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A Staff Ride to the Franco-Prussian War Battlefields of Spicheren, Mars-la-Tour, and St. Privat

Robert H. Larson

The growing popularity of staff rides in the U.S. Army during the past decade generally has focused on battlefields from the Civil War and from World War II. This is understandable, given the importance of these conflicts in the American military experience, and the easy availability of sites and primary sources for many military personnel. To neglect battles from other wars, however, wastes valuable opportunities for expanding historical knowledge and for training in different settings. The opening battles of the Franco-Prussian War of 1870-71 fought at Spicheren, Mars-la-Tour, and St. Privat offer an excellent case in point.

Between 6 August and 18 August 1871, the First and Second Armies of the North German Confederation defeated the French forces of Napoleon III in three bloody battles, which resulted in the entrapment of one French army in Metz and paved the way for the capitulation of another two weeks later at Sedan. As a consequence, Napoleon's Second French Empire collapsed, and Germany not only was united, but also was propelled into position as the premier military power of the Western World. German military institutions and practices were, to some degree, adopted by all of the other European powers and even reached the U.S. Army, where a belief in German military superiority became a staple in many quarters, exemplified as early as the works of Emory Upton, and as recently as the works of Trevor Dupuy. As a historical exercise, the study of these three battles can serve as a test for the validity of this belief and as an excellent counterpoint to the American Civil War, illustrating the impact of weapons and organization on the conduct of battle.

To those planning staff rides and who, consequently, are concerned with the application of history to the training of officers, these battles are no less valuable. Specifically, they offer an excellent vehicle

for studying the problems of the encounter battle, the need for proper reconnaissance and evaluation of intelligence, and, most importantly, the difficulty in balancing the necessary aggressiveness that all armies want to inculcate into their officers with the equally important quality of prudence.

Preparations for a staff ride to these battlefields obviously is more difficult than to Civil War sites because of the limited number of books in English. Two works that are especially valuable and easily available are Michael Howard's classic *The Franco-Prussian War* and David Ascoli's *A Day of Battle* which, despite its title, is a detailed account of the war through the disaster at Sedan. Older sources available at the U.S. Army Military History Institute (MHI) at Carlisle Barracks, Pennsylvania, are G.F.R. Henderson, *The Battle of Spicheren* and Harry Bell, *St. Privat: German Sources*. As for maps, the current Michelin map of Alsace and Lorraine (No. 242) is extremely useful for plotting the strategic situation, as well as for planning the route of the tour. The topographical maps accompanying the German official history of the war (copies of which can be obtained through MHI) are superb for studying the terrain as well as for placing German units on the ground at specific times in the battles. It should be emphasized that a detailed preliminary terrain study of these battlefields is absolutely essential, as there is virtually nothing on the ground to indicate the course of the battles.

The focus of this preliminary study should be to bring out the most important characteristics of the contending armies. Perhaps the most striking is the aggressiveness of the German armies and the almost passive attitude of the French. Regardless of the circumstances, German commanders on all levels sought to attack the French whenever contact was

made, often without proper reconnaissance. This often gave them a great psychological advantage and played a role in their victories, but on several occasions it also resulted in heavy and unnecessary casualties. This was especially true because the French infantry was equipped with the chassepot, the most advanced breech-loading rifle of the time, with a range of 1,600 yards, almost 1,000 yards more than the Dreyse needle gun the Germans carried. The Germans, on the other hand, had a decided advantage in artillery, being equipped with Krupp breech-loading steel cannon, firing percussion shells. The willingness of the German commanders to push their artillery forward, and the heroism of the gunners who worked their pieces under heavy French fire, saved their infantry more than once from complete disaster. The French, on the other hand, invariably were reluctant to attack, even when German over-aggressiveness offered excellent opportunities to turn the tide of battle. Finally, it is important to understand the extent to which the command structure of both armies was decentralized. As a matter of principle, the *de facto* German commander, Count

Helmuth von Moltke, believed that he was not in a position to direct the course of the battles and left most of the decisions in the hands of his army commanders. Only once, in fact, did he attempt to direct one of his army commanders, and that attempt failed. On the other hand, the French commander for the last two major battles, Francois Bazaine, clearly was above his level of competence and abdicated his responsibility to his corps commanders.

For the purposes of the battlefield tour, a convenient place to begin is Kaiserslautern, not only because it is well known to most Americans serving in Europe, but also because it was the initial headquarters of the German Second Army. With the outbreak of the war, the German states mobilized three armies in the Palatinate, with the objective of advancing on a broad front between the Moselle and Rhine Rivers toward the French border. Moltke's initial plan was for the Second Army under Prince Frederick Charles to advance in the middle with General Karl von Steinmetz' First Army on the right and Crown Prince Frederick's Third Army on the left. Assuming the French would launch



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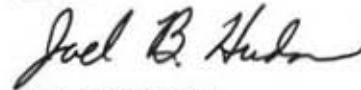
an immediate offensive into the region, Moltke planned to hold them with the Second Army and to strike their flank with his Third. Unfortunately for these plans, the French were not nearly so well organized as the Germans anticipated and when they finally brought their forces together in Lorraine, they were incapable of launching any offensive. Moreover, Steinmetz, deeply unhappy with what he considered to be his secondary role, pushed his army ahead of Frederick Charles, and on 6 August the lead elements of his VII Corps crossed the Saar at Saarbrücken and unexpectedly ran into French outposts just south of the city. When the French withdrew to high ground to the south, the German division commander on the spot assumed the French were in full retreat and ordered his lead brigade to assault the northern-most protrusion of the heights, a hill known because of its red soil as the Rotherberg. Unfortunately, the French were not in retreat, but instead were firmly positioning their entire II Corps on these heights.

To view this battlefield, travel on Autobahn E50 from Kaiserslautern, exit at Spicheren just after crossing the border and drive up the Rotherberg. The natural defensive strength of the French position immediately is apparent. The steep grade of the Rotherberg is in itself a serious obstacle, and once on the top, one becomes aware that this hill is but the forward component of a mass of high ground which continues to rise. The Germans initially tried to take the position by assaulting from both flanks, but from the heights of the Rotherberg it is obvious that the terrain there is hardly suited for such an attack. Throughout the afternoon of 6 August, more and more German units reached the battlefield and were committed piecemeal to the struggle. Efforts to work around the French flanks met with only very limited success, and by evening the Germans had gained only a very precarious foothold on the forward edge of the Rotherberg at a cost of some 4,500 casualties, compared to only 2,000 for the French. At this point, however, the German 13th Division, which had crossed the Saar downstream at Völklingen—on its own initiative—was marching to the sound of the guns, appeared at Forbach on the French left rear and forced them to retreat, lest they be cut off completely. In the final analysis, the day-long German assaults on the French position on and around the Rotherberg were ill-conceived and costly, and violated Moltke's dictum

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that commanders should commit to combat only when their forces were concentrated. Nonetheless, it must be recognized that this same aggressiveness also had motivated the 13th Division commander, whose initiative won the day.

Coupled with another unexpected German victory the same day to the east at Wörth, came the beginning of a French retreat to the west, with the Germans in rapid pursuit. On 12 August, Emperor Napoleon III placed Bazaine in command of the newly created Army of the Rhine, consisting of four corps and the Imperial Guard, in the vicinity of Metz. The following day, he ordered Bazaine to withdraw westward to avoid entrapment, but a small battle at Corny, east of Metz, on 14 August, and administrative problems the following day, delayed execution of the order. As a consequence, when Napoleon left the army on the morning of 16 August, Bazaine's army had just begun its withdrawal along the Metz-Verdun road, and the Germans, unbeknownst to either side, were poised to cut off his retreat. Giving the French more credit than they deserved, the Germans assumed the French retreat already had begun, and on the evening of 15 August, Moltke ordered Steinmetz' First Army to advance directly west on Metz and Frederick Charles' Second Army to cross the Moselle to the south of the city and advance northwest, in hopes of interdicting the French as they marched. Thus, on the morning of 16 August, Frederick Charles' III Corps, commanded by Constantin von Alvensleben, was crossing the river at Corny and preparing to cut the Metz-Verdun road between Rezonville and Mars-la-Tour. His X Corps, under Constantin von Voigts-Rhetz, already had crossed the river at Pont-a-Mousson, and one of its divisions had reached Thiaucourt, some nine miles to the west. Elements of the 5th Cavalry Division had even reached the Metz-Verdun road.

To view this segment of the action, return to E50 from Spicheren, continue west towards Metz, and then turn south on E21/23, exiting at Corny. From there, proceed as Alvensleben did to Gorze, a small village surrounded by steep, heavily wooded hills. Gorze was a natural bottleneck which could have held up the German advance easily, but the French had failed to defend it, and Alvensleben quickly moved through, sending his 5th Division directly north to Rezonville, and his 6th Division northeast to Mars-la-Tour.

Taking the road to Rezonville, proceed up the

narrow valley road for about two miles, until emerging on the Gravelotte plateau. A broad, open expanse, it is marked by gently rolling hills and slight depressions interrupted only by small villages and copses of woods. The first impression is somewhat misleading, for although one can see for several miles toward the north and northwest, the depressions and woods can conceal large bodies of troops and their movements to a surprising degree. This certainly explains why Alvensleben, assuming most of the French already had left Metz, initially believed that he had found only Bazaine's rearguard. Upon leaving the woods, the 5th Division deployed on both sides of the road and immediately moved against the French but, not surprisingly, was quickly thrown back by the French II Corps deployed just south of Rezonville. Alvensleben, located with the 6th Division on the road to Mars-la-Tour, heard the sound of the battle and personally rode to Tronville to determine the situation. It was only then, at approximately 1100, that he learned that his two divisions faced, not the French rearguard, but a vastly superior force of eleven infantry and four cavalry divisions. He quickly decided that any attempt to break contact and retreat would invite disaster and that his only course was to bluff the French by attacking them and convincing them that they faced the entire German army. He ordered the 6th Division to change its line of march to the northeast to seize the villages of Vionville and Flavigny and to come up on the left of the 5th Division. At 1130, the 6th Division successfully attacked and the Metz-Verdun road was cut.

Staff ride participants can follow the action by continuing up the road from Gorze, entering Rezonville, and then proceeding west through Vionville to the road junction just beyond. From this vantage point, one can gain a clear picture of the serious situation that Alvensleben faced at midday. With the successful attack of the 6th Division, the German line now extended from the Tronville wood on the left, in a southeasterly direction along the slight rise just east of Vionville and Flavigny, and along the forest on the southern edge of the plateau. The open terrain and excellent fields of fire for the French defenders prevented Alvensleben's troops from advancing any further, but also provided clear fields of fire for the German artillery, which he now brought into position. As a consequence, his front and the interdiction of the

French line of retreat along the Metz-Verdun road was secure, but his left was in the air and vulnerable to envelopment by the numerically superior French. Fortunately for him, the French were slow to take advantage of the situation. For reasons that still defy explanation, throughout the day Bazaine was fixated by the need to maintain his connection with Metz, and retained the bulk of his forces around Rezonville, rather than send them against Alvensleben's vulnerable flank.

About noon, the French VI Corps brought up artillery to a position just short of the distant woods to the left front, and began to enfilade the 6th Division's position. In desperation, Alvensleben ordered his only reserve, two regiments of Major General von Bredow's cavalry brigade, to silence the guns. Bredow carefully reconnoitered the terrain and then moved his troopers out of Vionville along the shallow depression visible to the left front. They advanced to within a few hundred yards of the French artillery, wheeled to the right and charged. The results were spectacular. Surprised by Bredow's troopers, the French were unable to react effectively, and the Germans overran the French position, silencing the guns and putting some of the infantry to flight. As they advanced, however, French cavalry fell on the Germans' rear, forcing them to fight their way back. Almost half of the German cavalry failed to return from what came to be known as "von Bredow's Death Ride." Alvensleben's left was again secured, but not for long.

About 1500, the French IV Corps finally launched an attack on the Tronville wood. This time Alvensleben had no reserves to send in, and after a desperate struggle, the 6th Division retreated south of the Metz-Verdun road. Once again, however, the situation was saved, as Voigts-Rhetz' X Corps altered its advance to the northeast at the sound of the fighting and began to arrive on the battlefield. The X Corps extended the German line west to Mars-la-Tour, and the French again were contained. At this point, Voigts-Rhetz believed he saw an opportunity to outflank the French right, and ordered his 38th Brigade to advance just east of Mars-la-Tour. This time, however, German aggressiveness proved to be a costly mistake.

