PHOTOGRAPH THIS SHEET

DTIC ACCESSION NUMBER

AD A951 855

LEVEL

INVENTORY

History of the Field Artillery School Volume I 1911-1942

DOCUMENT IDENTIFICATION

1942

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

DISTRIBUTION STATEMENT

ACCESSION FOR
NTIS GRA&I
DTIC TAB
UNANNOUNCED
JUSTIFICATION

(1942)

BY
DISTRIBUTION /
AVAILABILITY CODES

DIST	AVAIL AND/OR SPECIAL
A	

DISTRIBUTION STAMP

DTIC
ELECTE
S OCT 12 1982 D
D

DATE ACCESSIONED

Released

DTIC COPY INSPECTED 2

UNANNOUNCED

DATE RECEIVED IN DTIC

PHOTOGRAPH THIS SHEET AND RETURN TO DTIC-DDA-2

DTIC FORM OCT 79 70A

DOCUMENT PROCESSING SHEET

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER USAFAS/MSL/F400005	2. GOVT ACCESSION NO. AD-A951 855	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) History of the Field Artillery School, Vol.I-IV, 1911-1967		5. TYPE OF REPORT & PERIOD COVERED Final - 1911-1967
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) U.S. Army Field Artillery School		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE 1911-1967
		13. NUMBER OF PAGES
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

This report is approved for public release; distribution unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Artillery, artillery units, education, military training, warfare

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This four-volume work presents an outline of the training efforts and development of the Field Artillery School from 1911 to 1967. Emphasis is on the Field Artillery branches training efforts in response to major and regional wars.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

HISTORY

of the

Field Artillery School

Volume I

1911-1942

Fort Sill, Oklahoma

PREFACE

This history could not have been written without the assistance of a number of people. This debt I take pleasure in acknowledging. Lt. Philip A. McCarthy, FA, gathered the material on the water problem at Fort Sill, on the Officer Candidate School, where he was for many months a battalion commander, and on liaison pilot training at the Field Artillery School. The information on the Gribeauval system was translated by him. In addition to his help on research, he offered many suggestions which were always most valuable. Lt. Margot Reis, WAC, furnished the scholarly translations of German and French sources used in Chapter One. Lt. Leslie W. Hatfield constructed the tables found in the book and checked the statistical information. The several departments of the School and the file section of Post Headquarters were unfailingly sympathetic and helpful. Thanks must also be given to Master Sergeant Morris Swett and Miss Ethel Hays of the Library of the Field Artillery School for their help.

Fort Sill, Oklahoma
1942

RILEY SUNDERLAND
1st Lt., FA

TABLE OF CONTENTS

CHAPTER TEN
FROM DISARMAMENT BY EXAMPLE TO MOBILIZATION

CHAPTER ELEVEN
THE FIELD ARTILLERY SCHOOL AND THE
SECOND WORLD WAR (1940-1941)

CHAPTER TWELVE
FOUR HUNDRED OFFICERS A WEEK (Jan-Jun, 1942)

APPENDICES

CHAPTER ONE

THE DEVELOPMENT OF FIELD ARTILLERY

From the Romans Through the Renaissance

The word "artillery" is far older than modern guns using explosive shells for it anciently referred to missile weapons of any sort: catapults, ballistae, machines of wood and cord which flung stones or darts, etc. The Romans, according to Vegetius and other authorities, made use of machines light enough to accompany the Legions in the field, a true "field artillery." Each century of the Legion, Vegetius states, had a dart-throwing ballista drawn by mules served by 10 men. It gave direct support to the heavy infantry. There were also 10 onagri, drawn by oxen to defend the walls of the camp. Caesar, when invading Britain, used the ballistae and catapults of his ships to disperse the Britons gathered on the beach to dispute his landing.

