and Order 804/3, G - 3, 18th Fr Div, 5 Oct (29th Div Box 2, 32.1).

20 History, p. 187; SOI 1, 29th Div, 8 - 9 Oct (29th Div Box 1, 20.1); DOR, 29th Div, 8 Oct (29th Div Box 3, 33.1), said 1572 prisoners were taken.

Arko 32 WD, 8 Oct (GFB 184, fol III); V Res Corps (Maas Ost) Order Ia/Artl 4163, 8 Oct, Arty Activity for night of 8/9 Oct (GFB 116, fol III, p. 13).


MAAS GRUPPE WEST
MAAS GRUPPE OST
GRUPPE ORNES
ARMEE ABT. C
LONGUYON
JAMETZ
Mouvement controlé à partir du 6 Octobre
Eléments des 48e et 207e B le 5 Octobre
Mouvement controlé à partir du 28 Sepbre
Entre en ligne le 9
30 Sepbre venant de Lorraine
DUN sur Meuse
7e DR
228e D
32e D
106 AH
DAMVILLERS
ETRAYE
CUNEL
BRIEULLES
VILOSNES
SIVRY sur Meuse
ROMAGNE
NANTILLOIS
MONTFAUCON
1ère DAH
15e D
33e D
Nouveau Front le 9
Front du 17e C.A. le 8 Oct 1918
CONSENVOYE
SAMOGNEUX
BEAUMONT
FORGES
BETHINCOURT
CUMIERES
VACHERAUVILLE
CHARNY
192e D
28. DR
VERDUN
GLORIEUX
SITUATION des FORCES ENNEMIES
DEVANT LE FRONT DU 17e C.A.
le 8 Octobre 1918
Source: 33rd Div Box 24

MAP NO. 3

morning and afternoon of 9 October, "to retake...at the very least, the Volker Stellung," forced the 33rd Division troops out of the Bois de Chaume, but reportedly gained no ground on the front of the 29th. The 58th Brigade that day reported for the first time "some gas...on our front, but the exact location at which it was used was not reported." Late in the day the brigade advanced to the Normal Objective and dug in to resist further counterattacks.[21]

When the 58th Brigade reached that line, the division history said, the 57th Brigade was supposed to pass through and continue the advance, but the resistance met by the French below Bois d'Ormont was to require the whole of that brigade in the French sector. General Morton was not pleased. On the night of 9 - 10 October, at corps order, the 113th Infantry and 111th MG Battalion moved up from the Cote des Roches to the vicinity of Ormont Farm with orders to assist the French by clearing out the Bois de la Reine and Bois des Chenes.[22] On its left the 115th and 116th Infantry prepared

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21 SOI 2, 9 - 10 Oct; History, p. 157. Rpt, Selbie, G - 2 29th Div [Feb 1919], sub: Opns of 17th Fr Corps Before Verdun (29th Div Box 4, 33.6). Msg, Hq 29th Div [to 58th Brig], 9 Oct (29th Div Box 2, 32.16), reporting the counterattack of the 32nd Div below Molleville Farm, Ormont Farm, and Bois d'Haumont, said: "The general commanding the 18th [French] Division looks upon this as an opportunity for the American troops to show their mettle in woods fighting against one of the best divisions in Germany."

22 DOR, 10 Oct; History, pp. 158 - 59. Nothing was said in FO 18, 29th Div, about the 57th Brig continuing the advance. In FO 19, 2200, 10 Oct, the brigade was assigned to the 18th Fr.

to resume the advance with the 32nd Division and take Bois Plat-Chene, the enemy OP at Richène, and Molleville Farm.

The attack on 10 October was again launched without artillery preparation, but some progress was made against the massed machine gun defense of the German lines when "It was found that frequently machine guns could be captured by a sudden rush just after a long burst of fire, while the belts were being changed." [23] Although G - 3 reported all objectives taken that day, other accounts indicate that the 115th was stopped on the forward slope of Richene, the 116th at the top edge of Bossois Bois, connecting with the 113th along the south edges of the two woods on its front.[24] Undaunted, corps ordered the 58th Brigade to advance after an artillery preparation the next day, 11 October, to the First Objective of Exploitation, from the Ravin de Moyemont to the Consenvoye-Etraye road, including Hill 375. If successful, the brigade was to continue on to the Second Objective of Exploitation, two kilometers beyond, in the Bois de la Grande Montagne.

But "blue cross and mustard gas were used during the early hours [of

---

23 Ltr, Col Palmer, CO 58th Brig to CG 29th Div, 23 Dec, sub: Rpt of Opns North of Verdun (Suppl Rpts, 29th Div Box 4, 33.6).

24 DOR, 10 Oct; History, p. 168. Arko 32 (32nd Div arty comdr) reported that Hill 371 (Richène) was lost that day by the 223th Div, but the 32nd had resisted all efforts to take Jaegerbusch and Ormontwald (Bois de la Reine and Bois d'Ormont) (Arko 32 WD, 10 Oct, GFB 184, fol III).

11 October] on the Ravin de Bourvaux and [Bossois Bois]," causing some delay,[25] and Molleville Farm, Bultruy Bois, and the Grande Montagne proved to be "infested with machine guns." The artillery preparation seemed "to have had no effect whatever on the German positions there," said G - 3. "I think we may have the keypoint of the entire German position in front of us, and it will be an interesting nut to crack." [26] The 58th Brigade was ordered to dig in along the Normal Objective and hold fast.

On the right the 113th Infantry advanced through the two woods on its front to the Ravin de la Reine, joining the 116th below the Ravin de Molleville. At night the line ran from a point in the Bois Plat-Chène, south along the edges of Bossois Bois and Molleville Bois. The casualties of the first four days were reported as 16 killed, 518 wounded and 125 gassed.[27] Among the latter, according to a message from the 57th Brigade command post in the Ravin de Bois des Caures on the morning of 10 October, may have

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25 This may have been the "bursts of yellow cross on Schaumbergmulde and western part of Mollevilleschlucht" that morning (228th Div Daily Rpt, 6 - 6 am, 10 - 11 Oct, GFB 225, fol I, p. 86).

Rpt on Gas Attack dated 12 Oct (GAF - 29th Div), said 400 blue and yellow cross shells fell on two tired companies of the 116th in Boissois Bois causing between 50 and 75 slight casualties. See also ltr, CO MG Co 116th Inf, 26 Nov, and platoon rpts, Co F, 116th Inf, n.d. (29th Div Box 10, 33.6).

26 Memo, G - 3 29th Div to G - 3 33rd Div, 0900, 12 Oct (29th Div Box 2, 32.15); SOI 3, 10 - 11 Oct; Ltr, Col Palmer, above.

27 DOR, 11 Oct; History, pp. 172 - 73.

been some of the

Very large numbers of men passing this place [on the way to the gas hospital at Glorieux] claiming to be gas cases. Many are assisted by other men; all are walking. The 57th Brigade commander desires medical supervision of this at his P. C. as the dressing station to the front will not handle gas cases and insists on the men being escorted to the rear by their companions.[28]

Both G -2 and Captain Maynard, the Division Gas Officer, made light of the enemy gas fire those first few days. The occasional and scattered gas shelling was only sufficient "to make us wear masks," and seemed to produce few casualties. Along with the machine gun fire, this gas defense was to be expected, said G - 2, since the Giselher Stellung, in the Grande Montagne in this sector, "a...key position to the entire Western Front, [was] the enemy's principal line of resistance now left in his hands." [29]

Characteristic of the attitude of staff and command officers in their early experience with gas in France -- that it was just something to be endured -- was the stand taken by the division commander. Sometime on 10 or 11 October, shortly after an advanced dressing station had been set up inside the Bois de Consenvoye, General Morton was making an inspection of the site when

a heavy bombardment of the woods around the station began. But General

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28 Msg, LO Modest PC to Bowen G - 3, 0940, 10 Oct (29th Div Box 2, 32.16). Note: It is not certain exactly when the PC was moved from Cumieres, across the river, to Caures ravine. If it was still at Cumieres, these may have been 33rd Div, not 29th Div, gas cases.

29 SOI 4, 29th Div, 11 - 12 Oct; Rpts on Gas Attacks for period 10 - 12 Oct.

Morton, without gas mask or helmet, refused to take shelter. Instead, as calmly as though machine gun bullets were not buzzing overhead, or shells tearing up the earth or cutting limbs from trees and dropping [them] at his feet, the general ordered everyone within the dugout and saw that the order was executed; but himself remained in the open.[30]

And on another occasion

an amusing incident occurred...when the...sergeant in charge of the general's mess at the Advanced Post of Command...secured some lemon pie which he served for lunch.....Just as it was served...everyone began coughing and sneezing, and cussing the cooks for putting pepper on the only decent thing we had had to eat since the drive started. Then an orderly rushed in and said the whole valley was filled with gas.

General Morton ordered all present to put on masks. But to his surprise, and later, to our great amusement, it was found he had forgotten to bring his with him when he came from his dugout to the elephant shelter in which we had our meals. An extra mask was soon found but it seemed unable to grasp the "old man's" nose. Finally, becoming disgusted, he threw the mask down and said he would not "fool with the damn thing any more," and that if his time had come he would "have to go, that's all."

Inasmuch as the general had considered leaving off the mask, even when thirty miles from the enemy's lines, an unpardonable sin, the officers of his staff, when they found no serious consequences had resulted, were greatly amused.[31]

Also typical was the report of Company M of the 113th Infantry, that

at Ormont Farm

most of us received our first real taste of lachrymatory gas. Everyone began sneezing, and breathing became somewhat difficult. It became necessary to wear our gas masks. This was more a source of musement that anything else, and the company soon resumed its march through the valley.[32]

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30 History, p. 211; quoted also in Robinson, Ambulance Company 113, pp. 129 - 30.

31 History, fn. p. 229.

32 History, p. 162

This was the beginning of a three-day shelling of the Haumont area (11 - 14 October) during which, Captain Maynard estimated, 2,300 blue, green, and yellow cross shells [diphenylchloroarsine, phosgene, and mustard gas] fell in the vicinity of 2,000 313th Infantry reserves, resulting in only 9 casualties.[33] The total of 125 gas cases reported by G - 3 for the period did not seem excessive.

On later reflection, the division history was to say of this period that "the positions of both regiments of the [57th] Brigade, as well as the brigade and regimental P. C.'s, were under constant and severe shell fire. Gas shells were used extensively, and constituted a serious menace." [34] And Captain Maynard was to learn that there was more to this gas attack than he was at first aware.

But in the opening days of the campaign the 29th Division had reason to think that gas, on this front, might not be a serious difficulty after all. While it was German policy to lull new units facing them with desultory gas fire until they grew careless, in this case another explanation appears in General von Soden's complaint on 12 October that since the beginning of the month his divisions in the Maas Ost [Meuse East] grouping opposite XVII Corps had fired only 2,262 rounds of gas, as against 29,843 rounds of

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33 Rpt on Gas Attack, 14 Oct; Spencer, II, 284.

34 History, p. 173.

high explosive.[35] In part, this was the result of the method employed in firing gas on that front, particularly by the German 228th Division, and may have been based on supply problems or usage directives peculiar to those divisions. Its like has not been encountered in German records elsewhere.

The 228th Division fired gas in terms of gaseinheits [i.e., gas units], a gaseinheit comprising 100 77-mm. gas shells or the equivalent, that is, 50 105-mm. shells, 50 10-cm. shells, 25 150-mm. shells, or 10 mortar shells. The fire order for the first twelve hours of 12 October, for example, listed four targets, each to receive one burst, each burst a single gaseinheit. "In each burst blue cross is to be fired first and followed shortly after by green cross." During the remaining hours of 12 October, "1200 FK [77-mm.] or equivalent, preferably gas, depending on the ammunition situation," was allotted for gas bursts on twelve other targets.[36]

This method of firing round-the-clock gas bursts of blue and green

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35 Study No. 8, "The 33rd Division Along the Meuse," p. 62.

36 Arko 228, Fire Orders for 12 Oct and Annex (GFB 225, fol I, pp. 79, 136).

In Memo, Fries, C of Gas Serv, n.d., sub: Contents of Gas Shells (GHQ AEF G - 4 Box 4457, 471.6), the 77-mm. shell was said to contain 1.0 lbs (.3 qt) of agent, the 105-mm. 4.75 lbs (1.4 qts), and the 210-mm. 38.8 lbs (11.7 qts). A. M. Prentiss, Chemicals in War (New York, 1937), pp. 446 ff., says the 77-mm. shell held 2.2 lbs of agent (except the blue cross shell, with 0.27 lb), the 150-mm. 10.6 lbs, and the 170- and 250-mm. minenwerfer shells, 26.4 and 52 lbs respectively.

cross shells on a wide variety of targets continued throughout the month, but after 12 October, as the narrative will show, the volume of fire, whether in terms of gaseinheit bursts, gas fire waves, or concentrations, increased enormously. The bursts of gas were to prove deceptive. The gaseinheit on a single target might actually be fired in groups of 10 or 25 shells an hour or more apart. With a number of batteries carrying out this kind of fire over a wide area both day and night, in cold, damp October weather, the sector was seldom free of gas. Since the gas mask could not be worn indefinitely, the constant slight lung irritation in addition to its effect on morale, was sooner or later bound to result in casualties, particularly when the volume of fire was increased.

## "The Deadly Effect of Gas Shell"

On the night of 11 - 12 October corps ordered the last of its reserves, the 114th Infantry, to move up from the Côte des Roches to Ormont Farm and the Ravin de Coassinvaux. Passing through the 18th French, it was to attack the fortified heights of the Bois d'Ormont at 0700.

By afternoon of 12 October, after a series of attacks, the west edge of the wood had been taken, with the assistance of the 113th Infantry from the Bois de la Reine, but not before the 114th had lost 118 officers and men killed and 812 wounded. Company D, rushing machine gun nests in the wood, came out with 36 men, leaving behind all 6 of its officers and 190 men.[37]

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[37] History, pp. 173 - 76.

The wounded total of 812 was misleading, since between 300 and 500 of that number were gas casualties. G - 2, as usual, reported that "Gas shells were fired in small quantities [during the day] without gaining concentration but sufficient to cause gas alarms." The division history, reporting the line of the 57th Brigade that night along the Ravin de Molleville, Bois de la Reine, south and west edge of the Bois d'Ormont, recalled that "the free use of gas by the enemy during and following the attack caused many casualties in the two regiments." [38]

The Division Gas Officer, in a second report on this gas attack (the first had reported just 9 casualties), said that intense gas shelling began at 0600, 12 October, and continued for 34 hours. Almost 2,000 blue, green, and yellow cross shells, all calibers, in groups of 300 to 500 were reportedly fired into the area occupied by the 113th and 114th Infantry attacking the Bois d'Ormont (Map No. 4). The brigade reported that

> The ravine south of the Bois d'Ormont [was] continually shelled by gas and high explosives. Enemy artillery [had] been brought up on the ridge in line of sight of the 113th Infantry, along the line 27.3 - 81.4 to 27.7 - 81.4, and [fired] point blank. Reports from the 114th Infantry state that the artillery fire received by them came from the northeast and machine gun and artillery fire...from the two ravines north of the Bois de Moirey.[39]

Advised by the Division and Regimental Gas Officers to evacuate the

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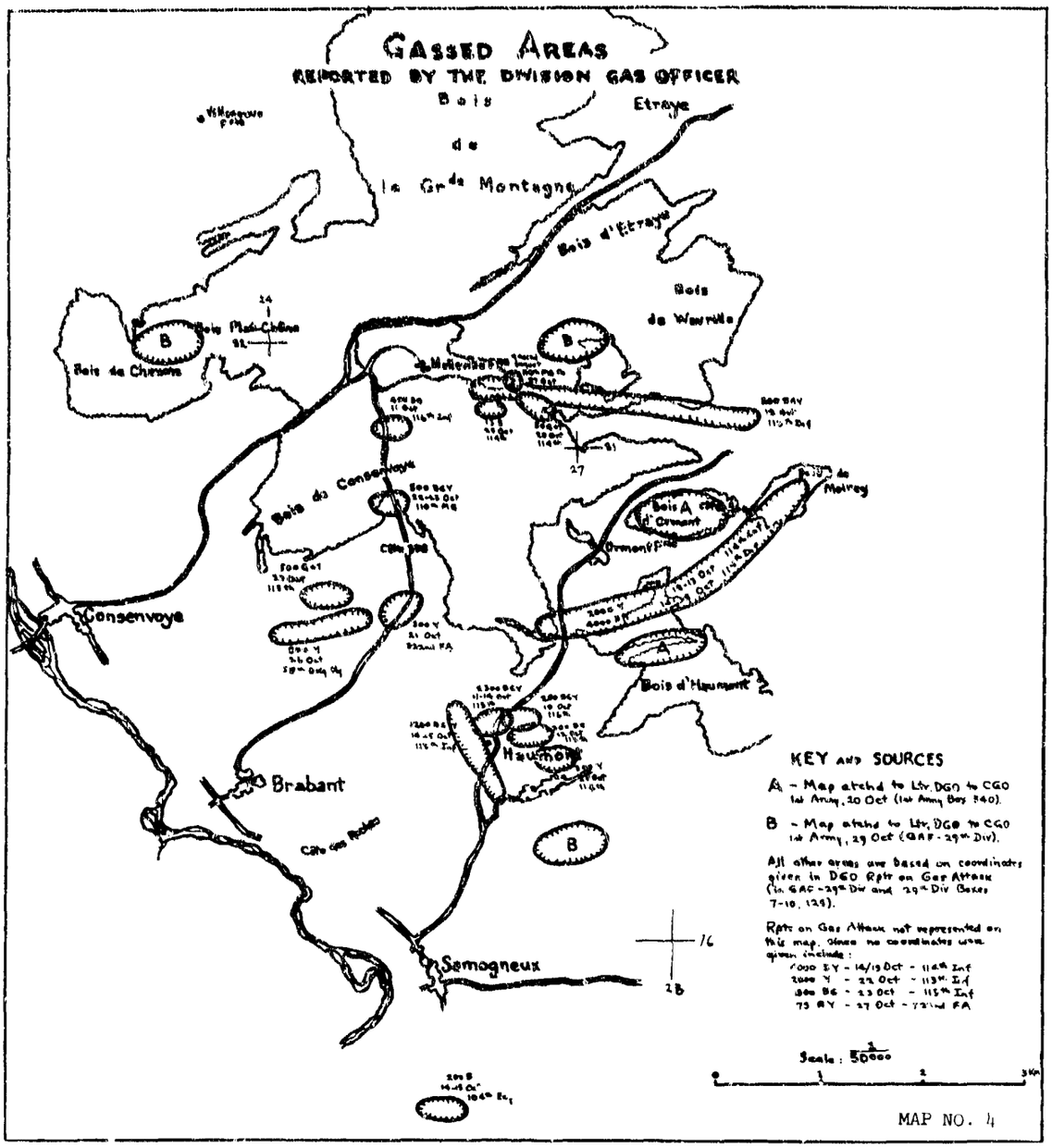
38 DOR, 29th Div, 12 Oct; History, p. 176.