Moving west to about 500 yards from Mars-la-Tour, one can observe the scene of the German attack. As the 38th Brigade advanced north from the road, it encountered strong French forces just north of a ravine

to their front and—without artillery preparation—advanced directly into them. From the other side of the ravine, the French could see the advance clearly, and brought the enemy under withering fire as the German infantry began to move forward. Some of the Germans were able to reach the ravine where they had a bit of cover, but the French moved forward to the edge of the ravine and fired down on them. The French then charged into the ravine, driving the disorganized 38th Brigade back, and threatening to turn the German retreat into a complete rout. Voigts-Rhetz turned to his cavalry for aid, and five squadrons of dragoon guards and *cuirassiers* furiously charged into the French. Like Bredow's attack, this action cost the cavalry dearly, but it halted the French attack and stabilized the situation again.

The last two acts of the battle were largely anticlimactic and may be discussed only briefly. As the situation on the German left was being stabilized, cavalry from both sides became involved in a huge brawl northeast of Mars-la-Tour. Eventually, some 5,000 troopers on both sides battled on the open plain, but the results were inconclusive, and eventually both sides broke off contact. Finally, about 1900, Frederick Charles, who only had arrived on the battlefield some three hours before, ordered a fresh assault on Rezonville by newly arriving troops. This attack was successful, but night intervened before the situation could be exploited.

In the immediate aftermath, both sides claimed victory, but—although casualties on both sides were approximately equal—what mattered was that the Germans had prevented the French from retreating to Verdun. There can be no doubt that German aggressiveness had given them a psychological edge that often enabled them to dominate their numerically superior foe. This stands in remarkable contrast to the French timidity in passing up a number of opportunities to turn Alvensleben's left flank.

Both armies spent the following day preparing for the resumption of combat. Determined to seal the trap, Moltke ordered the Second Army to continue its move over the Moselle and, hence, north to block the French retreat, while Steinmetz' First Army concentrated around Gravelotte and acted as the pivot for this move. Bazaine, meanwhile, continued to be transfixed by the need to maintain his communications with Metz, and

spent the day deploying his forces west of the city to defend it from an attack from that direction. Stretching from the Point du Jour near the Moselle north for seven miles to the village of St. Privat, the line he established was ideally suited to the chassepot. The southern third was covered by the steep, heavily wooded Mance Ravine, while the northern two-thirds offered a panoramic view to the front of up to three thousand yards. Unfortunately, Bazaine's mission was not to defend Metz, but to escape from it.

Early on the morning of 18 August, Frederick Charles began his move north from the Gravelotte-Mars-la-Tour road. His advance was led by three corps abreast, the IX Corps on the right with orders to attack the village of Amanvillers—which the Germans assumed to be the end of the French line—and the Guard Corps and XII Corps in the center and left to carry out an enveloping movement. Inexplicably, Frederick Charles had failed to conduct any reconnaissance and was unaware that the French line extended almost two miles further north of Amanvillers to the village of St. Privat. Shortly after 1000, the IX Corps began its move east against Amanvillers, striking the French center instead of its right. Steinmetz, chaffing at his secondary role, immediately assumed that the French flank was being turned, and began to attack across the Mance Ravine.

To view this part of the battle, move east from Gravelotte. There one immediately can see the difficulties that Steinmetz' troops faced. The French on the other side of the ravine could clearly see the German advance and even bring the attackers under fire. Upon moving into the ravine, the observer immediately sees the overwhelming difficulty of maintaining unit cohesion and control there. The ravine's steep slopes and heavy underbrush would quickly reduce any formation to shambles, and when the Germans finally climbed up the eastern slope and out into the open, they faced devastating fire from entrenched French troops a thousand yards to their front. Three times during this long day Steinmetz ordered troops from the VII and VIII Corps to attack the French positions; the only result was to increase the casualties and chaos in the ravine. Toward nightfall, he prevailed on the Prussian king, who had moved forward to Gravelotte, to allow him to send the newly arrived II Corps to make a final effort that Steinmetz was convinced would carry the French

heights. But the result was a panicked retreat which not even the king was able to contain, and he left the field convinced that he had lost the battle.

The Germans, however, retrieved the situation on their left. Throughout the day, the IX Corps remained steadfast before Amanvillers, unable to advance, but covering the flanking march of the Guard and XII Corps. Shortly after 1500, after dropping off one brigade to support the IX Corps, the remaining three brigades of the Guard seized St. Marie, opposite the French right at St. Privat. They took up positions on either side of the village to wait for the XII Corps to march further to the north and swing around to outflank the French. They waited for about an hour and a half and then launched a frontal attack.

The attack of the Guard Corps on St. Privat remains shrouded in controversy and mythology. Standing on the eastern edge of St. Marie where the attack began, it is easy to understand why. St. Privat lies just over a mile away, its stone walls and buildings clearly visible. Between the two villages, there is no cover or concealment, no possible protection from the French chassepot, whose range easily extended to three-fourths of the distance to be traversed by attacking troops. Those who have visited Gettysburg, Pennsylvania, will be struck by the similarity with Pickett's Charge, except that at St. Privat the defenders possessed weapons with four times the range and three times the rate of fire of the Union defenders on Cemetery Ridge. But the Prussian Guard went forward, apparently without hesitation. Attacking successively by brigade, 18,000 men advanced, only to be slaughtered by the French defenders. Their regimental histories stress the courage and determination of the troops, but cannot hide the fact of the terrible losses. Within minutes, regiments were reduced to battalions commanded by lieutenants. None of the Guards reached closer than 800 yards from St. Privat, where they were forced to halt and hug the ground. But they did not retreat. They attempted to return fire, and waited for the XII Corps to attack the French on their flank, rescuing the Guards. Shortly after 1900 their deliverance finally came, and when it did, those Guards who were able joined in seizing the villages. The final German success at St. Privat turned the tide as the French, now flanked, streamed into the fortifications around Metz. It was a costly victory, the Germans losing slightly more than 20,000 to the French

12,000. But Bazaine's army was locked in Metz, where it was forced to surrender in October.

Above all, a staff ride to the Franco-Prussian War battlefields in Lorraine demonstrates that principles which may lead to success on one level of war may lead to disaster on another. The German aggressiveness on the operational level and the ability to advance rapidly in a dispersed formation undoubtedly confused the French, who had no idea that they were being closed in and soon would be entrapped at Metz. On the other hand, the German aggressiveness on the tactical level indicates that many officers only imperfectly understood the impact on the offensive of changing technology. Against better generalship on the French side, this recklessness might well have led to defeat. The French

illustrated the fatal weakness of hoping to achieve a decision by remaining strictly on the defensive. In the end, the old aphorism that the best defense is a good offense retains its validity—so long as one places as much emphasis on the word "good" as one does "offense."

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Improving America's Horses The Army Remount Program

Eve Iversen

For most of the nation's history, the U. S. government purchased animals for peace and war purposes as needed. At the end of World War I the Army recognized that a better system was necessary to ensure that quality horses were available when needed. Later than almost all other military powers, the government established a program for purchasing the best available stallions and for placing them with breeders across the country. It was a system based on close cooperation between civilians and the military, and it worked to the benefit of both.

The purpose of the program was to raise the general quality of the light horse population. The Army Remount Service and its Breeding Plan ensured that an adequate supply of suitable animals were available at a reasonable cost for the mounted services.

Ironically, even as the program became fully operational, the days of horses in the military were numbered. The Army mechanized while the number of equine progeny increased. After World War II the Remount Service was disbanded and the horses were

sold to the public.

The effects of the program were varied and widespread. Participants learned genetics and disease control. More quality horses were left in public hands than private money could have afforded. The level of training given to breeders was equal to that available at the best agricultural colleges, as an interested military establishment funded extension programs and other agricultural studies. The program was marked by close cooperation between military personnel, academics, and civilians. In sum, one can conclude that the American horse breeding industry gained from military necessity.

Background

The Army Horse Breeding Program was an outgrowth of World War I, when the Remount Service had been called upon to purchase nearly 500,000 horses and mules. This was done through centralized purchasing at selected sites. The animals were then shipped by rail to military installations. Because of time pressures,

there was always the danger of epizootic outbreaks or the purchase of large numbers of unsuitable animals due to time pressures. The periodic procurement of a large number of animals focused attention on the shortage of both mules and suitable riding horses brought about by the trend toward mechanization in both urban and rural areas.

During the period 1908-20, the Department of Agriculture's Bureau of Animal Industry had operated a program to encourage the breeding of riding horses. This mission was transferred voluntarily to take advantage of the War Department's large appropriations and personnel roster. There had always been a close bond between the two agencies, as Maj. C.L. Scott noted

All requests for advice and assistance made to the Department of Agriculture have been promptly and willingly complied with and have been of great value. Remount officers should take every occasion to seek its advice, and the assistance and advice of the state agricultural colleges and stations should be sought. Also in return, prompt and considerate attention should be rendered all requests from the Department of Agriculture and state agricultural establishments (*Field Artillery Journal* [Sep-Oct 1928], p. 480).

Remount Administration

The term "remount" means a fresh horse or mule used to replace one that is lost or killed by combat, accident, or sickness. War dogs were also included in that definition, but dogs were administered through a separate program.

The function of the remount depot was to procure, train, and issue animals to mounted units (mounted infantry, cavalry, pack and field artillery, and pack transportation), and to replace those who had become ineffective for various reasons, including combat. There were two kinds of remount depots: permanent and field. The Army's permanent depots were located at Front Royal, Virginia; Fort Reno, Oklahoma; and Fort Robinson, Nebraska.

Since they require daily maintenance and rations, animals are different from any other type of supplies. When first purchased, the animals were not ready to be issued. They first had to be sent to the depots, where they could overcome shipping illness and otherwise recover physically. Most already had basic training for

riding or draft, but at the depot more work was done. Here, they obtained sufficient training that they could be handled by the average soldier. The normal processing period was not less than 120 days. Experience revealed that any attempt to issue an animal more quickly ran the risk that they would become sick after arrival at their unit.

During the period between World War I and World War II the Army was chronically short of soldiers, and just about everything else. Field artillery units in particular had difficulty in keeping their animals in condition. For lack of enough riders, large numbers were exercised on gang lines, making the preliminary training at the depots all the more important.

The receiving organizations, however well qualified they might be to train the animals for work, rarely had enough experienced men to start the process of training. One of the principal reasons for maintaining remount depots throughout the first half of the 1940s was to maintain a cadre of officers and enlisted men experienced in livestock work.

In the years following World War I, the Army's activities dwindled, and the Remount Service was reduced to the status of a Branch within the Supply Division. The Army began to expand again following the adoption of the Selective Service Act (1940). The Remount Branch became a separate division in January 1941, with the following stated mission:

a. The general mission of the Remount Division is to encourage and assist civilian breeders to produce [profitably] horses suitable for civilian and military use, and to procure horses and mules as directed by the War Department and as authorized by Congress for use of the Army of the United States in peace and war.

b. The remount division is not only a national defense measure, but is a sound government agency by which horse breeders throughout the United States are greatly benefitted. (*Remount*, War Department Technical Manual 10-395, 1941, pp. 1-2).

In 1943 the Army was reorganized along functional lines, and when it became obvious that horses would be phased out of combat units, the remount program was transferred to the Service Installation Division and reduced again to branch status. It remained such until the end of World War II.

One of the functions of the branch was the super-

vision of the Army Horse Breeding Program. For administrative purposes, within the United States the animal breeding and purchasing missions were carried out in geographically divided Remount Areas, each with a separate headquarters. In late 1941 the United States was divided into seven Remount Areas, each corresponding roughly to a corps area, as follows:

1. Eastern - Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and the island of Puerto Rico. The headquarters was located at Front Royal, Virginia.

2. East Central - Alabama, Florida, Georgia, Illinois, Indiana, Kentucky, Louisiana, Michigan, Mississippi, North Carolina, Ohio, South Carolina, Tennessee, West Virginia, and Wisconsin. The headquarters was at the Post Office Building, Lexington, Kentucky.

3. North Central - Arkansas, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota. The headquarters was at the Post Office Building, Kansas City, Missouri.

4. South Central - Oklahoma and Texas, headquartered at St Angelo, Texas.

5. Northwest - Idaho, Montana, Utah, and Wyoming, headquartered at the McCormick Building, Salt Lake City, Utah.

6. Southwest - Arizona, Colorado, and New Mexico, headquartered in Colorado Springs, Colorado.

7. Western - California, Nevada, Oregon, Washington, and the Territory of Hawaii, headquartered in San Mateo, California.