The use of machines to cast incendiaries was well known in classic and medieval times. French crusaders under St. Louis and Moslems attacking Constantinople were both in turn attacked by Greek fire and wildfire. Dim memories of the latter compound survive in the expression "to burn like wildfire." Although often most deadly, these compounds, however close some of them came to being gunpowder, were incendiaries, not explosives, for they burned progressively and did not detonate instantaneously.

Modern scholars have almost ended the belief that Chinese or Arabs invented gunpowder, and it is thought more likely that Roger Bacon (1214?-1294) was the inventor. One of the foundations for the belief is the solution by Lt. Col. H. W. L. Hime of the cipher in Chapters 9 and 10 of Bacon's "Epistolae de Secretis Operibus Artis et Naturae et de Nullitate Magiae" (which when solved gives a method of refining saltpetre, one of the three ingredients of gunpowder) and his solution of the anagram in Chapter 11 which gives the correct proportions of the ingredients of the explosive. Last of all a fragment of one of Bacon's manuscripts, the Opus Tertium, 1267, tells the Pope of an explosive compound of sulphur, saltpetre, and charcoal then in general use, according to Bacon. The existence of the Holy Inquisition was motive enough

for Bacon to be exceedingly careful lest comtemporaries link his name with such devilish arts as the making of explosives, and he succeeded so well that only today may we be fairly certain Bacon invented gunpowder.

These matters may still be disputed by scholars, but we do know that cannons were used early in the 14th century. By 1324 they were used in besieging Metz. One early picture of a cannon (a queer vase-like affair shooting a missile like a cross-bow bolt) is dated 1327. The English were using cannon against the Scots in 1327 and the term "canon" was used in its modern sense by 1349. Probably the first employment of cannon in a major conflict was the English use of two or three bombards at Crecy in the opening of the Hundred Years' War between the French and English. Their use is mentioned almost casually in contemporary French sources, and most historians credited English archers with the victory, which was not surprising when the nature of early pieces is considered. There is some reason to believe that English sources preferred to minimize the role of cannon in their victory; certainly for many years the attitude of the chivalry was that expression to Hotspur in Shakespeare's Henry IV:

> And that it was great pity, so it was,
> That villanous salt petre should be digg'd
> Out of the Bowels of the harmlesse Earthe
> Which many a good tall Fellow had destroy'd
> So cowardly. And but for these vile gunnes
> He would himself have been a soldier.

Two types of guns are known to have existed then, the bombard, and the ribauld. The bombard, ancestor of heavy artillery, was built of strips of iron beaten and welded together and reinforced by hoops. The contrivance was much like a barrel, and thus originated the term "barrel" as applied to a gun. Unsound though this method of construction was, it survived until the perfection of casting in the 16th century. The bombard was of large bore, sometimes as great as 20 inches, and was often mounted on a solid block of wood which was laboriously hauled by oxen. Elevation was provided by digging under the breech, or by propping up the front of the mount. The ribauld was little more than a smooth bore musket in size and power, mounted on a cart or block of wood. Sometimes many of these would be mounted together--an anticipation of the Gatling gun. In speaking of medieval artillerymen, the term gunner is often used; however, these people were not soldiers but civilian experts. Sometimes they owned the guns they

served and were paid by the number of guns emplaced or by the weight of shot thrown. Given the superstitious ignorance of most of those who lived in the Middle Ages, and considering these gunners worked with flame, smoke, and thunder, the specifications for Hell itself, it is not surprising that an atmosphere of sorcery hung about the craft or that captured gunners were liable to summary execution. This quasi-civilian status, this air of mystery, lasted until quite modern times. Twelve of these quasi-civilian gunners are shown on the roll of the English Army for 1347.

