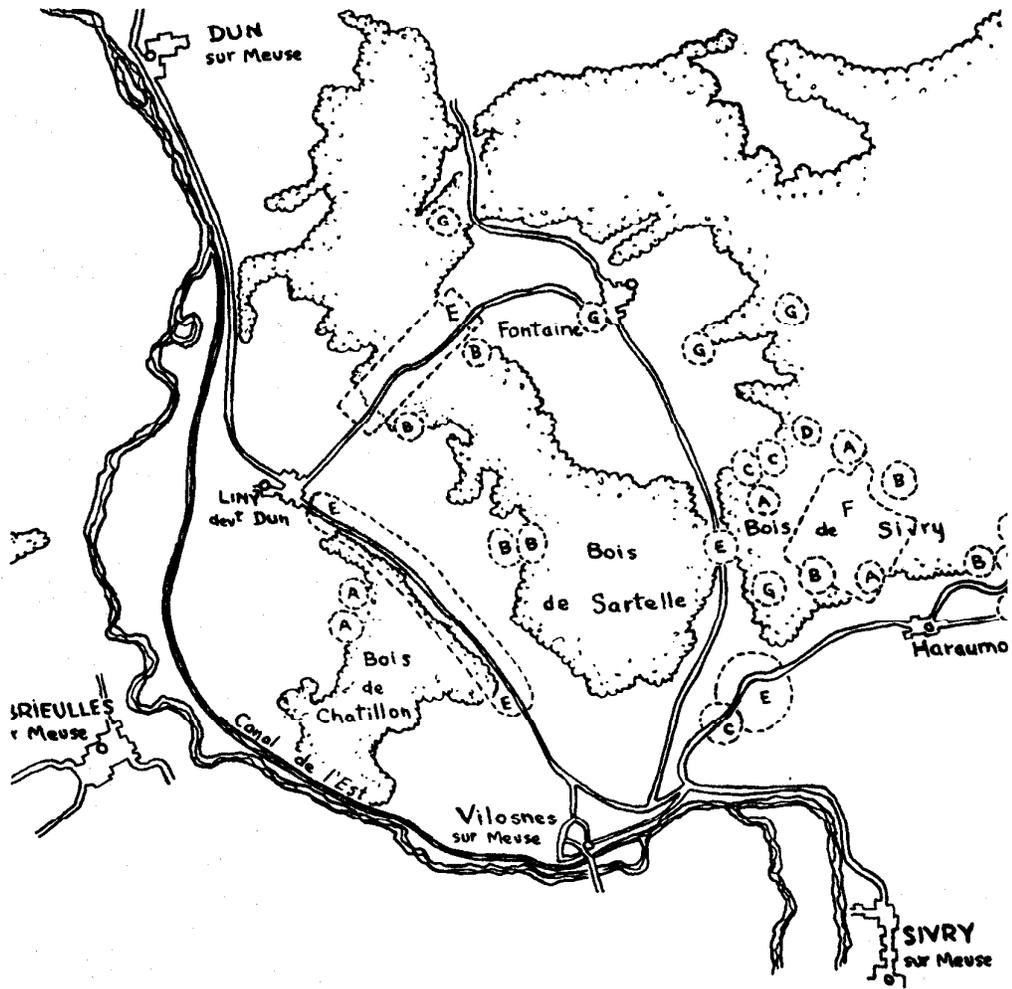


U. S. ARMY CHEMICAL CORPS HISTORICAL STUDIES
GAS WARFARE IN WORLD WAR I
THE USE OF GAS IN THE MEUSE-ARGONNE CAMPAIGN
September-November 1918



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

NO. 10

COCHRANE STUDY
#10

DECEMBER 1958

**The Use of Gas in the Meuse-Argonne Campaign
September-November 1918**

by

Rexmond C. Cochrane

GAS WARFARE IN WORLD WAR I

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1958

The Use of Gas in the Meuse-Argonne Campaign
September - November 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



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Foreword

This is a tentative study of the gas experience of the Use of Gas in the Meuse-Argonne Campaign during World War I. This study is not presented as a definitive and official history, but is reproduced for current reference use within the Military Establishment pending the publication of an approved history.

The author was assisted in his research by Mr. Guy F. Goodfellow and Mrs. Charlotte M. Bolin.

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 USE OF GAS IN THE MEUSE-ARGONNE CAMPAIGN
September-November 1918

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THE USE OF GAS IN THE MEUSE-ARGONNE CAMPAIGN
September-November 1918

The present study is concerned with the developing plans for the use of gas by the American Army in the Meuse-Argonne campaign.

When the American Army arrived in France all the important war gases and the principal means for projecting them had already been devised. Basic gas defense doctrine as well as individual and collective protective measures against gas attack had become fairly well established and standardized. The principal innovations in gas warfare in 1918 were in the development of new tactical uses of gas, and they were largely of German origin.

For more than three years, offensive operations in France by either side had been preceded by immense HE bombardments lasting anywhere from four days to four weeks, on the principle that "The depth of ground that can be swept by the artillery determines the space which can be assigned to the infantry to conquer."¹ The first of the new gas tactics, depending upon the employment of huge quantities of gas shells in a preparatory bombardment of only a few hours length, was tested by von Hutier before the Battle of Riga in September 1917 and by von Bülow at Caporetto in October 1917. Although known to the entrenched British and French on the Western Front, this gas tactic achieved maximum results in the first of the great German offensives launched against them on 21 March 1918.

Pershing, strongly opposed to the trench-psychology which for so long had governed French and British military thinking, described with admiration

I

The Memoirs of Marshal Foch, tr. Col. T. B. Mott (New York, 1931), p. 214.

the new German tactics that had broken through the fixed trench system on the Western Front and made open warfare possible again. Beginning with the secret concentration of troops close to the front, the breakthrough was, in his words,

based on a few hours of heavy bombardment, principally with gas shells, followed by violent assault...by picked battalions supported by an unusually heavy concentration of machine guns and other portable weapons. The defense once broken, fresh troops held close in rear poured through the lines of leading troops and...rapidly carried the fight beyond the entrenched positions.²

Thus began the series of innovations in the use of gas by the Germans -- the localized cloud shoots, colored gas shoots (blue and green cross mixtures), gas bursts, follow-up yellow cross contamination, and wide-spread harassment with HE and gas mixtures -- and the increasingly vigorous retaliation by the Allies that was to result in more gas being fired in 1918 than in the preceding three years put together.

The American Army, arriving on the battlefield that spring, was understandably reluctant to use a weapon wholly new to its tradition and experience and was encouraged in its reluctance by the initial difficulty in obtaining any quantity of gas shells from the French. But the Army discovered by experience that gas could only be countered by gas, and through sheer necessity learned to use it. And as its demands for gas increased, so did its supply and expenditure. Plans for 1919 contemplated artillery gas preparations as overwhelming as those made by the Germans in the spring of 1918.

²

My Experiences in the World War (New York, 1931), I, 205-207.

The existence of a deliberate plan for the use of gas in the Meuse-Argonne campaign is nowhere acknowledged in any AEF record or history that has been consulted. Yet it can be shown that such a plan existed as clearly motivated and directed as the artillery plan for the campaign. The success envisioned by the plan was largely vitiated in the attack on 26 September by the reluctance of the corps to carry it out. By 1 November the corps had learned their lesson, and the gas plan for the final assault was carried out, with notable success, as directed by Army.

What may be the only official acknowledgement of this plan in the final assault -- and even that statement is ambiguous -- appears in a textbook used at the Staff and Command School at Fort Leavenworth in the 1920's. There, speaking of the preparations for the attack of 1 November, Colonel Howland says:

...the whole remaining German last line of defense, west of the Meuse, was within range of the American artillery. Under the artillery plan, the whole Kriemhilde position was to be put under neutralizing fire, beginning October 21. In order to secure maximum range, the army artillery was placed well forward. The Bourgogne Woods and the high ground east of the Meuse were to be neutralized in order to protect the attacking troops from cross fire....The American artillery reached its maximum efficiency in the American operation that was launched November 1, 1918.³

Here, as elsewhere in so many of the histories and records of World War I, the story of the use of gas is obscured by the failure to distinguish clearly between neutralization with HE and neutralization with gas. In this case, as the narrative will show, the principal neutralization fire that Colonel Howland referred to was carried out with gas.

3

Col. C. R. Howland, A Military History of the World War (Fort Leavenworth, Kansas, 1923), pp. 401 - 402.

The neutralization with yperite of the Bois de Bourgogne on the left flank and of the Bois de Sassey and heights of the Meuse on the right flank, to protect the main attack through the center, was the basic tactic of the final assault and to a high degree the measure of its success.

This study, growing out of Study No. 2, "The 78th Division at the Kriemhilde Stellung," and Study No. 8, "The 33rd Division Along the Meuse," traces in greater detail than either of those reports the development of the use of gas in the Meuse-Argonne campaign and its culmination in the gas preparation for the 1 November assault.

The Meuse-Argonne Sector

With the blunting of the last of the five German drives in the spring of 1918 and the successful limited Aisne counter-offensive carried out by the Allies in July and August, Marshal Foch believed that a general offensive should be launched, although he did not expect it to end the war in 1918.

The plan of the Allied offensive on the Western Front was announced on 2 September. In Flanders, an army each of Belgian, French and British troops were to attack in the direction of Ghent, to force the Germans away from the Channel. Above the Somme, three English and two French armies were to attack in the direction of St. Quentin-Cambrai, while below in the Champagne two French armies would seek to drive the Germans beyond the Aisne. Preceding these offensives by several days in this "greatest of all battles" was to be the attack of the American Army in the Meuse-Argonne sector. Supported by Gouraud's Fourth French Army on its left, it would attack in the direction of Sedan-Mezieres, to cut the German line of

lateral communications in the west (Map No. 1).

In the attack the American Army was to hold with its right east of the Meuse and attack north between the Argonne Forest and the Meuse, driving the enemy from the line of the Aisne onto the Meuse. The Fourth French Army, whose boundary did not extend to the Argonne but was linked to the American Army by two separate regiments, was to attack in support of the First Army flank, cross the Aisne on its front, assist in reducing the Argonne forest, and join First Army at Boulton aux Bois (Map No. 2).⁴

Natural obstacles on the immediate front of First Army were the almost impenetrable tangle of the Argonne Forest, the heavily ridged terrain between the Argonne and the Meuse, dominated by the eminence of Montfaucon, and the heights east of the Meuse, commanding Army's right flank (Maps No. 3 and 4).

[While] the Meuse provides easy protection for the right or east flank of the proposed operation [said First Army]...east of the Meuse River along the line of attack there is the northern end of the Cotes de Meuse. These heights which further south form the heights in the St. Mihiel salient are generally higher than the watershed between the Meuse and the Aisne Rivers. In the area between the hostile first line and the first objective of the operation the highest point is Montfaucon 342 meters. In Bois de la Grande Montagne there are a few points over 370 and one point three kilometers northeast of Consenvoye which is at elevation 382. The elevation generally decreases from the south to the north. These heights form good observatories.⁵

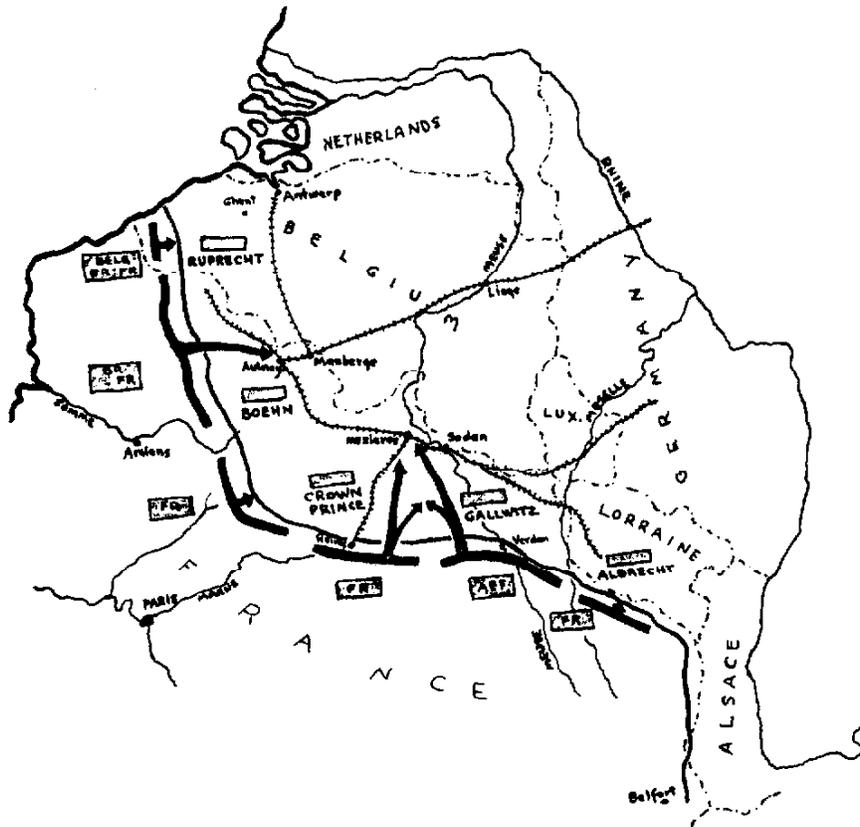
For the defense of this terrain the Germans had in the course of four years, constructed a belt of four defensive positions more than twenty

4

Howland, pp. 378 - 379.

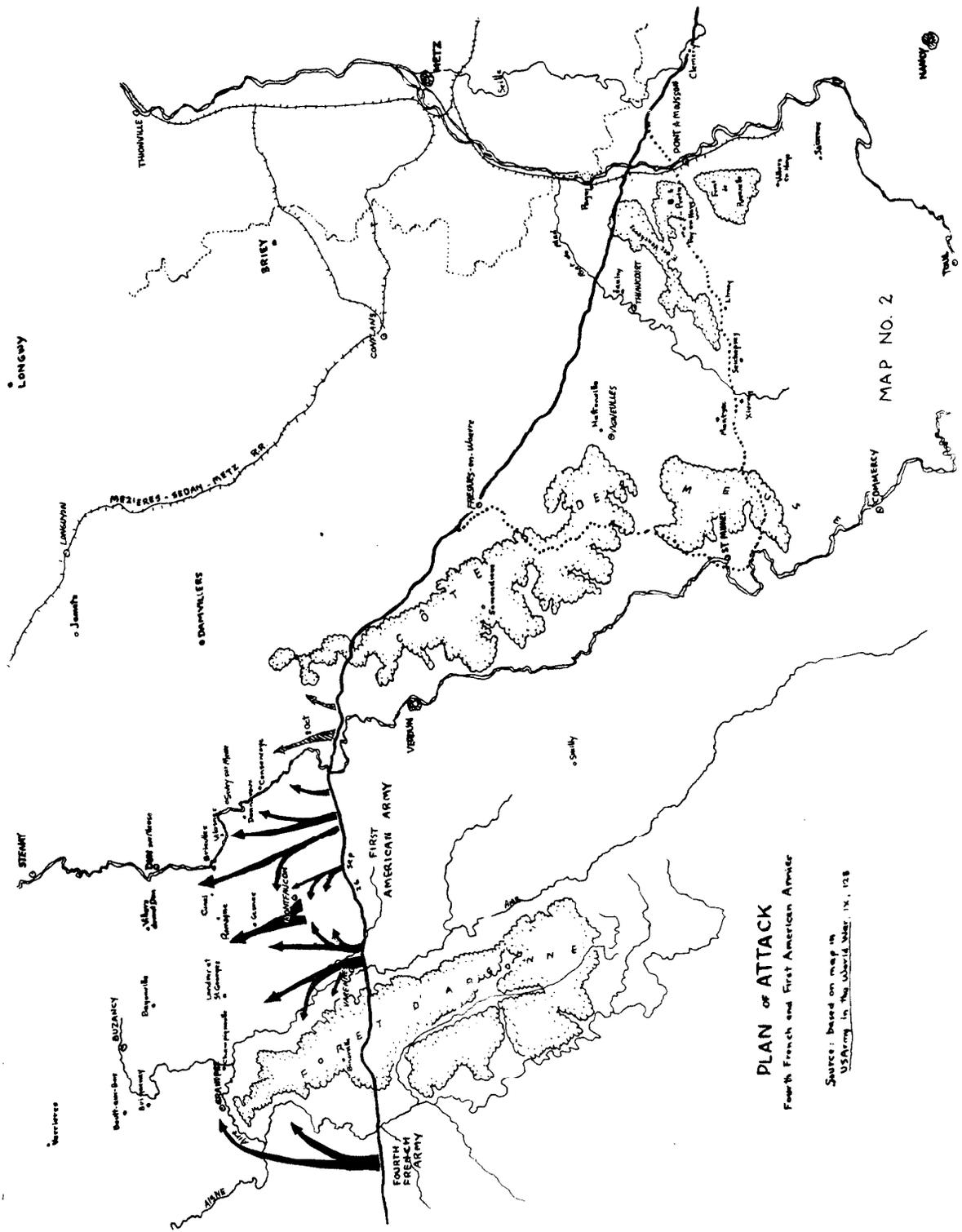
5

Extract of G-3 Rpt, First Army, 7 Sep (US Army in the World War, 1917-1919, Washington, 1948, IX, 73 - 74).



"Tout le monde à la grande bataille"
BATTLE ORDER
 September 1918

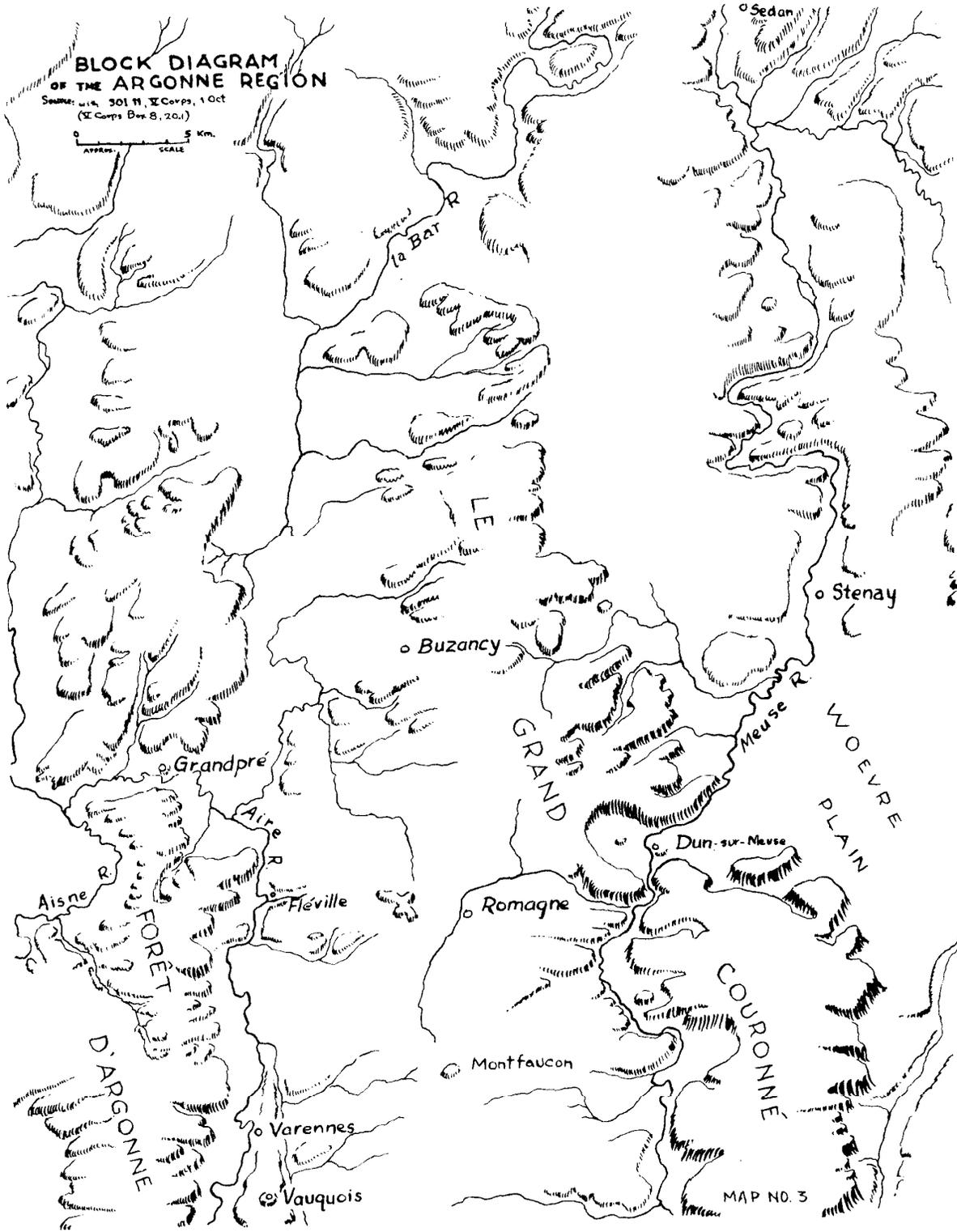
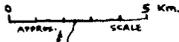
MAP NO. 1