The Remount Area did not require a large headquarters. Each headquarters was supervised by an officer in charge, assisted by a veterinarian, veterinary assistant, clerical staff, and one or more civilian grooms. Only small quarters were required for offices. A stable of about ten box stalls and two paddocks for the newly purchased horses, if it could not be on the same site, might be located nearby. A purchase quota of animals was allotted periodically to each area. Horses normally were purchased directly from breeders after inspection by the officer in charge and the veterinarian.

The issue over the role that animals would play in the coming war generated a great deal of debate. Col. Edwin N. Hardy, Q.M.C., wrote:

For the single fiscal year 1941 more animals are

required to meet this expansion than were required during any eleven years since the Remount Service was organized. During the various hearings prior to the appropriation of funds we were often asked if such a number of suitable horses and mules were available. Such inquiries could always be answered affirmatively, thanks to the results of the Army Horse Breeding Plan (*The Quartermaster Review*, vol. 20 [Jan-Feb 41], p. 26).

Local Agents and Public Relations

The Remount Area headquarters were of paramount importance in the Army Horse Breeding Program. They were responsible for locating and procuring the best stallions available, and for placing them in the hands of the best civilian breeders throughout the country. In addition, the various headquarters supervised the actual conduct of breeding activities.

Stallions were obtained by purchase, usually from a breeder in the plan, with good prices paid to encourage civilian stockmen. Some animals were donated to the government by breeders. This was the source of many of the founders at the beginning of the breeding plan in the 1920s.

Thoroughbreds were the main breed used as sires. Chief of the Remount, Lt. Col. Edwin N. Hardy reported:

At the present time the Remount Service has... stallions available for stud duty as follows:

Thoroughbred.....	697
Arabian.....	18
Morgan.....	15
Saddlebred.....	3

By December 31, 1939, 258,960 mares had been bred to our Remount studs and have produced, as far as we can ascertain from reports, 155,370 foals, conservatively valued at \$23,305,500. The annual foal crop from our Remount studs is now well in excess of 10,000 animals ("Our Remount Situation," *Crossed Sabers* [1 Sep 90], p. 20.

Civilians selected to receive a government stallion were called "local agents." Maj. C.L. Scott (1928:468) described the qualifications of a good local agent: "A good horseman, who is popular and well known and who takes an active interest in breeding and the welfare

of his community, should be secured if possible..."("Remounts: Breeding, Purchase, Issue and Training," *Field Artillery Journal* [Sep-Oct 28], p. 468). After the stallion was delivered, the civilian breeder was responsible for all cost involving the animal's care and maintenance. The agent had to agree to provide all accommodations specified by the Army and to render periodic reports.

The agent could help defray the costs by two methods:

1. The "stud fee basis" charged a sum that was determined by the officer in charge. The agent collected the fee and turned it in. He was then given an equal amount from the breeding appropriation.
2. The "community agreement basis" prorated the expenses among a number of breeders and they received free service in return. In this case the local community nominated the person to be a local agent.

Local agents in hunting country or in communities where several wealthy owners lived were permitted, in some cases, to charge more than the normal fee of \$10.00. The officer in charge was authorized to set the fee, which was not to exceed \$20.00. In these instances, he then was not to charge bona fide ranchers or farmers any fee at all.

Stallions were not to be used for the production of racing stock. No remount stallions were permitted to be exhibited in any horse show, except in halter or performance classes. They were limited to the walk, trot, and canter and were not to be trained to jump. They could not be transported more than 100 miles. The stallion had to be in excellent condition and a credit to the Remount Service.

The War Department gave the local agents complete instructions concerning the handling of stallions, the minimum and maximum number of mares to be bred, and the largest number of services per week. The Army assumed no obligation to buy the offspring of remount stallions. In the purchasing program, normally about 75 percent of the horses procured were actually the offspring of sires placed with local agents under the breeding plan.

Remount personnel were encouraged to take every opportunity above and beyond the personal contacts with individual farmers and ranchers to contact and cooperate with county agents, agricultural and livestock societies, and educational institutions. They

were to act as public information officers, giving educational talks on horse breeding to college students, county agents' meetings, and horse breeder meetings. They also used newspapers and radio to spread information.

Writing in 1928, Major Scott encouraged every effort to bring the breeding operations to the attention of farmers and stockmen and to arouse local interest. Stallions, mares, and colts were to be shown at all state and county fairs possible, and donations of prizes, ribbons, etc., were to be encouraged. Colonel Hardy noted in 1940 that there probably existed no Army enterprise more dependent upon civilian cooperation for its success than the Remount Service. Civilians were essential partners in the production of horses for procurement.

As the technical manual of 1941 put it,

The attitude of an officer in charge must be characterized above all things, by an earnest desire to be of assistance to all people interested in the production of horses. He must look for opportunities to give advice and impart sound knowledge and he must accomplish this with the greatest amount of tact and judgement (*Remount*, War Department Technical Manual 10-395, 1941, pp. 2-3).

The local agent was the center of the Army horse breeding plan. The officer in charge was required to impress upon him, tactfully, all of his responsibilities, as well as his importance. Public interest was encouraged by informing local newspapers of the Remount Service so that proper public notice could be given and additional people who were interested in the work of the breeding plan could become informed. Through these public relations activities, the local agent was given prestige in the community, as the fact that he had a remount stud became widely known.

Remount, War Department Technical Manual 10-395 urged every effort to recognize the role of local agents, to encourage the agent by correspondence, personal visits, and invitations to visit remount area headquarters and depot. As the center of Army horse breeding activities in his community, the Army was to keep him advised of when buying was being done in his neighborhood, and to buy at his place, if possible, when a stallion agent visited a depot. The manual also

advises that, if practicable, the local agent be received by the commanding officer in person and shown every possible courtesy.

Local agents and stallions in the hands of agents were to be inspected as often as time and travel funds permitted. A Remount Service officer might drive from 30,000 to 50,000 miles a year over all kinds of roads. Agents were inspected at least once a year and every effort was made to arrange for deliberate unhurried visits. In addition, stallions, mares, and foals were to be inspected to obtain knowledge of breeding results.

The exchange of knowledge went both ways, as Major Scott noted in 1928:

...many prominent breeding establishments handling private stallions are located in remount breeding centers. Officers on remount duty should neglect no opportunity to inspect these establishments with a view to obtaining data and pointers on how to conduct Army breeding work in matters pertaining to the handling of stallions, mares, and colts. Such establishments have always rendered most valuable assistance in Army breeding work ("Remounts: Breeding, Purchase, Issue and Training," *Field Artillery Journal* [Sep-Oct 28], p. 472).

One of the best times for stallion inspections was in spring, when interest in breeding was most active. The inspector should assume the role of an adviser, not that of a faultfinder. Praise was to be given for every good point before criticism was made. Nevertheless, inspectors were to be firm.

Stallions were assigned to the Remount Areas by the Quartermaster General. There they were to remain until released by his office. Unless an area officer had a definite reason to change the assignment of a stallion, he was to be left at the Remount Area, since nothing tended to disrupt the breeding as quickly as the constant shifting of stallions without just cause, or merely because some other agent desired the horse. Stallions would ordinarily be exchanged with a different community after the fillies they sired were themselves old enough to breed. This was done to prevent inbreeding.

A stallion could be removed because of illness or failure to breed properly. An agent could lose the animal for failure to properly maintain him or, after repeated instruction, for failure to render the required

reports. Seriously deficient agents could be blacklisted summarily for gross or cruel neglect or for abuse of the stallion entrusted to him. The Army tried to take into account the effects on the community that the removal would have, lest innocent parties be injured through the shortcomings of the local agent. In such cases, the stallion would be put under the charge of another agent in the community, or shifted at the end or before the start of the breeding season.

Indeed, reports were required. The local agent's monthly report of the mares bred enabled each officer in charge to make timely corrections with reference to over- or under-breeding of stallions during the season. The annual report of the colt crop also was required. Experience demonstrated that obtaining complete reports on colt crops was difficult, but without these, progress could not easily be determined.

If necessary, the owners of the mares were persistently urged by the officer in charge of the Remount Area to furnish the information directly, until positive or negative reports were received. This included the results of the breeding, e.g., the mare was barren, or she produced a live foal (male or female specified), or there was a stillbirth, or an abortion.

The farmers and ranchers were discouraged from using mares deemed unsuitable for the production of useful horses, and encouraged to improve their mare bands by retaining their best fillies. The mare's owner had title to the foal and could dispose of it in any manner he wished.

To encourage the breeding, and to encourage establishment of horse markets at each breeding center, government representatives inspected and bought such offspring in each center as were needed, provided they came up to Army requirements. Such activity was shown in the movie *Thunderhead—Son of Flicka* (1945), where a Remount inspector comes to the ranch looking for mounts. Markets were only to be used as a last resort.

While the Army retained the right to use dealers in an emergency, as a matter of policy, the use of breeders was always encouraged. Purchasing animals directly from the breeders eliminated the dealer middleman, provided the breeder a better price for his animals (which encouraged him to breed better animals), and permitted the officer in charge of the area to obtain first hand information of horse breeding conditions in the

states assigned to him.

To maintain interest in horse breeding for all purposes—including military—two civilian organizations were established. These were The American Remount Association and the Horse and Mule Association of America. The Army's Remount Service made every effort to cooperate in the most cordial manner with these two civilian organizations.

The American Remount Association was originally located in Washington, D.C., and is now in Oregon. They still provide an offspring registry for Thoroughbred or Arabian stallions. These go to the Half-Bred Stud Book. They also register the foals of listed Thoroughbred mares. Foals with a registered Thoroughbred or Arabian sire and registered Thoroughbred dam can be entered in the American Stud Book of the Jockey Club.

All concerned with the breeding program appreciated the importance of registering the foals. It was a means of increasing their saleable value, but also helped establish new breeds. The offspring of registered Thoroughbred mares by stallions of other recognized breeds also found a place in the Half-Bred Stud Book.

The Horse and Mule Association also continues to this day, albeit, now called the Draft Horse and Mule Association of America. Membership is increasing yearly, and its headquarters in Lovington, Illinois, issues a wide range of activities and publications in its role as the educational arm of the heavy horse and mule industry.

Breeding at Remount Depots

Only limited breeding was undertaken at the depots. In 1928 Major Scott estimated it cost about \$350 to produce a three-year old through the government. He concluded that this was not economical, compared to procurement in the civilian market. Moreover, if the Army endeavored to pull out of the civilian breeding market to any extent, it might well lose its civilian contact in its peacetime procurement of remounts, and thereby undermine the goal of stimulating mass production among civilian horsemen.

However, breeding at depots was authorized and undertaken with the several objectives in mind: (1) To instruct officers and other personnel of the Remount Service in the practical handling of stallions, mares, and colts, and the technique of breeding; (2) To provide

the plants and means of handling, testing, and training stallions before distribution to civilian agents; (3) To have available for inspection by civilian breeders government breeding establishments that would serve as examples in handling stallions, mares, and colts in a practical, economical manner, and particularly to demonstrate the value of upgrading mares; (4) To have a small number of establishments where experimental work in the control of equine diseases of all kinds could be carefully studied in a practical and technical way; and (5) To produce for Army issue to Service Schools and sale to officers a few high-class colts, the market value of which would cover, to a large extent, the costs of the experimental and practical work enumerated in the objectives above.

Breeding stock was procured from donations, by purchase, and through the selection of depot-raised animals. All offers to donate stallions or mares were forwarded to the Quartermaster General's office for appropriate action. The animal was to be inspected without delay by the officer receiving the offer. Most brood mares were obtained from depot-raised four-year-old fillies. High-class mares, superior to the average brood mare at the depots, could be purchased for a price not exceeding \$300.

Stallions were to stand between fifteen and seventeen hands (150 cm to 170 cm), weighing 1,000 pounds (454 kg) or more according to height and condition. They were to be three to ten years old, inclusive, and of any color, except grey, unless the animal was outstanding.

A good little stallion is better than a mediocre large one. No essentials will be sacrificed to secure size. Substance, balance, disposition, confirmation, and a good way of moving will be particularly required in all purchases. Good legs and good feet are essential. No stallion not considered above the average (of those) now in the remount will be purchased. Those charged with the purchase of stallions must realize the success of the Army breeding plan depends on the suitability of the remount studs (*Remount*, War Department Technical Manual 10-395, 1941, p. 16.)