39 SOI, 57th Brigade, 14 Oct (29th Div Box 7, 20.1). The coordinates designate the wooded isthmus just above the Bois de la Reine. Combat rpts suggest it was the enemy arty, not the 313th Inf, on that line, although the DGO (in Map No. 4) indicated that as a gassed area on 12 Oct.


GASSED AREAS
REPORTED BY THE DIVISION GAS OFFICER
Bois de la Grde Montagne
Etraye
Bois d'Etraye
Bois de Warville
Bois Mal-Chêne
Bois de Chenois
Bois de Consenvoye
Consenvoye
Bois d'Ormont
Bois d'Haumont
Brabant
Haucourt
Semogneux
KEY AND SOURCES
A - Map atchd to Ltr, DGO to CGO 1st Army, 20 Oct (1st Army Bty 340).
B - Map atchd to Ltr, DGO to CGO 1st Army, 29 Oct (GAS - 29th Div).
All other areas are based on coordinates given in DGO Rptr on Gas Attacks (In GAC - 29th Div and 29th Div Bases 7-10, 129).
Rptr on Gas Attacks not represented on this map, since no coordinates were given include:
Scale: 1/50000

MAP NO. 4

the area at once, the 113th Infantry troops were withdrawn, but the 114th Infantry commander insisted it was not tactically possible while his men were attacking, and if he did withdraw the enemy was certain to counter-attack. Both the forward elements and the 114th reserves in the Ravin de Coassinvaux, approximately 1,500 men, held their positions "in the gassed area beyond the limit for which it is physically possible for a man to wear the mask continuously." And the "longer [they] remained in the area the more rapid was the rate at which the men became casualties." [40]

In successive reports, Captain Maynard estimated 100, then 300, and finally 500 casualties. Hospital records for the period 12 - 14 October reveal 706 gas casualties in the 114th Infantry, 57 in the 113th.[41]

Maj. James H. Walton, on the staff of the Chief Gas Officer, First Army, who was with the division when the attack came, said: "This is one of the best examples of the deadly effect of gas shell that has come to my attention. Compare with the effectiveness of an equal number of high explosives or shrapnel!" Forwarding Major Walton's report on the gas attack to General Fries, Col. John W. N. Schulz, First Army Gas Officer,

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40 Msg, RGO 113th Inf to DGO, 1000, 12 Oct (29th Div Box 2, 32.16); Rpt on Gas Attack, n.d., signed by Maj Jas. H. Walton, with added notes by Capt Maynard (1st Army Box 340); Telg, DGO 29th Div to C CWS, 12 Oct; Rpt on Gas Attack, 15 Oct; Ltr, DGO to CG 29th Div, 21 Oct, sub: Enemy Gas Activity, 9 - 19 Oct (all in GAF - 29th Div).

41 Analysis, p. 67. Note: All future references to hospital records of casualties will indicate this same page.

said the attack was "especially interesting from an offensive standpoint as showing the effectiveness of mustard gas either for getting evacuation or, as in this case, for obtaining casualties when the troops exposed must continue occupation of an Yperited area." 42

The gas attack actually covered a large portion of the Haumont-Ormont area. It was carried out by the German 32nd and 15th Divisions, beginning with a "gas shoot on Haumontschlucht" on 11 October, probably with yellow cross, since the next day Arko 32, the artillery command of the 32nd Division, reported that "more yellow cross contamination shoots were carried out." Target areas were not designated.[43]

Following the Maas Ost order on 12 October that more gas be used, Arko 32 that day said that henceforth

> In the nightly harassing fire gas concentrations with HE are to be put down. Deliver in concentrated rapid fire about 20 - 25 rounds of blue cross and after 3 - 4 minutes follow with the same amount of green cross. Targets 3a, 3b, and 4 are the primary gas targets. Increase use of gas shoots of this type! The inclusion of ample blue cross in annihilation fire is a basic principle.

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42

Walton's Rpt on Gas Attack (1st Army Box 340); Ltr, CGO 1st Army to C CWS, 11 Nov, sub: Rpt on Gas Attack (GAF - 29th Div). See Spencer, II, 285 - 91, for the several accounts of the gas shelling, 12 - 14 Oct.

43

Arko 32 WD, 11, 12 Oct (GFB 184, fol III). Arko 32 shows no gas shells expended by its arty until 13 Oct, but may be reporting the 400 yellow cross shells fired into Haumontschlucht by the 15th Div on the morning of 11 Oct. The other contamination shoots may also be unrecorded missions of 15th Div arty. See 135th Füssa Bn WD, 11 Oct (15th Div Sub Units, source k, GFB 168, fol III).

The annihilation fire areas (targets 3a, 3b, and 4) proved to be Konservenschlucht and Namenloseschlucht, that is, the eastern edge of the Bois de Consenvoye and the Ravin de Coassinvaux (Map No. 5 and Overlay).[44]

On 13 October, with 57th Brigade forces in the Bois de la Reine and along the edges of Bois d'Ormont, and its reserves crowded in Coassinvaux ravine, 32nd Division artillery "carried out yellow cross contamination and [nonpersistent] gas shoots, fired waves of annihilation fire, and shelled ravines and approach roads with harassing fire and sudden bursts," putting down a total of 967 77-mm. blue cross shells, 150 105-mm. yellow cross, and 13,100 HE shells, of which 9,500 were 77-mm. The weight of HE that day was approximately the same as the two previous days.

"Extensive use was made of gas, principally yellow cross," on 14 October as "ravines and draws, enemy assembly positions, approaches and infantry strong points [were] energetically shelled," with an expenditure of 2,095 blue cross, 602 green cross, 1,084 yellow cross, and 3,989 HE, all calibers.[45] Assisting in this fire, the 15th Division put several hundred blue and green cross shells and 300 yellow cross shells into the Ravin de Coassinvaux

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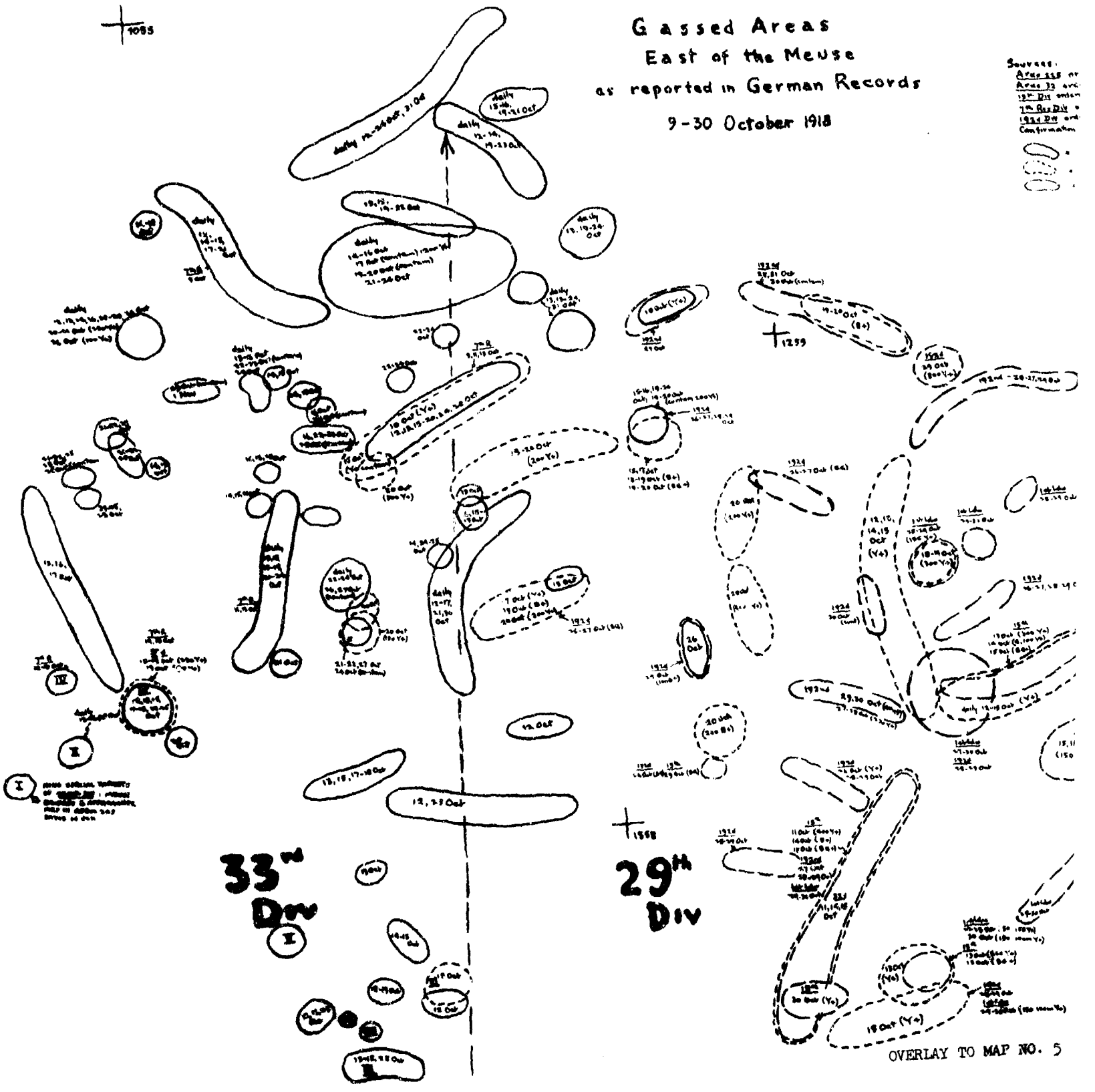
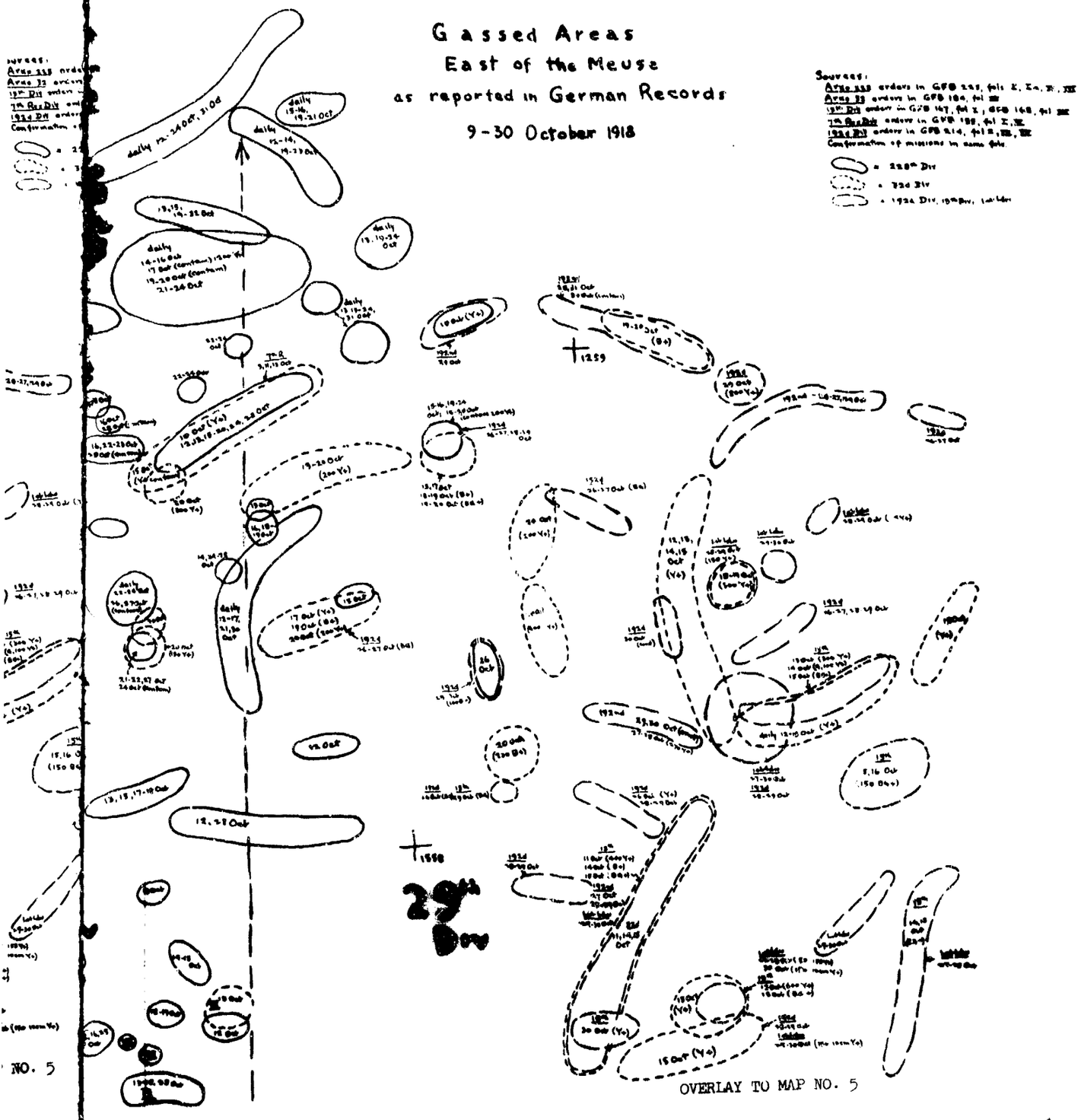
44 Arko 32 Orders 344, 345, 12 and 13 Oct (GFB 184, fol III, pp. 128, 130).

NOTE: Since place names in German orders and reports are based on the German map (Map No. 5) and often have no equivalents on French maps (cf. Map No. 2), it is necessary to use the German names.

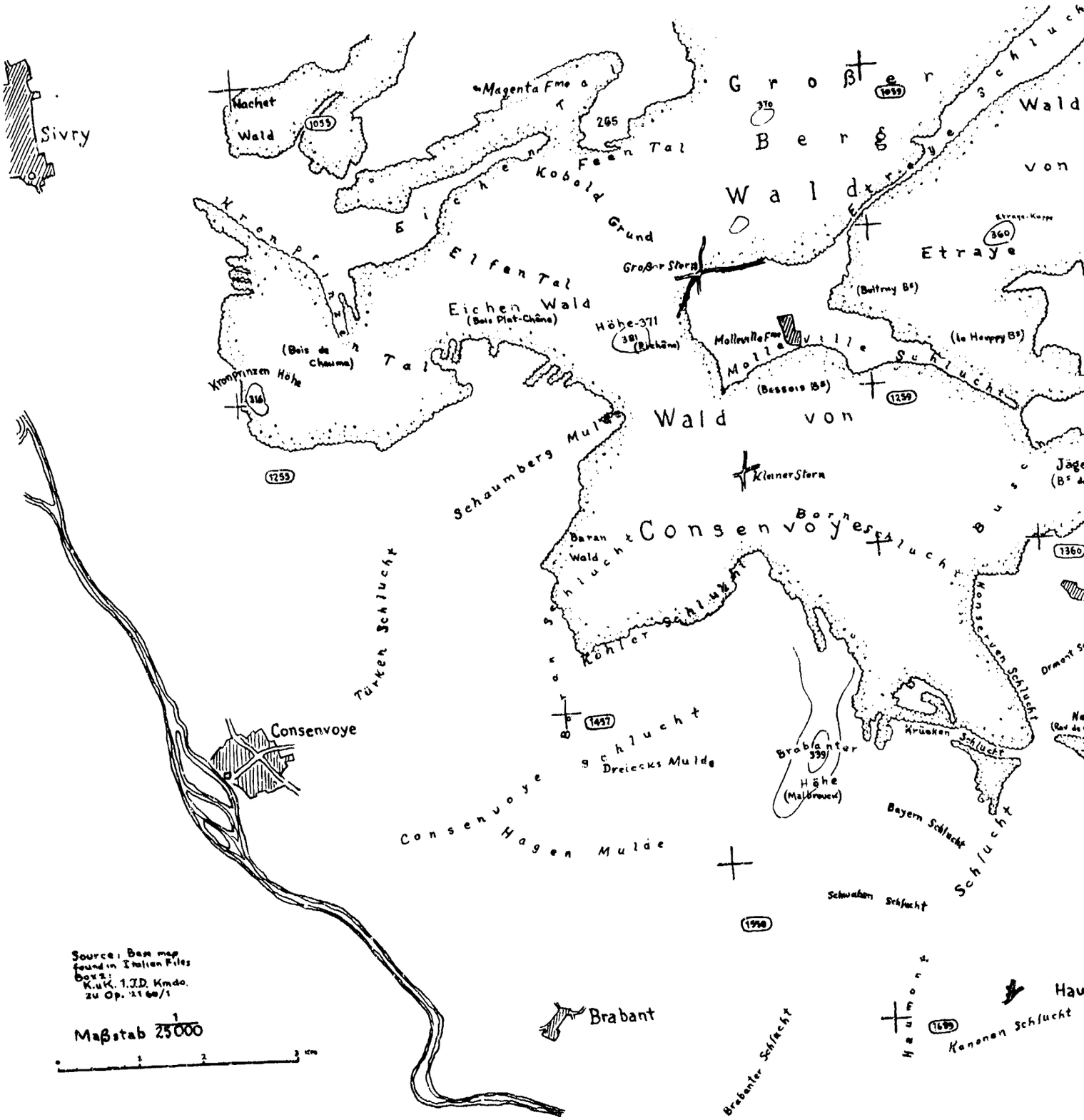
45 Reduced to 77-mm. equivalents, this totaled 2,501 blue cross, 1,446 green cross, 2,284 yellow cross, and 5,715 HE.