The Battle of Poictiers (1356), the second great battle of the Hundred Years War, was apparently fought without artillery. Since the English force involved was but a raiding column, it is no wonder that the ponderous artillery of the time was unused. In the second phase of the Hundred Years War (1369-1396), the French retired to their castles and cities, refusing battle, and relying on raid and ambush to harass the English wandering about the ravaged French countryside. Such a policy was only practical in the absence of an efficient English siege artillery. By 1408 the picture had changed, for by that year the then Duke of Burgundy was able to own cannon firing shot of 200 to 500 pounds. These weapons doomed the feudal castle. Seven years later the English, opening the last phase of the Hundred Years War, captured Harfleur after a steady bombardment. This action set a precedent which the French later followed in conducting 60 successful sieges of English strongholds in a year and four days (1449-50)-- an interesting contrast to the conditions in the second phase of the war. In 1451 the garrison of Bayonne asked for terms as soon as the great guns were emplaced, and in 1453 Mohammed II battered down the walls of Constantinople with great cannon throwing shot of 500 pounds. One of these very pieces, in 1807, broke the mast of an English warship attempting to force the Dardanelles.

Thus by about 1400, the cannon had become a powerful siege tool, and the day of the medieval castle with its thick stone walls was rapidly passing. But in those 100 years in which the cannon became established as a weapon, what about the field gun? Actually the ribauld was the oldest type of weapon that might be regarded as a field piece. Reflection suggests, however, that a ribauld of one barrel was too light a gun to function as a true field piece, for killing one knight at a time would never change the course of battle. Also, the contrivances made by bundling ribaulds together were as bulky and immobile as the bombards. The 15th century artillerist was like an artilleryman of today who had only the 240-mm howitzer and the 37-mm antitank gun--the one powerful but unwieldy, the other, mobile but too light.

In 1424 a Bohemian religious sect, the Hussites, having revolted against their feudal German overlords, faced the tactical problems involved in opposing feudal knights with raw peasant levies. Their leader, General John Ziska, reacted by forming a square of farm carts, chained together, and mounting small cannon. The German knights threw themselves futilely against this armament. The happy improvisation was later reduced to a system incorporating gun carts specially built to mount small cannon. The scheme was very like field artillery for the gun carts were mobile and manned by troops trained to work with an army in the field. It is not known what influence this had on contemporary artillery practices, but in 1453 an English attempt to storm French siege lines was beaten back largely by a form of artillery fire which, in the light of later events, suggests small cannon able to fire fairly rapidly. Surely this was an early use of cannon in field fortifications.

True field artillery accompanied the French in their invasion of Italy in 1494 when they took with them horse drawn bronze pieces connected to the carriage by trunnions. These guns also utilized limbers. The gunners' skill in loading, firing, and shifting fire was beyond that previously known. These techniques and this piece were new on the battlefield, and led to such later developments as the massing of fires, the use of artillery to stop attacks, and the "softening up" by artillery prior to an attack. It is dangerous, in examining the actions of those who have gone before, to impute modern motives and modern doctrine to Greek hoplites or Renaissance condottieri, but on the other hand, we may have in mind that doctrine often comes from discovery of the principles implied in a happy improvisation. Thus, we should be wary in saying that "Gaston de Foix ordered an artillery preparation at Ravenna," but we would err too far on the other side if we did not see in it an action of a sort from which the principle of artillery preparation might well have been deduced.

At the time of the French invasion, the Swiss system of massed pikemen and halberdiers formed the most formidable infantry in Europe--against which the shock action of mounted knights had been worse than futile. Similar formations of Scots pikemen had always come to grief against English archers, but archers were few in Europe. Thus even powerful rulers, such as Charles of Burgundy, went down before the Swiss halberdiers. Charles was found lying in a frozen ditch, his face one dreadful gash from temple to chin. He had attempted to use cannon against the Swiss, but the lack of discipline and training of his mercenaries and feudal levies made them unable to handle the weapon properly. Moreover, his bombards were not suitable weapons for use in the field.