To keep the stallion virile as a sire, the Army recommended that no more than eight breedings be done per week during the breeding season and no more than two coverings per day, never on successive days.

Under no circumstances should these coverings be shorter than four hours apart.

The Remount Service encouraged the use of hand breeding, which provides the closest monitoring of the activities of the stallion and mare. Corral breeding was considered second best, but pasture breeding was discouraged.

End of the Remount Program

As World War II progressed, the role of horses diminished. The Cavalry became ever more mechanized, as did Quartermaster and Artillery units. The requisitioning of horses for military use virtually ceased in the late 1940s, but the Army Horse Breeding Program continued in operation on a reduced scale: war conditions and a shortage of farm labor made it difficult to place stallions.

At the end of World War II the program even included animals seized as legitimate prizes of war. On 24 August 1945, Col. Fred L. Hamilton, the Chief of the Remount Service, was ordered to proceed to Paris and other places in Europe as necessary to inspect and select breeding stocks of horses and dogs captured from the enemy.

Colonel Hamilton, accompanied by Col. Louis G. Gidney, United States Cavalry, went to the German government's Thoroughbred breeding farm at Altfeld, approximately 100 miles northwest of Frankfurt, and within the American sector. The first importation totaled 150 animals, including sixty-five Thoroughbreds. They were shipped from Bremerhaven and

arrived at Newport News, Virginia, on 29 October 1945. On his second trip to Germany, in the spring of 1946, Colonel Hamilton inspected and selected eighty-three horses, again as legitimate war prizes.

In 1940, Colonel Hardy concluded that, from an economic point of view, he could not think of a sounder governmental enterprise than the Remount Service. He estimated that the production resulting from the breeding of Remount sires amounted to approximately \$1,400,000 annually, at a yearly cost to the government of only approximately \$82,000.

A total of 39,000 foals were produced during the war years. Eventually, the Remount Purchasing and Breeding Headquarters offices were closed and the Horse Breeding Program was returned to the Department of Agriculture, from whence it had come from in 1920.

In 1949, all equipment and breeding stock were sold at public auction at Front Royal, Virginia. The Front Royal site is now part of the Smithsonian Institution and a breeding center for the National Zoo's endangered species program. Fort Robinson, Nebraska, is now a state park.

During the twenty-eight years the Army Horse Breeding Program was in operation (1921-48), more than 715 stallions had been placed throughout the country and 230,000 foals were produced. It was a most unique partnership of public and private enterprise, one that is still having an effect on animal agriculture today.

TABLE 1—PROCUREMENT ALLOTMENTS FY 41

Area	Cavalry Riding Horses	Field Artillery Horses	Light Draft Horses	Pack & Riding Mules	Total
Eastern	1,190	0	250	4	1,444
East Central	3,175	0	435	1,700	5,310
North Central	4,100	140	235	1,210	5,685
South Central	3,125	100	130	536	3,891
Northwestern	4,600	150	130	150	5,030
Southwestern	2,200	150	30	400	2,780
Western	2,974	160	90	0	3,224
Robinson Depot	136	0	0	0	136
Totals	21,500	700	1,300	4,000	27,500

TABLE 2—SELECTED YEARLY RESULTS OF THE REMOUNT HORSE BREEDING PLAN

Year	Stallions at Stud	Mares Bred	Foals Produced
1921	159	4,100	2,460
1922	219	6,800	4,080
1923	236	7,500	4,500
1924	277	8,700	5,220
1925	308	9,900	5,940
1926	382	11,800	8,260
1927	454	12,800	8,960
1928	527	14,800	10,360
1929	580	17,400	12,180

TABLE 3—SELECTED YEARLY RESULTS OF QUARTERMASTER REMOUNT DEPOTS

Year	Stallions at Stud	Mares Bred	Foals Produced
1937-38	19	201	155
1938-39	19	197	140
1939-40	15	167	125
1940-41	10	161	126
1941-42	11	170	133

Ms. Eve Iversen, holds an M.A. degree from the University of California, Davis, where she has been studying the use of animals as an alternative mode of transportation in areas such as the Balkans. A former U.S. Army officer (1978-1986), first with the Medical Service Corps, and later with the Transportation Corps, she became familiar with the history of the Army Remount Service while assigned to the Transportation Center at Ft. Eustis, Va., and the J.F.K. Special Warfare Center at Ft. Bragg, N.C.

A Note on Sources

Most of the material for this article derives from the collection of the U.S. Army Military History Institute, Carlisle Barracks, Pennsylvania. These sources tend to repeat the same material in very much the same

words. This article was closely derived from these sources: The War Department's *Operation of the Remount Breeding Service*, Technical Manual 10-390 (Washington, D.C., 28 Feb 41); and *Remount*, Technical Manual 10-395 (Washington, D.C., 18 Dec 41); the Quartermaster General's *Horses and Mules and National Defense* (Washington, D.C.: Dept. Army, Office of the Quartermaster General, 1958). See also Lt. Col. Edwin N. Hardy, "Our Remount Situation," *The Cavalry Journal* (Nov-Dec 4), as reprinted in *Crossed Sabers* (1 Sep 90):1-3; "Remount Procurement Operations," *The Quartermaster Review*, vol. 20 (Jan-Feb 41):25-29, 61, 64-65; "The Remount Service and the Army Breeding Plan," *The Quartermaster Review*, vol. 19 (Mar-Apr 40):7-12, 69-74; and Maj. C.L. Scott, "Remounts: Breeding, Purchase, Issue and Training," *Field Artillery Journal* (Sep-Oct 28):467-480.

The Chief's Corner

John W. (Jack) Mountcastle

I just reviewed my remarks in the Spring issue of *Army History*. I assumed then that I would have more information on the future of CMH to share with you. However, the Army's Leadership has not made any formal announcements regarding the redesign of the Army Headquarters or the effect that redesign will have on the current and future state of the Center and the Army's history program. I will share information when we have it.

I would like to acknowledge the work of some truly great historians here at CMH. The key staff attributes of teamwork, high standards, and effective organization were very much in evidence during the highly successful biennial Conference of Army Historians recently hosted by Dr. John Greenwood and his division. Many thanks should go to Dr. Arnold Fisch and *especially* to Dr. Judith Bellafaire for a first-rate job of planning and conducting this meaningful three-day conference, which focused on the early days of the Cold War.

If you have not yet visited our CMH Homepage on the Internet, I certainly hope that you will do so. We are able now to support many more people who need our help, but would otherwise do without it were it not for the power of automation. Please also look for new CMH publications. Becky Raines' organizational history of the Signal Corps, Bill Hammond's second volume on *The Military and the Media* in Vietnam, and Mary Ellen Condon-Rall's monograph covering the Army's response to the tragic accident that occurred at Pope Air Force Base in 1994 are back from the printer. All three scholars have made us very proud. (Note: The text of Dr. Condon-Rall's monograph is on our CMH Homepage on the Internet. Since the bombing in Dhahran, it has been utilized by military personnel in Saudi Arabia, Germany, and the United States.)

Dr. Jeff Clarke and Col. Clyde Jonas (of Histories Division) recently went through a final review panel of the CMH study concerning the 24th Infantry Regiment. The panel, chaired by the Assistant Secretary of the Army for Manpower and Reserve Affairs, the Honorable Sarah Lister, found the book to be an important addition to the literature dealing with a difficult period in the Army's history. This volume, entitled *Black Soldier, White Army*, will go to press this summer. Its authors (Bill Hammond, George MacGarrigle, and Tom Bowers), addressed this one-of-a-kind panel. They impressed everyone present with their professionalism.

This won't be a long "Chief's Corner." I'm going back to work. Stay in touch with us. Hope you have had a safe and enjoyable summer. Keep up the great work that you're doing! And—thanks for all of your support as the Center carries on.

Editor's Journal

Since the last issue of *Army History*, some of us at the Center have been occupied preparing for and participating in the biennial Conference of Army Historians (17-19 June 1996). This year's conference, which drew a significant participation from academe and from overseas, was carried out successfully with the support and cooperation of the Army Historical Foundation.

In this issue, we feature Eugene Visco's look at the Johns Hopkins University's Operations Research Office, Prof. Robert H. Larson's staff ride guide to three Franco-Prussian War battlefield sites, and a special photographic glimpse of Normandy's D-day venues, provided to us by Lt. Col. (Ret.) Thomas Morgan.

Arnold G. Fisch, Jr.

Impressions of D-Day

Thomas D. Morgan

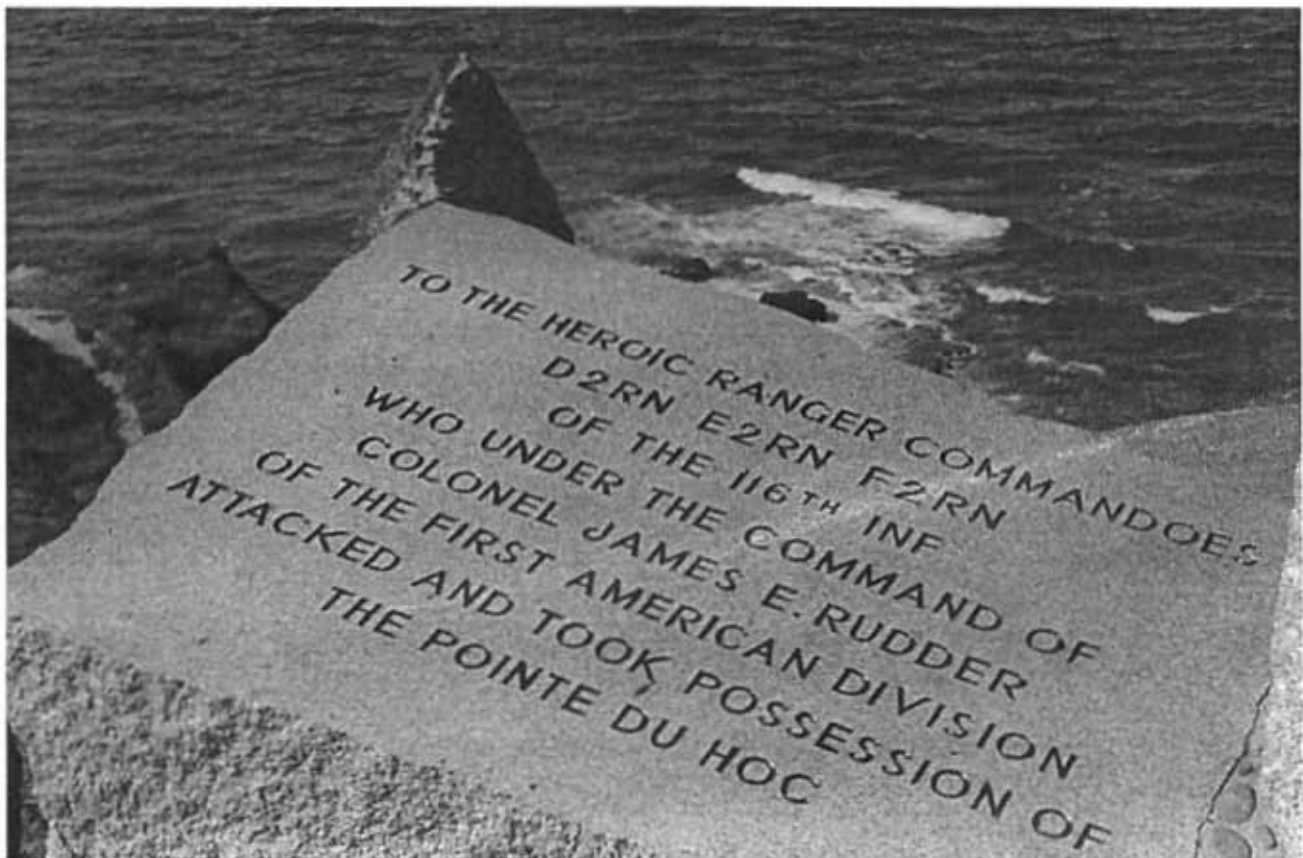
In the Winter 1996 issue of Army History (no. 36), Thomas Morgan outlined for our readers a suggested tour for one last World War II commemorative look at the D-day beaches. In this companion photographic essay, he shares with us visual impressions of Normandy, through pictures he took during visits to the invasion sites.

This monument, erected by the French government, marks the center of OMAHA Beach and symbolizes the beginning of France's liberation.