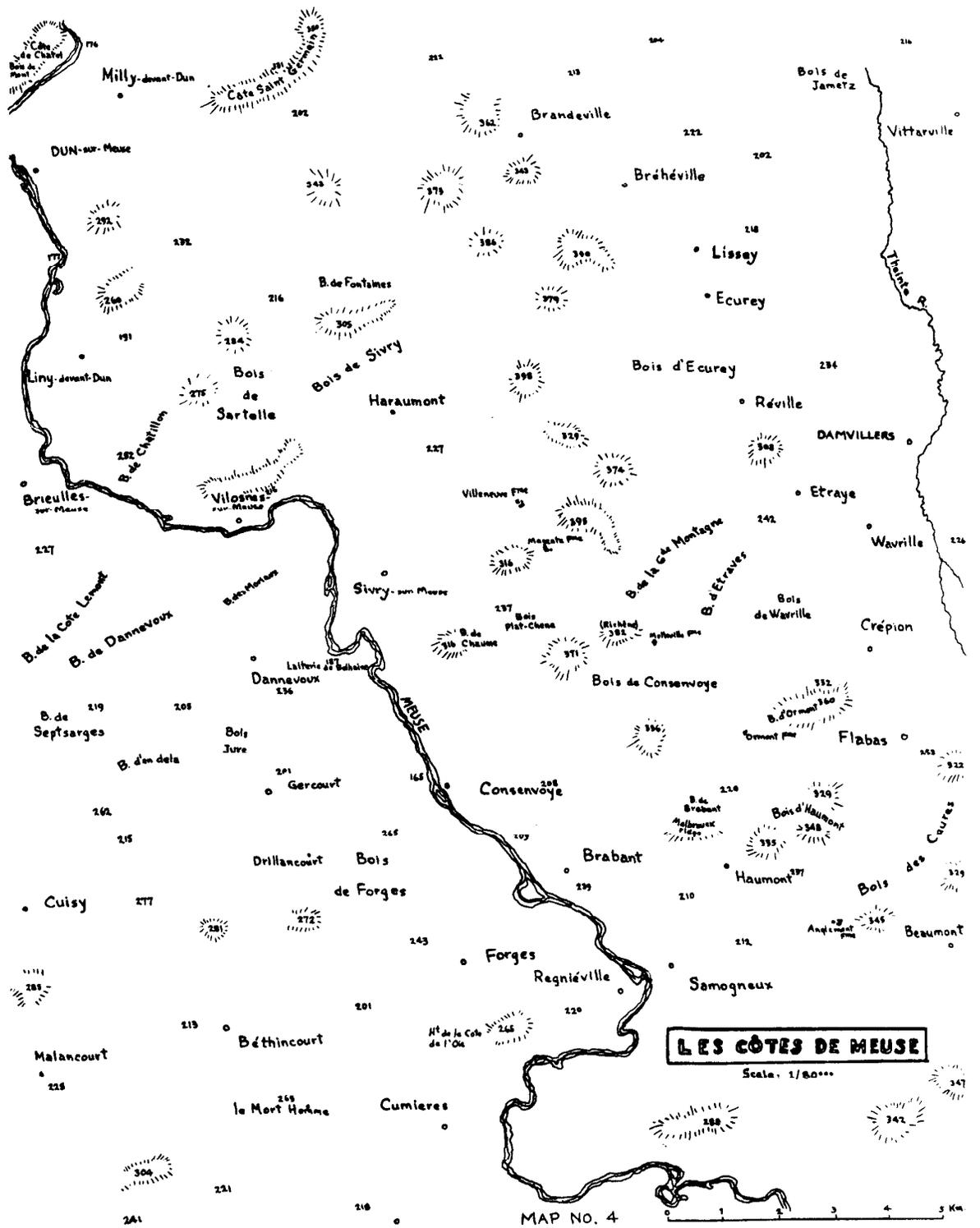
PLAN of ATTACK
 Fourth French and First American Armies
 Source: based on map in
 US Army in the World War, IX, 128

BLOCK DIAGRAM OF THE ARGONNE REGION

Source: U.S. 301 11, IX Corps, 1 Oct
(IX Corps Bar 8, 20, 1)



MAP NO. 3



kilometers in depth, with intermediate and switch positions. Occupying this belt from the Argonne to Fresnes-en-Woevre was a part of von Einem's Third German Army, the whole of von der Marwitz's Fifth German Army, and a part of Fuch's Army Detachment C, comprising a total of eleven divisions in the line with five in reserve east of the Meuse. On the immediate front between the Argonne and the Meuse, however, were just four German divisions. Most of the enemy's strength, including his reserves, was concentrated east of the Meuse where the principal Allied attack was expected.

Assembled in secret opposite the German forces from the Argonne to the Meuse, a distance of approximately 25 kilometers, were three American corps comprising nine divisions in the line and three in reserve, and from the Meuse down to Fresnes-en-Woevre two French corps totaling four divisions, including the 4th American.

Pershing's plan of operations called for a surprise penetration of the first three German positions in the direction of Montfaucon-Romagne-Buzancy, with III Corps on the right maintaining liaison with Claudel's XVII French Corps holding fast east of the Meuse, and I Corps on the far left keeping in touch with the advance of Mangin's Fourth Army.

The initial objective was the enemy's Hagen Stellung, and beyond that the corps objective, the Volker Stellung complex which ran from

⁶ Howland, pp. 380 - 382; Rpt of ACoFS G-2 1st Army, pp. 4 - 5, n.d. (1st Army Box 18, 21.2); Opns Rpt 3801, Gp of Armies Gallwitz, 21 Sep (USA in the WW, IX, 507).

⁷ The First Army front actually extended beyond Fresnes to Clemery (the St. Mihiel sector), for a total distance of 72 miles, with four divisions of IV Corps holding the Fresnes-Clemery front.

Montblainville, on the edge of the Argonne, across the front to Dannevoux. Both positions were to be overrun on the morning of the first day. The Army objective was the third German position, the Kriemhilde Stellung, along the heights of Romagne, Cunel, and Briouilles. This was to be reached during the afternoon of the first day and penetrated by exploitation that night.⁸ With this advance by the troops of over eight miles the first day, "the second morning would find them in open country, and almost half-way to Sedan and the lateral railway."⁹

Initial Army Gas Plans

In a realistic appraisal of the necessity for large-scale use of gas in the attack, the Chief of Army Artillery estimated that because of the large area of wooded country on the Meuse-Argonne front that would probably require neutralization, at least 30 percent of the shells for the 75's and 155's would have to be gas, with smoke shells comprising 2 percent of the 75-mm ammunition. A working chart, "Estimate of Special Shell Required for Operation B," dated 14 September, indicated that at least 128,000 rounds of No. 20 yperite, 61,000 rounds of No. 4 hydrogen cyanide or No. 5 phosgene, and 60,000 rounds of No. 3 smoke shell would

⁸

FO 20, 1st Army, 15 hrs, 20 Sep, par 3(X)5 (USA in the WW, IX, 87, and 1st Army Box 32). Note: Since 1st Army FOs in USA IN THE WW are in some cases extracts, the original orders in Box 32 will be used. For map of the German defensive organization, see USA IN THE WW, IX, 508, and 1st Army Box 19, 22.21.

⁹

B. H. Liddell Hart, The Real War, 1914-1918 (Boston, 1931), p. 464.

be necessary for the operation. The amount of yperite shell in this estimate would suggest that Army Artillery may originally have contemplated yperiting large sections of the Argonne prior to the attack, as it did the heights east of the Meuse.

A map apparently prepared jointly by Fourth French Army and First Army headquarters and identified only as part of operation documents of 18 - 21 September, without supporting papers, makes clear the general plan of the Fourth Army attack and in more detail that of First Army (Map No. 5).¹¹

The areas on the map marked for neutralization with gas appear to be explained in a rough draft memorandum of 18 September from Col. John W. N. Schulz, First Army Gas Officer, for Col. Hugh A. Drum, Chief of Staff, First Army. The memo recommended that prior to the attack on 26 September the eastern edge of the Argonne Forest and Montfaucon heights be gassed with phosgene, since the troops would later occupy those areas, but urged that enemy battery and observation positions east of the Meuse -- in the Bois de la Grande Montagne-Bois de Consenvoye area to the south, and in the Bois de Sartelle-Haraumont area east of Dun-sur-Meuse -- be heavily gassed with yperite, to neutralize enemy interference as First Army moved up the left bank of the Meuse.¹²

10

Memo of Proposed Operation, O G of Arty, 10 Sep (1st Army Box 92, 32.11); working chart (1st Army Box 94, 32.16).

11

French Files Box 90, 30.9 (17th Fr Corps). This is Special Map No. 12, atchd to FO 20, 1st Army, 20 Sep (1st Army Box 32), but no reference is made to the map in the FO or its Annexes.

12

Draft memo, CGO 1st Army, 18 Sep, sub: Employment of gas shell in Operation Z (GAF-1st Army).



MAP NO 5
ARMÉE AMÉRICAINE

ARMÉE FRANÇAISE

The First Army order for the attack went beyond the memo, saying that in the preparation hostile artillery fire and observation on the edge of the Argonne Forest, in the Bois de Montfaucon, Bois de Chehemin, and Bois de Septsarges were to be neutralized with nonpersistent gases, while the heights east of the Meuse were to be neutralized with persistent gas.¹³ More specific, the artillery annex said that in the first fifteen minutes of the three-hour preparation "all artillery, army, corps and divisional" (a total of 3,980 guns), was to "place an intense bombardment of HE and gas shell upon hostile cantonments, important headquarters and telephone centrals in their respective normal zones." In the special neutralization fire to follow, during which the Argonne, Bois de Montfaucon, Bois de Septsarges, and the Meuse heights were to be gassed, it was specifically directed that "Toxic gas shells, but no yperite shells, will be used west of the Meuse." The neutralizing fire with both gas and HE would be followed by destructive fire until H¹⁴ hour.

Despite the restriction of yperite to the east bank of the Meuse, in the initial three-day allotment of gas shell by Army all corps were to have available between 3,000 and 6,000 rounds of No. 20 yperite shell, in addition to approximately 7,500 No. 4 hydrogen cyanide or No. 5

13

FO 20, 1st Army, 20 Sep, pars 2, 3(H)6.

14

Annex 1 (Employment of Army Artillery) to FO 20, 19 Sep, pars 4, 5(3)a, 5(4). The number of guns on the front is given in lecture, Maj. Gen. W. S. McNair, Plans for Artillery for...Argonne-Meuse Operation, 23 Dec, p. 15 (1st Army Box 76, 191.58).

phosgene shell, and between 3,000 and 9,000 No. 3 phosphorus shell, the greatest weight of the latter going to V and III Corps in the center and right flank. Three of the four elements of Army artillery, the Aisne, Aire and Meuse Groupings, were allotted approximately 3,000 rounds each of No. 4 or No. 5 shell, while the fourth, the Verdun Grouping on the right flank, had in addition 10,800 rounds of No. 20 and 7,200 rounds of No. 3 shell for its missions east of the Meuse.¹⁵ By comparison, Army, corps, and divisional artillery were allotted five days' fire at the beginning of the attack, or almost 4,000,000 HE shells.¹⁶ The relatively small amount of gas shell for so large an operation may have been determined by the stocks available in French depots for the attack, or by practical considerations of the actual amount of gas shell that the corps and divisions were, at that time, likely to use.¹⁷

Army records do not indicate that at any time during the campaign was there a shortage of chemical ammunition.¹⁸ Of greater significance was the implication in Army field orders and annexes, later made explicit,

¹⁵ Memo, Ord Off 1st Army Arty for G-4 1st Army, 20 Sep, sub: Munitions; Memos, Ord Off 1st Army for C of Arty, I, V, III Corps and Army Gpgs, 20 Sep (1st Army Box 102, 44.6). The allotment of No. 20 shell to the corps was recommended in memo, CGO 1st Army for McCleave G-3 1st Army, 18 Sep, sub: Persistence of Gases (1st Army Box 117, 63.32), which also said that only No. 4, No. 5, and No. 20 gas shells were then available to Army.

¹⁶ Lecture, McNair, pp. 15 - 16.

¹⁷ Interv with Brig. Gen. John W. N. Schulz, ret., 2 Sep 1958. (notes of interv in CMLHO).

¹⁸ Memo, 1st Army Arty, 8 Oct, sub: Ammo Supply (1st Army Box 101,

that the use of gas in each corps sector was under the authority of the corps commander, subject to his decision depending upon favorable weather conditions. Such leeway was to prove unsatisfactory, for the corps were reluctant to use gas even when urged by Army to do so. On the other hand, Army artillery seems at all times to have been more than willing to use gas. This willingness was nullified when for several weeks after the initial advance inadequate and badly snarled roads made it impossible to move any of its guns or ammunition forward.

The final Army artillery order for the preparation indicated that despite their supply of gas shells just two of the four Army groupings were to use gas. No record of the decision changing the gas plan has been found. The Aisne and Aire Groupings on the left of the front were to bombard the Argonne and Montfaucon areas with HE; the Meuse Grouping was charged with the "bombardment of Bois de Septsarges (Toxic gas shell to be used on this target up to H-4 hours)"; while the Verdun Grouping was to keep enemy positions east of the Meuse gassed with yperite. Division and corps artillery were to carry out the largest part of the gas programs that had been planned by the corps gas officers and approved

18 (continued)

60.4), said that ammo allowances by the French were quite sufficient and corps were making lavish use of HE but their reports "show very small expenditures of...gas." So meager had been the use of gas shells by corps that on 23 Oct the 1st Army Munitions Officer "recommended that no more gas projectiles will be asked for" (1st Army Arty War Diary, 1900, 23 Oct, 1st Army Box 90). See also memo, CGO III Corps for CGO 1st Army, 14 Oct (GAF-III Corps), that reported large stocks of smoke, yperite, and phosgene shell, with the comment that the corps "usually received what it asked for."

19
by Army.

A half hour before midnight on 25 September, corps artillery opened fire preparatory to the attack. At 0230 on the 26th the Army artillery joined in, and at 0530, with an hour to go, all the divisional artillery began the bombardment of near enemy positions, commencing with a standing barrage and changing to a creeping barrage at zero hour. At corps direction, owing to "unfavorable winds," no gas was fired into the Argonne or on Montfaucon heights during the preparation.

In I Corps sector, instead of gas, No. 3 phosphorus shell and large quantities of HE were put down on the edge of the Argonne by the Aisne Grouping and by corps and divisional artillery prior to the assault. V Corps "asked that no gas be used in any of its area of advance. The event [proved] that gas used against the Bois Emont, Bois de Beuge and Bois des Epinettes, all small woods foreseen to be probable centers of

19

FO 6, 1st Army Arty, 21 Sep, par 5(F)1 (1st Army Box 29 New Series) and 1st Army Box 90, 32.1). Bulletin, 1st Army Arty, n.d. (1st Army Box 91, 32.1), said No. 20 or No. 5 shell was to be used during the first five minutes of the preparation, followed by No. 4 shell.

20

Memo, CofS 1st Army to Corps Comdrs, 24 Sep, sub: Operation B (1st Army Box 33, 32.11).

21

Rpt of Opns, V Corps arty, 14 Nov (V Corps Box 81, fol 50), repeated the words of the Army FO concerning the gassing of the Bois de Montfaucon and Bois de Chehemin. But see the narrative.

resistance of serious consequence might have saved much delay."²²

The Aire and Meuse Groupings assisted V Corps in the heavy HE fire put down on the Montfaucon area before and during the attack but the report of "much phosgene" used by the Meuse Grouping that day referred to its fire in the III Corps sector, on the Bois de Septsarges, Bois d'en Dela,²³ and Bois Jure. As Colonel Schulz said, and Major General McGlachlin, the Army Chief of Artillery, concurred:

The considerations which [withheld full use of gas in the 26 September preparation] were principally the over-sensitiveness of our troops, including some Division and Corps Staffs, to the risk of casualties from our own gas; too little faith that the offensive use of gas could really powerfully aid our advance and save us casualties; and too great anticipation as to what the rate of advance of our infantry would be.²⁴

Advancing with artillery and machine gun barrages and concealed in smoke and morning fog, First Army troops overran the enemy forces all along the immediate front that morning. Except in the Argonne, where the progress of the 77th Division was limited to a few kilometers, and at Montfaucon, the line by midmorning was on the corps objective, between four and five kilometers from the line of departure. There I and III Corps halted to wait for V Corps, stopped at Montfaucon, to come

22

Ltr, Actg CGO I Corps to CGO 1st Army, 19 Nov, sub: Rpt on Recent Operations (1st Army Box 339), said there were no records available on the initial artillery gas project. The report on V Corps is in memo, C of Arty 1st Army for CofS 1st Army, 1 Oct, sub: Some conclusions from recent operations (1st Army Box 87, 60.3). See also 1st Army Arty WD, 1440, 1940, 2057 hrs, 27 Sep.

23

Memo, Actg Adj, Meuse Gpg, 1st Army Arty, 23 Sept (1st Army Box 91, 32.11); 1st Army Arty WD, 2030 hrs, 26 Sep (1st Army Box 90).

24

Lecture, Execution of Gas Plans for...the Argonne-Meuse Operation, 13 Jan 1919, p. 12 (1st Army Box 77, fol 58); memo, C of Arty, 1 Oct, above.

East of the Meuse

The yperiting east of the Meuse began on the morning of 26 September, with the Verdun Grouping, assisted by the XVII French Corps, charged with protecting the advance of Army's right flank by keeping "the woods and hostile positions on the east bank of the Meuse River [gassed with Yperite shell]...subject to weather conditions, uninterruptedly day and night until further orders."²⁷

Although its boundary of fire was between the Meuse and the line Lissey-Damvillers-Moirey (the area from Consenvoye north to Dun-sur-Meuse), the Verdun Grouping, sited at Esnes and Bethincourt, apparently had no guns that could reach above Sivry-sur-Meuse. Unable to advance its guns after the opening attack, the Verdun Grouping had to confine its yperite fire below Sivry. The enemy, withdrawing as much of his artillery above Sivry as he could, and rushing in his reserve guns, soon²⁸ had the whole right of First Army under flanking fire.

27

FO 6, Army Arty, 21 Sep, par 5(F)1 (1st Army Box 90, 32.1). 17th Corps Arty order 3486/8, Confirmation Ecrite...entre l'a. 17th et l'A. du 3^e CAUS, 22 Sep (French Files Box 90, 60.9), said that discrete use of yperite would be made on mg and OP positions prior to the attack and phosphorus shells when the attack began. During the advance, alternate HE and yperite shells would be fired on battery nests and targets for interdiction, including Sivry-sur-Meuse. Cf. Note pour les D.I. de l'a/17, 2100, 26 Sep (French Files Box 87, 30.1): "Continuation par tous les moyens possibles de la mission de neutralisation (contre-batterie) de nuit et le jour au profit de l'Armee Americaine."

28

Memo CGO III Corps to G-3 III Corps, 28 Sep, n.s. (III Corps Box 39, 63.33), had a tracing (missing) showing areas yperited by Army and XVII Corps arty on 26-27 Sep.

On the afternoon of 26 September, the Verdun Grouping reported it had fired 6,000 rounds of yperite that day on designated targets across the Meuse. Little or no phosphorus shell had been fired apparently, for none had been needed. When during the following days it was needed, the targets were beyond range, and the grouping could only be "directed to keep the area east of the Meuse gassed in order to prevent occupation by the enemy."