For a century and a half, the Swiss infantry dominated central Europe. When it was defeated at Marignano by the French in 1515, contemporaries were impressed, and the role of the field artillery was significant. The French had won Marignano by the judicious combination of artillery and cavalry, the latter charging and forcing the Swiss to halt and ground their pikes, the former then firing on them. There is evidence that the French guns were massed, for the Chevalier Bayard is quoted as saying to the Grand Master of Artillery, "I pray you, fire seven or eight guns altogether," and a chronicler relates that gaps were made in the lines of pikemen and that the Swiss were blown into the air like powder. Coordination between artillery and cavalry was not always perfect and many of the Swiss charges hit home with resultant heavy losses to the French. But Swiss losses were disastrously high.

At Ravenna (1512) Gaston de Foix found the Spanish and Italians entrenched behind a ditch and an embankment. For many years the records of assaults upon an enemy in position had not made encouraging reading for ambitious generals, and the young Frenchman was faced with a real problem. In what terms he saw his solution we do not know, but it is recorded that he opened the ball with a brisk bombardment of the enemy positions. This fire eventually so galled them that their cavalry made a premature attack, which greatly contributed to their final defeat. The cannonade as a preparation was not too successful, for the first French infantry assault was repulsed. The Spanish cannon, for their part, slew 2,000 in the French center (actually, Germans and Gascons!) while they were waiting the signal to assault.

Bicocca (1522), notable as the defeat which ended the Swiss belief in their own invincibility, is another example of the use of artillery in the defense, this time a most successful one. The Swiss were in arrears of pay and had threatened to leave if they were not allowed to fight at once. Their French allies were forced to fall in with the plan and to prepare to attack a wall and ditch that were well-covered by cannon and backed with arquebusiers and pikemen. The Swiss led the attack and threw themselves into the dreadful ditch with matchless valor, but the steady fire of the cannon, arranged to sweep the space before the earthwork, and the fire of the arquebusiers was too much for them. Every attempt failed. The slaughter was great. It broke the spirit of the Swiss. Why the French did not attempt a preparation, we do not know.

With the French defeat at Pavia in 1525, field artillery passed under a cloud for about 100 years. Part of the decline was

due to an accident on that day. When the French cannons were correctly massed, they had their fire masked by their own troops drifting before them. At the same time, the enemy arquebusiers inflicted great damage thru the skillful use of cover and movement. The other cause was the improvement in small arms. When the cannon had been the best means of attacking masses of pikemen the light cannon had flourished. However, with the development of small arms, it was possible to form an infantry which could successfully oppose pikemen. Thus, cannon tended to assume the likeness of siege guns, and though they did not literally disappear for 100 years, the guns became cumbersome and slow. The approved method of use was to plant them before the battle line where they remained during the action often changing hands several times.

Some of this trend toward using artillery as siege guns may be traced to erroneous ideas on gun construction. Thus, in 1809 we find a French artillerist in the American service, Colonel de Tousard, writing that until his own day it had been thought that the longer the gun the greater the range, and that the greater the charge the more the effect. In the light of those theories, a gunner seeking a more powerful weapon would lengthen the barrel and widen the powder chamber. Then, to keep the gun from blowing up in his face, he would have to strengthen it, thus making it a good deal heavier than it needed to be.

This period of the late Renaissance, though unfriendly to field artillery, was yet a time of great progress in artillery in general. Many of the characteristic features of modern artillery originated during that period. During the 16th century rifling, pointed projectiles, breech loading, shells, and the gunner's quadrant were well understood; in fact, the gunner's rule of Queen Elizabeth's day in only a slightly changed form was used as a sight for our artillery as late as 1898. It was deficiencies in metallurgy, chemistry, and engineering that kept the Tudor and Elizabethan gunners from showing what they could do. The shell, for instance, was known in 1573, but the invention of a reliable fuze was an insoluble problem at the time. Shells might burst in the bore or at the muzzle, in flight or not at all. Some valiant gunners lit the fuze and then thrust the shell down the barrel; others hoped the blast of firing would ignite it. Breech loading pieces were by no means uncommon, but it was impossible to get a gas-tight seal for the breech or a breech that would always resist the shock of discharge.