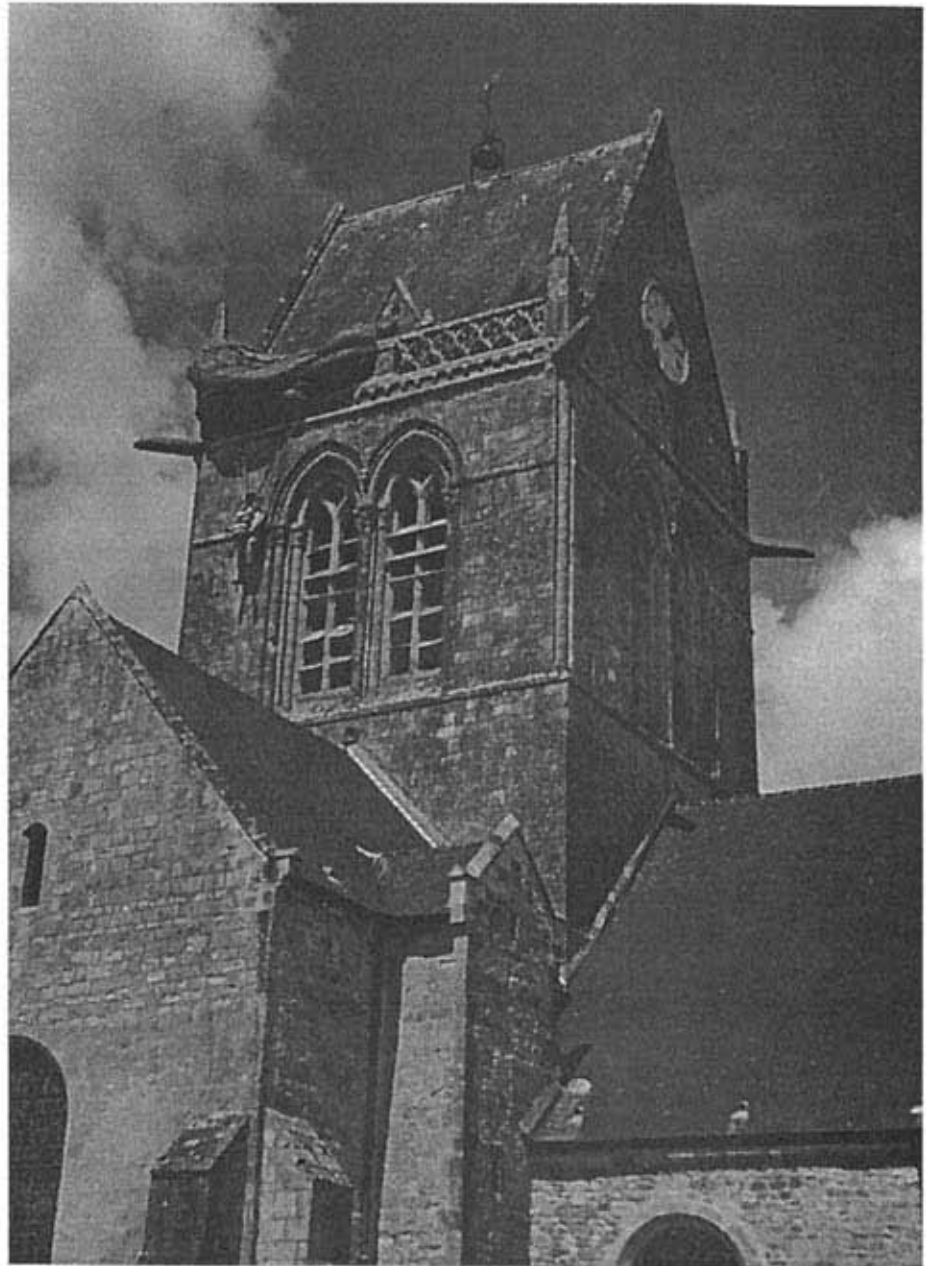
Some fifty years after D-day, the rugged bluffs of the Normandy coastline (above) at Pointe du Hoc still look formidable. A memorial (below) stands on the heights of Pointe du Hoc, where three companies of Army Rangers scaled the cliffs in the face of murderous German fire.





Long-silent guns of the Longues Battery were part of the Germans' "Atlantic Wall" defenses at Normandy.

*Anyone who has seen
the movie
The Longest Day
will remember the
82d Airborne Division
paratrooper landing
on the fifteenth century
Gothic church in the
center of Ste. Mere-Eglise,
where the event is
recalled each year.*





Imitation soldiers: two Swedish tourists on 6 June 1994 reenact a D-day scene from fifty years earlier.



General Wayne A. Downing, USA (Ret.) (right), then Commander in Chief of the U.S. Special Operations Command, and a WW II veteran of the 502d Parachute Infantry Regiment, 101st Airborne Division, at the Normandy American Cemetery overlooking OMAHA Beach.

The twenty-two-foot statue, "The Spirit of American Youth" rising from the waves, is the central figure of the memorial at the Normandy American Cemetery at Collesville-St. Laurent.





A solitary German cross, dedicated to the fallen members of the 726th Infantry Regiment, is probably the only German monument on the D-day landing beaches. It overlooks OMAHA Beach. To the left, is a monument to the American 5th Engineer Special Brigade.

Lt. Col. Thomas D. Morgan, USA (Ret.), is employed at Fort Leavenworth, Kansas, by a defense contractor (Logicon RDA) that supports the Army's Battle Command Training Program (BCTP). A graduate of the U.S. Military Academy, he was commissioned in the Field Artillery. He has visited Normandy several times, including during the fortieth anniversary of D-day in 1984, and again in 1994. He holds an M.A. degree in history from Pacific Lutheran University and an M.P.A. degree from the University of Missouri.

The Operations Research Office

Eugene P. Visco

This article derives from material E.P. Visco gathered while preparing a piece for the Encyclopedia of Operations Research and Management Science, edited by S. I. Gass and C. M. Harris (Norwell, MA: Kluwer Academic Publishers, 1996).

The story of the Johns Hopkins University Operations Research Office, the Department of the Army's early principal operations analysis institution begins well before 1948, the official starting date of the organization. Throughout history, scientists of all types have made contributions to war. The mathematician Archimedes supported the war effort by designing weapons to defend Syracuse against the Romans in 215 B.C. He paid the supreme price for his work in delaying the Roman victory—it took three years for the Romans to capture the city, but when Syracuse fell, the Romans executed Archimedes. Writing in the early 1960s, Bernard and Fawn M. Brodie summarize principal technical and scientific contributions to war throughout history. (1) They devalue operations research by arguing that, before the Manhattan Project, real scientists did not participate in providing weapons of war. Only engineers, technicians, and inventors worked on war machines; the Brodies apparently hold that theoretical physicists are the only real scientists. When they discuss the nuclear revolution, they quote the mathematician David Hilbert, at Göttingen: "One hears a lot of talk about the hostility between scientists and engineers. I don't believe any such thing. In fact, I am quite certain it is untrue. There can't possibly be anything in it, because neither side has anything to do with the other."

In discussing the early days of operations research, P.M.S. Blackett notes:

The Armed Services have for many decades made use of civilian scientists for the production of new weapons and vehicles of war, whereas the tactical and strategical use of these weapons and vehicles has been until recently almost exclusively a matter for the uniformed Service personnel. During the first years of the Second

World War circumstances arose in which it was found that civilian scientists could sometimes play an important role in the study of tactics and strategy. The essential feature of these new circumstances was the very rapid introduction of new weapons and devices, preeminently radar, into the Services at a time both of great military difficulty and of such rapid expansion that the specialist officers of the Armed Services, who in less strenuous times can and do adequately compete with the problems raised, found themselves often quite unable to do so. I will attempt to describe below [sic] how it was that civilian scientists, with initially little or no detailed knowledge of tactics or strategy, came to play a sometimes vital role in these affairs, and how there grew up a virtually new branch of military science—later to be dignified in the United Kingdom by the name 'Operational Research,' or 'Operations Analysis' in the United States. By the end of the war, all three Services had operational research groups of mainly civilian scientists either at headquarters or attached to the major independent Commands. These groups were, in varying degrees, in close touch with all the main activities of the Service operational staffs and were thus in a position to study the facts of operations in progress, to analyse them scientifically, and, when opportunities arose, to advise the staffs on how to improve the operational direction of the war...." (2)

The history of The Johns Hopkins University Operations Research Office (ORO) is inseparable from the history of Ellis A. Johnson, the founder and only director of the ORO. After earning his M.S. and D.Sc. degrees at the Massachusetts Institute of Technology, Dr. Johnson went to Washington in 1934 to work on magnetic instruments at the U.S. Coast and Geodetic Survey. In 1935 he joined the Department of Terrestrial Magnetism, Carnegie Institution, as a geophysicist. Early in 1940 he moved to the Naval Ordnance Laboratory (NOL), first as a consultant, then as associate director of research, where he worked, among other things, on degaussing as a countermeasure tactic. He quickly became interested in the operational offensive

use of mines and countermeasures to mines. (3) Even during the early days of the mine-countermine analysis, Dr. Johnson believed that the analysts and researchers could not be divorced from those responsible for and conducting the military operations—the very essence of operations analysis. At the NOL the mine warfare group conducted embryonic war games, looking at mining and mine countermeasures, including degaussing and sweeping as strategies. Much of the “gaming” was done on weekends, presumably because the gaming approaches were not accepted as sound research methods. The group consisted of John Bardeen, Lynn Rumbaugh, David Katcher, Scott Forbush, and Thornton Page, in addition to Ellis Johnson. Many of the group were to join Dr. Johnson when he founded the ORO after the war. On Saturday, 6 December 1941, the group actually gamed an aerial mining attack on Pearl Harbor. Dr. Johnson was at Pearl Harbor during the attack by the Japanese and participated in minesweeping operations immediately after the attack to help clear the harbor so that the remainder of the fleet could move to the open ocean.

While British military operational research was in place in all three uniformed services during World War II, American military operations research during the war was carried out primarily in the Army Air Forces and the Navy. There was no single U.S. Army group comparable to the Army Operational Research Group in Britain. There was a scattering of small groups doing operational analyses in various parts of the Army. The Signal Corps set up an Operational Research Division to prepare instruction manuals for radio communications by using operational experience data. The Office of Field Service, a major subdivision of the Office of Scientific Research and Development, provided civil-

ian scientists to Army units in the Pacific Theater of Operations, initially to conduct operations research. However, the scientists were often called upon to carry out work other than operations research. Only the Navy and Army Air Force groups were dedicated to operational analyses. By war's end, the U.S. Army Air Forces had twenty-six operations analysis sections assigned to the numbered Air Forces, commands, areas, wings, boards, and schools. Approximately 250 analysts served in those sections. A wide range of professions were involved: fifty engineers, forty educators and trainers, thirty-five mathematicians, twenty-five lawyers, and twenty-one physicists. Other professions represented included architects, meteorologists, physiologists, a historian, agriculturists, investment analysts and stock brokers(!), an astronomer, biologists, and many others—true adherence to the mixed team concept introduced by the British founders. The Navy's work was mainly carried out in two groups, one focusing on antisubmarine operations, primarily in the Atlantic, and the other on mining-countermining operations, primarily in the Pacific; the latter group's work was kept under wraps for many years after the war and, hence, is much less well known than that of the former. (4)

Some analyses conducted at the Aberdeen Proving Ground at the recently formed Ballistic Research Laboratory (BRL) could certainly be considered Army operations analysis, even though those words were not recognized there. A variety of survivability and vulnerability studies, particularly on Army aircraft, were carried out at BRL as were many weapons effectiveness and bombing pattern analyses. Detailed computations of bomb and artillery trajectories were carried out by hand, since computing machinery at that time

Admiral Nimitz Symposium Announced

The Admiral Nimitz Museum, Fredericksburg, Texas, will hold a retrospective symposium on the Tokyo War Crimes Trials, "Justice in the Aftermath," 12-13 October 1996. War crimes trials conducted throughout the Pacific rim following World War II will be examined by leading scholars and individuals who will share their "first-hand" recollections from the trials. The U.S. Army Center of Military History is one of the symposium cosponsors. For symposium ticket information, call (800) 210-9440. Members of the Admiral Nimitz Foundation receive a discounted rate. For additional information on the museum and the Admiral Nimitz Foundation, write to the Admiral Nimitz Foundation, P.O. Box 777, Fredericksburg, TX 78624, or call (210) 997-8600 or FAX (210) 997-8092/8220.

was limited and primitive. A number of women, particularly women with undergraduate degrees (in any major), were hired to develop graphs and plots of the trajectories; the job title of these analysts was *computer*! In addition, some weapons analyses carried out at the Army's arsenals could be considered operations research. However, there was no central overall Army operations research group, so identified, other than those working with the Army Air Forces during World War II.