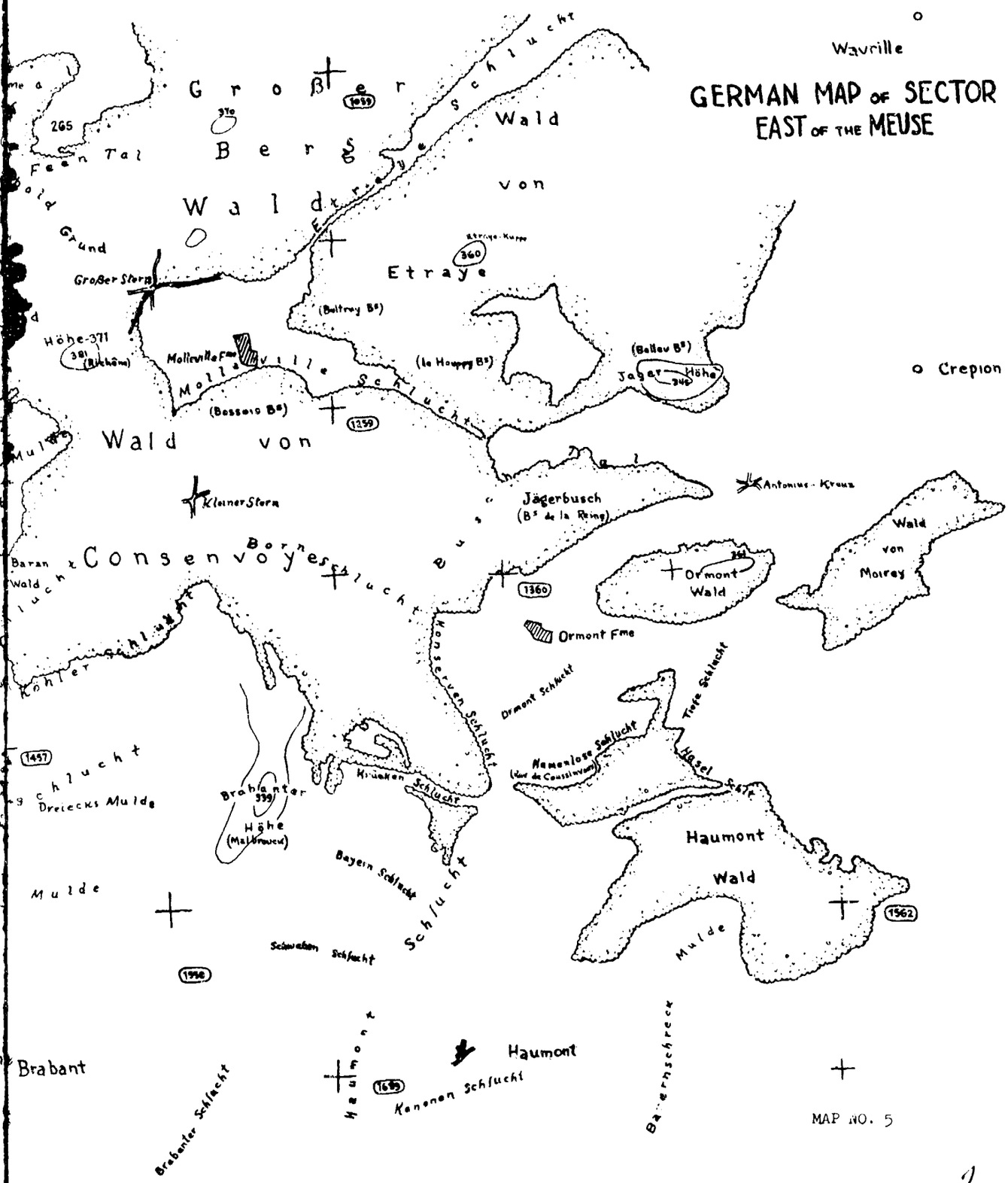



OVERLAY TO MAP NO. 5


Gassed Areas
East of the Meuse
as reported in German Records
9-30 October 1918
Sources:
Area 333 orders in GFB 242, fol. I, Ia, II, III
Area 33 orders in GFB 184, fol III
13th Div order in GFB 147, fol I; GFB 148, fol III
79th Res Div orders in GFB 198, fol I, II
192nd Div orders in GFB 214, fol II, III, IV
Confirmation of missions in same fols.
= 228th Div
= 33d Div
= 192d Div, 19th Div, Landw
29th Div
OVERLAY TO MAP NO. 5

2


Sivry
Hachet Wald
Magenta Fme
Großer Wald von Etraye
Großer Berg
Feen Tal
Kobolds Grund
Eichen Tal
Elfen Tal
Großer Stern
Eichen Wald
(Bois Piat-Chêne)
Höhe-371
Mollerville Fme
Mollerville Schlucht
Etraye
(Bois de Chaume)
Kronprinzen Höhe
Schaumbers Mulde
Wald von Consenvoye
Kleiner Stern
Baran Wald
Consenvoyes Schlucht
Köhler Schlucht
Türken Schlucht
Consenvoye
Dreiecks Mulde
Brabanter Höhe
Consenvoye Hagen Mulde
Bayern Schlucht
Schwaben Schlucht
Brabant
Brabanter Schlucht
Kanonen Schlucht
Konserven Schlucht
Krücken Schlucht
Source: Base map found in Italian Files Box 2: K.u.K. 1.J.D. Kmdo. zu Op. 2160/1
Maßstab 1/25000
0 1 2 3 km


GERMAN MAP OF SECTOR
EAST OF THE MEUSE
Wavrille
Crepion
Großer Berg
Wald von Etraye
Etraye
Großer Stern
Kleiner Stern
Wald von Consenvoye
Jägerbusch
Antonius-Kreuz
Wald von Moirey
Ormont Wald
Ormont Fme
Haumont Wald
Haumont
Brabant
Brabanter Schlucht
Kanonen Schlucht
Bayern Schlucht
Schwaben Schlucht
Dreiecks Mulde
Mulde
Tiefe Schlucht
Namenlose Schlucht
Ormont Schlucht
Konserven Schlucht
Kohler Schlucht
Feen Tal
Grund
Wald
von
Schlucht
Höhe-371
Brabanter Höhe
Jäger Höhe
Bayernschreck
Haumont
1359
1360
1497
1562
1699
1998
265
360
MAP NO. 5

2

on the night of 14 - 15 October.[46]

Altogether, German records indicate that from 11 to 14 October more than 3,000 blue cross, 800 green cross, 2,000 yellow cross, and 43,000 HE shells, all calibers, fell in the Haumont-Ormont area. Actually, as troop dispositions in Map No. 2 indicate, probably somewhat more than half of these shells fell on 57th Brigade troops, the remainder on the area occupied by the 18th French Division.

## The Ultimate Advance

With orders to remain in place, 13 and 14 October were days of comparative quiet, said the division history. Except for bursts of gas and HE at Richêne, the 58th Brigade was almost free from enemy fire, and G - 3 referred principally to the 57th Brigade when it said that during those two days the line "held firmly under heavy machine gun and artillery fire, and large concentrations of gas." All four regiments of the division as a result of the fighting, the gas alarms, and gas attacks were reported to be approaching exhaustion. The gas and machine guns below the Etzel position had brought them to a halt.

Actually, said G -2, the enemy line could not be quite located but

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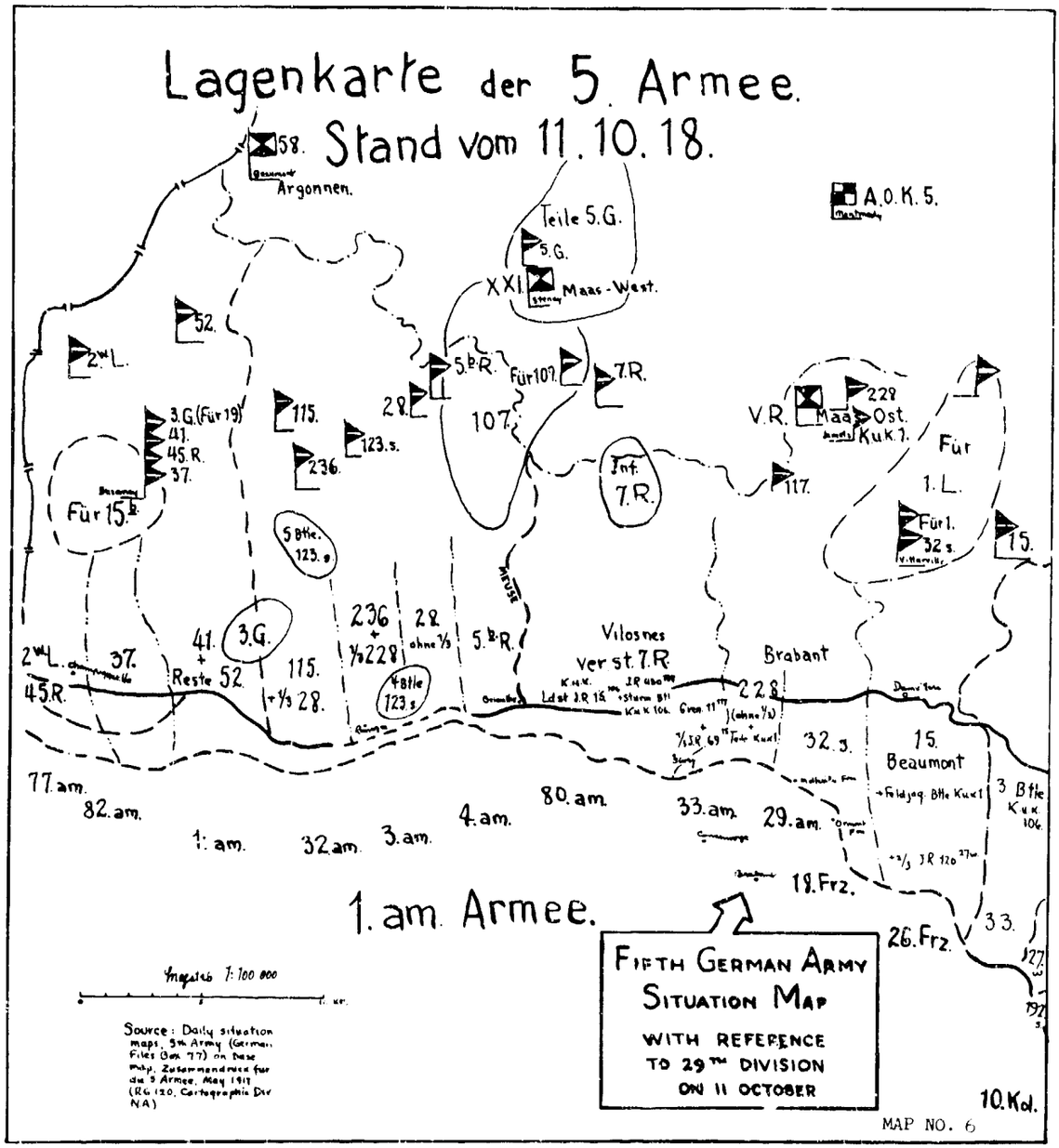
46 Arko 32 WD, 13, 14 Oct; 135th Fussa Bn WD, 14, 15 Oct (15th Div Sub Units, source k, GFB 168, fol III); 1st Bn 135th Fussa Regt WD, 13 - 14 Oct (ibid., source l); Intel Bul Ic 126, 136/10, 15th Div, 13 - 15 Oct (GFB 167, fol I, pp. 73, 75).




FIFTH GERMAN ARMY SITUATION MAP WITH REFERENCE TO 29TH DIVISION ON 11 OCTOBER

MAP NO. 6

appeared to run southeast and northwest through Molleville Farm (as verified in Map No. 6). It seemed to be a succession of machine gun nests, with infantry companies practically machine gun companies, and the crest of every hill on the front so organized as to be "more like a fort than a line." [47]

These crests -- the heights of the Grande Montagne -- would have to be neutralized before another advance could be made. The attack on them, a combined operation of the 33rd, 29th, and 18th French Divisions, was set for 15 October.

The 29th Division artillery was to be allotted 14,760 77-mm. and 4,532 155-mm. HE shells to silence the enemy machine guns on its front and 6,000 gas shells to neutralize the enemy artillery positions in the Bois d'Etrayes. The gassing was to begin a half hour before the attack and continue for two and a half hours after zero hour (Map No. 7).[48] But the 6,000 gas shells requested for this mission were first reduced to 4,560 and then, at the last minute, omitted from the firing schedule. And only a portion of the HE was fired, on the north edge of Molleville Farm clearing and in Bultruy Bois,

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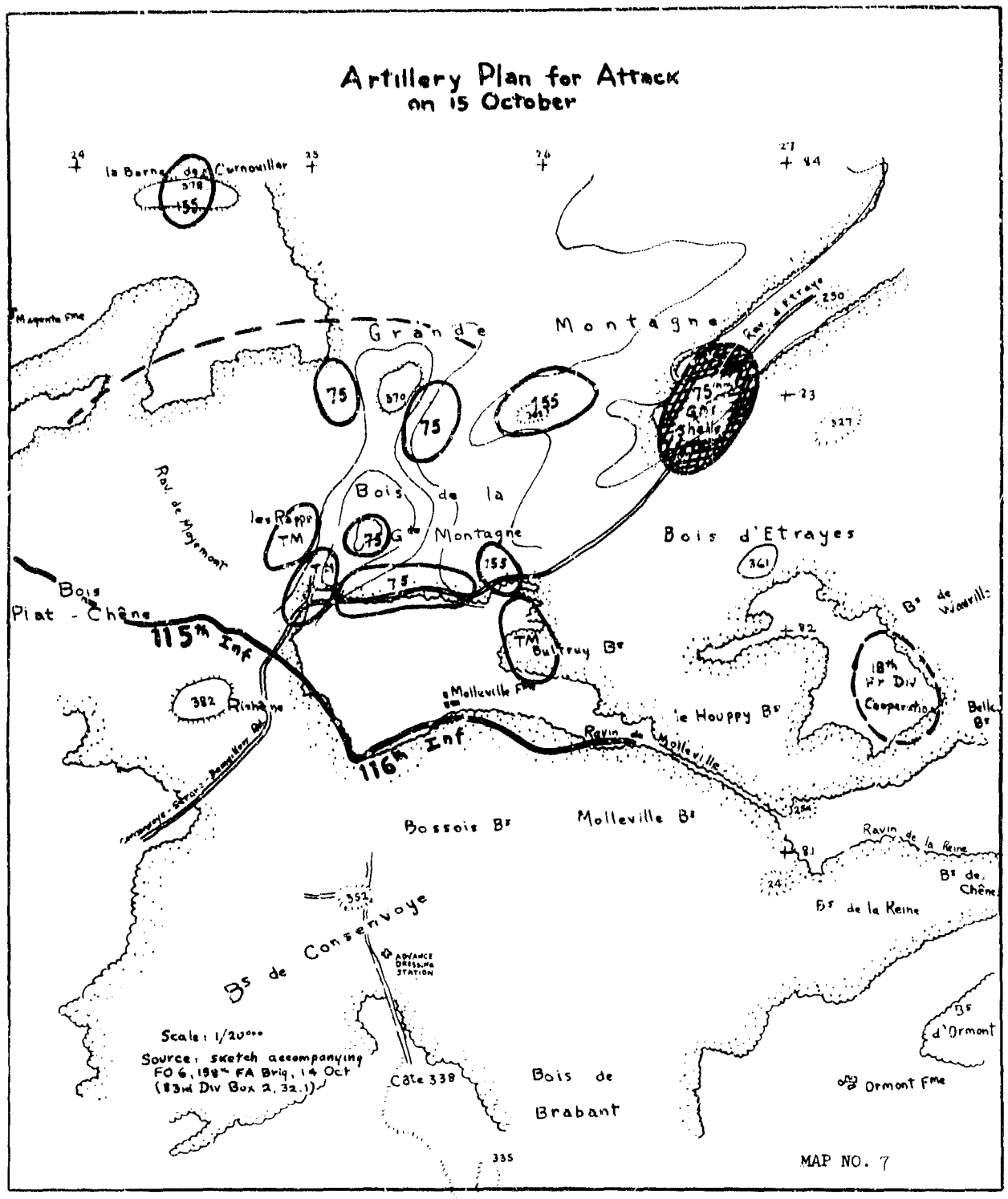
47 DOR, 29th Div, 14 Oct; SOI, 11 - 12 Oct; History, p. 180.

48 Until mid-Oct the principal mass of 228th Div arty was above the line Villeneuve Farm-Etraye, when it moved northeast of Haraumont (see overlays in GFB 225). 32nd Div arty after mid-Oct was in a semicircle above Etraye and to the east of that town (GFB 184). 15th Div arty was above Chaumont, southeast of Damvillers (GFB 167). An overlay of 32nd, 1st Ldw, and 15th Div arty for the period 14 - 27 Oct shows 32nd Div west of Damvillers, 1st Ldw and 15th Div arty massed above Chaumont (GFB 141, fol II, p. 123). See Map No. 2 for these locations.