The gunner's quadrant of those days, a segment of arc graduated in degrees across which a plumb line moved, survived until the American Civil War. Windy days offered a real problem, and so the gunner's rule was invented. It was simply a graduated stick with a movable bead. The bead set at the desired elevation; the rule was held on the breach; and the muzzle was elevated until it lined up with the bead. The principle was that used in the sight of the '03 Army rifle, the famous Springfield. In 1898 our artillery went to war with the gunner's rule mounted on the breech of its cannon and improved with a peep sight, spirit level, and a windage screw.

In one way the Elizabethans were curiously unprogressive, for they had no sighting equipment. The familiar nick in the breech and button at the muzzle were not invented until the 18th century. The gun was sighted by noting the apparent difference in size between the circle made by the breech and that made by the muzzle, marking one-half the difference on the top of the breech and lining that mark and the muzzle edge with the target. Perhaps it was after weighing all of this that some early gunner wrote: When I was first admitted a gunner, I thought it a shame to take the Queen's pay for a gunner and do no other service than watch and ward, to load a piece and shoot her off, which even every fool may do."

That gunner actually did little justice to his profession, for in that day the expert gunner had to be a most learned man, uniting in himself the chemist, the ordnance engineer, the military engineer and the gunner. There was no one else to superintend the casting of cannon, the preparation of ammunition, the emplacing of batteries for siege or defense, or their handling in action. In Tudor days, these experts were grouped in little bands in various forts, each under a master gunner but under no central control. The first step toward the formation of the Royal artillery was the appointment by Henry VIII of a Master Gunner of England with jurisdiction over all these bands. Another forward step consisted of sending home the foreign gunners who had been intermittently in English employ since the early days of the 14th century.

Tudor gun crews had three men, the gunner, the servitour or matross, and the laborer. The latter two titles clearly suggest the civilian connections of the arm, the title of "matross" lasting until well into the 19th century. These men went through 13 motions in loading, suggestive of the 13 commands of the English Civil Wars a century later. Their equipment included a ladle,

rammer, sponge, wad-screw, coyne, linstock, priming iron, flask of priming powder and a leaden plate to cover the vent. Major General Sir John Headlam, writing in the Coast Artillery Journal, Vol 63, states: "Indeed, to any who served with a horse or field battery in the 80's the detail for serving the vent, sponging, ramming home, and 'springing the rammer' will sound very familiar."

A document of 1620 illustrated the conception of the proper amount of artillery to accompany an expedition of 30,000 men to the Continent. This force was to have two brass mortars (each with a chief petardier and five assistants), and 18 cannon of varying size with a master gunner, three mates, three constables or quarter gunners, 124 gunners, 100 carters, the Master General of Ordnance and his staff, a body of engineers, and miscellaneous personnel. This arrangement allowed one cannon for every 1500 men. In 1690, an army of William of Orange had one piece for every 500 men. It would, however, be an error to deduce any tactical trend from this, for 20 years later the great Marlborough almost disposed of artillery in one of his battles.

Gustavus Adolphus

In 1631 a Swedish king and general, Gustavus Adolphus, won the battle of Breitenfeld, using as one of his tools, a light handy artillery that could freely maneuver on the field. His example was not fully understood by his contemporaries, but his use of artillery was fully modern and was to have its influence on a Frenchman, Gribeauval, who in turn organized the artillery Napoleon used. It was an exheptional armywhose artillery, training, and doctrine were logically organized and developed for its task, but Gustavus' army was one of those. Gustavus could build his army as he wished, for Gustavus the King could enforce the ideas of Gustavus the Great Captain. Most soldiers must take the equipment and doctrine that comes to hand and make the most of it, just as Napoleon inherited the artillery and doctrines developed under the Bourbons. He saw their faults but could not correct them.