After the war, the wartime British and American groups were converted to institutions to continue conducting operations research and analysis for their respective services in peacetime, uneasy as the peace quickly became. It also quickly became apparent in the United States that an Army operations analysis organization was needed; many had become convinced of the relevance and importance of operations research to military operations. The process in the U.S. military services of converting wartime organizations to peacetime operations resulted in a variety of forms designed to provide operations research support. The Air Force, newly defined by the National Defense Act of 1947, had an in-house military and civilian staff as part of its headquarters and the RAND Corporation, an independent, not-for-profit research organization located about as far away from Air Force headquarters as it could be and still remain in the continental United States. The Navy chose to continue its wartime group under a contract with the Massachusetts Institute of Technology. The Navy group, to be known after a series of name changes as the Center for Naval Analyses, was and still is located in the Washington, D.C., metropolitan area; it is now a fully independent not-for-profit organization. The Army opted to go in the direction of a contract with a distinguished university, but had to start the institution from the ground up. The Johns Hopkins University agreed to act as the "parent" for the fledgling operations research group and a contract was signed between the Army and the University in the summer of 1948. The Army's Chief of Research and Development, Maj. Gen. Anthony C. McAuliffe, was the Army's key person, and Johns Hopkins President Detlev Bronk was key on the part of the university. "Tony" McAuliffe will be remembered for his role as artillery commander in the 101st Airborne Division and acting division commander at Bastogne during the second Ardennes Campaign—also known as the Battle

of the Bulge—in World War II. Detlev Bronk was himself a distinguished scientist and researcher.

Ellis Johnson was selected as the director of the new organization and began work in August 1948. Dorothy Hoover, who became his secretary and who stayed in that role for the thirteen years that Dr. Johnson headed the ORO, actually was the first employee. The organization's administration office initially was located at Fort McNair in Washington, D.C., while staff recruiting was undertaken. The first name of the organization was the General Research Office. [In an odd twist of name-fate, when the Army decided in 1970 to sever its connection with the private, not-for-profit Research Analysis Corporation, created by the Army to replace the ORO after a falling out with its director, the organization selected to continue the active projects for the Army was the General Research Corporation, a California profit-making company.]

From the outset, the Operations Research Office reflected the wartime experiences and the philosophy of analysis that emerged from that experience. When the ORO began its work, therefore,

there was a working assumption that something called operations research was in being, and the Army anticipated its value enough to be willing to try to use it. But for the Army, this did not mean that it was clearly defined. Ground warfare was recognized as a more difficult field for operations research than air and sea warfare; on the one hand, ground warfare could not be affected so much by one new technical factor as air warfare was by radar, while, on the other, the analysis of the convenient geometry of the open space in the air or on the sea was quite inapplicable for troop movement on terrain. So, if ORO was to play a significant role in support of Army planning, it would have to learn how to structure the problems, identify the elements amenable to analysis, and find methods of analysis by adaptation or invention. There were almost no direct precedents as to what could be expected.... (5)

The organizational principles that quickly evolved included a wide breadth of study topics; control and management of analysis in the hands of the researchers conducting the analyses; and close involvement with the operational elements of the Army, including access to real and often raw operational data representing performance of organizations and systems. Research

managers, including division chiefs and deputies directly subordinate to Ellis Johnson at the ORO, were also expected to conduct research themselves to maintain a connection with the realities of research management.

Early staffing consisted of those old hands Dr. Johnson personally recruited—people he had worked with at NOL and at other places during the war. Rumbaugh, Katcher, and Page from the NOL team were early analysts; Forbush, a distinguished statistician, was a consultant to the ORO. Others with experience in operations analysis from the Navy's wartime Operations Research Group or with the Army Air Forces operations analysis sections were early members; those included Dr. Nicholas Smith (Army Air Forces background), who later headed the basic research unit in the ORO and who directed the creative work on nonlinear mathematical programming techniques, and Robert Best (Navy Operations Evaluation Group background), who made major contributions to tactical combat operations analyses.

By this time, the ORO had taken up location at 7100 Connecticut Avenue, Chevy Chase, Maryland, on a site originally selected for a young ladies' finishing school. The property was taken over for unpaid taxes during the war years, and the National 4H Club purchased the site, with plans to place its national headquarters at that location, with a hostel for youngsters visiting the National Capitol. Immediately after the war, however, building materials were hard to come by; the country was engaged in a massive home building program together with other large-scale construction programs. The Army made a deal with the 4H: if the 4H would lease their property to the Army, for the ORO to use until building possibilities were better, the 4H would get it back in no worse shape than it now was (and perhaps better) and gather enough money from the rent that it could afford the necessary rehabilitation and rebuilding needed to make it into the kind of national headquarters of which the 4H could be proud.

The campus consisted of three buildings. The main building, where most of the classes for the young ladies had been held, was where the ORO Director, administrative offices, many of the analysts, and the library were located. The President's House, originally the residence of the president of the school, became the location of a major study project team, as did the third

building, called the Science Building. In the Science Building, a large crystal chandelier hung in the middle of a major room which had been converted into a typing and secretarial office. The chandelier hung down to a within a few feet of the floor. It was some years before this writer, who was assigned office space in the Science Building for his first project at the ORO (1956), realized that the science taught in the Science Building was domestic science and that the room in which the chandelier was hung was the one in which the young ladies were taught to set and serve a formal dinner!

The formative first two years included assignments from the Army covering a major study of military aid to other nations, a study of the causation of artillery firing errors, and armored force operations. During this time the staff was brought to the level of about forty full-time analysts. A pool of more than a hundred consultants, with ORO linkages to a number of research and analytic companies, was established to provide additional on-call support. Arrangements were concluded with the Army to establish a broad program of continuing research on nuclear weapons, tactics, logistics, military costing, psychological warfare, guerrilla warfare, and air defense. A core set of fifteen authorized and funded projects thus provided a formative and formidable base from which to proceed. When the Korean War broke out in June 1950, the ORO was a functioning institution with a developing reputation for sound and practical analysis on behalf of the operational Army. Dr. Johnson quickly recognized that the war created both a need and an opportunity. He made an early visit to Korea to establish a *modus operandi* for field analysis teams in the theater of operations. By the fall, ORO had forty analysts in the field (as many as the full staff only a few months earlier); by war's end, over 50 percent of the professional staff had spent time in the combat theater. Many hundreds of reports were written, with considerable impact on military operations. The ORO influence was felt in Great Britain and Canada, and operations analysts from those two United Nations (UN) participating countries joined their respective countries' military units operating in Korea. Among the many distinguished analysts receiving the theater service ribbon of the UN Command was Col. S.L.A. Marshall, U.S. Army (Ret.) who spent considerable time in Korea as an ORO analyst and whose careful and experienced review of combat operations

led to valuable contributions to the history of war as *The River and the Gauntlet*, *Pork Chop Hill*, and a number of ORO reports, particularly on tactical operations and the performance of infantry weapons. Among the interesting findings of the operations analyses carried out during the Korean War was the observation that the bugle calls heard prior to and accompanying Chinese Army assaults, particularly late at night and in the early morning hours, were not designed to harass and frighten the UN forces, but were rather the Chinese method of exercising command and control of the tactical units in the attack. Radios were in short supply and visual signals were not useful in the dark.

The growth in staff during the Korean War necessitated the ORO finding more office space than at 7100 Connecticut Avenue. Additional facilities were leased in Chevy Chase (at Chevy Chase Circle) and Bethesda, MD (near Wisconsin Avenue and East-West Highway) in conventional office buildings. The first computer, a Sperry-Rand 1103A vacuum tube machine, was housed in an oversized Quonset hut-like building near the railroad tracks in Bethesda; the building, referred to as the Pearl Street building, purportedly had been a plumbing supply warehouse. The heat generated by the vacuum tubes was more than window air conditioners could deal with, so the computer often was shut down during the summer months. All analysts were required by Ellis to learn "programming"; after a one week course, each analyst was able to write a program to compute the arithmetic mean of a set of five or ten numbers. Some analysts, of course, went on to become serious programmers and system analysts, in the old meaning of that phrase. When the Army was forced to return the 7100 Connecticut Avenue campus to the 4H, the center of the ORO moved to a four-story office building on Arlington Road, Bethesda, where it still was located when it ceased to exist in 1961.

In May 1952 the Operations Research Society of America was founded as the first professional society in the United States to represent directly the burgeoning analyst population. The ORO was closely connected with the founding of the Society. Of the seventy-three members attending the founding meeting, nine were from ORO; Thornton Page was the first editor of the *Journal*, then named the *Journal of the Operations Research Society of America*. (6) Other OROs, as they were called, participating in the early

days of the Society included W. L. (Bill) Whitson on the Membership Committee, and Foster Weldon on the Nominating Committee. Ellis Johnson was a member of the earlier Formation Committee, as was Thornton Page. (7) Volume 1, number 2 (February 1953) of the *Journal* contains an advertisement from the Johns Hopkins University Operations Research Office for experimental and theoretical physicists, mathematicians, and statisticians, preferably at the Ph.D. level, so stated the ad. Less than a year later (volume 1, number 5, November 1953) the ORO was still looking for the same types of professional backgrounds, but the advertisement also announced that the office had the following fields or disciplines, among others, actively represented on its professional staff: aeronautical engineering, anthropology, biology, chemistry, civil engineering, economics, electrical engineering, experimental psychology, geography, history, international relations, mathematics, mechanical engineering, medicine, meteorology, physics, political science, social psychology, sociology, symbolic logic. The mixed-team concept, with a vengeance!

Dr. Johnson, from the earliest time, created an environment as close as possible to that of an academic institution. There was a need to maintain sound security procedures because of the classified nature of much of the analyses under way. Within the limits of the security controls, Dr. Johnson made it clear that all properly cleared analysts were to be given access to all ongoing research. All analysts were seen as peer-reviewers and possible contributors to the projects undertaken for the Army. Staff biographies were printed and distributed to the entire staff, for use in identifying colleagues who could be called upon to respond to particular vexing questions or act as reviewers or members of "murder boards" for reports and other papers. A cross-index of staff by professions, areas of interest, and special capabilities was also available to all staff. Seminars and colloquia were regular weekly events, the former related to planned or ongoing research or outside speakers of note or special interest to the community, the latter focused on more abstruse topics, such as new mathematical tools for application to analysis.

Most of the operations analysts at the ORO had military experience or were associated in some capacity with the two wars immediately surrounding the

organization, World War II and the Korean War. A comparison of analysts on the staff from 1956—when this author became an OROn—to the office's final date in late 1961 may be instructive. The data do not include analysts who joined and departed before 1956, nor do they identify the analysts who left after 1956, so the total below is greater than the number of analysts on hand at any moment in time. A rough estimate for staff size at any time during the period 1956 to 1961 is about 170 analysts. The number of analysts who joined in the period 1948 to 1961, not accounting for those who joined and left prior to 1956, is 272. Of this total, thirty, or more than 10 percent, were women. A professional-level support staff, excluding secretarial staff, added another fifteen to that total. The Army assigned thirty active duty officers as liaison and military advisors during the period; at any one time there were probably ten to fifteen officers on staff, ranging from captain to colonel. Also, eighteen enlisted Army men were attached; during the Korean War period and following, the Army created a classification group designated Enlisted Scientific and Professional Personnel. The soldier-draftees in this group generally had advanced degrees (M.S. or Ph.D.) in mathematics, engineering, chemistry, chemical engineering, or biological sciences. The enlisted soldiers were integrated into studies as operations analysts as were some of the liaison and military adviser officers.

In addition to the names of operations analysts (OROns) already mentioned, some others are cited here to give a flavor of the talent and experience that comprised the ORO during its short institutional life. Maj. Gen. James G. Christianson, USA (Ret.), graduated from the U.S. Military Academy in 1918, and was a graduate of the Command and General Staff College (1937) and the Army War College (1940); he was a member of the Army's General Headquarters (GHQ) in 1940 when the Army force to enter the war was designed. Dorothy Kneeland Clark received her doctorate from Radcliff in 1937 and served at the Far East field office of the ORO in 1955. Dr. Clark is perhaps best remembered for the ground-breaking analysis she did on the effects of casualties on combat unit performance. Gerald Cooper, a bright young analyst in 1958 when he joined the ORO, is still contributing to the Army as a researcher involved in new analysis techniques at the Concepts Analysis Agency in Bethesda.