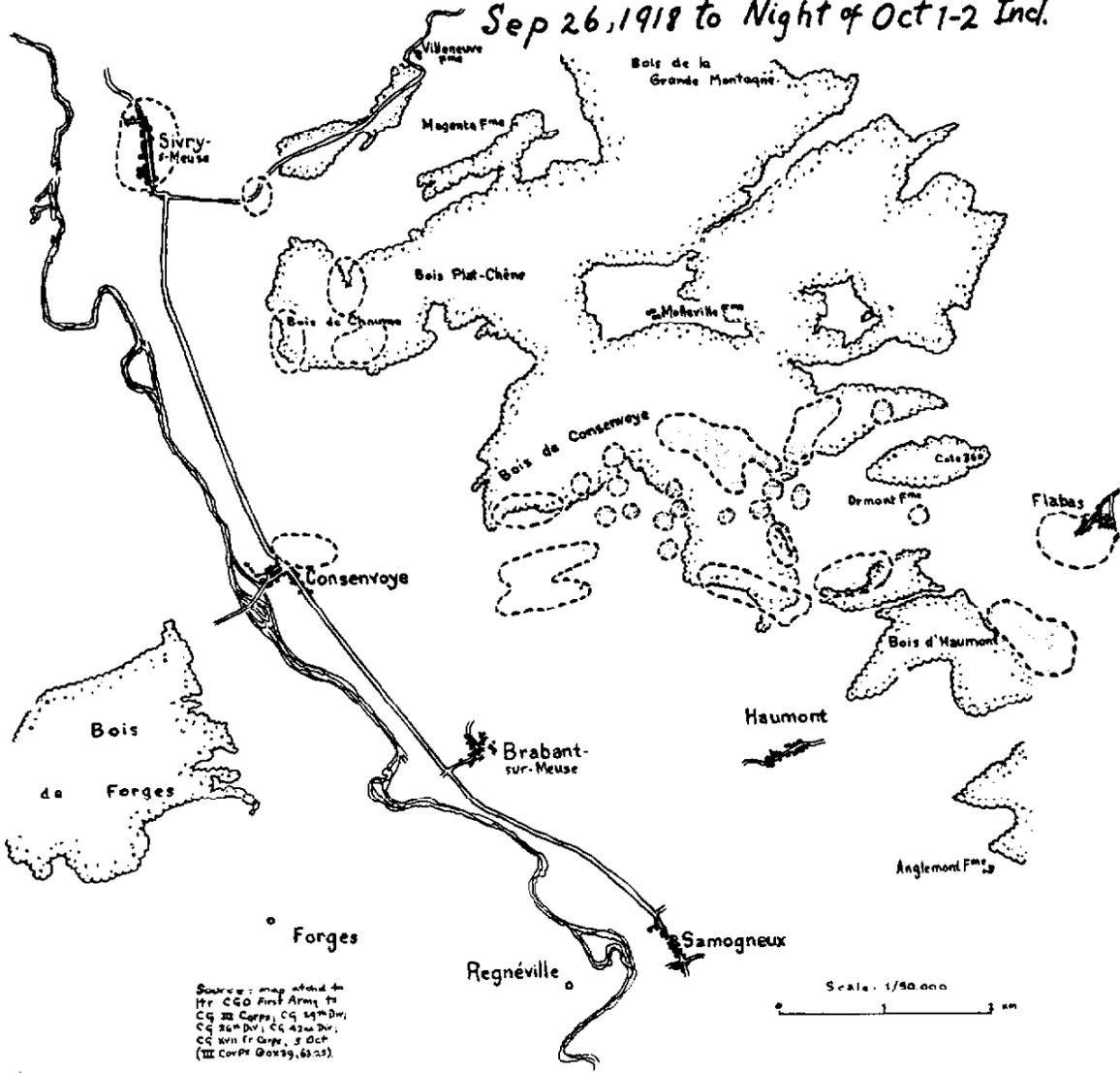
The first heavy guns that were moved up the clogged roads to advanced positions were six batteries of 105's and three batteries of 155's. These were III Corps guns, finally wheeled into position on the afternoon of 1 October. They were at once told "to keep the heights of the East bank of the MEUSE under fire of yperite and for this purpose 9,000 75-mm shells or their equivalent in other calibre are being provided." It is doubtful however whether these gas shells reached the guns before orders were received on 2 October to halt the yperite program, preparatory to a possible assault across the interdicted terrain. By that time a number of large areas east of the Meuse had been thoroughly contaminated by Army and XVII Corps artillery (Map No. 6).²⁹

While no Army artillery expenditure reports have been found for this yperite program, Colonel Schulz, the Army Gas Officer, later estimated a "probable amount of 25 to 30 tons [of gas had been used in] Yperiting

29

1st Army Arty WD, 1645, 26 Sep; 0905, 29 Sep; 1425, 1 Oct; 1325, 2 Oct (1st Army Box 90).

ZONE BOMBARDED
 with
GAS SHELL
 TYPE # 20 (YPERITE)
 Sep 26, 1918 to Night of Oct 1-2 Incl.



MAP NO. 6

east of the Meuse during the period Sept. 26 to Oct. 2nd." Elsewhere he said that an estimated "60-70,000 rounds [of yperite were] fired east of the Meuse during the first few days of the offensive."³⁰ Available data -- the number of yperite shells stocked by III Corps and the Verdun Grouping, the number of special shell fired by XVII Corps, and the records of subsequent yperite shelling -- suggest that this weight of shell may³¹ be approximately correct.

The most heavily yperited targets were in the area occupied by the 1st Austro-Hungarian (i.e., Kaiserlich und Koeniglich or KuK) Division of Maas Ost (5th Reserve Corps). The daily reports of that division show that after the widespread gassing on 26 September, particular targets were gassed daily thereafter until 2 October with from 80 to 600 yperite shells each. Recurring targets were Namenloseschlucht and Tiefeschlucht, Konservenschlucht, Jagerbusch, Krückenschlucht, Ormontwald, Haumontwald, Kronprinzenhohe, Consenvoyewald, Brabanthohe and Brabantschlucht, Hill 281 (unidentified), and Flabasschlucht (Map No. 7).

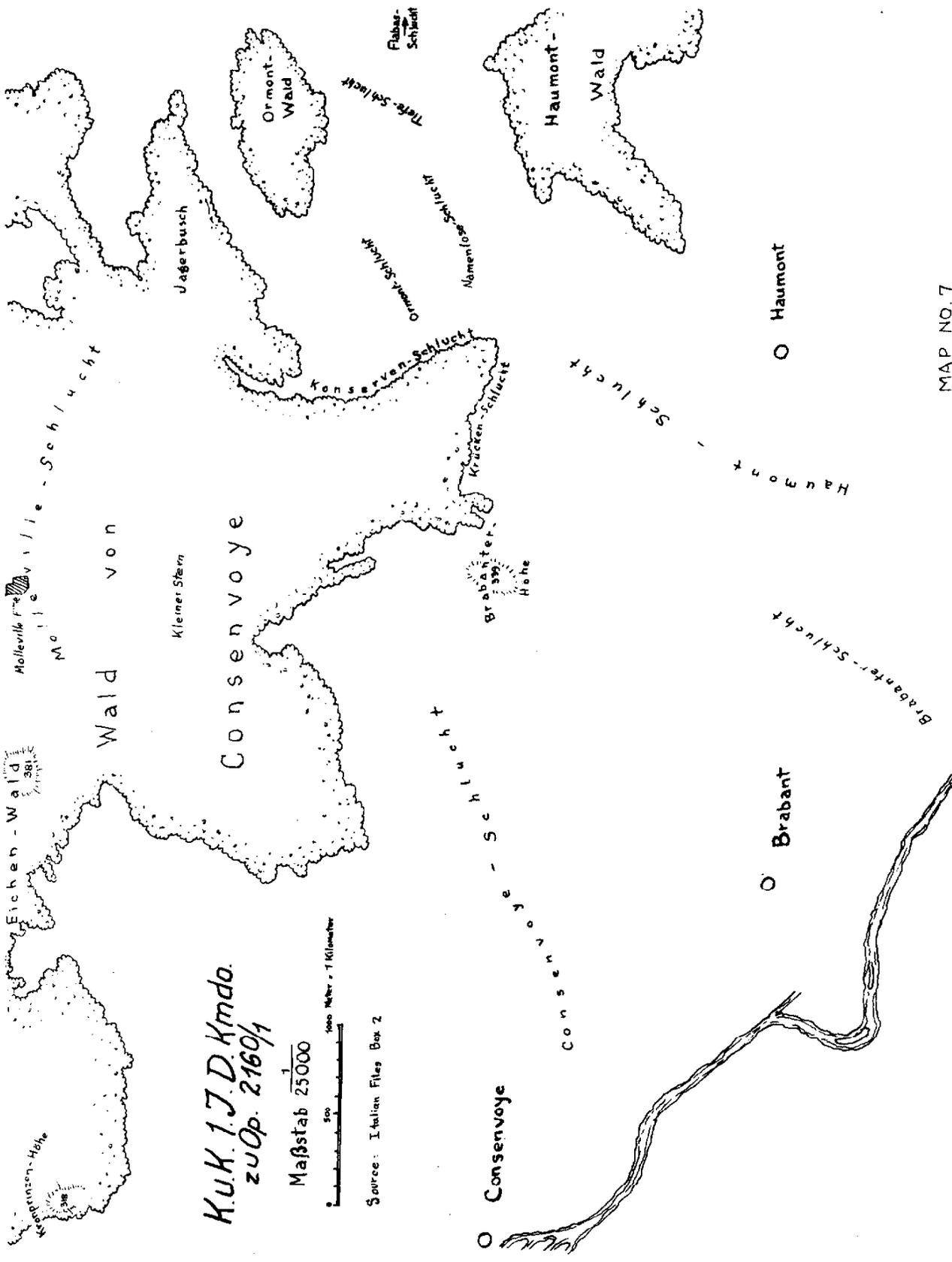
On 26 September, as a result of the gas, phosphorus, and HE fire, and the demonstration raids made by XVII Corps, the division reported killed, wounded, gassed, and missing "this day...about 500 men." Its

30

Lecture, 13 Jan 1919, pp. 12 - 13 (1st Army Box 117, 63.58). Records of the XVII Corps arty show that on 25 - 26 Sep it fired 75,581 shells, of which 18,414 were special, and on 27 - 28 Sep it fired 12,304 shells, of which 2,889 were special. No distinction is made between phosphorus and yperite special shells. Bulletin de Renseignements 313 and 315, XVII Corps Arty (French Files Box 90, 60.9).

31

Interv with Brig. Gen. Schulz, ret., 2 Sep 1958.



K.u.K. I. J. D. Kmdo.
 zu Op. 2160/1

MAP NO. 7

summary report on 3 October showed 30 killed, 103 wounded, 270 gassed (including 9 officers), and 109 missing for the week, a total of 512 casualties. (These presumably were in addition to the first day's casualties, since daily reports for five of the seven days between 27 September and 2 October reveal a cumulative total of 9 killed, 210 [sic] wounded, and 230 gassed, or 449 casualties).³²

In spite of the heavy casualties in the 1st Austro-Hungarian Division, as well as in the 7th Reserve Division spanning the river to its right, much of their artillery was quickly withdrawn above the gassed area and there consolidated "to support the [German forces on the] west bank of the Meuse with flanking fire."³³ By the night of 27 September, a group of Austro-Hungarian long range guns had been put in position on Hill 374, east of Villeneuve Ferme, well above the gassed area, and the next morning, with yellow cross hurriedly brought down the night before, it carried out the first of its

³²

Rpt of Action of 26 Sep, 1st A-H Div, 29 Sep (Italian Files Box 2, Opns Docs, fol I, pp. 124, 130, 135, 141, 149, 160)§ No casualty reports were found for 30 Sep or 1 Oct. See also Weekly Report, 3 Oct (Italian Files Box 1, fol, Army Hq (Baden) Rpts, 1 Sep-31 Oct, n.p.).

Memo, Schulz for CofS 1st Army, 12 Oct (III Corps Box 39, 63.3), said a battalion of the 1st A-H Div lost between 50-75% of its effectives on 26 - 27 Sep. G-2 1st Army SOI 35, 3 Oct (1st Army Box 13, 20.1), reported a prisoner as stating that a company of the 112th KuK lost 75% of its men from gas on 26 - 27 Sep.

³³

Maas Ost WD, 26 Sep (German Files Box 115, fol I, p. 22); Maas Ost Rpt 1451, 27 Sep (German Files Box 116, fol II, pp. 14 - 15).

contamination fires on Dannevoux⁴ and the Bois des Moriaux.

First Army had used large quantities of gas east of the Meuse and had successfully neutralized the enemy guns that might have hampered the initial advance on the right flank, but it was not foreseen that the attack in the center would stall so far from the Army objective.

The Attack Continues

When on 29 September hostile machine gun and artillery fire from the wooded areas to its front continued to hold up the advance of V Corps, Army G-3, despite its earlier order, directed the corps to use mustard gas, as well as phosgene, "to neutralize batteries in these positions while our troops advance. The army commander desires this means of overcoming opposition and delay utilized whenever possible."³⁵

Brig. Gen. Amos A. Fries, Chief of the Chemical Warfare Service, A.E.F., also wrote that day: "As the advance seems to be held up for a short period, and the enemy is making some resistance and possibly gathering forces in certain places for counter-attacks, the time has arrived for

³⁴

Arko l A-H, Daily report, 28 Sep (Italian Files Box 3, fol I, p. 139); Telg rpt, OP521, 29 Sep (*ibid.*, p. 149). Cf. 1st Army Arty WD, 2210, 27 Sep: "Several new hostile batteries have revealed themselves east of Meuse but out of range of our guns. These enemy batteries are firing on Bois de Forges and Meuse Valley towns."

³⁵

Tel instru, 1st Army to CG V Corps, 29 Sep (USA in the WW, IX, 155). This was an exception. See tel msg, Hq Army Arty for G-3 III Corps, 1 Oct (1st Army Box 38, 32.15): "Mustard gas will not be used west of the Meuse without authority from General Pershing or Colonel Drum."

for a vigorous use of poisonous gas." Almost 2,000 phosgene shells for the Livens projectors and 2,100 phosgene and chlorpicrin shells for the Stokes mortars were available to the First Gas Regiment, and he recommended that this gas be used along the entire front wherever possible. No further authority from Army was necessary, Fries was told. Corps gas officers need only get authorization from their corps headquarters "for the freest possible use of gas," as outlined in Fries' letter. Said Army, "It is desired that energetic use be made of gas troops, and corps gas officers and commanding officers of gas troops will be so informed. in cases where mustard gas is used [by the artillery] it must be by special authority from corps headquarters."³⁶

But the corps were not interested in having projectors or gas mortars emplaced on their fronts, and least of all in using mustard gas in the path of their advance. As Major General McGlachlin pointed out, the offensive use of gas simply was not understood, and divisions and corps had no confidence that a gassed area could be safely bypassed.³⁷

The Army order on 29 September did not specifically say that all corps might use mustard gas where necessary, but it implied as much: "Gas will be used on the heights east of the Meuse, and may be used west of the Meuse within the corps zone at the discretion of the corps commander."³⁸ But on 1 October, still fighting its way through the

³⁶

Ltr, C CWS to CofS 1st Army, 29 Sep, and 1st Ind, G-3 to C CWS, 30 Sep (USA in the WW, IX, 156 - 157).

³⁷

Memo, C of Army Arty for CofS 1st Army, 1 Oct, sub: Some conclusions...(1st Army Box 87, 60.3).

³⁸

FO 32, 1st Army, 11 P.M., 29 Sep, par 3(C).

Argonne on the left flank and towards Brioules on the right, Army repeated its instructions for the use of yperite east of the Meuse only, "to neutralize hostile artillery fire and observation," while phosgene³⁹ was to "be used freely west of the Meuse on favorable targets." No evidence has been found that any quantity of gas, of any kind, was used⁴⁰ west of the Meuse during that period.

The Attack on 4 October

In Army's original plan, the heights of the Meuse were to be kept neutralized but would not be cleared until V Corps had taken the heights of the Bois de Barricourt. Then the XVII French Corps was to advance to Sivry, taking the crest south of La Grande Montagne, while III Corps, crossing south of Dun-sur-Meuse, would complete the turning of the Meuse⁴¹ heights.

But the neutralization of the heights below Sivry had not succeeded in putting the enemy's flanking guns out of action for long, and his preponderance of long-range artillery, "applying gas freely," had hurt III Corps as well as V Corps and made all efforts to advance prohibitively

39

FO 33, 1st Army, Noon, 1 Oct, par 3(F)4.

40

On 29 Sep the Aisne Gpg was instructed to draw 4,500 No. 9 lachrymatory gas shells from Neuville for use in Le Petit Bois, Bois de Gesnes, Bois de Moncy, and the Argonne that night and the next day. The next evening the Aire Gpg reported that none of the No. 9 shell had been used as road congestion prevented bringing it up. This No. 9 gas was not used until 5 - 6 Oct. See below, p. 34. (1st Army Arty WD, 1530, 1859, 1902, 2200 hrs, 29 Sep; 2100, 2210 hrs, 30 Sep).

41

G-3 Spec Opns Rpt, 1st Army, 5 Jan 1919 (USA in the WW, IX, 130).

42
costly. If, in the renewal of the attack planned for 4 October, III Corps could not get above Brioules with some prospect of flanking the Meuse heights, then XVII Corps, east of the river, would have to be reenforced in order to advance and seize those heights. To this end, the 33rd Division on 1 October was ordered "to make preliminary preparations to cross the Meuse on its front," and the next day all ⁴³ yperiting across the river was ordered stopped.

The First Army order for the resumption of the advance on the morning of 4 October called for penetration of the Kriemhilde Stellung. In the attack, I Corps was to seize the crest of the Argonne and the heights north and northeast of Exermont, to assist V Corps in the center in its assault on the heights west of Romagne. III Corps was to pierce the enemy position between Cunel and Brioules, advancing to the heights northeast of Cunel, both to assist the V Corps attack and preparatory to a sweep east to the Meuse, cutting off Brioules. ⁴⁴

Although the Army order for the attack called for continued neutralization with yperite east of the Meuse, on the afternoon of 3 October, III Corps was notified that no yperite was to be fired across

42

G-2 Rpt 35, 1st Army, 3 Oct (USA in the WW, IX, 201); SOI 35, 1st Army, 3 Oct (1st Army Box 27, 20.1).

43

Msg, CG 1st Army to CG III Corps, 1:55 P.M., 1 Oct (USA in the WW, IX, 193). The decision "that no [more] mustard gas could be used east of the Meuse" was made final in a conference with the corps on 3 Oct (memo, CofS 1st Army for ACofS G-3 1st Army, 3 Oct, USA in the WW, IX, 198).

44

FO 33, 1st Army, 12 hrs, 1 Oct; FO 22, III Corps, 9:00 A.M., 3 Oct. (III Corps Box 19, 32.1).

the river until further orders. Instead, the 33rd Division artillery was directed to "use bursts of nonpersistent lethal gas on hostile positions at intervals throughout the night." But neither then nor later did its artillery, notoriously reluctant to use gas, fire a single round.⁴⁵ Actually, there appears to have been no artillery preparation whatever, even though General Pershing said in his memoirs that for the attack on 4 October "the observation stations beyond the Meuse were to be blinded by [high explosive and gas] and smoke screens."⁴⁶ When the Army Gas Officer submitted plans for large-scale use of gas in all three corps sectors just before the attack, he was "advised that the present plans do not contemplate artillery preparation with either gas or any other kind [of shell]."⁴⁷

In the attack launched by First Army at 0525 on 4 October, the left and center corps made slight gains, reaching Apremont, Exermont, and Gesnes, but the right corps, "hampered by the German flanking positions on the heights east of the Meuse, advanced only slightly. It became absolutely necessary to suppress these flanking positions by

45

Msg, Hq III Corps to G-3 33rd Div, 1515, 3 Oct, msg, Col Hope G-3 III Corps to G-3 33rd Div, 1853, 3 Oct (33rd Div Box 6, 32.16); memo, DGO 33rd Div for III Corps Gas Officer, 15 Oct, n.s. (WD Hist Box 300, 33.6).

46

My Experiences, II, 322.

47

1st Army Arty WD, 1655 hrs, 3 Oct. See ltr, CG 1st Army to C of Arty and CGs I, V, and III Corps, 3 Oct, sub: Use of gas in pending operation (1st Army Box 117, 63.32), which supplemented par 3(F)4 of FO 33 in urging use of gas shells both before and during the advance whether or not there was any formal artillery preparation.

capturing the cliff from Dun-sur-Meuse to Damvillers."⁴⁸

Army artillery admitted it could not reach the German guns:

The Verdun Grouping will continue to endeavor to locate these batteries [east of the Meuse] but the means at their disposal is very limited. The matter has also been taken up with the Meuse Grouping, who are working on the same problem.⁴⁹

Unable to silence the German batteries in the Bois de Chatillon and on the heights beyond, or to get above the machine guns ringing the German defense positions in and around Brioules, at the bend of the Meuse, III Corps in a fury called for the bombing and gassing of Brioules. In a raid on 6 October, twenty planes set fire to a part of the town, and the next morning 80th Division artillery put 1,000 phosgene shells and 1,500 yperite shells into the town. Although temporarily silenced, when no effort was made to exploit the shelling, the enemy quickly restored his defenses around the town and on the ridge to the north-west.⁵⁰

The Attack East of the Meuse

With the failure to pierce the Kriemhilde Stellung, Claudel's XVII Corps, which had remained in place since the start of the campaign, was alerted to prepare a frontal attack on the Meuse heights. The

48

Memoirs of Marshal Foch, p. 412.

49

1st Army Arty WD, 1720 hrs, 4 Oct.

50

Msg, CG 65th Brig to G-3 33rd Div, 1225, 7 Oct (33rd Div Box 6, 32.16); Memo CGO III Corps for C CWS Att Def Div, 8 Oct, n.s. (GAF-III Corps); ltr, CGO III Corps to C CWS, 12 Nov, sub: Rpt on Gas Activities for Oct (1st Army Box 340).

mission of XVII Corps was to seize and hold the heights northwest of Beaumont between the Meuse and Theinte rivers. Its forces included the 58th Brigade (29th American Division) and the 18th and 26th French Divisions, reenforced by six Senegalese battalions, with three battalions of the 33rd Division joining its left flank as it advanced.⁵¹

The immediate objective of the attack was the line Consenvoye-top of the Bois de Consenvoye-Flabas. The final objective by exploitation was along a line from Sivry-north edge of the Bois de la Grande Montagne-Réville. This advance when executed would clear what Pershing seems to have identified as the principal heights of the Meuse, that is "the crest south of Bois de la Grande Montagne," between Beaumont and Sivry.⁵² Presumably with the advance of XVII Corps artillery to la Grande Montagne, the enemy batteries to the north could then be neutralized, facilitating the advance of III Corps and its crossing of the Meuse at Dun.

The attack of XVII Corps towards Sivry was begun without artillery preparation on the morning of 8 October. By the evening of the 10th six additional battalions of the 33rd Division had been hurried across the Meuse to support the original three and were holding desperately along a line through the Bois de Chaume and Bois Flat-Chene, under intense gas and HE shelling and machine gun fire. The attack had been stopped well below Sivry and XVII Corps could make little further

51

FO 39, 1st Army, 14 hrs, 5 Oct.