Artillery Plan for Attack
on 15 October
Grande Montagne
Bois de la Montagne
Bois d'Etrayes
Bois Piat-Chêne
115th Inf
116th Inf
Molleville Fme
Ravin de Molleville
le Houppy Bs
Bossois Bs
Molleville Bs
Ravin de la Reine
Bs de la Reine
Bs de Chêne
Bs de Consenvoye
Bois de Brabant
Bs d'Ormont
Ormont Fme
Scale: 1/20000
Source: sketch accompanying FO 6, 198th FA Brig, 14 Oct (83rd Div Box 2, 32.1)

MAP NO. 7

when supply limited the preparation to a half hour.[49]

At 0800, 15 October, the 58th Brigade moved out of its entrenchments in Bossois Bois and in heavy fog resumed its attack on the Grande Montagne. "Just before the [116th] regiment went over, a barrage of H.E. and [blue cross] gas shell was thrown on it...[and more] gas was used on the troops as they advanced...[resulting in] some forty gas casualties." Hospital records show 150 gas cases in the brigade that day and the next.[50]

The 116th Infantry was probably near Kleiner Stern, below Bossois Bois, for that was the area gassed by Arko 228 and Arko 32 that morning. Arko 228, which had been keeping the 33rd Division sector gassed since the beginning of the campaign, swung several of its batteries around when Arko 32 called for assistance, and for the next ten days kept the Richêne area under daily gas fire. But except for several contamination missions, the records do not indicate any greater fire than 100 to 200 gas shells daily by Arko 228 on 29th Division targets. The greatest volume of gas and HE fire continued

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49 See FO 6, 158th FA Brig, 1500, 14 Oct, and revisions to Append III (83rd Div Box 2, 32.1). FO 20, 29th Div, 1600, 13 Oct, called only for the half-hour prep.

Rpt, Opns O, 322nd FA, sub: Fires Carried Out... 14 - 15 Oct, n.d. (83rd Div Box 2, 33.1), said 3,272 gas shells were fired between 0730 - 1100 on 15 Oct, but this is not confirmed in the FA brigade history or in any 29th Div record. General Morton (Analysis, p. 79 ) appears to deny it. History, p. 181, says that corps did not have ammo enough to support the attack with heavy arty fire on Bultruy Bois and Bois d'Etrayes, as desired, and the 29th's own short supply limited its prep to a half hour.

50 Ltr, DGO to CGO 1st Army, 20 Oct, sub: Enemy Gas Activity, 9 - 19 Oct (GAF - 29th Div).

to come from Arko 32, in the Bois d'Etrayes.

On the night of the 15th, with companies scattered through Bultruy Bois following the day's fighting for Molleville Farm, advanced elements of the 116th Infantry were on the edge of the Grande Montagne, approximately 600 meters from the jump-off line. Again it was the machine gun fire "which... the heavy bombardment had not silenced" that prevented a further advance. The attack battalion of the 116th Infantry lost 15 officers and 533 men that day and had to be taken out of the line.[51] The 115th Infantry, with approximately 30 killed and 250 to 300 wounded and gassed, had 1,550 effectives left in the regiment, all of them "all in physically...and very nervous, due to the incessant bombardment." [52]

After a night of pounding by the enemy batteries in the Bois d'Etrayes, the attack was continued at 0930, 16 October. Under almost continuous gassing that afternoon, it was 1900 hours before the brigade reached the First Objective of Exploitation, above Hill 370, its left flank refused in les Rappes and the Ravin de Moyemont where it joined the 33rd Division.[53] The brigade was to remain in this approximate position until relieved two weeks

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51 Every attack order of the 29th contained the sentence: "Assault battalions will be relieved only when necessary; each one will be pushed to its limit."

52 Msg, CO 115th Inf to G - 2 29th Div, 0845, 16 Oct (29th Div Box 2, 32.16); Ltr, Palmer CO 58th Brig, 24 Dec, above; History, pp. 181 - 82, 186.

53 DOR, 29th Div, 15 - 16 Oct.

later.[54]

On the right, the 57th Brigade, spread along the southern edge of Eultruy Bois, south side of Ravin de Molleville, and on the edge of the Bois d'Ormont, continued to consolidate its positions under steady gas and HE fire (Map No. 8). "On the 15th," the division history said, "the enemy... sent over such a concentration of gas that the men of some of the companies [were] compelled to wear gas masks for over two hours and to move out of the ravines and low places." The Regimental Gas Officer of the 114th Infantry reported from the Ravin de Coassinvaux:

All men in this sector have been under gas for 22 hours and are showing the effects of it: sore throats and bleeding at the nose. No means of protection except our masks, which have been worn intermittently for about 60 hours. In my opinion much further exposure will have fatal results.[55]

Captain Maynard, the Division Gas Officer, estimated that almost 4,000 blue, green, and yellow cross shells fell on the 113th and 114th Infantry in an 11-hour period beginning 1800, 14 October. (The 114th Infantry RGO, who called "this the most important attack we had," said it began that morning at 0730 and lasted for 35 hours.) Maynard reported 100 gas casualties

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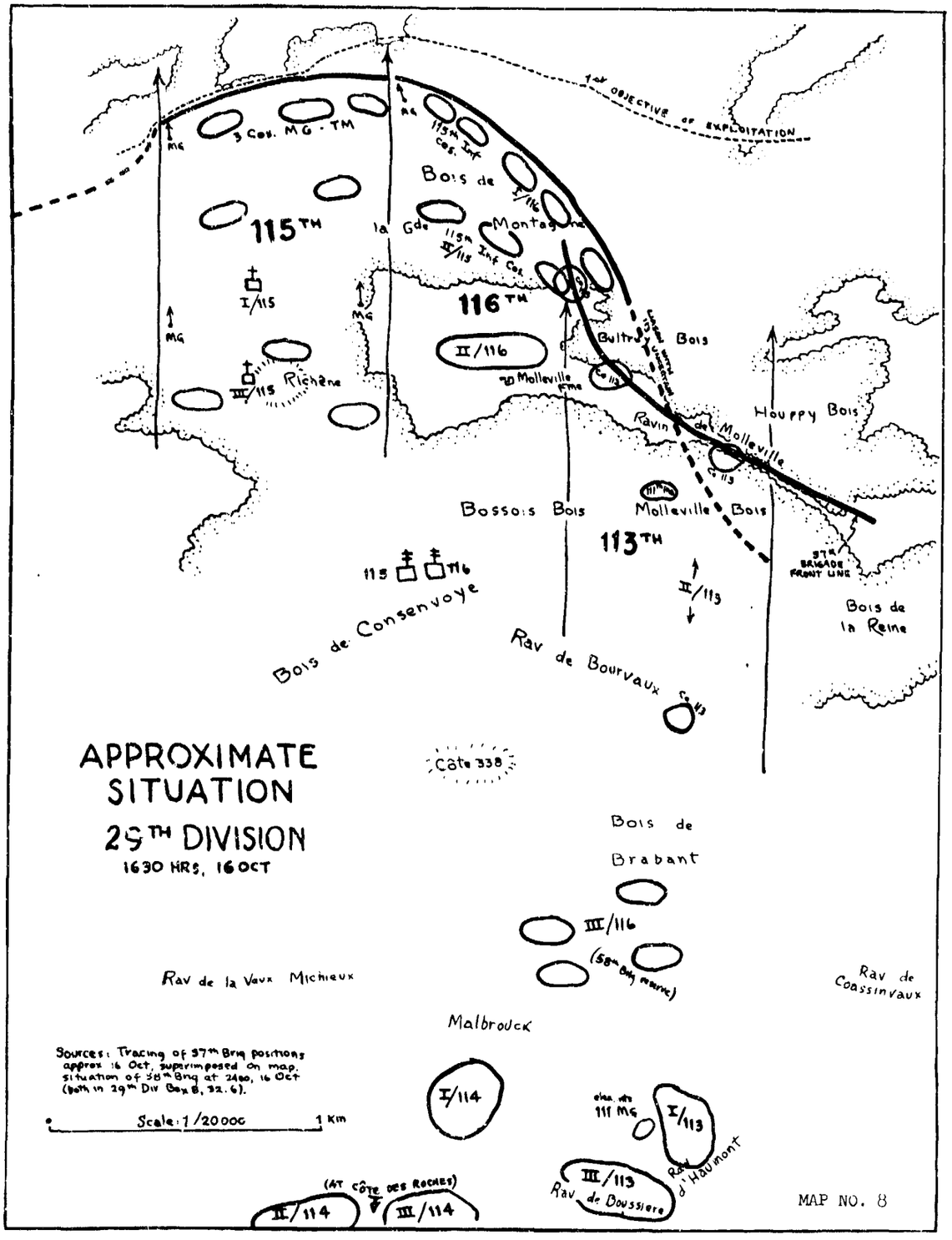
54 Field notes made 26 - 27 May 1919 concerning these positions held by the 58th Brig said: "Identifications on the ground in this sector are extremely difficult due to the fact that very little consolidation was done by the Americans. Although abandoned American equipment was found everywhere, little of it is marked with the designation of the organization" (Field Notes in 29th Div Box 4, 33.6).

55 History, p. 189; 2nd Lt G. L. Bussey, Rpt on Gas Attack, 15 Oct (29th Div Box 9, 33.6). Note: No war gas produced nose bleed as a characteristic symptom.


APPROXIMATE SITUATION
29TH DIVISION
1630 HRS, 16 OCT
1st OBJECTIVE OF EXPLOITATION
3 Cos. MG - TM
115TH Cos. Inf
Bois de la Gde Montagne
115TH
116TH
113TH
I/115
II/116
III/115
Richène
Bultrot
Bois
Molleville Ferme
Ravin de Molleville
Houppy Bois
Bossois Bois
Molleville Bois
37th BRIGADE FRONT LINE
Bois de Consenvoye
Rav de Bourvaux
Bois de la Reine
Côte 338
Bois de Brabant
III/116
Rav de la Vaux Michieux
Rav de Coassinvaux
Malbrouck
I/114
I/113
III/113
Rav de Boussiere
Rav d'Haumont
(AT CÔTE DES ROCHES)
II/114
III/114
Sources: Tracing of 37th Brig positions approx 16 Oct, superimposed on map, situation of 38th Brig at 2400, 16 Oct (both in 29th Div Box 8, 32.6).
Scale: 1/20000
1 Km

MAP NO. 8

in the 114th Infantry and just one in the 113th Infantry when a shell burst within a few feet of a man and "gassed him before he could get his mask on. Death was almost instantaneous." Hospital records indicate there were probably over 200 gas casualties that night.[56]

The difficulties of the 29th Division Gas Officer in distinguishing the succession of gas attacks is explained in the fire orders of Arko 32. In an effort to save a portion of their Volker position and prevent any further advance against the Etzel position, the German artillery kept the entire attack front and intermediate area under almost constant HE and gas fire, while all draws, ravines and approaches farther back that might harbor reenforcements or reserves were kept under gas harassment to the limit of supply. On 15 October Arko 32 reported that its batteries "participated chiefly in the defense against the enemy attack," and at night "shelled draws and approaches with harassing fire," expending on the 29th Division front a total of 5,240 blue cross, 328 green cross, 1,122 yellow cross, and 5,216 shrapnel shells, all calibers.[57]

The next day, 16 October, Arko 32 reported it swept the zone of attack with waves of annihilation fire, put harassing fire on intermediate

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56 Rpt on Gas Attack, 17 Oct. Spencer, II, 291 also cites the 113th Inf RGO rpt of the instantaneous death, no other casualties, as the result of 12,000 gas shells (sic) on the night of 14 - 15 Oct.

57 Equivalent in 77-mm. to 9,047 blue cross, 1,296 green cross, 1,584 yellow cross, and 12,746 shrapnel shells.

and rear areas, and yellow cross on Kleiner Stern and Schaumbergmulde, firing a total of 1,821 77-mm. blue cross, 106 150-mm. green cross, 30 10-cm. yellow cross, and the equivalent of 10,530 77-mm. shrapnel shells. A summary report on 16 October confirmed that during the week its batteries had contaminated Haumont, Konservenschlucht, Kanonenschlucht, Tiefeschlucht, Namenloseschlucht, the woods west of Konservenschlucht, and the area above Kanonenschlucht. The heavy expenditure of shell now made

> great economy necessary....In annihilation fire blue cross will be used only in slight amounts. Harassing fire and sudden bursts in areas farther than one kilometer in front of our first line are to be executed principally with blue cross and H.E.[58]

In the two days of fire, enemy artillery had subjected the 29th Division sector and that on the right to 8,647 gas shells and 8,842 rounds of shrapnel (the equivalent of 14,868 77-mm. gas shells and 23,276 77-mm. shrapnel shells), the greatest weight falling in the right half of the sector.

The 57th Brigade above Ormont Farm was now "exceptionally tired physically." On 16 October the remains of the 1st Battalion, 114th Infantry, was brought down to the Côte des Roches to rest. The elements of the French division on the right had had to be relieved the day before, by a regiment of the 26th American Division. Two days later, on 18 October, the remaining three battalions of the 113th and 114th Infantry in the line were also

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58 Arko 32 WD, 15, 16 Oct; Weekly Rpt, 8 - 15 Oct; Arty Order 363, 16 Oct (GFB 184, fol III, pp. 134, 139).

relieved. The brigade was used up, and the division history was to say that "The question of reequipping the 57th Brigade for further service was a serious one." [59]

On the night of the 16th, its positions "considered by the corps commander to be the ultimate advance practicable to the north until the capture of Ormont woods," the division was ordered to dig in and organize the Grande Montagne Sector. G - 3 reported that in its nine days of fighting for the Grande Montagne the division had lost 88 officers and 2,876 men, of whom 392 were killed, 952 gassed, and 1,620 wounded. (Hospital records show a total of 1,424 gassed and 1,855 wounded as of the night of 16 October.) The men "had fought until their organizations were but skeletons, and they themselves nerve worn, gassed, and physically exhausted." [60]

For the next six days the division was to remain in place while the enemy, with perfect observation of the entire front from Hill 378, poured high explosives and gas into the sector.[61] For three days in a row, according

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DOR, 29th Div, 16 - 18 Oct; History, pp. 189, 192. In partial explanation of the problem of the 57th Brigade may be Gen Morton's remark that "One regiment disregarded the order [to carry their packs into the fight] and lost their packs entirely" (Rpt, 25 Apr 1919, 29th Div Box 1, 11.4).

60

Rpt, CG 29th Div, 25 Apr 1919, sub: Services of the 29th Div with the AEF (29th Div Box 1, 11.4); FO 21, 29th Div, 1930, 16 Oct; DOR, 16 Oct; History, p. 233.

61

Concerning the period 17 - 22 Oct, corps said: "Cette periode n'à été marquée par aucune action important en raison de la fatigue des units et de la faible quantité de munitions allouées." Résumé des Opérations executées...par le 17e. C. A., p. 22 (French Files Box 88, 30.4).

to G - 3, the division 75's harassed Hill 378 with 200 rounds of HE each day, but there was no let up in the fire or its accuracy.

In the "general use of gas throughout the sector" on 16 - 17 October, "four hundred gas shells were observed in the immediate vicinity of the 113th Infantry P. C.," and on 18 October, in addition to a "fairly heavy concentration [of gas] in the Bois de Consenvoye, brought out by the sun this morning," the front lines were sharply shelled with phosgene and mustard gas. Daily through 22 October regimental PCs and troop areas in les Rappes, Bossois Bois, Bois de Consenvoye, Malbrouck Ridge, and the valley between Bois de la Reine and Bois d'Ormont were gassed with small quantities of phosgene and mustard, while mixed gas and HE fire "extended over the rear areas and lines of communication from Samogneux to Verdun." [62]

The gas fire below Samogneux was the work of 15th Division artillery. Arko 32 confined itself to the immediate 29th and 26th Division sectors. In the morning hours of 17 October, in support of a counterattack by the 228th Division against the 33rd Division, Arko 32 put harassing gas fire on Kohlerschlucht, around Kleiner Stern (the site of 115th Infantry kitchens), and on the forward positions of the 58th Brigade. The roads, ravines, and woods in the sector were harassed through the afternoon and night with 1,793 77-mm. blue cross, 650 77-mm. and 130 155-mm. yellow cross, and 3,093 (equivalent of 8,292 77-mm.) rounds of shrapnel. Arko 228 that day

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62 SOI 8 - 14, 16 - 23 Oct; DOR, 18 - 20 Oct; Ltr, Upton, CG 57th Brig to CG 29th Div, 23 Dec, sub: Rpt of Action of 57th Brig North of Verdun ( Suppl Rpts, 29th Div Box 4, 33.6).

carried out a contamination shoot of Eichenwald [Bois Plat-Chene] with some or all of the 1,200 yellow cross shells previously allotted for the mission, and it may have been fumes from that gassing that were noticed in the Bois de Consenvoye the next morning.[63]

No targets were given for the 633 77-mm. blue cross, 157 77-mm. and 75 105-mm. green cross, 150 77-mm. yellow cross, and the 1,453 (equivalent to 3,000 77-mm.) shrapnel rounds mixed in the gas fire on 18 October. On the 19th, 636 blue cross, all calibers and 408 77-mm. green cross shells were put into Kohler-, Turken-, and Schaumbergschluchten. Dugouts around Kleiner Stern, the Ormont Farm area, and the crossroads at Consenvoye were contaminated that day with more than 307 77-mm. and 250 10-cm. yellow cross shells, while Arko 228 assisted in the contamination of Kleiner Stern. Mixed in the gas fire were 308 shrapnel rounds, all calibers (see overlay to Map No. 5).[64]

On the left, where Arko 228 covered the sector of the 33rd Division and 58th Brigade, 29th Division, specific gas missions are more difficult to determine since they were carried out in gaseinheits on widely dispersed targets. 228th Division artillery orders are available only for the period 12 - 22 October, during which time gas missions with a total of 14,700 blue

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63 Arko 32 WD, 17 Oct; Arko 228 Fire Order for 16 - 17 Oct; Evening Rpt, 228th Div to Maas Ost, 17 Oct (GFB 225, fol Ia, pp. 62, 92). For Kleiner Stern, see Memo Asst DGO to DGO, 26 Oct, n.s. (29th Div Box 4, 33.6).