Gustavus' artillery reforms were part of a general reform intended to improve the mobility, fire power, and discipline of his army. The system of Gustavus' opponents, the Imperial armies under Tilly and Wallenstein, was marked by great squares of pikemen and musketeers flanked by cavalry with a line of almost immobile artillery drawn up in front. The soldiers

were hardened mercenaries, expert, brave, and cruel.[1] Gustavus planned to handle the Imperial cavalry with pikes, fire power, and his own cavalry; the infantry squares were to be withered with grape and canister and then cut up by cavalry. The Swedish field artillery included 24-, 12-, and 6-pdr cannon, short pieces of light weight, mounted on good, high wheels for easy going on bad roads. To give a rapid rate of fire to these light pieces, Gustavus used fixed ammunition, grape or canister lashed to a paper powder cartridge. The fire power of the infantry regiment was increased by the addition of two 4-pdrs which fired six times a minute as against the four rounds a minute of the Imperial musketeers. The Imperial cavalry charged at the trot wheeling and firing pistols when in range of the enemy. The Swedish cavalry charged at the gallop, sword in hand, and their infantry formed in small handy units of pikemen and musketeers.

The Swedish army Gustavus arrayed at Breitenfeld totalled some 26,800 men, 19,100 were infantry and 7,700 cavalry and over 100 guns. They were allied with some 20,000 Saxons, who broke and fled early in the battle. The percentage of guns to troops in Gustavus' army may be compared to a U. S. corps of two divisions with some 30,000 men and 96 guns plus corps artillery. The Imperial army was somewhat smaller and had only 26 cannon.

As at Ravenna a heavy cannonade opened the battle with Swedish artillery striking the Imperials. Again as at Ravenna the enemy cavalry could not stand the fire and charged the Swedish right flank without orders from old Tilly, who tore his beard and cried, "They have robbed me of my honor and glory!" As they advanced from the Imperial left wing, the rest of Tilly's cavalry at his right, not realizing the mistake, charged the Saxons at Gustavus' left who took to their heels. Undaunted, the Swedes moved musketeers and artillery to the right and to the left furnishing an excellent example of the mobility of their artillery on the field of battle. Seeing the Swedes left flank uncovered by the Saxons' rout, Tilly moved his infantry mass obliquely to strike it. The Swedes' right wing which had shaken off the premature cavalry attack wheeled to the left and the Swedish cavalry charged the Imperial pikemen just as the French Gendarmerie had charged the Swiss at Marignano. The first charge was repulsed, but it shook the squares,

---

[1] At Breitenfeld, Gustavus faced an army that had shortly before slaughtered 30,000 men, women, and children, citizens of Magdeburg. Its general, Tilly, had given the order, then gone to breakfast.

and then the Swedish guns began cutting long red lines in them. The best of Gustavus cavalry threw itself at the gap, and that portion of the Imperial line broke and fled, thus exposing the Imperial artillery. The remaining Imperial infantry braced itself for the expected cavalry charge. It never came. Instead, the Swedish artillery and the captured guns began to work on the squares and continued until night came. Six thousand pikemen lay there. Then the Imperials began to break and drift to the rear, and the Swedish cavalry rode forward.

Here at Breitenfeld there was the coordinated action of infantry, artillery, and cavalry all working toward the same end. The reward was not only in victory but in the disparity of losses, about 7,000 to 3,000. At Marignano some of the Swiss phalanxes had been able to make good their charges, but at Breitenfeld the bulk of the Swedish losses came from artillery. Plainly the Imperial infantry masses could never carry their attacks home.

There was another notable feature of Gustavus' tactics, the massing of fire. At Leipzig he united all of his regimental guns in one great battery, and at the passage of the Lech formed 72 guns in 4 great batteries. The infantry's demand for continual close support was met by giving them small quick-firing guns, the ancestors of the cannon company of the 1942 infantry regiment, while the great bulk of the Swedish artillery was kept under central control. Breitenfeld for all its interesting features cannot be seen as the beginning of an epoch, for in the English Civil War which followed soon after, artillery was fought as though Gustavus had never lived, and early in the 18th century the French used cannon as heavy as any Gustavus might have captured.