52

My Experiences, II, 292. Cf. Map No. 4.

progress in the weeks that followed. First Army reported that the penetration of the enemy front east of the Meuse on 8 - 10 October led to the capture of a portion of the Bois de la Grande Montagne on 15 - 16 October and the Bois d'Etraves on 23 October, but the clearing of the heights "east of Dun-sur-Meuse could not be accomplished...due to lack of space⁵³ for deployment of more troops and of divisions for this purpose."

The advance east of the Meuse was at best a limited success and did little to relieve the flanking fire on III Corps. On 19 October the corps said: "It is of interest that our sector is being shelled almost entirely from enemy batteries located East of the Meuse." Of 24 enemy batteries that had been located by corps, only one was west of the Meuse. Twelve batteries alone had been spotted in the vicinity of the Haraumont-Ecurey road, out of range of any Army or corps gun.⁵⁴

The objectives of the attack suffered a change in Pershing's report after the event:

The narrowness of the ridge east of and parallel to the Meuse River and the difficulties of the terrain limited the number of troops that could be employed there. This restriction, coupled with the heavy hostile artillery directed from...north of Damvillers, prevented...the clearing of the heights of the Meuse until we were able to attack from south of Dun-sur-Meuse, as originally planned.

Nevertheless,

This advance of the French XVII Corps deprived the enemy of many important observation points and battery positions. The main purpose of the attack, however, was to increase the fighting front of the army and

53

Extract Rpt of First Army, p. 75 (USA in the WW, IX, 288).

54

SOI 35, III Corps, 18 - 19 Oct (III Corps Box 6, 20.1).

thus engage and consume the maximum number of German divisions.

With the advance of more of the heavy artillery on 12 October, Pershing ordered immediate resumption of the yperite program on the German artillery to the north of XVII Corps. Neutralizing HE fire was to be maintained on the enemy guns sited on the heights above Sivry and east of Dun-sur-Meuse, with mustard gas to be used north of the line

56

Liny-Haraumont-Réville.

Stalemate at the Kriemhilde Stellung

In the general attack on 4 October, no advance could be made in the Argonne, where the episode of Colonel Whittlesey's "Lost Battalion" illustrated the difficulties of the 77th Division on the left flank of the attack. To suppress the direct fire on the troops trying to get above Binarville and Chene Fondu in the Argonne, as well as the flanking fire on the divisions east of the Aire, Army's Aisne Grouping was ordered to gas thoroughly the German batteries at the top of the Argonne.

During the night of 5 - 6 October, No. 9 bromacetone, a lachrymatory agent, was fired into the northern edge of the Argonne, above a line through the Bois de Marcq. Directed to put still more gas farther south, "and particularly on the eastern edge opposite Chatel, Cornay and Fleville," where the flanking batteries were thickest, the Aisne

55

My Experiences, II, 332, 379. Cf. Extract Rpt of First Army, p. 60 (USA in the WW, IX, 253).

56

FO 59, 1st Army, 11:00 A.M., 12 Oct, par 3(F).

Grouping reported that I Corps requested no further gas firing. Instead, the Army heavies resumed their normal counterbattery fire with HE.⁵⁷ At high cost, I Corps was to outflank the German defenses in the Argonne by brute force.

These operations, leading to the rescue of Whittlesey's battalion on 8 October, broke the backbone of the German line in the forest, and with the 82nd Division alongside, the 77th pushed on through the forest, emerging in the gap before Grand Pré on the night of 10 October.

That night the First American Army stood before the Kriemhilde Stellung, the line of strongly fortified heights and woods along Grand Pré-Champigneulle-Landres et St. Georges-Romagne-Brieulles. By then German divisions on that front had been increased from eleven to twenty-five, transferred from east of the Meuse, from Flanders, and from Alsace. To the American troops facing them it appeared that every German soldier had a machine gun when he did not have a cannon.

To break this seemingly solid line of weapons, Marshal Foch, in a directive sent to First Army on 11 October, recommended that the next principal attack be made on the left flank (I Corps), as part of a wheeling action to push the enemy back across the Meuse when junction of that flank and the Fourth French Army was made in the vicinity of Boult-aux-Bois. Foch's plan thus necessitated the clearing of

57

FO 21, Army Arty, 2130, 6 Oct (1st Army Box 29 NS); 1st Army Arty WD, 2100, 5 Oct; 0945, 1235, 1830 hrs, 6 Oct.

the woods east of the Aisne and north of the Aire (i.e., the Bois de Bourgogne and Bois des Loges), in order to flank the enemy line on the Aisne.⁵⁸

In a succession of field orders, First Army directed a continuing attack across the front, with I Corps ordered to capture Grand Pré and Champigneulle and advance to its immediate objectives, Haute Batis Ferme-north edge of the Bois des Loges-Alliepont-Imecourt.⁵⁹ Repeatedly I Corps assaulted the German line but failed to dent it anywhere. Enemy positions in the Bois de Bourgogne and the Bois des Loges proved too strongly organized, and neither Grand Pré nor Champigneulle could be taken. The assault in the general advance ordered by Army on 14 October was fruitless. On the 15th, the 77th Division made one more effort to capture Grand Pré before being relieved. By dusk a battalion⁶⁰ was established on the outskirts of the town.

In the center, V Corps reportedly put heavy concentrations of HE, gas, and smoke into the Romagne area prior to the assault on 14 October and urged its divisions to use nonpersistent gas "as freely as supply permits," but no evidence has been found that this was actually done,⁶¹ and in the attack the corps was held to small local gains.

58

Ltr, C-in-C AEF to Lt Gen Liggett CG 1st Army, 16 Oct (USA in the WW, IX, 276; Rpt of First Army, p. 75 (extracted in ibid., IX, 286 - 287).

59

FO 56, 1st Army, 1800 hrs, 10 Oct, par 2(G)4; Rpt of Opns, I Corps, Reduction of Argonne Forest and Advance to Meuse (78th Div Box 7).

60

Study No. 2, "The 78th Division at the Kriemhilde Stellung," pp. 9, 22.

61

FO 73, V Corps, 2300, 12 Oct (V Corps Box 14, 32.1).

The Army order that directed relief of the 77th by the 78th Division on the night of 15 - 16 October also ordered I Corps and XVII Corps at the extreme ends of the First Army battle front to continue their attacks, while V and III Corps held fast. I Corps was to resume the attack on the Grand Pre-St. Georges front, to turn the enemy out of the Bois de Bourgogne, and then advance to Le Mort Homme-Beffu et le Mort Homme-Moulin de Champigneulle-St. Georges, in accordance with
62
Foch's directive.

Despite daily orders from Army urging I Corps to clear the two woods on its front, it could not be done. On 19 October Army admitted that the general attack begun on 14 October had bogged down. Little had been achieved at high cost, and neither the right flank nor center could advance further until the Bois de Bourgogne and Bois des Loges were cleared on the left. The Army line meanwhile was to "improve its
63
position preparatory to a general attack."

Some idea of the magnitude of resistance that had been put up by the German defense can be seen in the plight of First Army divisions on 17 October. Four divisions (the 28th, 35th, 37th and 79th) had been so badly mauled in the opening days of the attack that they had been withdrawn from the sector entirely, to recuperate on quiet fronts. Three divisions (the 77th, 80th, and 1st), recently withdrawn from the line,

62

FO 67, 1st Army, 1900 hrs, 15 Oct, pars 2, 3 D(1), 3 E(2), 3F.

63

FO 75, 1st Army, 19 Oct; FO 83, 1st Army, 23 Oct, par 2.

had lost so many men that they would have to be reconstituted before being used again. Still in the line were four divisions (the 32nd, 3rd, 4th, and 33rd), but in need of immediate relief.⁶⁴ Machine gun fire and gas had chewed up eleven of the nineteen American divisions between the Argonne Forest and the Meuse. Two other divisions, the 2nd and 91st, were to come into the sector before the end of the month, making a total of twenty-one engaged on that front.

Still effective on 17 October were the 78th and 82nd Divisions in I Corps, the 42nd and 89th in V Corps, and the 5th and 90th in III Corps. East of the Meuse, the 29th and 26th, despite high gas casualties, continued to fight beside the French 18th and 26th Divisions.

The four German divisions that met the attack on 26 September were increased to nine on 28 September, to twelve on 10 October, and twenty-one by 18 October. Before the end of the month, thirty-six German divisions were identified and another fourteen new divisions were to be identified between 1 - 6 November.⁶⁵

As hard and expensive as the first three weeks of fighting had been for First Army, the German Fifth Army, with relatively fewer men in the line, was to report disproportionately higher casualties. Such

64

Memo, G-3 1st Army for C-in-C, 17 Oct (USA in the WW, IX, 292). The 92nd Division was reported "not available." The 6th Division was to remain in the rear of First Army, the 7th and 81st with Second Army.

65

Study, The American Military Factor in the War, Hist Sec GS AEF, 14 Jan 1919, pp. 15 - 16 (GHQ AEF G-3 Reports Box 3154, fol 1092).

was the implication of Army Group Commander Gallwitz's account of losses in mid-October:

During the second and third weeks of October, our Fifth Army suffered the loss of 750 officers and 24,178 men. Among these were listed as "missing" 153 officers and 7,734 men. Almost one whole battalion of the 52nd Division [near Landres et St. Georges] made the acquaintance of "Edison Gas," a new combination resembling our "Yellow Cross" Gas.⁶⁶

(According to General Fries, Chief of the Chemical Warfare Service, A.E.F., there was no such thing as Edison gas, despite German reports then current.⁶⁷ It is unlikely that the Germans knew anything until after the war about the new vesicant, Lewisite, in production in the States at that time).

Resumption of the Yperite Program

Apparently doubtful of Pershing's ability to push his V Corps to the heights of Barricourt or his III Corps above Brioules for some time to come, and faced with the necessity of taking the heights of the Meuse, the Allied High Command in mid-October began planning an attack along both banks of the Moselle towards Longwy-Luxembourg and the Saar, using French forces in Lorraine, under the command of Petain. Petain thought the attack could be mounted about 15 November.⁶⁸

⁶⁶

Gallwitz, "The Retreat to the Rhine," As They Saw Us, ed. G. S. Viereck (New York, 1929), p. 273. Cf. Fifth Army WD, 0630, 6 Oct (German Files Box 74, M-A fol IV, p. 33).

⁶⁷

Ltr, C CWS to ACoFS G-2 GHQ AEF, 10 Oct, sub: Edison Gas (SOS Dec File Box 787, doc 470.6/64.1).

⁶⁸

Memoirs of Marshal Foch, pp. 443 - 445.

Meanwhile First Army had resumed its yperiting east of the Meuse, this time on the heights above Haraumont. The 86th RAL (Regiment Artillerie Lourde) in the Verdun Grouping, with 28 155-mm guns, was ordered to assist XVII Corps in maintaining continuous pressure on the enemy line, while an attached battalion of 75's concentrated on neutralizing with gas the hostile artillery to the north. "No. 20 gas will be employed at once and continuously in the area north of the line Liny-devant-Dun, Réville."⁶⁹ The yperiting was to continue intermittently⁷⁰ to the end of the month (Map No. 8).

According to daily reports of the Verdun Grouping, a total of 48,725 yperite shells were fired east of the Meuse during the period 14 October - 1 November. No yperite was fired on three days in this period and data for two other days are missing.⁷¹ Army artillery records elsewhere indicate that between 3,000 and 6,500 rounds of No. 20 gas were fired daily across the Meuse in the week ending 2 November,

⁶⁹

FO 59, 1st Army, 11 A.M., 12 Oct; FO 28, 1st Army Arty, 10:00 P.M., 12 Oct (1st Army Box 90, 32.1).

"Commanding Officer, 86 R.A.L. directed to have guide at Rare-court at 4 p.m. today to meet 30 trucks loaded with #20 shell for 75 guns, and to conduct them to emplacements south of Vilosnes" (1st Army Arty WD, 1206 hrs, 12 Oct). The battalion of 75's was to commence gassing the woods north of the Haraumont-Ecurey road at 2200, 13 Oct (ibid., 1115, 12 Oct; 1105, 13 Oct).

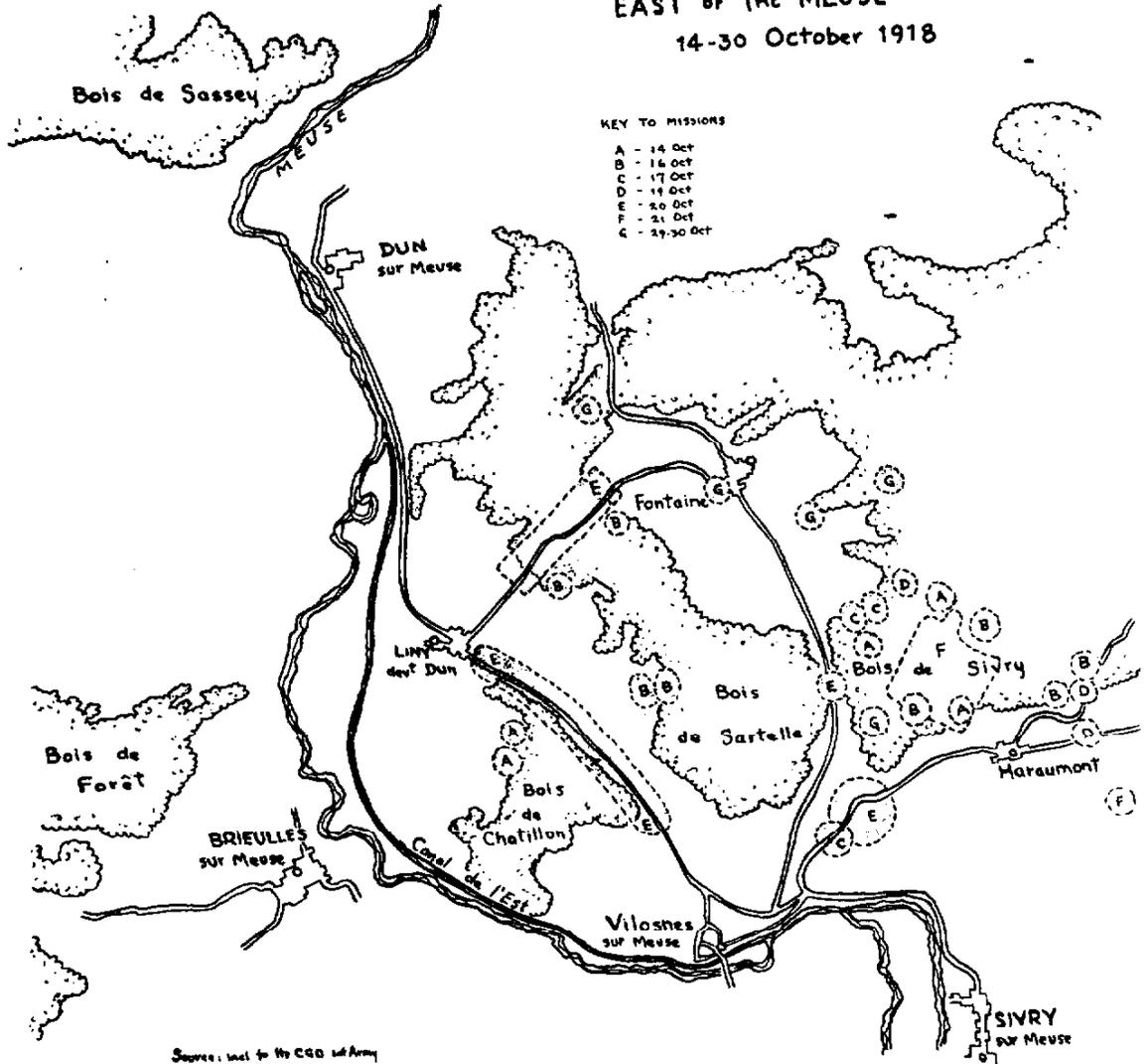
⁷⁰

See daily FO's of 1st Army and 1st Army Arty.

⁷¹

Daily Reports, Verdun-Tessier Gpg (1st Army Box 89, file 191).

**OPERATING
EAST OF THE MEUSE
14-30 October 1918**



Source: Intel to HQ CGO of Army
to CG III Corps, 4 Nov
(WD War Box 300, 59.6)

MAP NO. 8

when the yperiting ceased. It is possible that Colonel Lanza did not greatly exaggerate the total yperite fire when he said that

During the Meuse-Argonne fighting, one battalion of French 75's firing about 15,000 of No. 20 per day for five days against hostile batteries east of the Meuse, had five German batteries in the area covered firing the first day, four the second day, three the third day, one the fourth day and none at all the next day. It is, however, necessary that such mustard gas neutralizations be made for a fairly extensive area, otherwise hostile batteries merely move to some other point and are just as troublesome as before.⁷³

By a fortune of war, the enemy unit in the area under most wide-spread contamination in the renewed yperiting was again the 1st Austro-Hungarian Division. Battered by the earlier yperiting, as well as by the attack of XVII Corps on 8 October, the division had to be withdrawn from the line on the afternoon of the 12th. Relieved by the 228th Division, it marched to Jametz "to reorganize new combat units from it and be ready for re-employment as soon as possible."⁷⁴ On 18 October the division was back in the line, in the Vilosnes-Sivry sector, relieving elements of the 117th Division on that front.

No casualty reports have been found for the 117th Division, which was subjected to the renewed yperiting from 14 to 18 October, prior to its relief by the 1st Austro-Hungarian. Whatever may have been the danger

72

Memo, MO 1st Army Arty for G-4 1st Army, 1 Nov, n.s., and atchd ammo rpts through 11 Nov (1st Army Box 106, 60.44).

73

Draft Study, Col. C. H. Lanza, Artillery in Use in the A.E.F., n.d. (1st Army Box 11, 18.2 fol 2).

74

Opns Rpt 2966, Combat Activity East of the Meuse, 1st A-H Div, 14 Oct, p. 10 (Italian Files Box 2, A-H Army Hq).

from residual gas fired earlier, it was the yperite missions on 19 - 21 October that produced most of the gas casualties reported by the Austro-Hungarian division. On 20 October it reported 8 officers and 109 men evacuated as mustard gas casualties. By the 23rd, "the gas cases...[had] reached the dimensions of a catastrophe." That day 9 officers and 100 men, including two complete battalion headquarters with their commanders, had to be evacuated. Gas casualties since 20 October totaled 22 officers and 360 men, "not counting the losses to gas in the artillery."

Thus in three days the 1st Austro-Hungarian Division, which had arrived on the Vilosnes front with approximately 2,700 effectives, had lost at least 400 men to gas alone. "If the shelling with gas continues in the present dimensions [the division reported to Maas Ost] the combat strength of the division is certain to be completely used up within a very short time....Even the best gas discipline is ineffective, owing to the duration of the gas effect...not to speak of the direct burns." ⁷⁵

It appears that resumption of the yperiting across the Meuse was intended as a preparation for more or less immediate operations in that area, made all the more imperative by the plans under way for Petain's attack along the Moselle. With XVII Corps virtually immobilized, an assault would have to be made across the river above XVII Corps positions as soon as possible. Such an Army plan seems evident, though no record of it has been found, from a memo prepared by the Army Gas Officer on

75

Opns Sec Rpts 3043 and 1023/8, 1st A-H Div, 21 and 23 Oct (Italian Files Box 2).

14 October recommending the use of three companies of the First Gas Regiment to assist in a proposed crossing of the river between Sivry-sur-Meuse and Liny-devant-Dun.

Colonel Schulz proposed that the gas troops "establish daily (preceding D day) a smoke screen, mixed with lethal gas, along the Meuse between Bois de Chatillon and Sivry," with projector attacks on enemy troop areas in the Bois de Chatillon and around Vilosnes. At zero hour a frontal and right flank smoke screen without gas would be established to cover the river above Sivry, and another before Liny, if a crossing was made there too. Following zero hour, "Stokes Mortar fire with thermite, smoke and small quantities of gas" would "assist in the neutralization and capture of machine gun positions north of the Meuse." The troops to make the attack under this chemical cover were not specified but presumably reserves would have been required since all III Corps forces were fully committed elsewhere.

Two days later Army plans for the crossing seem to have been revised, with the gas and smoke missions largely turned over to the artillery. Colonel Schulz's new plan contemplated the use of smoke, gas, and thermite by the First Gas Regiment at zero hour opposite new proposed crossing points between Vilosnes and Brieulles, while the

⁷⁶

Memo for ACoFS G-3 1st Army, 14 Oct, sub: Use of Gas Troops in Proposed Operations (GAF-1st Army). Cf. ltr, CO 1st Gas Regt to CGO 1st Army, 14 Oct, sub: Project covering proposed crossing of Meuse, Liny to Sivry (WD Hist Box 303, 32.15).

⁷⁷

Cf. FO 67, 1st Army, 15 hr, 15 Oct, par 3(E)2, which ordered the yperiting of Brieulles and enemy defense positions below the town. It is doubtful whether this was carried out, and Brieulles was not captured until the end of the month.

artillery put No. 3 phosphorus shell on selected heights northeast of Sivry. The supply of smoke shell on hand, however, was meager, said Colonel Schulz.⁷⁸ The artillery would also lay surprise bombardments of phosgene along Route Nationale No. 64 between Vilosnes and Liny-devant-Dun, and on Haraumont and the Haraumont-Ecurey road.