64 Arko 32 WD, 18 and 19 Oct; Arko 32 Fire Order for night of 18 - 19 Oct (GFB 184, fol III, pp. 142 - 43); Intel Bul, 228th Div, 19 - 20 Oct (GFB 225, fol Ia, p. 127).

and green cross shells and 3,400 yellow cross shells were ordered fired. No large-scale or crash concentrations of blue or green cross gas have been found. In a few instances yellow cross gas was also fired in short bursts over a period of time, as on 10 October. But all the 1,200 yellow cross shells allotted for the contamination of Eichenwald [Bois Plat-Chêne] on 19 October were probably fired in an hour's rain of shells, as were the contamination shoots on the center of the Bois de Consenvoye and the battery positions below Plat-Chêne on 19 and 22 October.

In most instances, 228th Division headquarters and artillery war diaries and daily reports for the period 12 - 22 October merely confirm gas fire on the targets designated in the orders, but without ammo consumption reports it can only be assumed that all the missions were carried out as ordered. The gas fire continued daily after 22 October but on a reduced scale (probably between 200 and 500 rounds per day) as the thin forces of the 33rd and 29th Divisions that remained in the line ceased to threaten.

Another reason for the reduced fire across the front may have been the supply of gas and HE in Maas Ost dumps, necessitating a change in its gas fire plan. Shrapnel had already been largely substituted for HE fire. In an order on 18 October, Maas Ost cut down on area firing and instead proposed "in the coming days" the systematic shelling of crossroads and road-forks to disrupt enemy traffic and destroy his communications:

More damage can be done to enemy traffic by continuous shelling of [sensitive] points than by attempting to cover the entire traffic route with fire. In this way greater and more effective use of gas can be made in the fire missions. This shelling should be irregular as to time and method of fire, but locally coordinated.

In the same order, the 1st Austro-Hungarian Division artillery was made responsible for roadforks west of the Meuse and those at Consenvoye; 22dth Division for those below Bois Plat-Chene, at Grosser Stern and Kleiner Stern; 32nd Division for those around Brabant and Haumont, the road above Côte 338, and the crossroads at the junction of the ravines below Ormont Farm. The heavy batteries of the 1st Austro-Hungarian were to cover communication lines around Samogneux and on the west bank of the Meuse, while corps heavies would interdict the road network at Vacherauville and Bras. "If the weather improves, further contamination shoots will be carried out according to plan." [65]

## Gas Attrition

G - 2, paraphrasing the Division Gas Officer report for the period 9 - 19 October, said in a Summary of Intelligence that

> Since October 9th gas shelling of one kind or another has been continuous. Favorable weather, cool and misty with frequent light rains, low wind velocity, and the valleys and deep ravines have formed an ideal setting for the defensive use of gas. The rapid advance of our troops beyond [where] the enemy had constructed dugouts made it necessary...to take shelter from artillery and machine gun fire in [the gas-filled] ravines.

(Captain Maynard was more explicit, saying the troops were "stationed in ravines and woods — the very places where gas shelling is most effective.")

Gas has been used mainly against the reserves. Green cross, blue cross and mustard have been combined in each attack, frequently beginning with the first two and mixing in the third as the firing progressed. Blue cross and

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65 Maas Ost Gp Order Ia 4480, 18 Oct (in 192nd Div records, GFB 214, fol I, p. 27).

some green cross have been employed several times along with H.E. in a defensive barrage.

Whenever possible the enemy seems to have immediately gassed areas evacuated by him. Blue cross and some lachrymatory gas have been used on roads. Considerable gas has been used around P.C.s, but comparatively little in counter-battery work.

In his report, Captain Maynard added that he was puzzled by the large quantities of blue cross gas "thrown along roads where traffice was heavy. The reason for the use of blue cross here is not clear. It has had a harassing effect but caused very few casualties." [66]

Aside from the fact that hospital records were to show more than 800 men admitted with symptoms of blue cross poisoning, it seems not to have occurred to Captain Maynard that the violent vomiting induced by diphenylchloroarsine, or the prolonged wearing of the mask necessitated by its presence, resulted in rapid physical exhaustion of the men. He was content to say that "from the observation of many of the casualties it is...believed that several, although they had been in gas, were suffering primarily from colds and fatigue."

Total gas casualties up to 19 October, "as shown by hospital records at Glorieux," said Captain Maynard, were 1,196 (a count of hospital admission lists reveals 1,556), the result of at least 20,000 gas shells. Beside eleven more or less specific gas attacks on particular targets, advancing

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66 SOI 16, 29th Div, 24 - 25 Oct; Ltr, DGO 29th Div to CGO 1st Army, 20 Oct, sub: Enemy Gas Activity 9 to 19 Oct (GAF - 29th Div).

troops had entered contaminated areas and failed to recognize the presence of gas until too late; they had removed their masks too soon, particularly while advancing at night over gassed, shell-torn ground; or had failed to evacuate or make frequent reliefs in areas continuously shelled. Many body burns and some lung cases resulted from taking refuge in gas shell holes to escape machine gun fire -- including airplane machine guns. Runners and stretcher bearers reported that they had encountered gas nearly everywhere in the sector. This was borne out by the casualty list in the ambulance section of the Sanitary Train showing 3 men killed, 9 wounded, and 28 gassed during the campaign.[67]

General Claudel, surveying the daily reports of gas casualties in the 33rd and 29th Divisions and comparing them with similar casualties in his French divisions (see Analysis, p. 74) sent a memo to the two divisions, for distribution down to company commanders, expressing alarm at their rates of attrition by gas. Such numbers could only be the result of negligence or inexperience, and he ordered better organization of the American sectors, greater decontamination efforts, and daily instruction of the troops, with particular emphasis on the wearing of the gas mask and the hazards of mustard gas.

The same Comptes-rendus (the French daily operations reports or DORs) that reported the daily tirés, blessés, intoxiqués, and disparus [killed, wounded, gassed, and missing] in Claudel's corps also reported the pieds

67 Ltr, DGO to CGO 1st Army, 20 Oct, sub: Enemy Gas Activity 9 - 19 Oct, and Ltr, DGO to CG 29th Div, 21 Oct, same sub (GAF - 29th Div); Ltr, Div Surg to CG 29th Div, 15 Jan 1919, sub: Opns of 104th San Tr, 8 - 29 Oct (Suppl Rpts, 29th Div Box 4, 33.6).

gélés [frozen feet], those hospitalized with trench foot. In the period 10 - 16 October, a total of 875 officers and men in the 18th French and 26th French Divisions were evacuated suffering from trench foot. It was one of the reasons for the relief of the 18th French front by the 57th Brigade. By comparison, the 29th Division was to report 29 cases of trench foot, the 33rd Division just one case, all in the last week of October.[68]

As the men rested and retrained at corps direction, and recovered from the "wet weather and hard fighting," rumor went the rounds that higher headquarters had forgotten that they were in the line, that it had been left to the French to effect their relief, or that the French were waiting for American authority to relieve them. They heard that the 26th Division was coming into their sector, but on 16 October it relieved the 18th French instead. Four days later, the 10th Colonial was said to be coming to their relief, but it replaced the 33rd Division on the left. The division had two long weeks to go.[69]

## The Last Operation

One rumor, of still another assault against the German machine guns above them, became fact on 20 October when the 29th and 26th Divisions

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68 Instru No. 8, 29th Div, 1030, 18 Oct, sub: Orders from Hq 17th Corps (29th Div Box 2, 32.11); Comptes-rendus, XVII Corps (French Files Box 92, 30.3).

69 History, p. 233; DOR, 29th Div, 18 Oct.

received orders to take the ridge in the Bois d'Etrayes. For almost two weeks this had been the source of prohibitory artillery and small arms fire, the German batteries on the height supporting their forces in Belleu wood and protecting their troops infiltrating into the Bois d'Ormont. Ormont wood could not be taken until Belleu wood, looking down on it, was captured, and Etrayes ridge was a necessary preliminary to Belleu wood.[70]

At a conference at corps headquarters General Morton learned that gas was to be used in the preparation, assisting a 29th Division attack for the first time:

> The Etrayes ravine will be gassed during the preceding night by the corps artillery. No gas will be used in the woods...General Claudel thinks that this is the last operation our men will be called upon to take part in before they are relieved and asks that every measure be taken to hearten them up for this advance which he anticipates will be the easiest one we have yet made.[71]

The attack, set for 22 October, was delayed a day to permit a maximum of recuperation and reorganization of the troops.

Meanwhile the daily gas fire continued but at a diminished rate. On

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70 FO 22, 29th Div, 2330, 20 Oct; Rpt, CG 29th Div, 25 Apr 1919, sub: Services of the 29th Div with the AEF (29th Div Box 1, 11.4); G - 3 Order 689-5/3, 17th Fr Corps, 23 Oct (29th Div Box 3, 32.7).

71 Notes on Conf at P.C. 17th Corps, 20 Oct (29th Div Box 2, 32). 17th Corps Compte-Rendu, 23 - 24 Oct, rptd "10 tirs de neutralisation et une concentration sur Etrayes," but "neutralisation" was not necessarily carried out with gas, and no gas shells were rptd expended that day. The only gas shown in daily ammo expenditure lists in the Comptes-Rendus for the period occurs on 16 - 17 Oct when 700 75-mm. special and 14,189 HE were fired, targets not designated.

20 October the field guns of Arko 32 fired almost 6,000 rounds, all calibers, of mixed gas and HE into the 29th Division sector, including 525 77- and 105-mm. blue cross and 75 105-mm. green cross shells into Turkenschlucht and Mollevilleschlucht and around Kleiner Stern, 200 77-mm. yellow cross shells on dugouts along the Consenvoye-Kleiner Stern road, and 500 77-mm. and 10-cm. yellow cross shells in the ravine south of Consenvoye (the old Hagen position) and above Brabanterhoehe. No Arko 32 reports for 21 October have been found, but on 22 October its batteries fired a total of 3,420 gas and HE shells (equivalent to 6,440 77-mm. rounds) on unidentified "blue and green cross shoots, contamination shoots, and bursts of fire...conforming to the firing order."[72]

29th Division G - 3 reported the 24-hour period ending at noon on 22 October as "very quiet," although in that period

> a few gas shells fell on Bossois Bois. Later about 2000 gas shells were received in the area occupied by the 113th Infantry, causing 14 casualties. Samogneux, Ravine de Boussiere and vicinity of Haumont were sprinkled with a light concentration of mustard gas. The roads and woods in our left sector were likewise heavily shelled with high explosives, shrapnel, and gas, especially between 14:00 and 16:30 o'clock....The battalion P.C. on Richene Hill..[received] a fairly heavy concentration of gas sent over at 19:00 o'clock. The back areas received a sufficient concentration of gas shells on the roads to cause gas alarms in the vicinity of Vacherauville at 3:30 o'clock this morning.[73]

Much of the gas in the left sector of the 29th Division was fired by Arko 228, its units issuing reports almost every day to the end of the month

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72 Arko 32 WD, 20, 22 Oct; Arko 32 Fire Order for 19 - 20 Oct (GFB 184, fol III, p. 145).

73 DOR, 29th Div, 21 - 22 Oct.

that harassing gas fire, bursts of gas, or small contamination shoots — this fire seldom totaling more than 100 or 200 rounds, but occasionally "mit vorwiegend gas" [with a preponderance of gas] — had been put on Kleiner Stern, Hill 371, Grosser Stern, and Koboldgrund (see Overlay to Map No. 5).[74]

Between 21 - 23 October, said Captain Maynard, a total of 4,800 gas shells fell on troop and artillery areas, almost all of it intermittent fire, resulting in 49 gas casualties. Hospital records show 102 gas cases admitted on those days.[75]

Possibly in retaliation for the gas preparation on Etrayes ravine earlier that night (for which there are no details),[76] at 0400, 23 October, as the attack battalion of the 113th Infantry with its machine gun company was moving up for the attack, "enemy artillery dropped about 400 shells, 200 of which were gas, in the vicinity of Molleville Farm...[and] a whole section of the

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74 See Arko 228 Fire Orders in GFB 225, fol Ia; 228th Div Intel Buls and Rpts to Maas Ost through 25 Oct (ibid.); and Arko 228 battery WDs through 29 Oct in GFB 225, fols II and III. Arko 228 WD fragments for 1 - 2 Nov (GFB 225, fol IV) indicate that contamination shoots were carried out to the last in the former 33rd Div sector.

75 Rpts on Gas Attack dated 21, 22, 23 Oct.

76 Résumé des Operations Executée...par le 17e. C.A. (French Files Box 88, 30.4) says only that a 45-minute prep preceded the attack.

machine gun company was gassed."[77] With elements of the 115th, 116th, and 113th Infantry in line almost north and south through Molleville Farm (Map No. 9), at 0615 the lines advanced against Pylone Observatory, the high point in the Bois d'Etrayes from which the enemy had a clear view of the front almost to Verdun.

General Morton said that the gas preparation "along the Ravin d'Etrayes... produced great effect," but the results of the attack tend to deny it. Certainly, the troops were in no condition to take advantage of it. That evening the line had advanced about one kilometer to the east on an 800-meter front as the 116th Infantry reached Hill 361. The 113th Infantry, after losing many of its men in the attack through Bultruy Bois, approached the observatory but was forced to withdraw during the night, and the 26th Division, after clearing le Houppy Bois and entering the Bois de Wavrille, was driven back by machine gun fire to the north edge of the Bois de la Reine.[78] A small force, however, that took the heights in Belleu Bois remained there temporarily.

During the night a battalion of the 114th Infantry relieved the remains of the 113th unit. Some of its men were found "near a wooded ravine (26.4 - 79.5) saturated with phosgene and blue cross," too tired to move. All were

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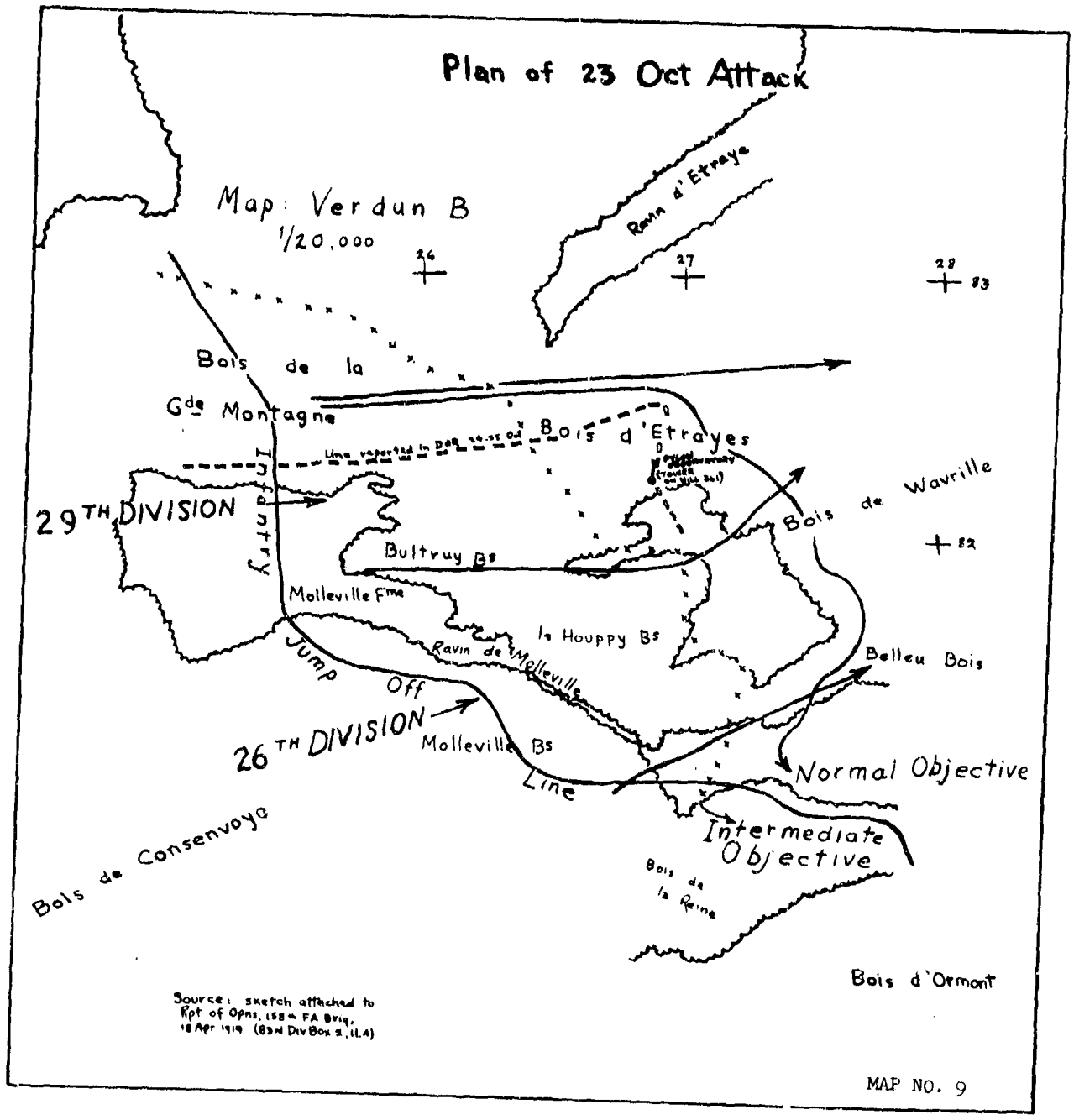
77 History, p. 194. This may have been part of Arko 32 heavy arty fire on Haumontwald and the ravines to the north and south, in support of a contamination shoot carried out by the 15th Div against the 26th Div sector on 23 Oct (15th Div WD, 23 Oct, GFB 167, fol I). Later gas missions by the 15th Div, and by the 1st Ldw Div which relieved it on 26 Oct, were in the 26th Div sector. See Spencer, II, 247 ff.