Hugh M. Cole is well remembered by the Army's historical community. Before joining the ORO in 1952, Dr. Cole served as Historical Officer, 3d Army (Europe), as Deputy Theater Historian in Europe, and as Chief of the European Section, Office of the Chief of Military History. He authored two of the famous "green book" histories of World War II: *The Lorraine Campaign* (1951) and *The Ardennes: Battle of the Bulge* (1965). At the ORO, Dr. Cole became one of the premier logistics analysts of the Office. General Thomas T. Handy, USA (Ret.), graduated from Virginia Military Institute in 1914, Command and General Staff College in 1927, the Army War College in 1935, and the Naval War College in 1936. During much of World War II, General Handy was assistant Chief of Staff to George C. Marshall. (8) Maj. Gen. Gerald J. Higgins, USA (Ret.), graduated from West Point in 1934 and was on General Maxwell Taylor's staff at the 101st Airborne Division when it was cut off at Bastogne, Belgium during the Battle of the Bulge. (9) Dr. James W. Johnson was responsible for much of the detailed force design analysis that contributed to the Army Pentomic and Pentagonal Division structures during the 1950s. Richard E. Zimmerman can be considered the sire of Army combat modeling—the use of digital computers to represent combat. Zimmerman wrote the seminal paper on Monte Carlo simulation, published in *Operations Research for Management* (Johns Hopkins Press, 1956). The paper received recognition as the Lanchester Prize Paper of 1957. Wilbur B. Payne, who joined the ORO in 1955 (and rejoined in 1960, after a brief sojourn teaching physics at Virginia Polytechnic Institute), went on to found an organization on the staff of the Secretary of the Army which is now known as the Office of the Deputy Under Secretary of the Army for Operations Research. There have been only three DUSA(OR)s in the approximately thirty-three years of the office: the late Dr. Payne, David Hardison (now retired), and the incumbent, Walter W. Hollis.

After establishing the ODUSA(OR), Wilbur, as he is still affectionately known in the Army, moved to White Sands Missile Range where he took over management of the then TRADOC (U.S. Army Training and Doctrine Command) Systems Analysis Activity. Later, he established the TRADOC Operations Research Organization, combining the WSMR TRASANA with the Fort Leavenworth Combined

Arms Operations Research Activity. That combination of TRADOC analysis institutions was the forerunner of the current TRAC (for TRADOC Analysis Center), combining all TRADOC analysis organizations under a central management, headquartered at Fort Leavenworth. The Secretary of the Army's annual recognition of the best Army analyses, presented by the DUSA(OR) at the Army Operations Research Symposium each fall at Fort Lee, Virginia, is now designated the Wilbur B. Payne Memorial Awards for Excellence in Analysis, as a lasting tribute to an operations analyst *par excellent*, whose influence is still recognized throughout the Army. The list of distinguished ORO analysts who made major contributions to the Army could go on and on.

A small field team was organized at the Continental Army Command Headquarters, Fort Monroe, Virginia. CONARC, as the command then was known, was responsible for development of operational doctrine for the Army and for the training related to that doctrine. It was Dr. Johnson's view that operations research could make important contributions to the development of doctrine, particularly considering the need for combat formations to adapt to the new considerations of ground combat under conditions of the potential use of atomic (later nuclear) weapons on the battlefield. ORO helped design formations, assisting in the structure and doctrine for the Pentomic Division and the Pentagonal (for five combat commands) Division. Other studies looked at the vulnerability of armored formations to tactical nuclear weapons and at the potential for the offensive use of low yield nuclear weapons. Much attention was paid to tactical operations and logistics in the early days; later there were studies related to strategic matters, the most demanding and significant was a large study devoted to defense of the continental United States from nuclear attack by manned bombers.

Other interests of the director involved the development of military operations research capabilities in the private sector; he believed strongly in a national capacity to support the defense establishment. The Fort Monroe field office, named the Combat Operations Research Group, was subcontracted to the Technical Operations, Inc. firm of Massachusetts. After an acceptable period of time, when Dr. Johnson was satisfied that the commercial firm could stand on its own, the full management of the CORG element was

transferred to Technical Operations which became the prime contractor with the Army for that field organization. In later years, CORG became a very large institution supporting the U.S. Army Combat Developments Command, created to take over the doctrine development function from CONARC; among other things, CORG conducted a number of studies for the Army in Vietnam during that war. E. B. Vandiver III, presently Director, Concepts Analysis Agency, as a young operations analyst, participated in the first of the Vietnam field teams from the Technical Operations CORG, in 1966, while the present author participated in the second in 1967. Fertilization was an active consideration of Dr. Johnson.

The ORO conducted experiments involving the capabilities of young, bright high school students to conduct independent analyses under the guidance of senior analysts. Students were recruited from local schools; criteria included factors not seen in reported grades and traditional school performance. Potential junior analysts were interviewed and judgments were made about their capacities for cooperative work and arcane subject-matter research. Each summer, student teams were put together to work on meaningful analytic problems, generally as part of a larger ORO study underway for the Army. Through the years, studies were done on the characteristics of effective air raid warning systems for civilians, and deep-thrust, independent armored operations in difficult terrain, among other topics. The studies were carried out during the students' summer break. The first ORO seminar of the year in the fall (the Office held its seminars and colloquia on an academic schedule) consisted of presentations by the young analysts of the results of their work. It was always the most well-attended seminar of the year—essentially all the professional staff came to listen and to query the young people on their work. Much of the work made significant and important contributions to the larger projects. During the five years the student program operated, seventy-five students spent at least one summer at ORO. Many came back in later years; a number joined the regular staff after completing their university work.

Field offices of the ORO were also established at the headquarters of the U.S. Army Europe in Heidelberg, Germany, and in Seoul, Korea (in support of Eighth U.S. Army). Heavy use was made of war gaming and exercises for both the European and Far

Eastern theaters.

ORO conducted a series of conferences designed to evaluate the Army's proposed research and development budget to help the Army understand the potential effects of R&D investments and improve the allocation of funds to the many R&D projects competing for support. The PISGAH (named for the mountain from which Moses saw the promised land) conferences brought uniformed officers, operations analysts, industrial scientists, and academics together to examine the Army's future needs.

Other topics examined, studied, and analyzed during the thirteen years of ORO activity included air operations and air defense; guerrilla, urban, and unconventional warfare; tactical, intratheater, and strategic mobility and logistics; weapons systems; civil defense; intelligence, psychological warfare, and civil affairs; and, overall, Army readiness for operations in a complex national security world. (10) Some examples will help to underscore the wide range and potential impact of ORO studies. In the arena of tactical operations, ORO examined ways to improve the casualty producing capability of small arms fire. Two unique ideas were introduced and assessed. One was a salvo concept, developed from a patent taken out in the nineteenth century by a serving Army officer. The concept consisted of a system of two projectiles of rifle ammunition, one nested behind the other, with a single cartridge casing and propellant. With one pull of the trigger the two rounds, designated duplex, came out of the weapon in tandem. ORO analysts predicted, using probability theory, that the natural spread of the two projectiles would greatly increase the hit probability on a man-sized target at the usual range of infantry firefights. An ORO analyst, activating an earlier, now neglected, principle of operations analysis as an experimental science, cast a few bullets in the salvo mode, loaded them with his hand-loading equipment, and fired them on his backyard range. The simple experimental results confirmed the statistical analysis. The Army accepted the results and standardized a duplex salvo projectile for the M14 .30-caliber (7.62-mm.) rifle. The second concept concerning improved effectiveness of small arms fire focused on infantry rifle training. ORO analysts developed and tested a simulated infantry battlefield target array as an alternative to the known-distance range traditionally used to train riflemen. Sets of man-sized targets were scattered

over the battlefield and linked with electronic controls that caused the targets to pop up to vertical positions simulating enemy shooters. The concept was adopted by the Army as the TRAINFIRE system; the targets themselves were nicknamed "Cocky Kens" after one of the ORO analysts, Dr. Kenneth Yudowitch, who was an important member of the analysis team.

Another ORO study examined the use of African-American soldiers in Korea, and extended that study to the broader issue of full integration of black troops throughout the Army. The study was prompted by an observation of the increasing importance of African-Americans in the overall U.S. labor force. Throughout American history the military forces began all major wars, from the Revolutionary War to the Korean War, refusing to use black (or Negro, as they once were designated) men in the forces. As each war progressed (particularly notably the Revolutionary War, the Civil War, and the two World Wars), and it became apparent that more manpower was needed than could be provided from the white part of the population, blacks were enlisted and drafted. The growing post-World War II economy and major demographic changes were the motivation for this study, requested of the ORO. The 1948 Presidential Executive Orders directing equal opportunity in the Executive Branch and the Armed Forces also were major factors. The study used a wide range of tools: demographic analysis, opinion and attitude surveys, content analysis, critical incident technique, statistical analysis, and community surveys. The ORO findings, conclusions, and recommendations supported the Army process and success in integration during the 1950s. Among the conclusions of the open literature summary of the study

this study provided policy-makers in the U.S. Army with objective evidence in support of integrated units of Negro and white soldiers. This evidence indicated: first, that integrated units allow more effective use of the manpower available through a more even distribution of aptitudes than is possible in segregated units; second, that performance of integrated units is satisfactory; and, third, that the resistance to integration is greatly reduced as experience is gained. The limit, if any, on the level of integration was shown to be above 20 percent Negroes, and difficulties in extending integration to all parts of the Army were identified and arranged in a sequential order so that a program leading

to Army-wide integration could be formulated. (11)

During the years of ORO activity, Dr. Johnson developed a study programming process, within the "block" funding structure agreed to by the Army. Each year, two sets of proposed study projects were developed, one by the Army and one by the ORO staff. Dr. Johnson and other senior ORO staff members would meet with opposite numbers from the Army and review all the candidate projects. Out of the collegial discussion would come a mutually acceptable program of studies consuming about 80 percent of the funds available. By agreement, the balance of the funds were allocated, 10 percent each, to projects that the Army wanted to have done but for which the ORO could see no value, and to projects that the ORO wanted to do but for which the Army could see no need.

All was not sweetness and light throughout the thirteen years. Over time, some Army officers and civilians became concerned that the ORO had too much independence from Army direction. Eventually, that group became strong enough to try to exercise more influence over the program planning process. In 1961 members of that group, believing that working with Dr. Johnson was no longer effective or useful, approached the President of The Johns Hopkins University with a request that the University consider other leadership for the ORO. After discussions with senior members of the ORO staff, Dr. Milton Eisenhower pointed out to the Army officials that the idea behind the creation of the ORO as an element of the University was to provide for the establishment of an independent institution to carry out research and analysis on behalf of the Army. That very independence was threatened if the Army were to dictate how the University managed the institution and, more particularly, who the University chose to lead the institution. If the Army wanted more control over the management and direction of an institution providing operations analysis support to the Army it would have to do so without the Johns Hopkins University. After thirteen years and hundreds of studies over some 70 major topic areas, at midnight on 31 August 1961, the Johns Hopkins University Operations Research Office ceased to exist. The not-for-profit Army-established Research Analysis Corporation was created on 1 September 1961. But that, as is said, is another story.

A fitting close to this brief history might be a statement the late Ellis A. Johnson, wrote in the summer of 1961:

During the last thirteen years ORO's accomplishments have indeed been noteworthy. ORO published 648 studies containing thousands of conclusions and recommendations. A majority of these have been adopted and acted on. This survey was written to summarize ORO accomplishments so that these could be considered in perspective and with satisfaction by those responsible for the accomplishments—the entire ORO staff: research staff, support staff, and administrative staff.

We can all be proud of this record.

Mr. Eugene P. Visco is an operations analyst on the staff of the Deputy Under Secretary of the Army (Operations Research). He has been a practicing "paper-and-pencil" operations analyst since 1956 when he joined The Johns Hopkins University Operations Research Office. Prior to that time, he was involved in the testing of chemical and biological weapons as a mathematician-statistician with the U.S. Army Dugway Proving Ground, Utah. His present fields of interest include the history of Army operations research, the etiology of friendly fire incidents, and chemical and biological defense.