If the Bois de Sartelle, Bois de Sivry, and Bois de Fontaines were not to be occupied at once, Colonel Schulz recommended that at zero hour a burst of phosgene and then "continuous and slow fire of special shell No. 7 and No. 9 (chlorpicrin and bromketones)" be kept on the known battery positions in these woods. As soon as the advance had begun, a continuous and steady fire with yperite should be put on enemy reserves in the towns of Ecurey, Breheville, and Réville, as well as on the Bois de Mont, Cote de Chatel, and Cote de Saint Germaine, on the west bank of the Meuse, to neutralize enemy activity from these positions.⁷⁹

These plans had to be temporarily abandoned for the yperite program then being carried out, while Army recouped its strength. They were to be partially incorporated in the massive gas plan for the attack of 1 November.

⁷⁸

This seems contradicted by memo, CGO III Corps for CGO 1st Army, 14 Oct (GAF-III Corps), which said corps had on hand 18,000 No. 3 shells, 6,000 No. 20 shells, and 950 No. 5 155-mm shells.

⁷⁹

Memo for ACoFS G-3 1st Army, 16 Oct, sub: Study of Use of Gas and Smoke in Possible Operations (GAF-1st Army).

Development of the Army Gas Plan

Four days after the organization of the Second American Army on 12 October under Maj. Gen. Robert L. Bullard, Maj. Gen. Hunter Liggett assumed command of First Army and at once ordered rest and reorganization for its tired forces. ⁸⁰ Shortly after that order, Colonel Schulz wrote to the Army Chief of Staff: "It is the present understanding of this office that Yperite bombardments west of the Meuse are prohibited, except by express command of the Commanding General or Chief of Staff, First Army." Nevertheless, in the event that the line became stabilized, he urged that all obtainable yperite shell be used, and that all corps and divisions be encouraged to have it on hand. The memo closed on a note of resignation, born of many plans dissipated by corps authority: "It is improbable, in any event, that the quantity of shell obtainable will be sufficient to interfere seriously with any general advance of our ⁸¹ army."

The line was thoroughly "stabilized." The troops were tired, and the enemy was in seemingly impregnable positions and apparently determined to hold on until the coming of winter made further operations too costly to mount. Although Army had repeatedly ordered the use of gas

80

My Experiences, II, 336. At the same time, Cameron of V Corps was replaced by Maj Gen Summerall (USA in the WW, IX, 269). The condition of the troops is indicated in the report on 15 Oct that III Corps declared "it impossible to get the infantry to attack. 260 stragglers in CUNEL and 640 other stragglers found in the woods" (1st Army Arty WD, 1710 hrs, 15 Oct).

81

Memo, CGO 1st Army, 18 Oct (GAF-I Corps Misc).

during the advance, it had been employed sparingly, when used at all, and, so far as can be learned, never in conjunction with a determined attack.

On 20 October, as the 78th Division, after a succession of fruitless attacks on the Bois de Bourgogne, disengaged its forces, Army headquarters formally countermanded its order of a month earlier for the use of nonpersistent gas only west of the Meuse. "Yperite, or mustard gas, may be used at the discretion of Corps Commanders within their Corps zones of action, after specific approval by these Headquarters." All corps and divisions were to keep a supply of yperite shell on hand for use when tactical conditions warranted its employment.⁸²

In conjunction with the yperite memo and perhaps to allay corps fears, Pershing in a memo to corps commanders explicitly directed that in order "to restrict the firing of gas shells by the Army Artillery, unless the consent of the Corps Commander concerned has been obtained," henceforth gas was to "be used in the zone of action of the Corps Artillery only with the consent of the Corps Commander concerned."⁸³ However, just before the final assault Army was to take a stronger stand concerning the employment and composition of Army artillery fire. This seems clear from a V Corps artillery operations order on 29 October that said Army artillery

82

Service memo, CofS 1st Army, 20 Oct, sub: Employment of Yperite (WD Hist Box 300, 33.6; also in USA in the WW, IX, 306).

83

Memo, CofS G-3 1st Army for Corps Comdrs, 20 Oct, sub: Use of Gas (1st Army Box 338, 400.1 Misc). This memo was first issued on 16 Oct (see copy in 1st Army Box 38, 32.15).

would bombard, harass, and interdict "as per Army Artillery orders," and only the divisions would submit their plans to use gas to corps before execution.
84

Meanwhile, General Liggett set about recasting both the plan and tactics of the next advance. An intensive effort would be made to neutralize the enemy positions on the left flank. Instead of battering "at the naturally strong and heavily wooded Bois de Bourgogne area due north of the Argonne, where the enemy was in strongest force, [he decided] to drive a broad wedge in the centre and so outflank the Bois de Bourgogne, threatening its encirclement in conjunction with the Fourth French Army to the west."
85 For this attack, Army was to be considerably more firm, as well as specific, about the gas preparation by the corps and divisions.

The revised plan of attack of First Army, approved by Pershing on 22 October, directed that the main assault be made on V Corps front, with the object of capturing the heights of Barricourt, after which I Corps would effect junction with the French at Boulton Aux Bois, on the left. Capture of the Barricourt ridge would flank the whole enemy position, compelling his withdrawal east of the Meuse, and it would avoid "the hard and expensive fighting" of a heavy attack on I Corps front.
86

84 V Corps Arty Opns O 5, Plan of Attack, 29 Oct (1st Army Box 90, 32.11).

85 Hart, The Real War, p. 468.

86 Extract Rpt of First Army, p. 80 (USA in the WW, IX, 366 - 367).

Two days later, on 24 October, Army issued a new gas directive to the artillery: "Yperite will be used on hostile battery positions east of the Meuse, north of Vilosnes-sur-Meuse, and in the Bois de Bourgogne, the latter in agreement with the Commanding General, 1st Corps." The directions were made more specific on the 27th when orders were issued for the general assault on 1 November, in conjunction with the Fourth French Army (Map No. 9):

Gas will be utilized to the fullest possible extent in preparing for and assisting the infantry attack, by inflicting casualties on enemy concentrations, neutralizing enemy battery, machine gun and observation positions, both before and during the attack; harassing enemy movement along lines of traffic; and demoralizing and wearing down enemy troops, including those in support and in reserve.

Yperite will be employed, especially in the neutralization of hostile fire and observation on the heights east of the MEUSE, in the BOIS DE SASSEY, and on the heights in the BOIS DE BOURGOGNE south of LE MORTHOMME.⁸⁷

With both flanks protected by yperite, Army was to drive through the center, making liberal use of lethal gas on strongpoints of the Kriemhilde

⁸⁷

FO 84, 1st Army, 0925 hrs, 24 Oct, par 3D(2); FO 88, 1st Army (corr copy), 1500 hrs, 27 Oct, pars 2, 3G(5).

Opn Map No. 16 (here, Map No. 8) was a part of FO 88, although referred to in that order only as an accompanying map. It should be noted that neither the jump-off line on the map nor the indicated gassing of Grand Pre correspond exactly to the situation at that time. Further, this map represents only the yperite plans for the 1 Nov attack; none of the areas gassed with nonpersistent agents before the attack are indicated.

Note: The original of Opn Map No. 16 was probably the zone map to accompany FO 37, Army Arty, 23 Oct, in 1st Army Box 95, 32.6.



Stellung in the Army line of advance. And for the first time, the use
88
of gas was to be an Army rather than a corps decision.

Gas Fire Along the Meuse

The III Corps order for the 1 November attack directed corps artillery "to neutralize especially...the heights east and southeast of Dun-sur-Meuse [and the] wooded heights of Bois de Sassey. Hostile cross fire from these points must be kept down." The map accompanying this order indicated the areas to be yperited and made clear the initial limited objectives of III Corps, to permit V Corps to launch the main attack against the heights of Barricourt (Map No. 10).
89

In the actual gas preparation, Army artillery executed all the yperite fire on the heights east of the Meuse. The yperite target of III Corps artillery was the Bois de Sassey, another potential Bois de Bourgonne

88

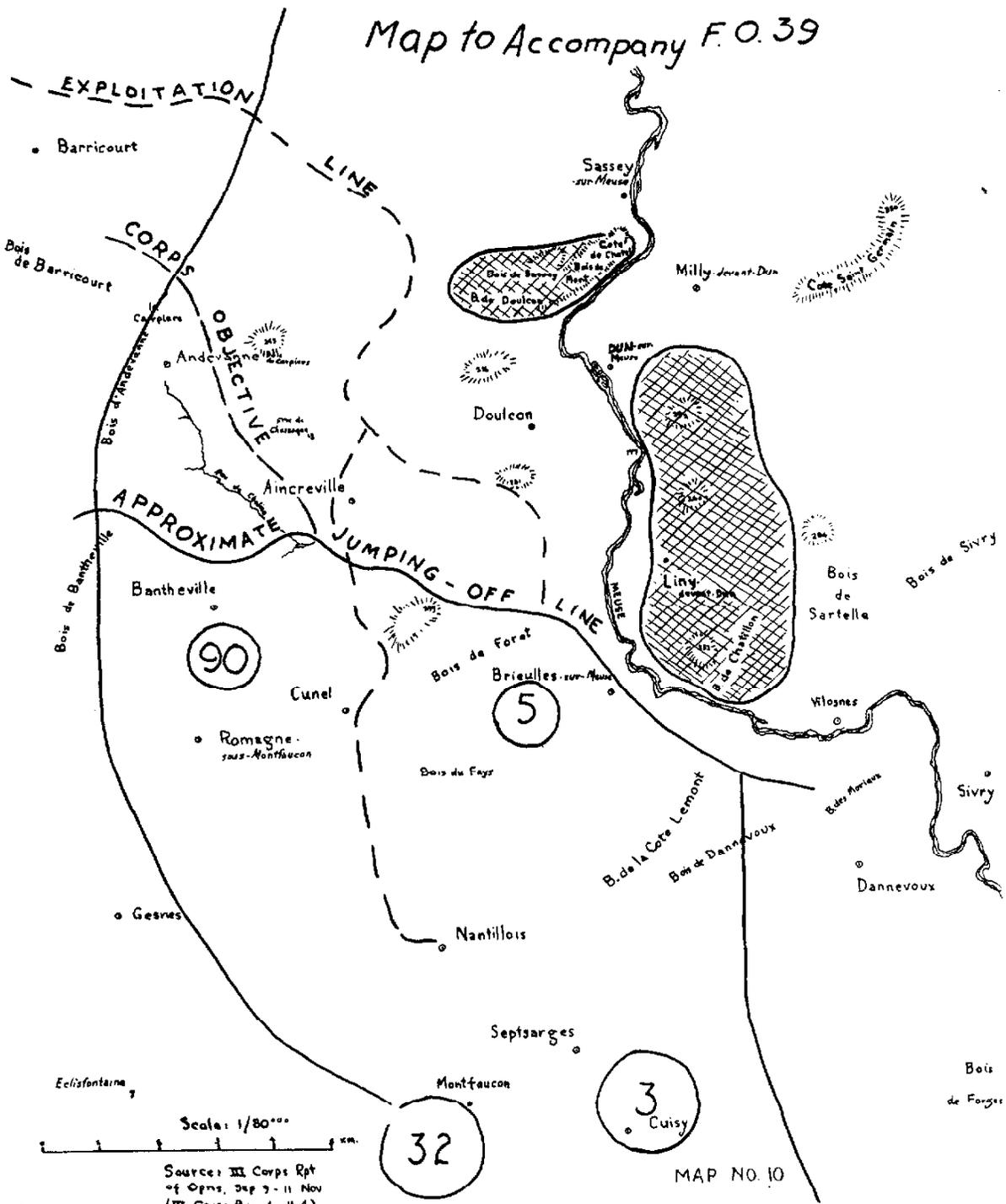
The Army artillery plan, atchd to Army FO 88, "coordinated the fire of all the artillery of the Army--Corps and Divisional as well as that of the Army Artillery. So far as detailed descriptions were given for fire of Corps and Divisional Artillery, these were merely advisory. The suggestions were, however, closely followed by the different corps with the result that when the preparation actually began the entire hostile front was covered by one coordinated blanket of fire." Lecture, Maj. Gen. W. S. McNair, 23 Dec, pp. 20 - 21 (1st Army Box 76, 191.58).

Memo, Hunt, CGO I Corps, for Army Conference, 20 Jan 1919, sub: Gas Operations During...the Argonne-Meuse Offensive (GAF-I Corps); "Army Headquarters took over preparation of the artillery gas program in the third phase of the operation and great emphasis was justly laid on the use of mustard gas....The results were...highly gratifying."

89

FO 39, III Corps, 20 hr, 26 Oct, par 3(d)6 (III Corps Box 4, 11.4). The map is essentially the right half of Opns Map No. 16, atchd to FO 88, First Army (See Map No. 9).

Map to Accompany F.O. 39



or Bois des Loges, where four German infantry companies and an artillery regiment had been identified. Other gas targets of III Corps and its divisional artillery were indicated on a map appended to the corps artillery annex (Map No. 11). As will be seen, the actual gas fire was considerably more than that represented on the map.

The gas preparation for the final battle of the campaign began on the night of 25 - 26 October when III Corps artillery fired 2,000 No. 20 75-mm shells into the Bois de Sassey. On 27 and 28 October a total of 800 No. 5 phosgene and No. 9 bromacetone 155-mm shells were put on Hill 243 and the Bois de Carpiere. Also on 28 October 50 No. 5 155-mm shells were fired on each of twelve targets in counterbattery fire on III Corps front.⁹⁰ On the night of 30 - 31 October, 3rd Division artillery followed up the contamination of the Bois de Sassey area with 2,000 rounds of No. 20 and completed it with another 1,000 rounds the next night. In the attack, little trouble was to be encountered from the gassed portions of the Bois de Sassey. A patrol sent in a week later

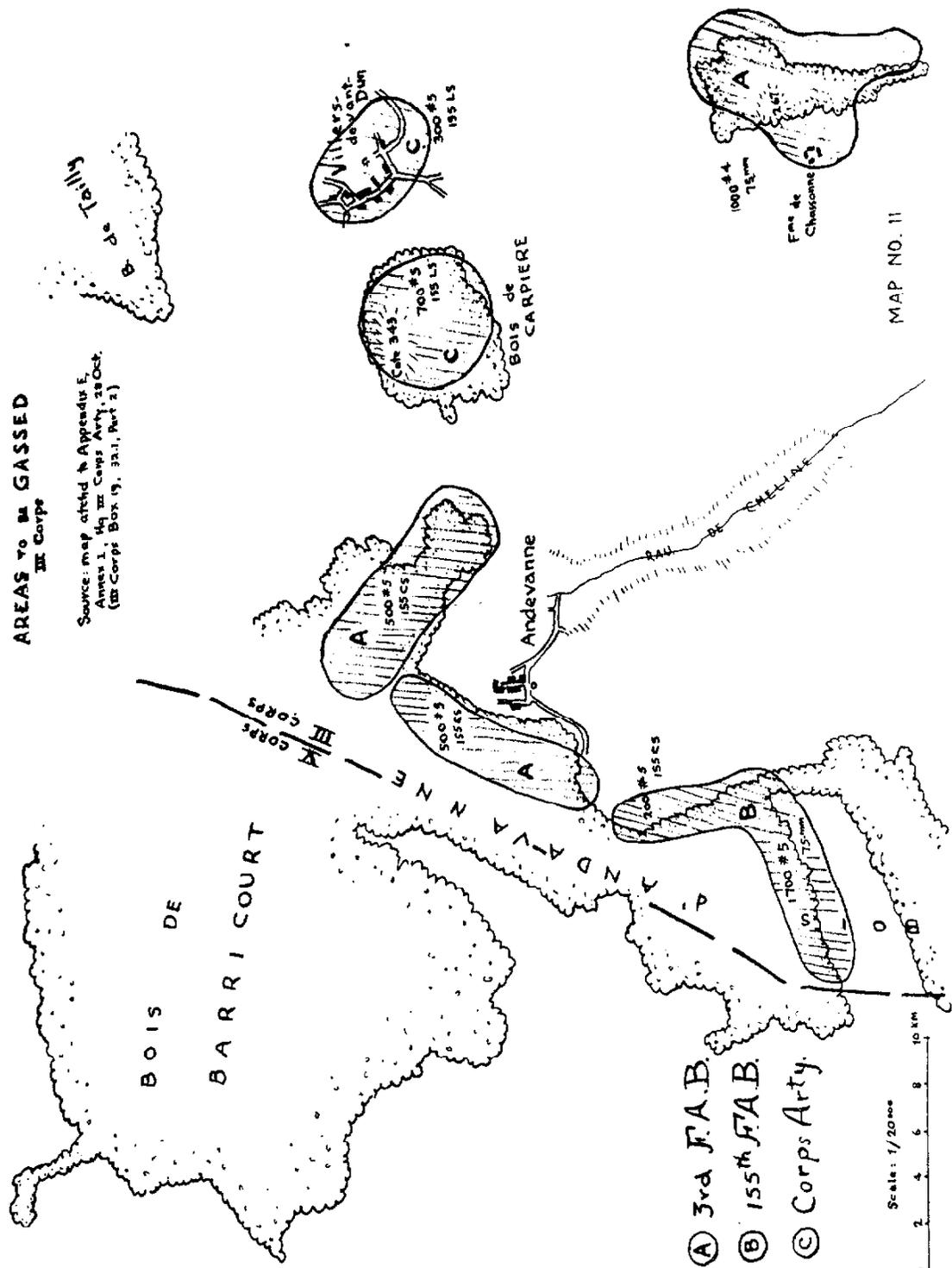
90

"Gas firing commences on receipt of this order on points indicated on Map No. 2 [i.e., Opns Map No. 16] attached" (FO 38, 1st Army Arty, 8 A.M., 25 Oct [1st Army Box 29 NS]).

Ltr, CGO III Corps to CGO 1st Army, 3 Nov, sub: Weekly Rpt (GAF-III Corps).

AREAS TO BE GASED
III Corps

Source: map attached to Appendix E,
Annex 1, HQ III Corps Arty, 28 Oct.
(III Corps Box 19, 32.1, Part 2)



- (A) 3rd F.A.B.
- (B) 155th F.A.B.
- (C) Corps Arty.

Scale: 1/20,000
0 2 4 6 8 10 km

MAP NO. 11

found sections of the wood still hazardous to unmasked troops.

In preparation for the attack on its immediate front, 3rd Division artillery on 31 October put down 500 75-mm No. 4 hydrogen cyanide shells on the Ferme de Chassonne, and the next morning 1,000 75-mm No. 5 phosgene shells on the Bois d'Andevanne, followed by 2,750 155-mm No. 7 chlorpicrin rounds on the Bois d'Andevanne, Bois de Sassey, Bois de Carpiere, Cote 243, and Ferme de Chassonne. On 31 October, 90th Division artillery fired 650 155-mm chlorpicrin shells into the Bois d'Andevanne, and the next morning gassed the wood again with over 600 155-mm chlorpicrin shells and 1,350 75-mm phosgene shells. Approximately 250 75-mm phosgene shells were also put in the Ravine de Cheline.

92

The yperiting east of the Meuse, in progress since 14 October, seems

91

Msg, III Corps to 3rd FA Brig, 3rd Div, 1415, 30 Oct (3rd Div Box 51, 32.16, fol 21); Arty O 4, III Corps Arty, 30 Oct (WD Hist Box 300, 33.6); ltr, CGO III Corps to C CWS, 12 Nov, sub: Rpt on Gas Activities for Oct (GAF-III Corps); Memo, G-3 III Corps for G-3 5th and 32nd Divs, 7 Nov, sub: Gas areas in the Bois de Sassey (WD Hist Box 300, 33.6).

Note: Conflicting reports on the dates of the Sassey gassing are found in Rpt on Gas Opns by and against 3rd Corps Units, CGO III Corps, 25 Jan 1919 (WD Hist Box 300, 33.6) and Rpt, CGO III Corps, sub: Data of Various Attacks of Units in the 3rd Corps, atchd to ltr, CGO III Corps to Corps and Div Gas Officers, 31 Jan 1919, sub: Request for Report (WD Hist Box 300, 33.6). Besides the dates (i.e., yperiting begun on 30 Oct instead of 25 Oct), these reports show a total of 7,000 instead of 5,000 No. 20 shells put in the Bois de Sassey.

92

Rpt, CGO III Corps, sub: Data..., above. Ltr, CGO III Corps to C CWS, 12 Nov, above, said 90th Div fired 2,861 rounds and 5th Div fired 4,500 rounds of No. 4, No. 5 and No. 7 shell on 31 Oct - 1 Nov. This total of 7,361 gas shells approximates the 7,100 itemized above.

to have been concluded on the night of 29 - 30 October when Army artillery contaminated five additional areas across the river (see Map No. 8).

Approximately 5,700 No. 20 75-mm shells were fired by the Verdun Grouping through the night.⁹³ Caught in this final yperiting of the Meuse heights was, once again, the 1st Austro-Hungarian Division. Reduced to skeletal remains after its long stand at the Meuse and its morale completely shattered, on 2 November the division was apparently disbanded.⁹⁴

By comparison with the detailed gas preparations described in the attack orders of I and III Corps, the V Corps order merely said that "gas will be freely employed to neutralize enemy organizations." The corps artillery plan said nothing about gas; only that in the preparation "shrapnel will be freely used."⁹⁵ Nevertheless, at the direction of General Summerall, now commanding V Corps, corps and 2nd Division artillery apparently smothered the St. Georges and Landres et St. Georges areas with phosgene. Evidence of this intense gassing appears in a report at second hand that on 1 November two German field hospitals at Verrieres

93

Daily Rpts of Verdun-Tessier Gpg, 24 Sep-11 Nov (1st Army Box 89, 191). These reports show a total of 37,286 No. 20 shells fired east of the Meuse between 14 - 23 Oct and 11,439 No. 20 shells between 24 Oct - 1 Nov, or a total of 48,725.