The latter part of the 17th century was marked by the introduction of the standing army principle in the forces of the several great powers, reflecting itself in the more soldierly aspect of the artillery. This arm with its civilian traditions was, on the Continent, still often supplied by contractors. Louvois (1641-1691), among his other reforms, ended this in the French army and put the artillery under royal control although the drivers and their teams remained civilians--an anomaly that lasted until Napoleon. In the English army the Royal Regiment of Artillery dates from the early 18th century.

Frederick the Great

With the era of the Enlightenment, and the battles of Frederick the Great, began the golden age of smooth bore field artillery. The campaigns of Marlborough, though fought during the Enlightenment, occurred prior to this period as can readily be seen by the great

Duke's treatment of the arm. His campaigns are not instructive for artillerymen, for though he handled the arm with his usual polished competence, he left it as he found it. The number of guns in his armies well illustrate his views. Marlborough began his campaigns in Flanders with 1.16 guns per 1,000 men; at his last great battle, Malplaquet, he had .9 per 1,000.

Frederick's campaigns are very different and are most instructive. It might perhaps annoy that prince to have his name linked with the artillery, since at the beginning of his career he berated it for its immobility, he often complained of it in battle, and the competition in artillery that began among the great powers during his wars (and which he initiated) drew from him the anguished complaint that it had opened an abyss into which the Prussian treasury was being poured. Yet though he did not like the arm, or so pretended, he used it in a way that set an enduring pattern. Gustavus seems to have been a little before his time, but Frederick's contemporaries paid him the compliment of imitation. Frederick began his first war with about 2.5 guns per 1,000 men. At the end of the Seven Years War the proportion in the Prussian and Austrian armies had risen to 4 per 1,000 as against Marlborough's .9. The Prussians and Austrians sought lightness and mobility by cutting the weight of their gun tubes, setting a ratio between weight of tube and weight of projectile of about one hundred to one, as against the contemporary French practice of two hundred to one.

In Frederick's first engagement his artillery was ordered to concentrate on the Austrian cavalry that it might be softened for the Prussian charge. The plan failed, largely because there were not enough cannon. After the battle, he set to increasing his artillery, and his efforts were matched by the Austrians. This resulted in an artillery race. Frederick sought to use his artillery always to pave the way, though he often wavered in selecting the primary target. He directed the fire first at the cavalry, in the next battle at the infantry, and in the next at the hostile artillery. Finally he settled on infantry as the proper target, concluding that the artillery could not cope with a small line of objects like the hostile guns.

The classic example of Frederician artillery technique is Leuthen (1757). The Prussian artillery, all on the flanks, massed its fire on a portion of the Austrian line with the greatest weight of fire on the reserves. Thus there would be no support for the first line when it started to buckle under the Prussian charge. The attack was launched into the "V" formed by the crossing lines of fire from the flanks so that fire could continue to the last possible moment. "As it was done near Leuthen" was for many years the maxim in the German artillery schools.

The massing of fire and the close support of infantry by artillery show the master touch. Another example of Frederick's talent was the creation of horse artillery--light artillery whose mobility was further increased by mounting the cannoneers on horseback (1759). He made a practice of keeping a reserve force, preferably howitzers, with which he might intervene at crucial moments in the battle. However, he had to caution the zealous Prussian gunners not to shoot over the heads of their own infantry because of the inaccuracies of the guns.