Notes

1. Bernard Brodie and Fawn M. Brodie, *From Crossbow to H-Bomb* (Bloomington: Indiana University Press, 1973).
2. P. M. S. Blackett, *Studies of War. Nuclear and Conventional* (New York: Hill and Wang, 1962), pp. 205-06.
3. Much of what follows draws heavily on the tribute to Ellis Johnson, published by the Operations Research Society of America following his death.
4. The Center for Naval Analyses, the oldest continuous military operations research institution in the United States, traces its heritage to the World War II Anti-Submarine Warfare Operations Research Group, an organization with which Philip M. Morse, another pioneer of operations research, was closely connected. The ASWORG is identified, in the official history of

the CNA (which, incidentally, almost totally ignores the war in the Pacific), as the first American group formed with "operations research" in its name. Other sources point out that the NOL group with which Ellis Johnson was associated, was named the Mine Warfare Operations Research Group on 1 March 1942, with Walt Michel as head. Professor Morse's group carrying out anti-submarine warfare research did not come into being until later in the spring of 1942 and was not named as an operations research group until much later!

5. Thornton Page, George S. Pettee, and William A. Wallace, "Ellis A. Johnson, 1906-1973," *Operations Research*, vol. 22, no. 6 (Nov-Dec 74):1141-55.

6. Operations Research Society of America, "Members Attending the Founding Meeting," *Journal of the Operations Research Society of America*, vol. 1, no. 1 (Nov 62):26-27.

7. Philip M. Morse, "The Operations Research Society of America," *Journal of the Operations Research Society of America*, vol. 1, no. 1 (Nov 62):1-2.

8. When General George C. Marshall was with President Harry S. Truman at the Potsdam meeting with

Prime Minister Winston Churchill and Marshall Joseph Stalin, the order for the attack with the first atomic bomb was issued, on 25 July 1945. The order was in writing to the Commanding General, U.S. Army Strategic Air Forces, to use the "special bomb." It was signed in Marshall's absence by General Thomas T. Handy.

9. There is a fine photograph of the staff of the division on Christmas 1944 at Bastogne; "Tony" McAuliffe, Acting Division Commander (later instrumental in the founding of the ORO), Harry Kinnard (later famous for leading the 1st Air Cavalry Division in Vietnam) and "Jerry" Higgins—all looking like the very young men they were—in John Toland, *Battle: The Story of THE BULGE* (New York: The New American Library, 1959).

10. Operations Research Office, Johns Hopkins University, *A Survey of ORO Accomplishments* (July 1961).

11. Hausrath, Alfred H., "Utilization of Negro Manpower in the Army," in *Operations Research for Management*, ed. by Joseph F. McCloskey and Florence N. Trefethen (Baltimore: Johns Hopkins Press, 1954), pp. 353-67.

Letters to the Editor

Editor:

I read with great interest Col. Richard Riccardelli's article on Homer Lea, "A Forgotten American Strategist...." (*Army History*, no. 36). Every few Pearl Harbor Day anniversaries or so, it had been a ritual in the popular press to invoke the "precognition" of Homer Lea. As Colonel Riccardelli notes, Lea's works and influence have been relegated to the curiosity cabinet where *passé* Darwinist race war fantasies are stored. Certainly there's more to Lea than that. I agree that his works should be kept on the shelf alongside those of other Progressive Era American strategists such as [Alfred Thayer] Mahan, [John] Bigelow, [Herbert] Sargent, [Arthur] Wagner, and Pete Ellis. However, in my opinion, Lea's predilection for *kulturkampf* ideology is not the chief reason for his neglect.

Lea, in his *Valor of Ignorance*, not only scrupulously prefigured the actual Japanese campaign for the

Philippine Islands, including the timetable, but the book went on to postulate a Japanese conquest of the United States west coast through amphibious landings at the Puget Sound, San Francisco, and San Pedro Bay areas. It was this rather far-fetched scenario that discredited him in the eyes of many. Even the seeming endorsement of Lea's writings by knowledgeable defense officials should be taken with a grain of salt.

Bearing in mind that the depleted U.S. Army of 1909 was competing mightily with the Navy for the attention of tightfisted Congressional appropriation committees, a vivid invasion scenario was seen as an effective, time-tested way to lobby an excitable reading public nurtured on the thrills of dime novels and Heart Syndicate "Yellow Journals." In the wake of the alarming rapid victory of Germany over France in 1870, British Colonel of Volunteers George Tomkyns

Chesney started the literary fad of cautionary Future War tales. Shortly thereafter the genre matured into a favored propaganda technique among rival Service lobbyists. Savy publicists preferred to employ lurid visions of disembarking foreign hordes rather than set out a dry compendium of comparative strengths and relative war potential.

While some Army staff and planning officers found Lea's somber geopolitical diatribe to be useful (even if a bit overstated), others were nervous about supporting such a far-reaching fantasy. Internal Army correspondence surrounding [Lt. Gen. Adna] Chaffee's endorsement of the *Valor of Ignorance*, for example, indicated that other members of his staff were not convinced that the U.S. Pacific coast defenses and naval interdiction forces were so inadequate as to permit a Japanese walkover. It is curious that Lea's grasp of the logistic difficulties that would prevent a timely reinforcement of the Philippines did not give him more insight into comparable Japanese problems in sustaining a mirror image expedition to our West Coast. He was satisfied to perform a bean-count of Japanese troop-carrying capacity (including merchant hulls that could be appropriated for the purpose) and point to the monetary insufficiency of naval firepower to resist the first wave, as well as the unsuitability of our coastal artillery system to prevent landings, as if these were the key determining factors. Lea was not alone in his scaremongering...a number of prominent U.S. military and naval officers ...resorted to the popular press. Their forecasts envisioned the victors of Mukden and Port Arthur ravaging our shores as effortlessly as they had ferried their landing parties to Seoul—which was not such a snap in any event.

Distinguished naval journalist Hector Bywater, who had a firmer grasp of the seapower "legs" required to mount an overseas expedition, demolished Lea's invasion hype in his 1921 study on the problems raised

by the impending Washington Naval Arms Limitation Conference, *Sea Power in the Pacific*. Bywater's own speculative account of a coming war with Japan, *The Great Pacific War of 1931-33* (1925), limited Japanese activities on the North American continent to a few harassing air and naval raids as well as [to] sabotaging the Panama Canal locks.

Curiously, the Western Division, in drafting the rudimentary defense project that eventually evolved into War Plan ORANGE, solicited Homer Lea's advice in October 1910. They asked him, as one who had done his own staff rides over the ground, to indicate how the water reservoirs serving the Los Angeles area could be defended. Typically, Lea did not limit his response to securing the water supplies, but wrote several pages outlining a full-fledged campaign, which evoked further correspondence from the Army planners.

Interestingly, at the height of the 1920s Red Scare, when the War and Navy Departments were on the lookout for Bolshevik saboteurs and revolutionaries, Army Intelligence Department representatives asked Ethel Powers, Homer Lea's widow, to furnish them with a manuscript of *Swarming of the Slav*, Lea's alleged work in progress on the coming Russian siege. Mrs. Powers advised that there were no traces of the manuscript to be found. If, in fact, one had been drafted, many of the Lea papers were burned when Secret Service and Justice Department agents investigated the so-called "Red Dragon" scheme to hatch the anti-Manchu revolution on American soil.

The interplay of Homer Lea with the military "establishment" during the Preparedness era has always fascinated me. I was glad to see that this enigmatic, engaging figure has not been forgotten.

James J. Bloom
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Book Reviews

Book Review
by Raymond Bluhm

Vietnam-On-The-Potomac
by Moya Ann Ball
Praeger Publishers. 215 pp., \$55.00

This is a fairly thin volume, both in size and in historical value. One of the Praeger Series in Political Communication, the book strikes this reviewer as neither "significant" nor as a "ground-breaking historical study," as touted in the foreword by the general editor of the series. When this review was written, Ms.

Ball was assistant professor of speech communication at Trinity University, San Antonio, Texas, and the book is her expanding on two previously written articles. At times the book has the tone of a converted graduate thesis.

The author claims in the introduction that her purpose is to "trace the Vietnam decision-making activities of the [John F.] Kennedy and [Lyndon B.] Johnson administrations," and thereby to show the creation by Kennedy of a "decision-making culture" that continued under Johnson and inexorably locked the United States into a policy of direct intervention in 1965. It is only because she is already convinced of this thesis that she is able to arrive at such a conclusion. It is doubtful that any thoughtful reader will do likewise.

The author's case study approach is intriguing, and her use of primary source documents—only recently released when she wrote—promised new and valuable insights into the Kennedy-Johnson policy making process. It is an unfulfilled promise. Instead of a dispassionate scholarly work, the book is an attempt to use the pseudo-science of political communication analysis to support a thinly disguised anti-Vietnam War bias to which the author finally admits in the epilogue. Along the way there are some interesting observations on the personalities, the infighting between the various courtiers around both presidents, and the interplay between the policy circle "ins" and "outs," but when the author moves from historical narrative to communication analysis, the results are highly questionable. The drawing of significant psychological or political meaning from the use of certain sports, medical, or other metaphorical speech by senior policy makers is unscientific conjecture at best. It would appear that Professor Ball has no more than a superficial understanding of the manner of speech and the significance of analogies and metaphors used by men, especially those in high-pressure positions, when communicating among themselves.

Ms. Ball's inexperience with national security and military matters is also evident in her attitude toward contingency planning. She sees the whole concept as as fraught with the danger that such plans actually might be used. She feels the existence of contingency plans holds an "inherent temptation" to "test such plans in the crucible of action." The reader must ask: Is there an alternative? Is that not the purpose of such a plan—

to be used when needed "in the crucible of action"? There are other naiveties as well that appear in the text. At one point, the author states "because of the covert nature of the war being waged in Vietnam, a norm of secrecy was apparent," and decisions were made in "a secretive way." The fact that covert operations are by definition secret does not seem to register with the author.

Unfortunately, Professor Ball is over her head in dealing with the area of military policy and decision making at the national level. That, and the not so hidden polemical antiwar agenda that runs through the book, make its trustworthiness questionable and its usefulness to the historian limited. The best part may be the notes and related bibliography.

Col. Raymond Bluhm, USA (Ret.), formerly served as chief of the Center's Historical Services Division and currently is executive director of the Army Historical Foundation. Colonel Bluhm is coauthor of The Soldier's Guidebook (Brassey's).

Book Review

by Arnold G. Fisch, Jr.

Brassey's Encyclopedia of Military History and Biography

Edited by Franklin D. Margiotta

Brassey's, Inc. 1,232 pp., \$44.95

In 1993 Brassey's published the well-received *International Military and Defense Encyclopedia* as a comprehensive reference work for historians of modern warfare. The current single volume is distilled from those earlier six volumes, with nearly 80 percent of the articles coming directly from the *International Military and Defense Encyclopedia's* history and biography section. At the same time, Brassey's uses *Brassey's Encyclopedia of Military History and Biography* to incorporate new material covering the Gulf War.

Eighty-eight different military authorities contributed the various articles. In selecting these writers, the editors strove to retain in this volume the multicultural

focus of the *International Military and Defense Encyclopedia* by including experts not only from the United States but also from other nations. The advisory board, subject matter editors, and contributors, therefore, include representatives from China, Egypt, Germany, India, Japan, Korea, Syria, and the United Kingdom. As noted military historian, John Keegan, observes in his foreword, warfare is a universal undertaking. Over time, the Western world excelled in warfare, and Western historiography neglected the study of warfare elsewhere. Keegan notes that this bias contributed to the reverses suffered by the French and, later, the American forces in Vietnam and the Russian forces in Afghanistan.

The articles are arranged alphabetically from "Afghanistan, Soviet Invasion of" to "Zhukov, George Konstantinovich," rather than chronologically. The researcher should begin with a key-word search of the index. Any reference book, however well constructed otherwise, can have its effectiveness undermined by an inaccurate or incomplete index. There are no such problems here. The cross-references are particularly good.

As in any undertaking of this type, especially in single-volume encyclopedias, there can be questions about what is included or what is omitted (e.g., Edmund

Burke is mentioned; Admiral Arleigh A. Burke is not). These aside, *Brassey's Encyclopedia of Military History and Biography* is highly recommended for libraries and as a quick reference for all students of military history.

Dr. Arnold G. Fisch, Jr., is chief of the Center's Field and International Branch and is managing editor of Army History.

Forthcoming in *Army History*...

Professor Marvin F. Gordon's examination of physiography and its impact on military perception in three case studies from World War II.

John B. Wilson's (Organizational History Branch) look at the various influences on the Army's divisional organization in the twentieth century.

Ted Ballard's book review of William R. Brooksher's *Bloody Hill: The Civil War Battle of Wilson's Creek*.

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