94

See below, p. 70. Note: The dissolution of the 1st A-H Div was certainly accelerated by political events as well as its physical plight after 26 Oct, when Austro-Hungary, the last of Germany's allies, sued for peace.

95

FO 101, V Corps, 10:00 o'clock, 28 Oct, par III(f)2 (V Corps Box 14); Annex A to Opns O 5, Plan for Employment of Arty, V Corps Arty, 29 Oct (V Corps Box 17, 32.11). Memo, Lt Meserve, OCGO 1st Army for CGO 1st Army, 14 Jan 1919, n.s. (1st Army Box 117, 63.33), described the vague and unsatisfactory reports from V Corps on its use of gas during the campaign.

admitted 300 gas cases, brought up from the St. Georges sector, of whom
96
20 died that day.

The reluctance of the much-gassed 89th Division, to the right of
2nd Division, to use gas preparatory to its attack on the heights of
Barricourt was recorded in the diary of its division commander on 31
October:

General Winn [brigade commander] requested this afternoon that the gas-
sing by our Artillery of the enemy be not done as it was liable to bring
retaliation in the gassing of the woods through which his troops had to
pass. It was not possible to stop this because this had been ordered by
the Corps and Army and although it may [draw] down gas retaliation, we
will have to do the best we can.⁹⁷

Over the objections of both General Winn and General Wright, the div-
ision artillery at 2200 on 31 October began firing 2,000 phosgene shells
on sensitive enemy points on its front. Its massive HE preparation
followed completion of the gas fire.⁹⁸ What measure of the success of
the V Corps attack on 1 November was owing to the gas preparation on its
front cannot be determined.

96

Memo, I Corps Gas Officer for G-3 I Corps, 15 Nov, n.s. (I Corps
Box 41, 63.33). No records of V Corps artillery fire have been found.

97

Gen. Wright, Personal Diary, 31 Oct (89th Div Box 19, 33.3). Be-
tween 28 - 31 Oct, the Army heavies back of V Corps were directed to fire
450 HE and gas shells into Le Fey Bois, 1,500 into the Bois de Barricourt,
and 800 into the Bois de Tailly. Army gas targets in I and III Corps
sectors, also reported in FO 39, 1st Army Arty, 6:00 P.M., 26 Oct, were
Thenorgues (750 HE and gas rounds), Bois d'Andevanne (950), Bois de Mont
(900), and northwest of Sivry-sur-Meuse (750).

98

Draft rpt, The Artillery in the M-A Offensive, 89th Div, 1 Nov
(89th Div Box 21, 33.6).

The most thorough gas preparation prior to the assault was the hyperiting of the Bois de Bourgogne, on the far left of the Army front.

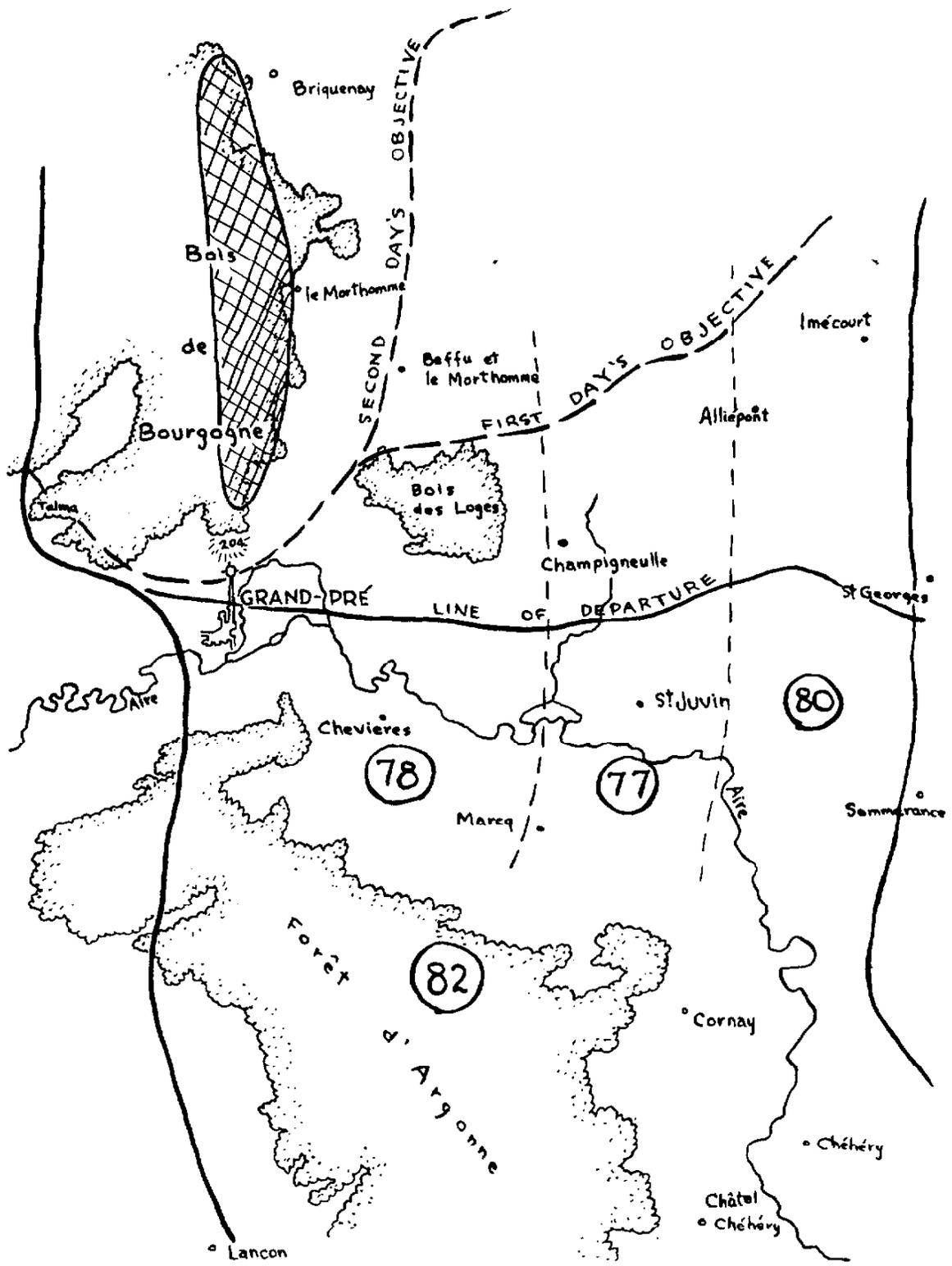
Hyperiting the Bois de Bourgogne

The mission of I Corps in the attack on 1 November was to flank the enemy out of the Bois de Bourgogne by envelopment from the right and then advance to meet the French Fourth Army at Boult-aux-Bois. To accomplish this, the right and center divisions of I Corps, after putting down non-persistent gas concentrations on their front, were to attack between Champigneulle and St. Georges, while the division on the left, the 78th, covered their flank by advancing through the Bois des Loges towards Briquenay so as continually to face the Bois de Bourgogne. The Bois de Bourgogne was to be thoroughly neutralized with No. 20 and No. 9 shell. The Bois des Loges was to be reduced by HE fire alone (Map No. 12).⁹⁹

Corps battle instructions did not underestimate German capabilities. "The enemy facing us has covered his front with a large number of well manned machine guns, closely supported by field artillery. His infantry

⁹⁹ FO 85, I Corps (corr copy), 2400, 28 Oct, par 3f; Annex 1 to FO 85, par III(A) (B) (I Corps Box 15). The map was essentially the left half of Opns Map No. 16, atchd to FO 88, 1st Army.

Memo, CGO I Corps for G-3 I Corps, 15 Nov, sub: Gas Offensive Opns (I Corps Box 41, 63.33), said lethal gas was used on Bois des Loges and other targets prior to 1 Nov opn. But a tabulation in memo, CGO I Corps for C CWS, 5 Feb 1919, n.s. (1st Army Box 339), showed only the hyperite fire of 30 - 31 Oct and no lethal gas fired by corps after 22 Oct.



Map to accompany field order N°85 - 1st A.C.

Source: 78th Div Box 3, 18.2.

MAP NO. 12

appears to be deeply echeloned, only small forces being kept in the advance zone." The enemy artillery in the Bois de Bourgogne had been confirmed during a prisoner interrogation a week earlier, when the large number of guns in Bourgogne woods and in the woods southwest of Beffu et le Morthomme were described.

100

All the light artillery of the 78th Division was moved as far forward as possible two days before the opening of the Bois de Bourgogne. On the morning of 30 October the artillery opened fire, contaminating one after another all known enemy battery positions in the wood and on the heights and eastern slopes of the wood north of Grand Pré (Map No. 13). Over the next twelve hours, almost 30,000 rounds of No. 20 shell were fired at barrage rate by the 48 field guns of the division, without a single casualty among the artillerymen or a single gun going out of action.

101

100

Annex 5, FO 85, I Corps; SOI 25 and 26, 78th Div, 20 - 22 Oct (78th Div Box 3, 20.1).

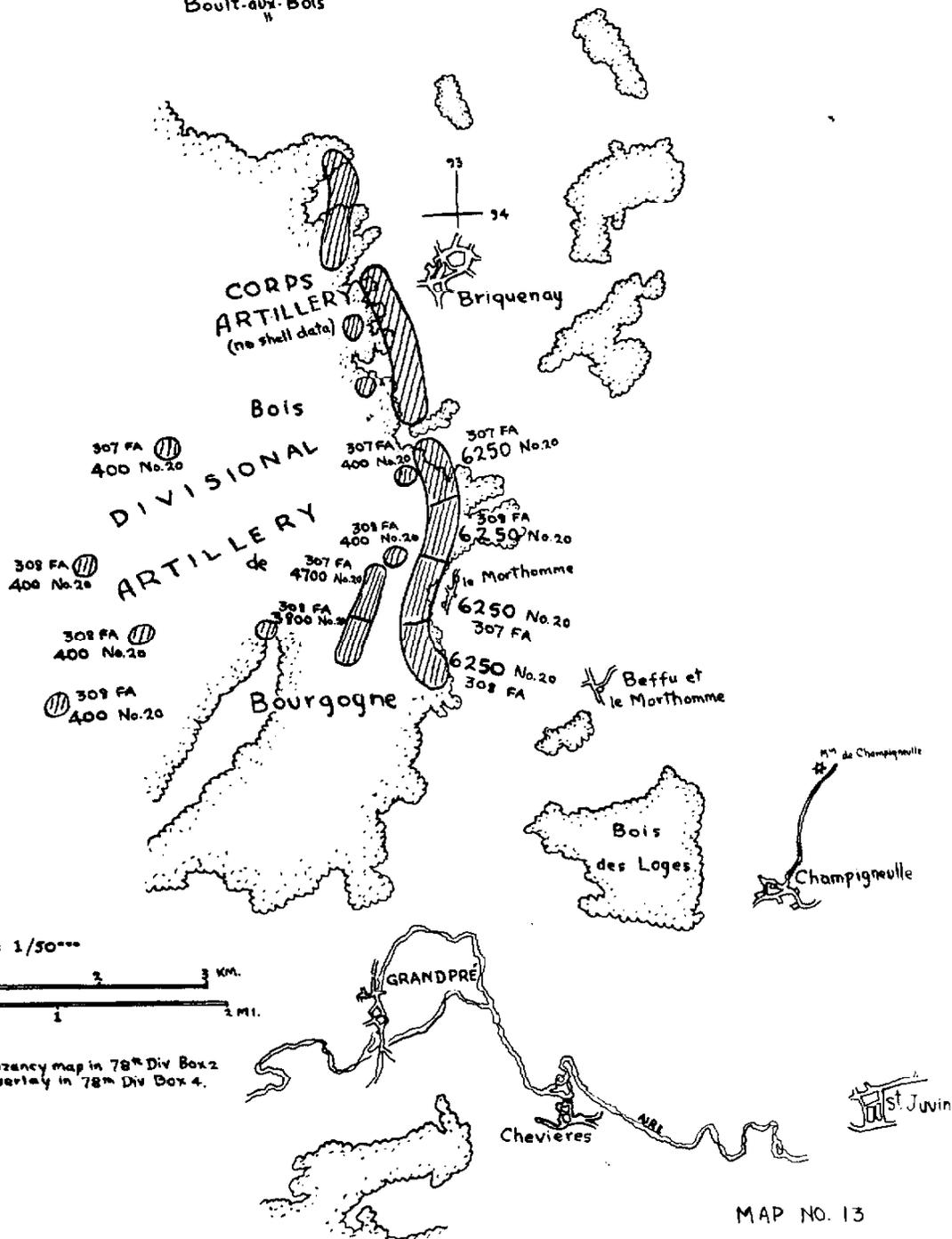
101

Opns Rpt, 153rd FA Brig, 23 Dec (78th Div Box 25); Tng Memo 124: Arty Opns in the Argonne, 22 Feb 1919 (78th Div Box 4, 32.15), said 40,000 rounds of No. 20 were fired but data below denies this.

According to Map No. 12, 36,300 No. 20 rounds were to be fired. Opns Rpt, 153rd FA Brig, 30 - 31 Oct (78th Div Box 25, 33.1), shows 19,381 No. 20, 468 No. 5, and 7,435 mixed No. 20 and No. 5 fired, with the rounds of one mission missing - a sub-total of 27,284 gas shells. Ltr, DGO 78th Div to CGO 1st Army, 31 Oct, sub: Opns Using No. 20 Shell (78th Div Box 24, Opns O), cites Opns Rpt, 153rd FA Brig, above (corr copy?), as saying its two regiments alone fired 23,214 No. 20, 471 No. 5, and 5,600 mixed No. 20 and No. 5, with all the No. 20 fired between 0008 - 2030 on 30 Oct -- a total of 29,285 gas shells.

YPERITED AREAS IN BOIS DE BOURGOGNE

Boult-aux-Bois



Corps artillery, extending the neutralized area on the morning of 31 October, put down 400 No. 20 105-mm shells along the edge of the wood beyond Briquenay -- which with the division fire made a reported total of 41.4 tons of yperite on the Bois de Bourgogne. Both division and corps missions were said to have been carried out "under ideal meteorological conditions," in clear warm weather, with a light wind which "carried the gas back through the woods."¹⁰²

There appears to have been no large enemy troop concentrations in the Bois de Bourgogne at the time. It was held almost entirely by numerous machine gun groups, protecting the guns of the 76th Reserve Division. The reports of that division describe the effectiveness of the yperite drenching. Seven out of the nine batteries of the Near Bombardment Group, 76th Reserve Brigade, were put out of action and the headquarters of the 252nd and 254th Regiments had to be abandoned, the latter so badly gassed that it had to be relieved completely by the staff of the

102

Opns Rpts, I Corps, 30 and 31 Oct (I Corps Box 24, 33.1); memo, CGO I Corps for C CWS, 5 Feb 1919 (GAF-I Corps).

I Corps artillery Daily Situation of Ammo reports (I Corps Box 38) show 4,185 No. 20 75-mm rounds fired on 30 Oct and 30,536 No. 20 75-mm rounds fired on 31 Oct. The discrepancy cannot be explained. On 1 Nov, I Corps artillery fired an additional 1,290 No. 20 105-mm shells, 2,207 No. 5 155-mm CS and 1,338 No. 5 155-mm L rounds on its front, none so far as is known in the 78th Div sector.

103

Rpt of DGO, 78th Div, n.d. (ltr in Spencer file, GAF-Hist of Gas Atks, Misc, Tech Library, ACC).

253rd Regiment. Six officers and 55 men were initially reported as gas casualties.¹⁰⁴ By the evening of 31 October, the division admitted to a total of 210 gas cases.

On 1 November, just prior to its relief, the 254th Regiment said there was still a "slight residue of gas to be felt" and a "number of people had to report sick because of gas." The 71st Regiment, attached to the division, said five of its headquarters staff became gas casualties during the withdrawal that day.¹⁰⁵ How many more delayed cases there were is not known but estimates of efficiency in 76th Reserve Division units a week later blamed "gassing and continued wearing of gas masks due to enemy fire" and "bloody losses and absences from gas sickness," despite reenforcements,¹⁰⁶ as contributing to the poor condition of the division.

Baron Quadt, commander of the 76th Reserve Division, said in his formal report on the gas bombardment:

The gassing began on 30 October at 9:00 a.m. The enemy fired continuously with about 6 batteries from a southeasterly direction. The fog made ground and air observation of the enemy batteries impossible. Later the gassing group in the direction of Chevieres was taken under annihilation fire.

The enemy fire was systematic and concentrated, especially on Morthomme, Jaeger Ravine [in the woods west of le Morthomme] and [the Bois de Bourgogne]. The regimental headquarters of the 252nd Regiment and the

104

76th Res Brig WD, 31 Oct, 1 Nov (76th Res Div, Sub Units, 24 Sep - 11 Nov, pp. 30, 32, German Files Box 200).

105

254th Regt WD, 1 Nov (76th Res Div, Sub Units, 24 Sep - 11 Nov, p. 69 Box 201); Msg, 71st Regt to 76th Res Div, 1 Nov (76th Res Div WD&A, 26 Sep - 27 Nov, p. 58 (Box 200)).

106

Est, 252nd Regt, 6 Nov; Est, 76th Res Brig, 7 Nov (76th Res Div, Sub Units, 24 Sep - 11 Nov, pp. 126, 129, German Files Box 200).

positions of the 2nd, 5th, 7th and 8th batteries of the 56th Artillery and the 6th Battery of the 24th Artillery suffered.

It is estimated that the enemy fired between 25,000 and 30,000 rounds up to 6:00 p.m. of 30 October. That night the enemy used spraying ammunition and on 31 October at 6.00 a.m. the gassing was renewed in its former vigor. It lasted all that day....The gas type was without exception yperite (yellow cross)....

Effect: Immediately after the beginning of the bombardment all units put on gas masks. The gas dispelled rapidly; however, it remained fairly thick in the woods. Certain firing positions were bombarded, many direct hits were made among the guns and the crews were sprayed. These positions were cleared and gas-free areas were sought. After sniffing tests some men took off their gas masks because they had difficulty breathing and their eyes were irritated. It was only towards evening that the majority of gassed men reported in....Some men in the few gas-free areas were surprised by gusts of wind which moved the gas. Repeatedly, men were sprayed with yellow cross and burns were reported by these men....The casualties were for the most part not serious. Of 210 gassed men (up to 31 October in the evening) 40 men returned to their units the next day.¹⁰⁷

That the enemy knew of the coming assault and planned to withdraw from the Bois des Loges area at least seems evident from an artillery order of the 240th Division, Group Argonne, on 29 October:

On the night of [29 -] 30 Oct. all yellow cross ammunition (including the small amounts in the positions) will be fired. On 30 Oct. at 9:00 a.m. the artillery groups will report by special telephone message that all yellow cross ammunition has been fired. No rounds must be allowed to remain in the positions.¹⁰⁸

Less than 200 rounds of gas was fired by enemy batteries the next day. 109

Their gas was gone, their flank protection in the Bois de Bourgogne had been neutralized, but the German forces remaining on the Bois des Loges-

107

Rpt, 4 Nov (76th Res Div WD&A, 26 Sep - 27 Nov, pp. 60 - 61, German Files Box 200).

108

Arty O, CO 240th Div Arty, 29 Oct (240th Div, Sub Units, WD&A 17 Oct - 11 Nov, p. 81, German Files Box 229).

109

SOI 35, 78th Div, 30 - 31 Oct; Obs Rpt, OP 8, 30 - 31 Oct.

Champigneulle front -- with those in the Bois des Loges untouched by gas -- were to continue to hold their positions and inflict high casualties on the forces attacking on 1 November.

The Final Assault

The HE preparation on the First Army front on the morning of 1 November was "the most terrific ever witnessed by American troops." ¹¹⁰ The principal target on the 78th Division front was the Bois des Loges, which was bombarded by the French artillery attached to the 78th Division and by the heavy Army artillery. The guns of the division alone fired an estimated 12,625 75-mm HE rounds as well as 650 No. 3 phosphorus shells and 3,000 155-mm HE shells into the one-kilometer-square wood during the ¹¹¹ two-hour preparation. A German regiment said of the fire: During the

110

Gen McRae, CG 78th Div, Lecture on M-A Opns, 3 Feb 1919, p. 21 (78th Div Box 2, 11.4); Hist of Opns of 321st FA, 82nd Div, Part III, p. 2 (82nd Div Box 26, 11.4).

111

Opns O 56, 153rd FA Brig, 29 Oct; Opns O 59, Amendment, 30 Oct; Opns O 57, 30 Oct, Plan of Ammo Supply (78th Div Box 24, 32.12).

In the preparation, the organic arty also fired on the Bois de Bourgogne south of the yperited area. The 238th and 247th Fr FA fired on the south and east edges of the Bois des Loges, the 317th RAL (155-mm) fired on the interior of the Bois des Loges, and the Army 9.2's of the 65th CAC fired on deep dugout targets in the wood (Lecture, Hearn, p. 10, 13 Feb 1919, 78th Div Box 25, 33.6).