78 DOR, 24 - 25 Oct; History, pp. 196 - 97, 200.


Plan of 23 Oct Attack
Map: Verdun B
1/20,000
Ravin d'Etraye
Bois de la
Gde Montagne
Bois d'Etrayes
29TH DIVISION
Infantry
Bois de Wavrille
Bultruy Bs
Molleville Fme
la Houppy Bs
Ravin de Molleville
Jump Off
Belleu Bois
26TH DIVISION
Molleville Bs
Line
Normal Objective
Intermediate Objective
Bois de Consenvoye
Bois de la Reine
Bois d'Ormont
Source: sketch attached to Rpt of Opns, 158th FA Brig, 18 Apr 1919 (83rd Div Box 2, I.L.4)

MAP NO. 9

"so weak it was necessary to halt three times in one kilometer" on the way down to the Côte des Roches. At Roches, the battalion commander reported the combined strength of two of his companies as 45 men.[79]

Reporting the relief of the 32nd Division that day, G - 2 said the German division had been reduced to a "skeleton organization." The 192nd Division, coming in "hurriedly" to replace the 32nd, counterattacked the next morning "to regain the Etraye-Ridge and the Jägerhohe [the height in Belleu Bois], which had been lost by the 32 I.D." [80] The 26th Division bore the weight of the battle for Jägerhohe all that week, but the 29th also suffered as enemy forces infiltrated its lines repeatedly and raised havoc with the exhausted troops. The infiltration was not difficult, "due to the ever decreasing number of [our] effectives and the enlarged front...[that made it] necessary to have a large portion of each regiment in the front line."[81]

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79 Quoted in ltr, CG 57th Brig, 24 Dec, above. The coordinates point to a ravine in the Bois de Brabant. Note: Though its combat record seems the most detailed, in the final reckoning the 113th Inf proved to have taken the fewest number of casualties in the division.

80 192nd Div WD, 23 - 27 Oct (GFB 214, fol I). SOI 16, 29th Div, 24 - 25 Oct, and Spec Rpt, G - 2, n.d. (29th Div Box 1, 21.2), rptd the relief of the 32nd.

81 History, p. 198. Tompkins, Maryland Fighters of the Great War, p. 63, says that on successive nights 23 - 25 Oct each of the battalions of the 115th Inf held the line, the ridge finally being taken by the last relieving battalion. On 27 Oct the 116th Inf was withdrawn, leaving the 115th to hold until the div was relieved. In this opn alone the 115th was said to have lost 131 killed, 900 wounded. So large a number is not supported by hospital records.

There was little fight left in the division and the remaining days of the campaign were uneventful except for the steady rain of high explosives and phosgene and mustard gas fired by four enemy artillery regiments that had been located but could not be reached. Straggling assumed serious proportions as the troops sought to escape the gas.[82]

On the 27th, the 114th Infantry took part in the attack of the 26th Division on Belleu Bois, Bois d'Ormont, and the west edge of the Bois de Moirey. But no appreciable advance was to be made on that front until the closing days of the war (Map No. 10).

Concerning the attack, G - 2 said only that "Our troops on the right... withdrew this morning to conform to the attack of the 26th Division." G - 3 later reported that they succeeded in reaching their limited objective, even though plans for machine gun support for the attack went awry when an officer placed 28 men of the company in a dugout in which the Germans had exploded yellow cross shells before their departure. All 28 had to be evacuated, and with its previously killed and wounded, all that was left of the machine gun company as a fighting unit was one section.[83]

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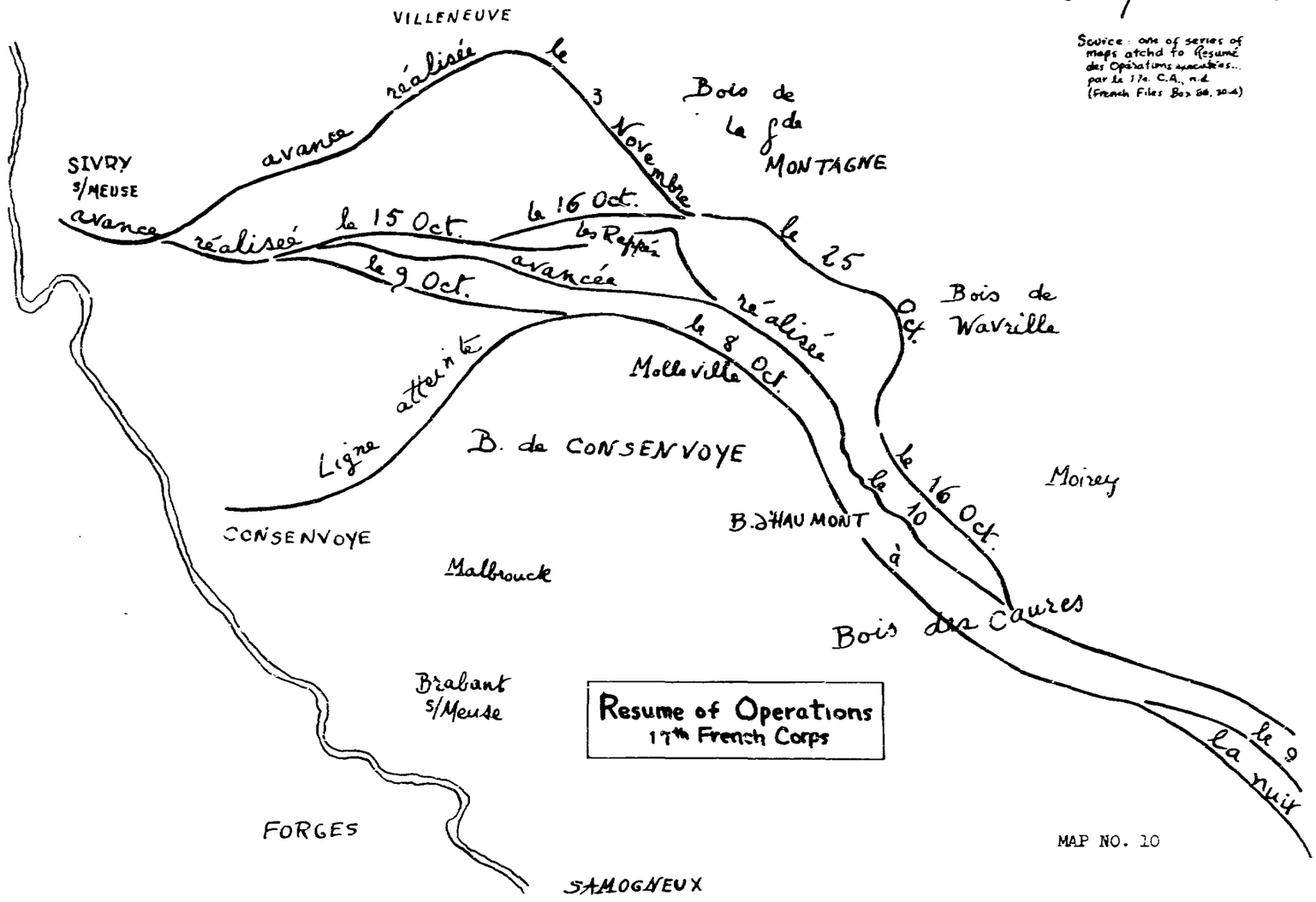
82 SOI 15, 29th Div, 23 - 24 Oct; DOR 23 - 24 Oct. Memo, CG 29th Div to all orgn comdrs, 31 Oct (29th Div Box 5, 50.4), rpted at length on the problem of stragglers in the last weeks of the campaign, with the comment that gas "affords a loop-hole for these characters to escape detection."

83 SOI 18, 26 - 27 Oct; DOR, 27 - 28; History, p. 201; Rpt, CO 114th Inf, 27 Oct, sub: Rpt of Opns, 27 Oct (29th Div Box 9, 33.1). RGO Rpt on Gas Attack, 27 Oct (29th Div Box 9, 33.6), counted 29 casualties.

Croquis N° 9

Source: one of series of maps atchd to Résumé des Opérations ... par le 17e. C.A., n.d. (French Files Box 88, 20-A)




MAP NO. 10

The relief of the 29th by the 79th Division was announced on 27 October and over the next several days, while enemy artillery repeatedly gassed the sector from Hill 338 down to the Samogneux-Haumont road, the division was sorted out and the sector reorganized.[84] On the night of the 26th the 192nd Division artillery, with a 1st Landwehr flanking group joined, carried on where the 32nd had left off, putting down "annihilation fire several times on the whole front....Gas was used part of the time....[i.e. 1,140 rounds of blue cross] and Haraumont schlucht was drenched with gas." [85] The sector was subjected to repeated harassing fire with HE and blue cross gas through 27 and 28 October, and on the night of the 28th the "ravine east of Molleville was drenched with [800 rounds of yellow cross] gas." On 29 October gas was included in repeated waves of annihilation fire, and "from 12 midnight the head of Mollevilleschlucht was drenched with gas as were also Buschtal and Kruckenschlucht." The north edge of Kruckenschlucht was again gassed on 30 October, and the next night, as the 79th Division completed the relief of the 29th Division, Mollevilleschlucht was heavily gassed again (see Overlay to Map No. 5).[86]

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84 FO 24, 29th Div, noon, 27 Oct; DOR, 26 - 29 Oct.

85 1st Ldw Div order IaNr 7692, 26 Oct (in 192nd Div records, GFB 214, fol I, p. 65), called for 300 77-mm. and 100 105-mm. shells "preferably gas" in 20-shell bursts on targets in the Ormont Fme area, and 50 155-mm. yellow cross shells on Haumontschlucht. Stab Felda R 192 WD, 26 Oct (source d, GFB 214, fol III).

86 192nd Div WD, 27 - 31 Oct (GFB 214, fol I). See 1st Ldw and 192nd Div orders and WD's in GFB 214, fols Ia, III, and IV.

During the week ending 31 October, the 192nd Division reported,

> Our own artillery was unusually active. They shelled roads, crossings, ravines, woods and troops positions with heavy harassing fire [and] fired for effect on enemy batteries. Additional batteries were shelled with blue cross. Kruckenschlucht, the junction of Namenlose-, Krucken-, and Konservenschluchten and the junction of Mollevilleschlucht and Buschtal were contaminated.

An artillery unit headquarters added:

> When weather permits, missions will be carried out only with gas ammunition, because ammunition is in scarce supply and we can figure two days' fire in the gun positions by counting in the gas ammunition.[87]

In his weekly report covering the period 20 - 26 October, Captain Maynard estimated that 12,000 gas shells had fallen in the sector, most of them coming in concentrated bursts of 50 to 200 shells, resulting in "an almost constant presence of gas in many ravines and selected places in woods." (His sketch of the general area gassed appears as Map No. 11.) He said he had reported ten specific attacks in the period, but like many of the eleven reported earlier, the accounts were somewhat artificial since it was almost impossible to distinguish separate attacks. Gas casualties had been held to 208 that week as it became possible to evacuate mustard gassed areas and areas continuously shelled.[88] More likely, straggling accounted for much of the exodus.

Another report, but covering the period 20 - 29 October, revised the

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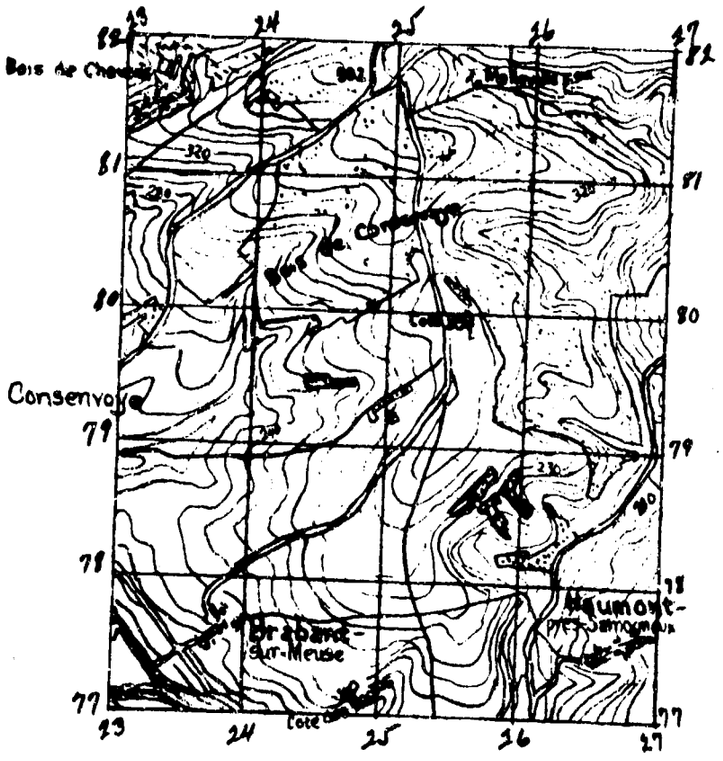
87 Weekly rpt, 192nd Div, 31 Oct (GFB 214, fol I, p. 77); Stab Felda Regt 192 WD, 31 Oct (source d, GFB 214, fol III).

88 Ltr, DGO to CGO 1st Army, 29 Oct, sub: Enemy Gas Activity 20 - 26 Oct (GAF - 29th Div).

DIVISION GAS OFFICER MAP SHOWING
AREA OF ENEMY GAS ACTIVITY, 20-26 OCTOBER

MONTFAUCON MAP
1/50,000




Source: Map attached to Lt. DGO
to CGO 1st Army, 29 Oct
(1st Army Box 340)

MAP NO. 11

total of gas casualties to 290 with the comment that these casualties represented just a fourth of those suffered in the period 9 - 19 October, owing to fewer troops exposed, a diminution in enemy gas fire, evacuation of untenable areas, and increased precautions taken by unit commanders. A tabulation of fourteen "specific" gas attacks in the period showed that 9,075 gas shells had produced 115 casualties. Unidentified gas shelling and traversing of previously contaminated terrain accounted for the remaining 175 gas casualties.[89]

The relief of the 29th Division took place 29 - 31 October as the 115th Infantry on the edge of the Grande Montagne and the 113th in the Bois d'Ormont made way for the incoming 79th. There as everywhere in the sector the men of the 29th came out "emaciated, with eyes sunken, with voices husky from gas, and with nerves strained to the breaking point." [90]

The division moved down to Verdun and then to Vavincourt, where it was placed in Army reserve. On 10 November it was assigned to Second American Army for a planned advance towards Metz. But the division order to move into the Second Army area was never executed. On 13 November, said a unit historian, "We ran into 26th Division men in the Zone of Advance without helmets or gas masks, and then we knew it was all over." [91]

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89 Ltr, DGO to CG 29th Div, 30 Oct, sub: Enemy Gas Activity, 20 to 29 Oct (GAF - 29th Div). Cf. Rpts on Gas Attack dated 25, 27, 28, 29 Oct, same file.

90 History, p. 204.

91 History, p. 241.

## ANALYSIS

### The Records of the 29th Division

The records of the 29th Division are among the most complete in the National Archives and abound in maps and sketches. Gas attack reports and gas correspondence of the division are found not only in the Gas Attack Files (GAF) at the Army Chemical Center but in 1st Army Box 340 and all through the division records, especially in Boxes 7 through 10 and Box 125.

The operational records of the division (in 29th Division Box 3, 33.2) are collected in a three-part mimeographed set of orders and high-level after-action reports entitled "Military History, World War: The Operations of the 29th Division East of the Meuse River, October 8th to 30th, 1918," compiled in 1921 by Maj. W. S. Bowen (G - 3) "for use in the course in Historical Research" at the Coast Artillery School, Fort Monroe, Va. This set seems to have been expanded later to include after-action reports down to platoons, and published as the 410-page Source Book: Operations of the 29th Division, Fort Monroe, Va., 1922 (in the Library of Congress).

For all the careful marshaling of detail in these records, both the mimeographed account and the Source Book are almost devoid of any references to gas during the campaign, apart from General Morton's undated report of operations, where 23 officers and 997 men are listed as the total gas casualties.[92]

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92 Source Book, p. 4.

Of interest in 29th Division records is the fact that there were two sets of after-action reports prepared by the commanders of the division and the brigades, dated 9 November and 23 December. The reports of 9 November, much less candid than the 23 December reports, are the ones printed in the mimeo and in the Source Book. With the 23 December reports are final reports of the Division Gas Officer, the Division Surgeon, and the Division Ordnance Officer, the whole designated as Supplementary Reports. These were all sent to Bowen on 16 January 1919, presumably when he began preparation of the "Military History." [93] Yet none of the documents comprising the Supplementary Reports were used in Bowen's mimeographed records, in the Source Book, or in any form in the official history of the division. They have, however, been used extensively in the present study.

## Battle Casualties

All summaries of battle casualties in 29th Division records include gas casualties. The summary with the smallest gas total is that in the Source Book:[94]

| | Officers | Men |
|---|---|---|
| Killed | 31 | 585 |
| Severely Wounded | 29 | 853 |
| Slightly Wounded | 47 | 1660 |
| Gassed | 23 | 997 |
| Psychoneurosis | 6 | 114 |
| Sick | 33 | 1278 |
| Missing | 1 | 204 |
| | 170 | 5691 |

93 See covering ltr in 29th Div Box 4, 33.2.

94 Morton's Rpt of Opns...on the Côtes de Meuse, Oct 8 - 29, Source Book, p. 4. Reprinted in Robinson, Ambulance Company 113, p. 218.