Other Army arty in the sector put gas and HE into the Buzancy area, the 60th CAC (155-mm) firing 205 No. 9 shells and the 87th RAL (155-mm) firing 251 No. 5 shells on 1 Nov (Ammo Rpts, Aisne Gpg, 1st Army Box 100, 60/44).

night of 1 Nov. there was lively enemy artillery harassing fire followed by gas. From 4:30 a.m. on, heavy artillery annihilation fire on our positions and artillery positions mixed with irritant gas and phosphorus shells. At 5:10 a.m. the fire let up.¹¹² The gas reported in the Bois des Loges may have drifted from the Moulin de Champigneulle area, where 1,000 rounds of No. 5 phosgene were put on that enemy strongpoint by the 77th Division artillery at 0330, 1 November.

The infantry attack at 5:30 A.M. was preceded by a rolling barrage into the Bois des Loges, with raking artillery fire and machine gun fire on the wood and its approaches. But when the troops reached the wood, they learned that the massive artillery and machine gun preparation had done little or nothing to silence the machine gun nests in the wood. Captured prisoners later said that losses from the artillery fire had been slight; the machine gun fire had been far more annoying. At nightfall, the Bois des Loges had still not been taken, despite casualties of 18 officers¹¹³ and 501 men.

The left brigade of the 78th Division advanced on schedule up the ravine between the Bois des Loges and the Bois de Bourgogne without

¹¹²

471st Regt WD, 1 Nov (240th Div, Sub Units, WD&A, 7 Oct - 11 Nov, p. 38, German Files Box 229). Ltr, CGO I Corps to CGO 1st Army, 3 Nov, sub: Special Report (1st Army Box 339).

¹¹³

Opns Rpt, I Corps, 1 Nov (I Corps Box 24, 33.1); lecture, McRae, pp. 24 - 25.

meeting any resistance whatever from the mustardized wood. ¹¹⁴ Not a single casualty resulted from the advance past the gassed area. "Enemy dead dotted the road and its vicinity and a trench near le Mort Homme [con-¹¹⁵tained] some thirty bodies, apparently gassed." Near the top of the Bois de Bourgogne that afternoon the brigade turned to assist the forces fighting for the Bois des Loges, with orders to make a flank attack on the wood from the northwest.

By the time the attack was ready, the brigade's help was no longer needed. Between 1900 and midnight on 1 November, the German gunners in the wood withdrew to the north unobserved. ¹¹⁶ The gassing of the Bois de Bourgogne and its evacuation had made the Bois des Loges untenable, and orders had come for the retreat of the German forces to the Freya Stellung, north of Briquenay. It was the first stage of the great Kriegsmarsch,

114

Msg 156th Inf to G-3, 0846, 1 Nov (78th Div Box 5); lecture, McRae, pp. 26, 38.

The DGO reported that "...no resistance was encountered from any part of the yperited wood" (ltr quoted by Spencer in GAF - Hist of Gas Atks, Misc). Opns Rpt, I Corps, 1 Nov, said: "There was little or no artillery fire from the Bois de Bourgogne. One battery near Briquenay was reported in action" (I Corps Box 24, 32.2). But Frederick Palmer, in Our Greatest Battle (p. 592), has perpetuated the story that "though the Bourgogne Wood was thoroughly gassed, it poured in a strong flanking fire, and even sent out one counter-attack."

115

Rpt of Opns, 312th Inf, 27 Oct - 5 Nov (78th Div Box 7, 33.6).

116

Order 2939, Gp of Armies German Crown Prince to Third Army, 3:50 P.M., 1 Nov (USA in the WW, IX, 571).

the withdrawal of the German armies to the Antwerp-Meuse line where they
117
intended to make their last-ditch stand.

Reports elsewhere that first day agreed that the enemy was abandon-
ing the Kriemhilde line, and that he appeared "to have withdrawn his art-
118
illery on the whole front." The divisions of III Corps, just west of
the Meuse, encountered stubborn rear-guard opposition but little art-
illery fire from the Bois de Sassey, and forged steadily ahead through
the day. In the center, the 2nd and 89th Divisions of V Corps met only
isolated resistance as they approached the heights of Barricourt.

Gallwitz, the German Army Group commander, said of the events that day:

The attack in force of the enemy [had] by noon [on 1 November] driven
back the weak forces of the Argonne Group and the Maas West Group, with
the exception of the extreme flanks....In the afternoon [with the fight
on the line Champigneulle-Bayonville-Freya Stellung, i.e., the fourth
position, below the Bois de Barricourt and Bois de Sassey], an army
order was issued to withdraw the main defense line [to the line Buzancy-
Freya Stellung]. The gradual wheel from the Argonne to the Meuse...
was upset....During the afternoon the main pressure was against the
junction between Argonne and Maas West [i.e., the center of the First
Army attack] ...[and] the opening up of the breach could not be pre-
vented. 119

According to General Liggett,

The American-French attack of November 1...resulted in a great break
in the hostile front exactly as planned. We had caught von der Marwitz
[Fifth Army commander] as I expected to -- braced for the attack on his

117

For the progress of the Kriegsmarsch, see USA in the WW, IX, 561,
564-65, 575, 580, 584; German Fifth Army reports (German Files Box 73,
fols I and II).

118

Opns Rpt, I Corps, 1 - 2 Nov.

119

Fifth Army WD, 1 Nov (German Files Box 74, M-A fol IV, pp. 72 - 73).
Cf. Opns O 2939, Gp of Armies German Crown Prince to Third Army, 1 Nov,
above.

right. His weakened center broke before the Fifth and Third Corps and these corps drove through to the Barricourt Ridge, as ordered, overrunning his entire defense system on this front to a depth of seven miles, and beyond his artillery lines....

Our First Corps...was ordered to threaten furiously, but not to fight the first day...but...part of the corps got out of hand and the demonstration developed into a real attack on Champigneulle... [and] led to deplorable waste of life....At seven o'clock that night General Pershing telephoned...remarking that our left -- the First Corps -- seemed to be held up. I replied that there would be no enemy in front of that corps the next day, as the advance in the center would force the German to go north, and to go fast. In fact, von der Marwitz had either to deliver a...successful counterattack, or to withdraw immediately north of the line Buzancy-Boult aux Bois, and we already held the only ground from which he could launch a counterattack with any prospect of success.¹²⁰

Coming on top of the heavy gas casualties sustained prior to the assault, the loss of materiel and the high battle casualties inflicted all across the front of the German Fifth Army in the first day's attack made further resistance in the Kriemhilde position hopeless. On the evening of 1 November, Fifth Army reported:

Our losses are considerable according to reports from both groups [Argonne and Maas West], also guns and material. On the east bank, on the Maas Ost front, long range fire and gas bombardment has continued. The number of gas sick in the last few days is very high, especially in the 1st Austro-Hungarian Division which alone since 31 October has suffered 200 gas cases.¹²¹

The gas casualty figure for the 1st Austro-Hungarian given in this report -- significant in that it was the only such precise figure -- was

120

Liggett, A.E.F.: Ten Years Ago in France (New York, 1928), pp. 221-223. Cf. his lecture, 17 Oct 1923, p. 8, this subject, in 1st Army Box 76, 58. The statement that I Corps was only to threaten furiously on 1 Nov seems contradicted by FO 85, I Corps, 28 Oct, et seq.

121

Fifth Army WD, 1 Nov, above.

doubtless the result of the final large-scale yperite mission east of the Meuse, carried out by Army artillery on 29 - 30 October. Little wonder that a postwar estimate by First Army of enemy losses in the Meuse-Argonne campaign (Analysis, p. 82) indicated that the 1st Austro-Hungarian, caught in the yperiting begun on 26 September, renewed on 14 October, and concluded on 30 October, had suffered the greatest number of casualties of any of the German divisions engaged during the campaign. In the resumption of the advance by First Army on 2 November, the 1st Austro-Hungarian
122
was to collapse completely.

The islands of desperate resistance encountered on the first day were indicated in the HE and gas bombardment missions assigned to Army artillery preparatory to resuming the advance on 2 November.
123
But the Bois des Loges was not among the targets. On the morning of 2 November only light long-range machine gun fire was met on I Corps front as the 78th Division forces before the abandoned Bois des Loges went straight through the wood and emerged at its northern edge. All that day I Corps

122

Msg, Opns Sec Maas Ost to Hq Fifth Army, 0942, 2 Nov (German Files Box 75, Annexes to WD, fol VII): "It has been demonstrated today that even the higher command of the A-H 1st Inf Div is a failure. I deem it therefore altogether undesirable to leave the hq of that division in command any longer and urgently request the transfer of a German division hq [to be] effected immediately."

Note: The end of the 1st A-H cannot be checked as Histories of 251 Divisions of the German Army... (G-2 GS AEF, Washington, 1920) does not record the histories of A-H divisions.

123

FO 43, 1st Army Arty, 11 P.M., 1 Nov (1st Army Box 29 NS).

advanced at will, delayed only by the condition of the roads, cratered by the retreating enemy. In the center, V Corps forces entered the Bois des Barricourt and the next day had captured the heights, outflanking the the German defenses on the whole front, as Liggett said. When Marshal Foch heard that the heights had been taken, he is said to have exclaimed,
124
"Then the war is over!"

Exploiting the general withdrawal of the enemy as the First Army line advanced on 1 - 2 November, and protected by the contamination of the Bois de Sassey, the 5th Division (III Corps) crossed the Meuse on the 3rd, establishing bridgeheads south of Dun-sur-Meuse. In the next two days its line spanned Milly and the Bois de Chatillon, and the actual clearing of the heights of the Meuse began as that line advanced to the
125
Theinte. Further preparations for Petain's Moselle attack to clear these heights were no longer necessary. The Armistice was just six days away.

124

MS. Hist of 89th Div, p. 196 (89th Div Box 1, 11.4).

125

Gallwitz, "The Retreat to the Rhine," As They Saw Us, pp. 279-281, says the crossing only succeeded on 4 Nov and was effected "after heavy artillery preparation, under smokescreen, along the Meuse, and the employment of gas around the heights to the east." The order from the German High Command to concentrate on the Antwerp-Meuse position is said to have arrived on the morning of 6 Nov.

ANALYSIS

As They Saw Us

Marshal Foch's order of 6 September for the Meuse-Argonne attack said the objective of First American Army was "the capture of the Hindenburg position along the front Brielle-sur-Meuse, Romagne-sous-Montfaucon, Grand Pré, developing later in the direction of Buzancy-Stonne with the view of overflowing the enemy line...towards the East."¹²⁶ Petain is said to have predicted that First Army might get one-third of the way to Mezieres-Sedan, a distance of thirty miles, before winter. And that, roughly, says Liddell Hart, is what the original attack did before getting stuck -- until the attack of 1 November.¹²⁷

The nature of the operation, said Foch in a note to Pershing on 25 September,

requires that all its advantages be followed up without the slightest delay....This applies especially to the advance of the American Army between the Meuse and the French Fourth Army. As the strength of this army relieves it from all risks, it must, without further instructions, and upon the initiative of its commander, push forward its advance as far as possible.

The French army on its left was, under no circumstances, to slow up the march of First Army, the deciding element in the attack.¹²⁸

The spectacular advance on the first day of the offensive was not

¹²⁶

Gen. Eugene Savatier, "The A.E.F. in the Meuse-Argonne Offensive," As They Saw Us, pp. 289 - 290.

¹²⁷

B. H. Liddell Hart, The Real War, 1914-1918 (Boston, 1930), p. 462.

¹²⁸

Memoirs of Marshal Foch, p. 410.

matched on succeeding days. Until the last week of the campaign Ludendorff was able to say that "The defensive battle in Champagne and on the Meuse, on either side of the Argonne...followed a favorable course, in spite of the absolutely overwhelming superiority of the enemy, which was considerably greater here than on the fronts of the two northern army groups."¹²⁹

To Foch it seemed that the results of the initial Franco-American offensive were "inferior to what it was permissible to expect against an adversary assailed everywhere and resisting at certain points with only worn-out, heterogeneous and hastily assembled troops, and in a region where his defensive organization had already been captured." The attack had not been "adequately conducted" and had been "commanded too distant from the action." As a result

the American Army, squeezed into the narrow corridor between the Meuse and the Argonne, opposed by a resistance which was all the stronger because favoured by difficult, broken country, and hampered in its advance by flanking fire both from the Argonne and from the east bank of the Meuse, continued to mark time. It tried to overcome these difficulties by increasing its forces in the first line; but this only intensified them, resulting in a complete blocking of its rear and the bottling up of its communications.

To remedy this, Foch, on the advice of Petain (who was in nominal command of the French Fourth and American First Armies), planned to withdraw some of Pershing's divisions and use them east of the Meuse and west of the Argonne. Pershing was to command the forces on both banks of the

¹²⁹

Erich von Ludendorff, Ludendorff's Own Story (2 vols, New York, 1919), II, 402, 419 - 420.

Meuse and a new French Second Army would be created to command the forces on either side of the Argonne. When Pershing refused to split up his forces, Foch acquiesced, "provided the American attacks should be resumed and, once started, continued without pause."¹³⁰

The general attacks mounted on 4 and 14 October made little progress because, said Foch, both armies continued to attack by the method of "marking beforehand on the map successive lines to be reached, and betrayed an exaggerated solicitude in the matter of alignment." "Troops launched into an attack need not think of anything except the direction of their attack...with no preoccupation as to alignment."¹³¹

However valid these critiques of the high command, to Pershing and Bullard, the latter soon to command the Second American Army, their critics seem not to have recognized sufficiently the magnitude of the resistance being waged by the enemy. The adversary, making his stand on the strongest line of his defenses, the Kriemhilde Stellung, seemed anything but worn out, however heterogeneous and hastily assembled he might be. As General Bullard pointed out:

That one month before the armistice came, peace should be so uncertain after four years of war and exhaustion, seems very surprising, [but so uncertain were the impressions at the time]. The enemy was then apparently not being hard-driven; he was almost standing the Allies off. Peace seemed incredible. About this time a French liaison officer passing my headquarters told me that Marshal Foch had just sent a message to General Pershing to this effect: "Press the arrival of American troops

130

Memoirs of Marshal Foch, pp. 412 - 414.

131

Ibid., pp. 439 - 440.

in Europe and I think we can end the war next year."¹³²

With the Fourth French and First American Armies at a virtual standstill before the Kriemhilde Stellung, on 21 October Foch issued new and, as it proved, final instructions. First Army was to

prepare and execute without the least delay a powerful attack in the direction of Boult-aux-Bois, Buzancy, and the Bois de la Folie...while avoiding getting engaged in combats in the woods of the Argonne [the Bois de Bourgogne?] and of the Bantheville region (p. 439).

Along with the knowledge that Petain was preparing an operation along the Moselle, such was the spur for the final attack.

The war might well have gone on another year had not the American Army learned two lessons in which it was wholly untutored upon its arrival in France: how to neutralize the greatly enhanced power conferred on the defensive by the machine gun and how to use gas in the offensive. Both are of present concern, for gas was the answer to the machine gun, as well as to hostile artillery. But it cannot be said that Army achieved anything like mastery of those lessons. To the very end it refused to believe that high explosive could not somehow counter gas. What it did learn it learned wholly through necessity. From its first entry on the fighting front, Army losses to gas were high and continued to be high to the end of the war. It was enemy use of gas, and the failure of Army to retaliate to the extent of its capability, that made the Meuse-Argonne campaign so costly.

132

Maj. Gen. Robert L. Bullard, Personalities and Reminiscences of the War (New York, 1925), pp. 308 - 309.

In all the criticism of the campaign from on high, in which the the difficulties of terrain and supply were freely admitted, there was no word of the role that German gas played in delaying and holding the French and American armies. Yet Liddell Hart was to say that the American Army "experienced the effect of gas warfare at its height."¹³³ Foch too could be mindful of effectiveness of gas, where the French were concerned. Speaking of the second German drive in Flanders in April 1918, he said he was "struck with the enormous wastage among the Allied troops, subjected as they had been to incessant attacks and bombardments by a prodigious number of gas shells."¹³⁴ The weight of enemy gas shells in the Meuse-Argonne may not have compared with that earlier in Flanders, but applied to the inexperienced Americans the statement of Foch was literal truth.

No mention of "the effect of gas warfare at its height" appears in a postwar article summarizing the performance of the American Army in the Meuse-Argonne campaign and written by Maj. George C. Marshall, Jr., who had been in the operations section of the General Staff, First Army, during the campaign.

Unfortunately in some ways, few of our troops experienced the strain of confronting the German during the period of his great offensives. Those who fought only at St. Mihiel and in the Meuse-Argonne probably will never realize the vast difference between their enemy then and the German of April or May....Many mistakes were made in the Argonne which the German at that time was unable to charge to our account. The same mistakes,

¹³³

Hart, The Remaking of Modern Armies (Boston, 1928), p. 82.

¹³⁴

Memoirs, pp. 298 - 299.

repeated four months earlier in the war, would have brought an immediate and unfortunate reaction. It is possible that methods successfully employed in the Meuse-Argonne would have invited a successful enemy counter-attack in the Spring of 1918.¹³⁵

Aside from the ambiguous "mistakes" and "methods," left unexplained in the article, this criticism was the same made by Foch, that the American Army fought worn-out troops. Worn out and outnumbered they may have been, but they were also desperate. They had gas and no hesitancy about using it, and who does not take this into account sees either a glorious victory for American arms that the records will not support, or an ignominy that American troops did not deserve.

The Gas and Wound

Casualties of the Meuse-Argonne Campaign

The 19,600 gas casualties reported to the Statistical Section, AGO, by the divisions of First Army for the period 26 September - 11 November (Table No. 1) represent in some measure the cost to First Army of its delay in learning to counter gas with gas, as some proportion of the 73,500 wound cases represents the cost of learning to counter organized machine gun and artillery fire with gas and smoke. These First Army gas casualties represented more than twenty-two percent of the total killed and wounded (exclusive of gas casualties), as tabulated by AGO.¹³⁶

¹³⁵

Marshall, "Profiting by War Experiences," Infantry Journal, XVIII (Jan 1921), 37.

¹³⁶

Memo, ACoFS G-4 for CGO 1st Army, 25 Nov, sub: Gas Casualties in the M-A Opns (MS Hist of CWS AEF, pp. 150 - 153), says 18,570 of the 92,022 battle casualties (20 percent) were gas casualties.

For comparison, a somewhat similar table has been compiled from the available Daily Medical Reports of the German Fifth Army (Table No. 2). Data for the table are not available until 28 September (that is, as reported on 29 September) and reports for two days, 18 and 30 October, are missing from the German Files. As might be expected, the data are subject to the question of even approximate accuracy. For example, the 1st Austro-Hungarian Division, in Maas Ost, reported a total of 117 officers and men gassed on 20 October and on 23 October had accumulated gas casualties of 382, "not counting the losses to gas in the artillery" (narrative, p. 42). The casualties for all divisions of Maas Ost on those dates, as indicated in the table, do not even approximate the 1st Austro-Hungarian data. Other gas data for this division (narrative, pp. 23, 25, 70) only exaggerate the discrepancy.

On the other hand, accepting for the moment these figures, it is of interest to note that the proportion of gas casualties to wound casualties in Fifth Army (exclusive of Group Beaumont and Group Ornes, which were beyond the right flank of First Army) constituted approximately twelve percent of the reported casualties, in comparison with the proportion in First Army, where gas casualties were over twenty-one percent of the total gassed and wounded. If little else, this disproportion may be said to reflect the effectiveness of the ceaseless gas

136 (continued)

Table of Casualties, 26 Sep - 11 Nov, based on Rpt of Ch Surg, 1st Army (Appendix L, Hist Records, A G Dept, 1st Army, vol II, in 1st Army Box 117, 64), has totals of 15,599 killed, 69,832 wounded, 18,664 gassed, 8,805 missing, and 2,629 shell shocked, or 115,529 battle casualties.

Table No 1
CASUALTIES
 REPORTED BY
DIVISIONS OF FIRST ARMY
MEUSE-ARGONNE OFFENSIVE
 26TH SEPT.-11TH NOV. 1918.