Of a large number of casualty summaries available in the records, five have been chosen as representative:

TABLE NO. 1

29th DIVISION SUMMARIES OF CASUALTIES

| | Div Surg[a] | | Med Dept[b] | | CG 29th Div[c] | | Div Stat Off[d] | | 104th San Tr[e] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Off | Men | Off | Men | Off | Men | Off | Men | Off | Men |
| KIA | | | 21 | 384 | 28 | 551 | 21 | 405 | 23 | 477 |
| D of W | | | 2 | 69 | | | 2 | 70 | | |
| Sev W | 28 | 706 | 38 | 754 | 36 | 754 | 38 | 791 | | 765 |
| Sl W | 42 | 1504 | 54 | 1629 | 54 | 1629 | 57 | 1715 | | 1663 |
| Gassed | 30 | 1414 | 20 | 1616 | 26 | 1616 | 27 | 1673 | | 1790 |
| Shock | | | | | | | 4 | 98 | | |
| PN | | | 4 | 89 | 4 | 89 | | | | |
| Sick & Inj | 49 | 916 | 46 | 819 | | | 49 | 885 | | 1227 |
| Missing | | | | | 0 | 143 | 1 | 301 | | |
| Other | 7 | 169 | | | | | | | | 219 |
| | 156 | 4709 | 185 | 5360 | 148 | 4782 | 199 | 5938 | 23 | 6141 |

a) Lt Col John B. Huggins, Div Surg, Hist Sketch of Med Dept, 29th Div, n.d. (Med Dept Box 3642, fol 1).
b) Casualties, 8 - 30 Oct, as compiled by Med Dept (in History, p. 207).
c) Morton, Rpt of Opns of 29th Div East of Meuse [Dec 1918] (29th Div Box 4, 33.6).
d) Rpt, [Div Stat Officer] for G - 3, Sum of Casualties, n to n, 8 Oct - 1 Nov (29th Div Box 1, 12.3). The same figures appear in a table, n.d., in Med Dept Box 3642, fol 2.
e) Rpt, CO 104th San Tr, 29th Div, 2 Nov, sub: Compilation of Casualty Reports [based on triage records, 7 - 29 Oct] (29th Div Box 3, 33.2).

Another record of hospital admissions, with the hour of their arrival, in Med Dept Box 3642, fol 2, shows 4 gas cases admitted on the afternoon of 8 Oct and totals during the campaign of 764 severely wounded, 1673 slightly wounded, 1789 gassed, 50 and 168 "other" admitted, and 192 and 1038 severely and slightly sick, for a total of 5674.

Shipley Thomas, who sketches the operations of the 29th Division briefly in his history says: "There was nothing sensational about its advance on the right of the Meuse, but...each day marked an important if small advance...gradually opening up the Meuse valley for the main attack" — presumably referring to the final advance on 8 November. According to his sources, in its 20 days east of the Meuse, the 29th Division advanced 7 kilometers (4½ miles) and suffered 5,796 casualties.[95]

This total apparently includes the shell shock cases, sick, and missing, as the Battle Monuments Commission casualty tables do not. Dividing the campaign into three phases (the approach, the advance, and the holding operation), casualties reported by the Commission are:[96]

| | Killed | Died of Wounds | Wounded | Total |
|---|---|---|---|---|
| 2 - 7 Oct | 0 | 2 | 37 | 39 |
| 8 -22 Oct | 599 | 188 | 3294 | 4081 |
| 23 -31 Oct | 158 | 51 | 677 | 886 |
| | 757 | 241 | 4008 | 5006 |

A further breakdown of infantry casualties in the Commission report reveals that the 114th and 116th Infantry had the highest number of battle casualties (1,421 and 1,262), the 113th and 115th the fewest (721 and 848). The figure for the 113th Infantry suggests that its early relief (narrative, p. 39 - 40) may have been necessitated by lack of equipment rather than exhaustion or decimation. As will be seen, that regiment also had the fewest gas casualties.

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95 History of the A.E.F. (New York, 1920), p. 332.

96 29th Div Sum of Opns (USGPO, 1944), p. 28.

## Gas Casualty Report

On 5 November, following an inspection of the division, Major Joly, V Corps Gas Officer, said that although there were only four battalion gas officers left in the division and very few gas NCO's, "gas matters were receiving every consideration, due without doubt to the fact that the division suffered 1500 casualties during their last stay of 21 days in the front line."[97] Lieutenant Noyes, of the Office of the Chief, CWS, AEF, who accompanied Major Joly during the inspection, added that it was "evident that this division has been handled in exceptional fashion by the previous Gas Officer... Maynard evidently had the cordial support of the Commanding General and Chief of Staff."[98] There is no reason to question this.

In the months that followed the Armistice four somewhat similar reports on the gas experience of the 29th Division were prepared from divisional records by the DGO's who succeeded Captains Waitt and Maynard. All attest to the intensive gas defense training received by the division, to the "constant supervision" by the gas officers during the campaign, and the "rigid observation by all" of standing orders and special gas orders. As a result, the reports said, no gas deaths occurred during the Meuse operation. But

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97 Ltr, Maj C. L. Joly, CGO V Corps to CofS V Corps, 5 Nov, sub: Inspection of 29th Div (1st Army Box 340).

98 Ltr and rpt, Lt C. R. Noyes to CGO 1st Army, 5 Nov, sub: Rpt on inspection of 29th Div (1st Army Box 340).

the nature of the enemy gas fire, in particular the absence of crash concentrations of blue or green cross gas, was a better explanation for the seeming fine record.

Of the 1,418 gas casualties found in DGO records by Captain Maynard's successors,[99] approximately 300 were said to have been lung cases, 300 eye cases, and 900 were burns (cf. p. 68 below). These casualties could not be avoided "because of the [tactical situation and the] continuous nature of the gas shelling." Three of the four post-war reports tabulated the weight of gas shells fired in specific attacks, counting a total of 22,287 gas shells in "27 distinguishable gas shell attacks." [100] Discounting for the moment the additional casualties resulting from non-specific gas shelling, on the basis of DGO data these 22,287 gas shells represent a casualty for every

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99

See fn below. Capt Maynard's two reports covering the period 9 - 29 Oct (narrative, pp. 46, 58) show a total of 1486 gas casualties. These resulted from a minimum of 32,000 gas shells or a casualty for every 21 shells. Note: A compilation made from gas attack rpts between 10 - 28 Oct in Spencer, II, 280 - 306, shows a total of 20,350 gas shells resulting in 574 gas casualties.

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Ltr, 1st Lt C. S. Moyer, DGO to CGO 1st Army, 20 Nov, sub: Rpt on Recent Opns (GAF - 29th Div); Rpt, Moyer, 14 Dec, sub: Gas, Argonne-Meuse Opn, 5 - 28 Oct (Suppl Rpt in 29th Div Box 4, 33.6); Ltr, Capt P. D. Farrell, DGO to Dep C CWS, 13 Jan 1919, sub: Rpt requested in Circ Ltr No. 89; Ltr, Farrell to G - 2 29th Div, 14 Mar 1919, sub: Data on Enemy Gas Opns (both in GAF - 29th Div).

Ltr, Capt Waller N. Mercer, DMGO 29th Div to Med Dir CWS, 5 Nov, sub: Rpt of Gas Casualties...7 - 29 Oct (Med Dept Box 3642, fol 2), said that of the 1418 gas casualties 577 resulted from blue cross, 309 from yellow cross, 322 were undetermined, 198 mixed, and 12 from phosgene. Of 180 returned to duty after 24 - 48 hours, 29 developed symptoms and were rehospitalized.

16 shells.

Defending the DGO total of 1,418 gas casualties in his inspection report of 5 November, Lieutenant Noyes took exception to the higher total found by the Statistical Section of the division:

The Statistical Officer's reports for casualties during the period which this division was in the line were approximately 2500, and Surgeon's report and the Gas Officer's figures were about 1400. This calls particular attention to the common practice of tagging all casualties [not] otherwise explained as gas cases.[101]

The Surgeon's report referred to may be that found in the "Historical Sketch of the Medical Department, 29th Division," which shows 1,444 gas cases out of a total of 4,709 hospitalized casualties.[102] All other Division Surgeon reports show considerably more gas cases, and these are confirmed in the compilation of casualties made from the hospital admission lists of the division in Table No. 2.

All 29th Division gas and wound casualties in Table No. 2 were found in the admission records of Field Hospital 114, the division triage or sorting station at Glorieux, near Verdun (Med Dept Box 3650).[103] Approximately

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101 Ltr and rpt, above.

102 Med Dept Box 3642, fol 1.

103 Memo, CO 114th FH Co for CG 29th Div, 5 Nov, sub: Rpt covering recent opns (Med Dept Box 3642, fol 6), rpts 1481 gas cases through the Glorieux triage and 407 through FH 115, opened as a gas triage at Charney on 18 Oct.

TABLE NO. 2

HOSPITAL RECORD OF GAS AND WOUND CASES ADMITTED
(in Comparison with DGO Records)

| | 113th Inf | | | 114th Inf | | | 111th MG | | | 115th Inf | | | 116th Inf | | | 112th MG | | | Others | | | TOTALS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | DGO Gas | FH Gas | FH HE | DGO Gas | FH Gas | FH HE | DGO Gas | FH Gas | FH HE | DGO Gas | FH Gas | FH HE | DGO Gas | FH Gas | FH HE | DGO Gas | FH Gas | FH HE | DGO Gas | FH Gas | FH HE | DGO Gas | FH Gas | FH HE | Date |
| Oct | | | | 44 | | | | | | | 6 | 65 | | 1 | 73 | | | 7 | 4 | 1 | 4 | 48 | 8 | 149 | 9 Oct |
| Oct | | | 63 | 52 | | | | | 1 | 12 | 4 | 89 | 9 | 24 | 70 | | 3 | 8 | | | 1 | 73 | 31 | 232 | 10 Oct |
| Oct | | 2 | 37 | 62 | | 1 | | | 5 | 24 | 4 | 61 | 75 | 76 | 25 | 2 | | 3 | | 5 | 3 | 163 | 87 | 135 | 11 Oct |
| Oct | 42 | 6 | 65 | 116 | 58 | 160 | | 3 | 22 | 8 | 10 | 29 | 31 | 66 | 108 | 3 | 15 | 7 | 4 | 7 | 5 | 204 | 165 | 396 | 12 Oct |
| Oct | 16 | 13 | 76 | 34 | 207 | 218 | | 15 | 6 | 43 | 9 | 17 | 18 | 10 | 28 | 6 | 5 | 5 | | 4 | 2 | 117 | 263 | 352 | 13 Oct |
| Oct | 9 | 38 | 19 | 108 | 441 | 134 | 11 | 46 | 19 | 18 | 5 | 19 | 46 | 20 | 12 | 3 | 2 | 3 | 5 | 18 | 5 | 200 | 570 | 211 | 14 Oct |
| Oct | | 9 | 27 | 28 | 73 | 8 | 7 | 9 | 3 | | 8 | 56 | 11 | 28 | 102 | 8 | 2 | 9 | 2 | 23 | 5 | 56 | 152 | 210 | 15 Oct |
| Oct | | 9 | 24 | 48 | 30 | 6 | | 3 | 6 | | 34 | 51 | 17 | 55 | 79 | 6 | 12 | 4 | 4 | 5 | | 75 | 148 | 170 | 16 Oct |
| Oct | | 4 | 17 | 17 | 35 | 8 | 3 | 1 | 2 | | 20 | 36 | 41 | 4 | 26 | 4 | | 6 | 3 | 5 | 1 | 68 | 69 | 96 | 17 Oct |
| Oct | | 4 | 4 | 8 | 14 | 3 | 2 | 1 | | | 15 | 12 | 11 | 4 | 8 | 8 | 11 | 1 | | 5 | 3 | 29 | 54 | 31 | 18 Oct |
| Oct | | 6 | | 7 | 4 | 1 | 23 | | 1 | | 3 | 1 | 12 | 5 | 8 | 4 | | 1 | 2 | 1 | 2 | 48 | 19 | 14 | 19 Oct |
| Oct | 28 | 6 | 2 | 2 | 4 | | 7 | 3 | | 2 | | 2 | 16 | 7 | 2 | | | 1 | 5 | | | 60 | 20 | 7 | 20 Oct |
| Oct | 6 | 30 | 3 | 2 | 2 | | | | 1 | 1 | 2 | 6 | 3 | 16 | 7 | | | 1 | 35 | 2 | 2 | 44 | 52 | 20 | 21 Oct |
| Oct | 7 | 7 | | 3 | 2 | | 4 | | 1 | 2 | 1 | 4 | 11 | 3 | 2 | 1 | | 1 | 15 | 8 | | 44 | 21 | 8 | 22 Oct |
| Oct | 4 | 8 | 38 | 1 | 3 | 2 | | 4 | 6 | 9 | 2 | 45 | 3 | 9 | 59 | 2 | 1 | 9 | 23 | 2 | 3 | 42 | 29 | 162 | 23 Oct |
| Oct | 8 | 3 | 24 | 4 | 1 | | | | | 7 | 8 | 25 | 5 | 3 | 43 | | 2 | 6 | 15 | | | 39 | 17 | 98 | 24 Oct |
| Oct | 1 | 4 | 14 | 3 | 2 | 2 | | | | 7 | 3 | 6 | | 2 | 16 | | | 2 | 19 | 4 | 2 | 30 | 15 | 42 | 25 Oct |
| Oct | | 1 | 1 | 29 | 3 | 5 | 1 | | | 1 | 7 | 6 | | | 1 | | | | 6 | 1 | 2 | 36 | 12 | 15 | 26 Oct |
| Oct | 1 | | 1 | 7 | 28 | 15 | 1 | 1 | 1 | 3 | 1 | 7 | 4 | | 12 | 1 | | | 17 | | 3 | 34 | 30 | 39 | 27 Oct |
| Oct | | 1 | | 1 | 8 | 10 | | 1 | | | 4 | | | 4 | 4 | | 1 | | | | 1 | 1 | 19 | 15 | 28 Oct |
| Oct | | | | | | 1 | | | | | | 5 | | | | | | | | 1 | | | 1 | 6 | 29 Oct |
| | 122 | 151 | 415 | 576 | 915 | 574 | 59 | 87 | 74 | 137 | 146 | 542 | 313 | 337 | 685 | 48 | 54 | 74 | 156 | 92 | 44 | 1418 [sic] | 1782 | 2408 | |

600 casualties, some gas cases but mostly wounded, were found in 33rd Division hospital records, but these appear to have been recorded at the 29th Division triage either before or after their admission to the neighboring hospital.

The DGO gas figures included in Table No. 2 are from the Monthly Gas Casualty Report for October (GAF - 29th Div). Some of the discrepancies with hospital data may be owing to the fact that the DGO report was not prepared until January 1919, in response to CWS Circular Letter No. 89, and was made up then from available gas attack reports. An inexplicable difference between DGO and hospital data is a total of 64 gas casualties in the 158th FA Brigade, recorded by the DGO between 12 - 27 October. Hospital records show not a single artilleryman among its 1,782 gas casualties.[104]

The hospital lists reveal that of the 1,782 gas casualties, 472 were admitted simply as "gassed," 293 as the result of "mustard gas," 831 resulted from "diphenylchloroarsine," and 186 "mixed gas." Of the 2,408 wounded, 2,376 were listed as "gunshot wound," 24 "shell shock," and 7 "shrapnel." No distinction was otherwise made between artillery shell and small arms casualties. The few shrapnel cases seem amazing, considering that almost

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104

Rpts on Gas Attacks of 17, 21, 27 Oct (in 83rd Div Box 3, 66.33), account for 35 casualties in the 322nd and 323rd FA, located two kilometers northeast of Brabant. The Battle Monn Comm study, p. 28, shows 28 killed, 13 died of wounds, and 184 wounded in the FA.

Another major discrepancy is the 158 gas cases reported by the DGO in the 114th Inf between 9 - 11 Oct while that regt was in corps reserve. In compensation, its casualties between 12 - 14 Oct are minimized by the DGO.

half the HE fired by the German batteries was shrapnel. On the other hand, it is to be observed that the 2,408 wounded in the hospital lists compares favorably with the 2,280, 2,475, 2601, and 2,428 wounded reported in Table No. 1 and therefore tends to support the hospital total of gas casualties.

Even more interesting, the Daily Operations Reports of the 29th Division, showing accumulative totals of 564 killed, 2,542 wounded, and 1,751 gassed, or 4,857 total casualties, are the only DOR totals so far examined in AEF records that approximate either hospital records or summaries of battle casualties.[105]

## Enemy Gas and HE Fire

The estimate, based on 29th Division gas records, that 22,287 gas shells were fired into the division sector in the course of 27 distinguishable gas attacks in October appears in Table No. 3, a tabulation appended to several of the postwar DGO summary reports (see p. 65).

For comparison, the German 32nd Division record of gas and HE fire on nine days in October, covering the most active period of the campaign (narrative, pp. 29 - 30, 38 - 39, 41 - 42, 48), has been compiled in Table No. 4. Since the DGO compilation represented in Table No. 3 makes no distinction in the caliber of the gas shells, none has been made here, although it may be said that the German totals of 21,034 gas shells and 37,905 HE and shrapnel shells represent the equivalent of 19,355 blue cross, 4,867 green cross, and 8,028

105 DOR, 29th Div, 8 - 29 Oct (29th Div Box 3, 33.1).

TABLE NO. 3

ENEMY GAS SHELLS FIRED IN SPECIFIC ATTACKS

| Date | Blue Cross | Green Cross | Yellow Cross | Total |
|---|---|---|---|---|
| 10 Oct | | 25 | | 25 |
| 10 Oct | 75 | 95 | 30 | 200 |
| 11 Oct | | | 150 | 150 |
| 11 Oct | 200 | | 200 | 400 |
| 12 Oct | 100 | 200 | | 300 |
| 12 Oct | 100 | 250 | 150 | 500 |
| 13 Oct | 300 | 1600 | 100 | 2000 |
| 14 Oct | | 25 | | 25 |
| 14 Oct | 400 | 1100 | 800 | 2300 |
| 14 Oct | 600 | 1200 | 1200 | 3000 |
| 14-15 Oct | 200 | [550] | | 750 |
| 14-15 Oct | 200 | 700 | 300 | 1200 |
| 14-15 Oct | 1000 | | 3000 | 4000 |
| 16 Oct | | | 200 | 200 |
| 17 Oct | 50 | | 200 | 250 |
| 18 Oct | | 200 | 50 | 250 |
| 19 Oct | | 12 | | 12 |
| 21 Oct | | | 500 | 500 |
| 21 Oct | | | 700 | 700 |
| 22 Oct | | | 2000 | 2000 |
| 22 Oct | 20 | 180 | | 200 |
| 22 Oct | | 150 | | 150 |
| 22 Oct | 80 | 320 | 100 | 500 |
| 23 Oct | 200 | 1300 | | 1500 |
| 26 Oct | | | 800 | 800 |
| 26 Oct | 20 | | 55 | 75 |
| 28 Oct | | | 300 | 300 |
| | 3,545 | 7,907 | 10,835 | 22,287 |

yellow cross, or 32,250 77-mm. gas shells, and 69,177 77-mm. HE and shrapnel shells. It is also known (narrative, p. 29) that on 11 and 12 October approximately the same weight of HE was fired as on 13 October. The total HE in the table should therefore be almost doubled.

TABLE NO. 4

RECORD OF 32nd DIVISION ARTILLERY FIRE

| Date | Blue Cross | Green Cross | Yellow Cross | TOTAL GAS | TOTAL HE | |
|---|---|---|---|---|---|---|
| 13 Oct | 967 | | 150 | 1,117 | 13,100 | |
| 14 Oct | 2095 | 602 | 1084 | 3,781 | 3,989 | |
| 15 Oct | 5240 | 328 | 1122 | 6,690 | 5,216 | |
| 16 Oct | 1821 | 106 | 30 | 1,957 | 3,626 | shrapnel |
| 17 Oct | 1793 | | 780 | 2,573 | 3,093 | " |
| 18 Oct | 633 | 232 | 150 | 1,015 | 1,453 | " |
| 19 Oct | 636 | 408 | 557 | 1,601 | 308 | " |
| 20 Oct | 525 | 75 | 700 | 1,300 | 4,700 | " |
| 22 Oct | 400 | 100 | 500 | 1,000 | 2,420 | " |
| | 14110 | 1851 | 5073 | 21,034 | 37,905 | |

A considerable amount of 32nd Division gas and HE fire was directed on the 18th French and 33rd American Divisions and was, as the overlay to Map No. 5 also indicates, put repeatedly on targets sooner or later evacuated by 29th Division troops. On the other hand, this fire represents just nine of the twenty-one days that the 29th Division was in the sector, and it does not take into account the gas and HE fired into the sector by the 228th and 15th Divisions or later minor missions by the 1st Landwehr and 192nd Divisions.

If these considerations do not quite cancel out, for purposes of computation the German fire is here assumed to represent the approximate total volume of fire on the 29th Division sector. Of interest is the fair agreement in totals between Table No. 3 and Table No. 4, despite the disparity in

volume between the kinds of gas. Hospital records showing the highest number, 831 casualties, admitted with "diphenylchloroarsine" (blue cross) symptoms tend to bear out the German data, even though the 283 "mustard gas" (yellow cross) and the total absence of phosgene (green cross) casualties do not.

Assuming the 1,782 gassed and 2,408 wounded in the division (Table No. 2) to be the result entirely of enemy artillery fire, that is, of 21,034 gas shells and 37,905 HE and shrapnel shells, 12 gas shells were required to produce a gas casualty, 16 HE shells to produce a wound casualty. (The ratio rises to 18 and 29 when the shells are reduced to 77-mm.). But the narrative (pp. 17, 18, 19, 23, 31 - 32, 35, 52 ) makes it abundantly clear that most of the wounded and killed fell before machine gun fire. This is further supported by hospital records showing just seven men admitted with shrapnel wounds, although shrapnel constituted a high percentage of the HE fire. The incessant HE bombardments during the period were nerve-wracking and sent numbers of shell shock cases to the hospital, but they wounded few.

The nature of enemy gas fire east of the Meuse makes reliable statistics for any one gas attack almost impossible. The single attack where available data permit any kind of computations is that in the period 11 - 14 October, when German batteries fired approximately 5,800 gas and 43,000 HE shells into the Haumont-Ormont area (narrative, pp. 27 - 28). The Division Gas Officer's estimates at the time of 2,300 and 2,000 gas shells, apparently for the same attack (narrative, pp. 21, 25) were considerably revised in postwar summaries (represented here in Table No. 3), but the total of 10,000 or more gas shells for the period shown in that table seems excessive on the

basis of available German data.

Probably little more than half the German fire fell on the 29th Division sector, the remainder in the adjacent 18th French Division area. It may therefore be assumed that approximately 3,000 gas shells and 21,000 HE shells hit the area occupied by some 3,500 men of the 113th and 114th Infantry in the period 11 - 14 October. The casualties of the brigade, including its machine gun units, during the period 12 - 14 October were 827 gassed and 719 wounded (Table No. 2), or a gas casualty for every three to four gas shells, a wound casualty for every thirty HE shells -- apart from the probability that "rushing the machine gun nests" in the attack on the Bois d'Ormont, and not the HE, accounted for most of the wounded.

## French and American Casualties

During October the XVII French Corps comprised three American and three French divisions. The daily casualties in these six divisions, as reported in XVII Corps Comptes-Rendus, are compiled in Table No. 5.[106]

While far from the true totals (corps totals for the 33rd Division, for example are approximately half its hospital totals), the French corps figures, as they stand, indicate that General Claudel may not have been entirely justified in calling the American divisions negligent about gas (narrative, p. 46), without also admitting that the French were more negligent about HE.

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106 French Files Box 92, 30.3.

TABLE NO. 5

COMPARISON OF FRENCH AND AMERICAN CASUALTIES IN XVII CORPS

| Date | 33rd Am | | 29th Am | | 18th Fr | | 26th Fr | | 10th Col | | 26th Am | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | W | G | W | G | W | G | W | G | W | G | W | G |
| 1-2 Oct | | | | | 6 | 8 | | | 5 | 4 | | |
| 2-3 Oct | | | | | 8 | 5 | | | 4 | 2 | | |
| 3-4 Oct | | | | | 3 | 12 | | | 1 | 0 | | |
| 4-5 Oct | | | | | 1 | 0 | 1 | 0 | 1 | 9 | | |
| 5-6 Oct | | | | | 2 | 2 | 2 | 1 | 0 | 18 | | |
| 6-7 Oct | | | | | 3 | 4 | 0 | 38 | 0 | 23 | | |
| 7-8 Oct | | | | | - | - | - | - | 0 | 15 | | |
| 8-9 Oct | | | | | 140 | 1 | 243 | 12 | 19 | 8 | | |
| 9-10 Oct | 79 | 78 | 143 | 21 | 80 | 6 | 189 | 11 | 43 | - | | |
| 10-11 Oct | 56 | 197 | 88 | 29 | 145 | 7 | 100 | 10 | 11 | 3 | | |
| 11-12 Oct | 9 | 183 | 9 | 26 | 99 | 19 | 171 | 27 | 4 | 9 | | |
| 12-13 Oct | 186 | 49 | 212 | 93 | 50 | 15 | 89 | 21 | 9 | 12 | | |
| 13-14 Oct | 73 | 79 | 265 | 129 | 19 | 40 | 32 | 12 | 7 | 22 | | |
| 14-15 Oct | 22 | 16 | 287 | 164 | 14 | 40 | 10 | 6 | 10 | 0 | | |
| 15-16 Oct | 17 | 20 | 193 | 264 | 13 | 57 | 12 | 3 | 0 | 6 | | |
| 16-17 Oct | 17 | 42 | 75 | 97 | 13 | 15 | 38 | 4 | | | | |
| 17-18 Oct | - | 95 | - | 213 | 2 | 3 | 6 | 4 | | | 15 | 60 |
| 18-19 Oct | - | 113 | - | 103 | - | 161 | 6 | 2 | | | 11 | 6 |
| 19-20 Oct | 5 | 37 | 41 | 33 | | | 3 | 4 | | | 13 | 11 |
| 20-21 Oct | 13 | 61 | 18 | 22 | | | 3 | 0 | | | 8 | 18 |
| 21-22 Oct | 3 | 11 | 10 | 46 | | | 2 | 0 | | | 24 | 11 |
| 22-23 Oct | 2 | 8 | 21 | 66 | | | 2 | 2 | | | 1 | 5 |
| 23-24 Oct | 0 | 2 | 46 | 30 | | | 5 | 18 | | | 1 | 3 |
| 24-25 Oct | | | 210 | 35 | | | 2 | 0 | | | 146 | 50 |
| 25-26 Oct | | | 105 | 29 | | | 1 | 0 | | | 116 | 72 |
| 26-27 Oct | | | 49 | 21 | | | 1 | 2 | | | 11 | 0 |
| 27-28 Oct | | | 25 | 20 | | | 4 | 0 | | | - | - |
| 28-29 Oct | | | | | | | 1 | 0 | | | 137 | 173 |
| 29-30 Oct | | | | | | | 1 | 0 | | | 31 | 156 |
| | 482 | 991* | 1797 | 1441 | 598 | 395 | 924 | 177 | 114 | 131 | 564 | 565 |

* Study No. 8, "The 33rd Division Along the Meuse," p. 78, shows 835 wounded, and 1.974 gassed admitted to its hospitals in the period 1 - 20 October.

If it is assumed that the German fired approximately the same amount of gas and HE into the three French sectors as into the American,[107] then on a proportional basis the total casualties of the French and American divisions were not so dissimilar as General Claudel suggested. Total wounded and gassed in the three American sectors are shown as 5,840 (2,843 wounded, 2,997 gassed); in the three French sectors as 2,339 (1,636 wounded, 705 gassed). Doubling the figure of 2,339, since French divisions were about half the size of American (and disregarding the French tendency to "save" their men), the proportional total casualties among the French was 4,678, with French wounded in excess of American.

Another source of battlefield casualties must be considered. Owing to negligence or perhaps failure of supply -- though certainly not to inexperience -- the French had an enormous number of men evacuated with frozen feet (875, according to the narrative, pp. 46 - 47). "Contrary to expectations," said the 29th Division Surgeon, "very few men were sent to the hospital with trench feet"[108] -- there were 35 in the three American Divisions. When these casualties in the six divisions are added to the wounded and gassed, the American casualties total 5,870, while proportionate French casualties

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107 15th Div records in GFD 167 and 168 indicate that almost as much gas and HE may have been fired into the French sectors, and that French arty returned an equal volume of gas fire. Cf. the contamination of Caine Ravine in the 18th Fr Div sector on 4 - 5 Oct with 3,800 yellow cross shells; no comparable single attack occurred in the American sectors. Note in Table No. 5 the few casualties this shoot produced.

108 Hist Sketch of Med Dept, 29th Div (Med Dept Box 3642, fol 1).

total 5,553. Claudel's correspondence with his French divisions concerning pieds gélés has not been found.

## Lessons Learned

The German tactic of lulling troops, by the desultory use of gas over a period of time before firing a gas concentration, worked twice against the 114th Infantry, in Alsace and again a month later east of the Meuse. It was an enemy tactic experienced by almost every division in the AEF, and even when the divisions were warned of it before entering the line, it worked without fail every time.

In transit or resting between 23 September and 7 October, the 29th was a relatively fresh combat division when it began the attack on 8 October. The Chief of Staff may well have thought, therefore, that the Kriemhilde Stellung, more than nine kilometers above the line of departure, could be reached by the division on the third day of operations.

Catching the enemy by surprise, the attack units of the 29th advanced five kilometers on the first day or more than halfway to the Kriemhilde. From that point on, the division fought in a constant gas atmosphere, and in the next three weeks advanced less than half the remaining distance to the final objective. The division simply was not prepared for that kind of fight.

The normal attrition of forces due to HE fire and to combat fatigue was understood and reckoned with in estimating attack logistics. This

was one of the reasons for the size of American divisions, to maintain a high level of effectiveness despite the distance from their bases of supply and replacements. But so far as can be learned, no provision was ever made for gas attrition, and it was never contemplated that an entire division might be called on to fight for prolonged periods of time in the constant presence of low concentrations of gas. The only suggestion that this was eventually recognized was in orders, late in the war, to train troops to wear their masks for long periods of time while performing normal duties.

Despite testimony after the campaign to the thorough gas training and gas supervision of the division, as it was then understood, the narrative everywhere indicates that the enemy's use of gas, rather than his machine gun and HE fire, was principally responsible for wearing down the strength and morale of the division, making further advance impossible. Actually, Chemical Warfare Service doctrine on the handling of troops under gas conditions in the field was largely ignored by troop commanders until the gas had decimated or exhausted their troops. Unit commanders eventually learned to respect gas, but by then it was too late.

In this operation, as in almost every one in which the AEF was engaged, the enemy fought a defensive battle with a minimum of troops, but on terrain of his own choosing. As General Morton said:

> The deep narrow gullies forming the only avenue of approach were exceptionally favorable to the continued and consistent concentration of phosgene and mustard gas, which the Germans sent over in quantity daily. At Grande Montagne, Molleville Farm, Ravine de Molleville, southwest of Belleau Wood and Bois d'Ormont, our division encountered a system of artillery, gas, and machine gun defense considered for years as

impregnable by both the French and Germans....It was concluded by the gas officer that 35,000 gas shells of various kinds were fired against our troops.[109]

Against such defenses and defensive tactics, only the most rigid training and extraordinary gas discipline could hope to prevail. But gas training in the 29th Division, as elsewhere, tended to be limited by the mentality of the staff and line officers, whose training was largely based on the battles fought in the Civil War of 1861 - 65. It is not too much to say that Capt. Alden H. Waitt, the first Division Gas Officer of the 29th, was removed for excessive zeal in his efforts to establish good gas discipline.

The 29th Division was a Spartan outfit. It went into the line an untried division, without its own artillery, under the command of the French, and took a beating without complaining. The French corps under which it served impressed on the division and its artillery the fact that ammunition was in short supply, and apparently for this reason the division expected little and got little artillery support. Thus, nowhere in the exceedingly complete records of the 29th Division does the word "retaliation" appear, nor does the thought occur in any record examined for this study.

Few of the divisions in the AEF, despite Chemical Warfare Service efforts, were ever convinced that retaliation with gas was the only possible way to hold down enemy gas fire. Ignorance of gas aggravated the fear that its use would be as dangerous to those firing it as to those receiving it. Nor,

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109 Rpt of Opns of 29th Div East of the Meuse [Dec 1918] (29th Div Box 4, 33.6).

so far as the records go, can it be said that the AEF was particularly aware of the antipersonnel effects of phosphorus and thermite, or even the effectiveness of phosphorus as a smoke weapon, to mask machine gun nests in the assault.

In the case of the 29th Division, the commander was to complain at the end of the campaign that he had been very limited in all kind of ammunition, exceedingly so with gas shells, and had had no smoke shells whatever. But this is not so if an ammo report of his attached artillery is to be believed. On 9 October the brigade had on hand 2,500 No. 3 phosphorus shells and 3,000 gas shells, 75-mm. caliber. Yet there is no record that smoke was ever used, and brigade (not division) plans to fire the gas shells seem to have been scotched. The artillery brigade report suggests that the division commander either did not know how to use gas or phosphorus shells, was in fear of them, or believed them too few when resupply was probably out of the question.

German records make it clear that the French themselves in the sector had at least an adequate supply of gas shells and fired them freely, principally on their own fronts. But they were not used, as they might have been advantageously, on Molleville Farm, Hill 375, or the Bois d'Ormont when the 29th Division was preparing to attack those strong points, and too few were used for the Etraye attack.

Division records nowhere mention any use of gas on its sector front during the operation except that prior to the Etraye attack on 23 October.

Yet the division commander was later to suggest gas had been used on the front throughout the campaign, its greater use limited only by lack of shell. Elsewhere he said that all counter-battery work for the division was carried out by the French corps and was not effective.

The new Division Gas Officer who came into the division after the Meuse operation seems to have been no better informed than the division commander. Presumably on the basis of available records, he was to write in some detail about "Our gas offensive during the operation...carried out by the artillery under command of the 17th French Corps...." The account referred only to the use of phosgene gas for the Etraye attack, and he concluded: "It was noted that our troops in attacking over this area several days after gas had been used, suffered no ill effects from it."

This ignorance about the persistency of phosgene gas, like that of an earlier gas officer concerning the tactical use made by the enemy of diphenylchloroarsine (narrative, p. 45 ) suggests gaps in the knowledge possessed by the gas officers of the division.

But a more serious gap existed in the limited authority of the Division Gas Officer and his staff even in matters of gas training and discipline, let alone the offensive use of gas. The Division Gas Officer could only advise, and, if conscientious, report the obduracy of his superiors to the Corps Gas Officer. (It is significant that in many of the official histories of AEF divisions, the Division Gas Officer is not included in staff rosters and in still more histories is not mentioned anywhere in the course of the

narrative history.) The sufferance with which gas officers seem to have been endured by the command, and their complete lack of authority, vitiated any real efforts they might have made. Greater authority, from the chief of the service down, might well have reduced considerably the enemy's monopoly on gas warfare.

The division commander of the 29th may well have believed, as he said in one report, that his division could have gone much farther had corps given him a freer hand. Held as he was by corps, and ultimately Army, to certain objectives, his division was subjected in a relatively short time to so much gas that it ceased to be an effective fighting unit. It had been used up before its command was returned to him by the French.

It may be seriously doubted whether the division commander, as he said, really believed his troops had benefited from the slight use of gas by the French corps artillery on their behalf. But he had no doubts about the effectiveness of German use of gas. Whether the lessons of that campaign — the only one engaged in by the division — would have been applied in another operation remains open to question.