DIVNS.	KILLED		KNOWN PRISONERS		MISSING		WOUNDED		GASSED		TOTAL		GRAND TOTAL
	OFF.	MEN	OFF.	MEN	OFF.	MEN	OFF.	MEN	OFF.	MEN	OFF.	MEN	
1ST	23	1221	-	4	3	1329	84	4909	17	1596	127	9059	9186
2ND	11	392	-	15	1	435	82	2290	3	85	97	3217	3314
3RD	51	1218	1	66	4	456	211	5130	55	1182	322	8052	8374
4TH	29	891	-	-	3	370	192	3683	24	548	248	5192	5440
5TH	45	881	-	33	-	220	196	4181	11	251	252	5566	5818
6TH	1	6	-	-	-	2	4	36	1	2	6	46	52
7TH	2	9	-	-	-	3	3	28	3	85	8	125	133
SUB-TOTAL	162	4318	1	118	11	2815	772	20257	114	3749	1060	31257	32317
26TH	21	504	1	257	-	-	99	1542	-	1648	121	3951	4072
28TH	21	482	-	-	1	403	104	2888	-	-	126	3773	3899
29TH	29	447	2	32	2	136	92	2383	28	1616	151	4614	4785
32ND	30	650	-	62	11	797	115	4084	17	578	173	6171	6344
33RD	14	355	-	71	1	57	61	1596	40	2158	116	4237	4353
35TH	27	555	4	64	2	446	207	5727	6	376	246	7168	7414
36TH	-	-	-	-	-	-	-	-	-	-	-	-	-
37TH	18	417	-	5	-	148	84	2420	28	378	128	3368	3493
42ND	13	398	-	10	-	55	54	2413	27	703	94	3519	3615
SUB-TOTAL	173	3886	7	501	17	2042	846	23083	142	7484	1155	36858	38013
77TH	44	978	-	-	5	230	119	3629	17	544	185	5376	5561
78TH	21	765	1	11	2	198	104	3138	54	1693	182	5805	5987
79TH	35	666	-	43	2	1417	131	3982	22	466	190	6574	6764
80TH	39	773	-	85	1	137	118	3072	50	1334	208	5401	5609
81ST	11	167	4	56	-	6	28	592	8	165	46	986	1032
82ND	34	741	7	178	9	385	116	3511	33	1260	199	6075	6274
89TH	41	874	-	12	1	201	112	3249	39	1296	193	5632	5825
90TH	19	609	-	18	6	267	68	2864	19	707	112	4465	4577
91ST	36	850	-	10	1	100	132	3298	26	350	195	4606	4801
92ND	2	36	-	-	-	7	3	181	5	45	10	269	279
SUB-TOTAL	282	6454	9	413	27	2948	931	27514	271	7888	1840	45189	46709
ADDITIONAL FIELD ARTILLERY REGTS. SERVING WITH DIVISIONS. 119 TH - 120 TH - 121 ST - REGTS., (57 TH F.A. BRIG.) 147 TH REGT., (66 TH BRIG.) TOTALS:- 4 29 - - - 1 12 207 3 18 19 255 274													
TOTAL	681	14609	17	1032	55	7806	2931	71031	530	19081	3754	113559	117,313

COMPILED BY STATISTICAL SECTION A.G.O. 1ST ARMY

Table No. 2

137

DAILY WOUND AND GAS CASUALTIES, GERMAN FIFTH ARMY

Date	Gr Argonne		Maas West		Maas Ost		Beaumont		Gr Ornes	
	W	G	W	G	W	G	W	G	W	G
29 Sep			350	39	67	107			2	1
30 Sep			96	9	44	122			0	0
1 Oct			441	8	36	27			0	0
2 Oct			152	1	13	11			6	0
3 Oct			181	1	25	13			2	0
4 Oct			151	0	28	10			2	2
5 Oct			563	3	34	9			1	0
6 Oct			665	25	75	27			1	0
7 Oct	361	12	602	7	34	23			3	0
8 Oct	127	4	668	38	24	16			10	1
9 Oct	659	71	344	19	262	3			73	0
10 Oct	593	39	621	17	521	14			26	0
11 Oct	296	39	1141	121	733	10			32	1
12 Oct	215	61	758	102	366	7			15	2
13 Oct	218	29	522	85	337	7			10	0
14 Oct	154	26	159	54	197	3			4	0
15 Oct	200	19	577	24	75	5			8	0
16 Oct	343	29	674	17	333	19			2	0
17 Oct	240	26	474	44	345	4			3	0
18 Oct										
19 Oct	122	7	201	2	78	5	5	0	2	0
20 Oct	71	18	210	21	31	23	3	0	6	0
21 Oct	75	47	258	15	31	85	8	0	3	0
22 Oct	60	10	243	28	53	68	10	0	6	1
23 Oct	84	4	352	84	42	103	9	0	6	0
24 Oct	107	9	174	20	101	192	9	0	3	0
25 Oct	87	13	178	6	237	148	31	2	2	1
26 Oct	23	2	122	12	94	95	12	0	3	0
27 Oct	38	5	75	5	28	42	9	0	0	0
28 Oct	46	5	103	22	118	27	11	2	0	0
29 Oct	18	11	49	10	61	36	44	0	3	0
30 Oct										
31 Oct	66	159	76	3	38	107	7	3	3	0
1 Nov			86	4	24	30	18	0	10	0
2 Nov					79	65	48	4	28	0
3 Nov					9	0	35	0	6	1
4 Nov					43	20	20	5	4	0
	<u>4,203</u>	<u>645</u>	<u>11,266</u>	<u>846</u>	<u>4,616</u>	<u>1,483</u>	<u>279</u>	<u>16</u>	<u>285</u>	<u>10</u>

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Compiled from Daily Medical Reports, Fifth Army, 29 Sep - 4 Nov (Annexes to WD, 12 Sep - 11 Nov, German Files Box 76, fol X).

Note: The wounded in this chart are a consolidation of the marschfähig (walking wounded), transportfähig (ambulance cases), and nichttransportfähig (nontransportable), distinguished in the daily reports.

program carried out by Fifth Army units throughout the campaign, even when allowance is made for the relatively massed target presented by First Army to the enemy, jammed as it was between the Argonne and Meuse, in comparison with the lighter and more deeply echeloned forces of the enemy.

A word must also be said of the G-2, First Army, tabulation of estimated enemy losses (Table No. 3). These losses in Fifth Army, totaling 74,000, are said to represent enemy killed, wounded, and captured. Since First Army estimated that it took a total of 16,000 Germans prisoners in the Meuse-Argonne campaign, that leaves 58,000 as killed and wounded, according to this table. Accepting the World War I ratio of wounded to killed as four to one, this would indicate a total of 43,500 wounded (i.e., gassed and wounded), almost twice the total of 22,876 gassed and wounded reported by Fifth Army.

The gas experience of but one enemy division, the 1st Austro-Hungarian, has been followed with some consistency in the narrative, principally because periodic reports of its gas casualties are available. As it happened, that was also the division believed by First Army to have taken the greatest number of casualties in the campaign, and to have been so devastated by gas, despite replacements, that by 2 November it was probably beyond hope of reconstitution.

The narrative (pp. 23 - 25, 42 - 43, 69 - 70) shows that admitted yperite cases in the 1st Austro-Hungarian Division totaled well over 1,000, "not counting losses to gas in the artillery," although the target of First Army yperite fire was that artillery. A probable total of 100,000 rounds

Table No. 3

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ENEMY LOSSES

Below is an estimate of total losses (killed, wounded and captured) of all divisions which have been engaged in active battle on the front of the First Army since September 25th. In most cases it has been possible to arrive at an estimate, from statements of large numbers of prisoners and records of prisoners captured, while in other cases the data is scanty. The figures must be considered as estimates only.

<u>Divisions</u>	<u>West of the Meuse</u>	<u>Losses</u>
1st Guard Division		4000
5th Guard Division		1800
3rd Guard Division		500
117th Division		3200
37th Division		2800
52nd Division		3000
53rd Reserve Division		1500
7th Reserve Division		3500
5th Bavarian Reserve Division		2500
236th Division		3000
115th Division		3000
76th Reserve Division		4000
2nd Landwehr Division		4500
240th Division		500
45th Reserve Division		1500
15th Bavarian Division		2000
41st Division		4500
13th Division		1500
123rd Division		3000
107th Division		2500
88th Division		1500
28th Division		3000
195th Division		500
103rd Division		500
203rd Division		
		<u>58,300</u>
	<u>East of the Meuse</u>	
1st Austro-Hungarian Division		6000
106th Austro-Hungarian Division		1000
228th Division		1200
32nd Division		3000
1st Landwehr Division		1000
27th Division		500
15th Division		1000
33rd Division		500
192nd Division		1500
		<u>15,700</u>
	Grand Total.....	74,000

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Appendix dated 1 Nov 1918 to Rpt of ACoFS G-2 1st Army (1st Army Box 18, 21.2). Cf. similar table in WD Hist Box 19, 22 fol 4.

of 75-mm yperite shell (narrative, pp. 20, 55) was fired east of the Meuse. Considering the widespread nature of that yperiting, it may be assumed that less than half the total actually fell in areas occupied by the division.

The resulting proportion of one mustard gas casualty for every fifty shells is low. It may reflect the ever-diminishing strength of the 1st Austro-Hungarian Division (on 20 October, according to the narrative, p. 43, it had left 2,700 effectives), and overlooks the purpose of that gassing, which was to interdict and to "blind" the enemy, rather than to produce casualties. The same must be said of the Bois de Bourgogne yperiting, where as a result of almost 30,000 No. 20 shells there were at least 300 gas cases (narrative, 60 - 63), or one casualty for every one hundred shells.

If there was any question about the effectiveness of the yperiting east of the Meuse, there was none about the Bois de Bourgogne.

Yperite vs. Smoke

The greatest single obstacle to the advance of First Army in the campaign was the flanking HE and gas fire from the heights of the Argonne and the heights of the Meuse. Much was said about blinding enemy observation from those heights but it appears that there were few or no precedents for such an operation. Given the choice of using yperite or phosphorus east of the Meuse (the supply of those shells was for the most part generous and approximately equal), Army artillery chose yperite. Large-scale smoke screening was a recent concept, and such screening for any length of time was apparently not considered possible. Smoke shell

simply was not used. In late October III Corps had 19,000 rounds of No. 3 in stock. There is no record that any quantity was used in the final preparation or during the attack. Army artillery at the end of the war had on hand over 15,000 rounds of No. 3 phosphorus 75-mm shells. In the period between 21 - 31 October it expended exactly 69 No. 3 shells.
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The Germans are said to have created a successful screening fog 20 kilometers long and 8 kilometers deep on the French front in 1917 by a smoke shell bombardment of 4 hours and 20 minutes duration. Whether it was maintained much beyond that time is not known. In any event, it seems to have been regarded as a spectacular achievement. But the advantage in the use of smoke, as of gas, was with the Allies on the Western Front, for not only were the prevailing winds favorable but the French had access to and large stocks of phosphorus and phosphate, which were denied to the Germans as soon as the war began. The advantage appears not to have been exercised.

American concepts of smoke screening, such as they were, seem to have been borrowed from the British who on occasion used their 4.5-inch howitzer for artillery screening operations but for most smoke missions relied on the 4-inch Stokes mortar. British smoke operations were

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Memo, CGO III Corps for CGO 1st Army, 14 Oct (GAF-III Corps); Memo, MO 1st Army Arty for G-4 1st Army, 1 Nov, n.s. (1st Army Box 103, 60.44).

therefore limited to the capabilities of that weapon. Smoke was put on division-wide fronts with the mortar and the resulting screen augmented with smoke candles and, in the attack, with hand and rifle smoke grenades. Although the British were aware of the anti-personnel effects of phosphorus,¹⁴⁰ no attempt seems to have been made to exploit it.

In the American Army, as in the British, smoke screening appears to have been the province of special troops, in this case the 1st Gas Regiment. During the St. Mihiel operation, its companies used smoke against machine gun nests on several occasions. In the Meuse-Argonne campaign a total of twelve Stokes mortar smoke bombardments on the division fronts served to screen the advance on 26 September. Nothing like that occurred again. In isolated cases, at the request of the divisions, smoke and thermites fire was put on enemy strong points with considerable success, but the divisions did not take kindly to the care and feeding of auxiliary troops and tended to be as wary of smoke as they were of gas. As a consequence, smoke operations on First Army front were, in comparison with the opportunities,¹⁴¹ negligible.

The limited range of the 1st Gas Regiment's mortars made that

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Foulkes, "Gas!" The Story of the Special Brigade (London, 1934), pp. 159 - 161; CWS Intel Bull G-18, 22 Oct, "Notes on the Use of Smoke" (GHQ AEF G-3 Rpts Box 3193, fol 1601).

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An exception may have been the artillery screening of the Meuse crossing on 4 - 5 November. See footnote, p. 71, above, and USA in the WW, IX, 586 - 588.

regiment incapable of screening the heights of the Argonne or of the Meuse, and there seems to have been no doctrine available to Army or corps artillery for large-scale screening. There was better precedent for large-scale gassing. That, in turn, raises the question of the purpose of the gassing east of the Meuse. If it was to prevent an enemy attack across the river and to silence, even temporarily, some of the German batteries on the heights, then the use of yperite was valid and to a degree successful. But if the yperiting was to "blind" the observatories on the heights, as III Corps and Army orders said, it was a secondary effect that might have been better achieved with smoke or with a combination of yperite and smoke.¹⁴²

Considering the frequency with which rainy weather was reported during the 47 days of the campaign, smoke rather than yperite was indicated. As visibility maps of the Meuse-Argonne sector reveal, without concealing smoke few of First Army's movements anywhere across the front were out of view of enemy observers at any time. Providing such smoke was a primary function of the 1st Gas Regiment, and failing that, of Army, corps, and divisional artillery. But as the Army artillery commander, General McGlachlin, said: "We beat the Boche...but it is by mass, not by art, and our waste is enormous."¹⁴³

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General Schulz argues that "an inordinate expenditure of phosphorus ammunition would have been required to maintain the smoke screen for the period of several days of the attack, had smoke been substituted completely for the mustard gas...and might not even have effected a complete screening considering the nature of the terrain and the commanding position of the Meuse heights" (Interv with Brig. Gen. Schulz, 2 Sep 1958).

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Memo No. 4, Hq Army Arty, 26 Oct, sub: Artillery Efficiency (1st Army Box 38, 32.15).

The Use of Gas in the Offensive

Looking back on the use that had been made of gas during the campaign, Colonel Schulz, First Army Gas Officer, was to express satisfaction only with the yperiting east of the Meuse on 26 September and the gas preparation for the 1 November attack. His chart of artillery gas shell expenditures (Chart No. 1) supported his argument. Although as the operation progressed gas was used on the front in increasing amounts, as the infantry came to "fear less the possibility of retaliation by the enemy,"¹⁴⁴ it had too often been used cautiously or in insufficient amounts for the purposes it was to accomplish. Schulz was to attribute the great volume of gas fired in the final preparation "to the less degree of secrecy required...and to the fact that the preparatory fire could therefore be extended over a period of three or four days before the actual jump-off."¹⁴⁵

Colonel Schulz had cause to approve the gas preparation for the final assault, but we may question his reasons for that satisfactory preparation. They were not considerations that had acted on the German armies in their series of offensives in the spring of 1918, when they smothered the Allied front with gas shells by the hundred thousand in a matter of hours preceding their attacks. The tactics of these German

¹⁴⁴

Rpt of Opns, CGO 1st Army to CG 1st Army, 25 Nov, in MS History of CWS, AEF, vol V, p. 25 (SOS Hist Box 249).

¹⁴⁵

Lecture, Execution of Gas Plans for...the Argonne-Meuse Operation, 13 Jan 1919 (1st Army Box 77, 58).

Chart No. 1

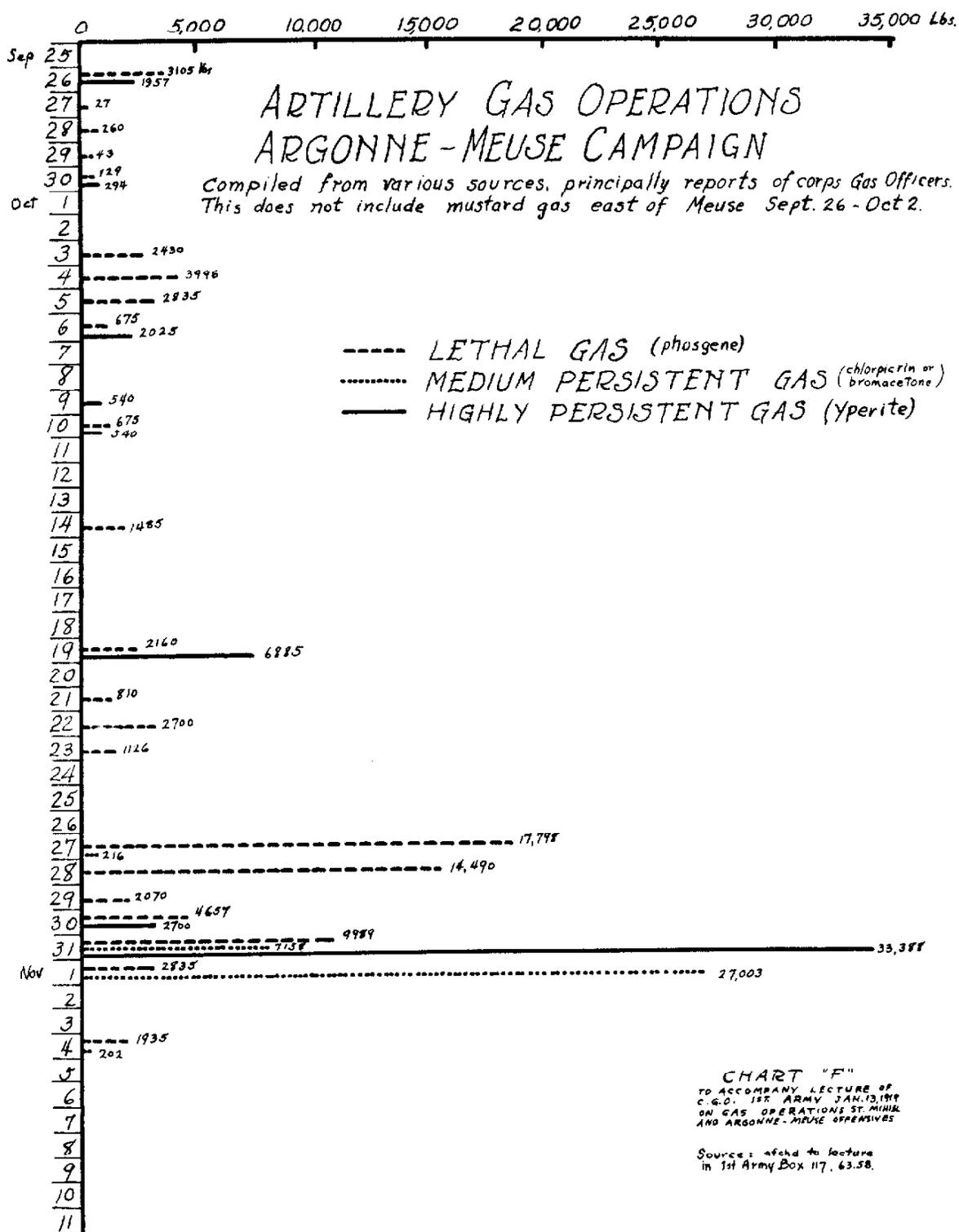


CHART "F"
TO ACCOMPANY LECTURE OF
C.G.O. 1ST ARMY JAN. 13, 1919
ON GAS OPERATIONS ST. MIHLE
AND ARGONNE-MEUSE OFFENSIVES

Source: a/cd to lecture
in 1st Army Box 117. 63.58.

offensives were endlessly studied by First Army headquarters and accounts of them disseminated throughout its units in the intelligence and information bulletins of both Army and the Chemical Warfare Service. To what degree were Pershing and his staff influenced by the success of the German tactics?

From first to last, First Army field orders issued during the campaign urged the corps and divisions to use gas both to neutralize enemy installations and strongpoints on their front and for casualty effect. But for good reason, though the gas shells were available in abundance, Army could not peremptorily order the use of gas, but had to leave the final decision to corps. Too many of the divisions in the line on 26 September had never before used gas in any quantity or had no training or interest in the offensive use of gas. As General McGlachlin said; "The possible offensive use of gas does not seem to be understood." Their natural reluctance was supported in the weeks after the first advance by the fact that the problem of supply was so critical that little or no priority was given gas shells.¹⁴⁶ In that period the incessant use of gas by the enemy educated the corps and divisions to the necessity of using gas themselves. The fear of enemy retaliation should they use gas became as nothing to the helplessness induced by their inability to retaliate.

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"The Army Artillery during the Meuse-Argonne campaign used considerable gas, but due to lack of supply not as much as could have been advantageously employed." Draft study, Col. C. H. Lanza, 1st Army Arty, Artillery in Use in the A.E.F., n.d. (1st Army Box 11, 18.2 fol 2).

As the narrative indicates, the American Army steadily gained confidence in the use of gas but did not master it. In the absence of firm direction, sound Army plans for the use of gas went for naught. A glance at Map No. 5 indicates that the gas tactics for the attack of 26 September were essentially the same as those for 1 November. Neutralizing the flanks and, in the September attack, Montfaucon heights in the center, would have permitted Army to drive on either side of these heights to the corps objective. Although the use of nonpersistent gas was ordered along the edge of the Argonne, yperite might well have been used, as it later was in the Bois de Bourgogne, with as good effects.

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It was a matter of confidence.

The failure to use gas in the Argonne and on the V Corps front in the opening assault were therefore major blunders. Later, corps and divisions temporarily neutralized Brioules at a time when they could not muster sufficient forces to capture or flank the town. Repeated orders to gas the Bois des Loges from 14 October on were never carried out. The high casualties suffered in the attacks on this wood were largely unnecessary, but none so unnecessary as the losses on 1 November. Elsewhere in the final preparation the enemy defenses in the Kriemhilde Stellung were not uniformly or, except in areas, thoroughly gassed.

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"It is (and was) believed that there was insufficient yperite ammunition available to the First Army to do an effective job on the... Argonne Forest....[But] with more confidence,...and with advance plans made for neutralizing and by-passing the Argonne, instead of attacking through it, possibly a greater and adequate supply of No. 20 shell might have been obtainable." (Interv with Brig. Gen. Schulz, 2 Sep 1958).

Yet tactically the gas plan for the final attack was the best that could have been devised, and it succeeded exactly as planned. Despite the fact that no explicit statement has been found acknowledging that the gas program as carried out was a deliberate plan, the present narrative and its supporting maps of Army and corps leave no doubt of the intention.