Gribeauval and the French Artillery

The French artillery was at this time in a state of almost whimsical disorder. On the credit side was the existence of the Royal Regiment of Artillery with its five battalions of eight companies each. There were artillery schools at Metz, la Fere, Strasbourg, Grenoble, and Perpignan. There was a Ministry of War, founded by Louvois, but between the battalions and companies there was no agreement as to either method or materiel, and no standard had ever been settled on. Commanding officers could submit their own specifications to foundries and arsenals. And the wildest confusion of calibers and types resulted. Cannon of one foundry would be unable to use shot from another, and no two cannon of the same foundry would be exactly alike. There was at this time in the Austrian service a middle-aged French colonel of artillery, one Jean Baptiste de Gribeauval (1715-1789) who had been loaned to the harassed Maria Theresa by Louis XV. Gribeauval seems to have been a true child of the Enlightenment, that age which thought order and system the law of nature, and of nature's God, and which rebelled against the traditional and disorderly. He had been impressed by the lightness and mobility of the Austrian and Prussian artillery, he had his share of Gallic logic, and he had a system in mind. Recalled to France, he surveyed the French artillery and recommended eight points for appropriate action. These were:

1. Standardization of calibers for all weapons.

2. Matching the caliber and composition of the artillery to the size and requirements of the army.

3. Assignment of definite types of cannon to the infantry, with a decision as to their being infantry weapons manned by infantry, or artillery pieces manned by artillerymen and borrowed from that arm.

4. Standardization of all gun parts and carriages to make parts interchangeable.[1]

5. Standard rules for construction of howitzers and carriages.

6. Standard rules for construction of mortars and carriages.

7. Diameters of shot and form of powder containers and cartridges to be fixed.

8. Standard formulae for powder.

Gribeauval made his fight for mobility when these principles had been tentatively accepted and work had begun in drawing up the specifications called for by 4, 5, and 6 above. A commission was formed which met at Strasbourg in 1764 to experiment with equipment a la Gribeauval. A comparison will be interesting.

	Model of 1732		New Model	
Type	Range at 6° Elevation	Weight	Range at 6° Elevation	Weight
12-pdr	2952 yds	3200 lbs	1822 yds	1800 lbs
8-pdr	1860 yds	2100 lbs	1666 yds	1200 lbs
4-pdr	1608 yds	1150 lbs	1546 yds	600 lbs

[1] The tubes and carriages were completely standardized, at least a generation before Eli Whitney is supposed to have "invented" standardization. An order of March 31, 1766, over the signature of Duc de Choiseul, Minister of War, set the system for casting brass guns, prescribed that their dimensions and weights should conform to the tables, sketches, and plans provided, with no alteration for any reason. Allowances were set to the hundredth of an inch. The "felloe, nave, transom, bolt, understrap, or any part . . . for instance, constructed at Auxonne, will assemble with the corresponding parts of the appendage of the same kind constructed at Strasbourg . . ." The American Artillerists Companion, by Louis de Tousard. C. A. Conrad and Company, Philadelphia, 1809. Vol. 1, page 145; Vol. 2, page 279.

The difference in range was not thought important, for fire was not accurate beyond one thousand yards. Tactical mobility was made easier by use of a prolonge, a long rope fastened to the trail, grasped by the cannoneers, and used by them to maneuver the piece.

This artillery of Gribeauval is of interest for two reasons of about equal weight:

1. It was the artillery of Napoleon.

2. Gribeauval's concepts dominated artillery well into the 19th century.

Napoleon

That Napoleon should have profited by the work of his predecessors is not surprising, for he was a student, an omniverous reader, and acknowledged his debt to his teachers. Among these must be listed the theorist, Guibert, who in a remarkable work written before the French Revolution predicted the national army, the use of decisive battles, living off the country, attack by advancing columns rather than by advancing lines, and other features of the "Napoleonic" system. Of artillery Guibert wrote: "Cannon, treated individually and aimed at a solitary object of inconsiderable extent are not very formidable machines," a clear plea for massed fire. Napoleonic tactics do not bear the mark of Frederick's influence in the massing of fire until Friedland, and there the inspiration was that of a subordinate, Senarmont. It has been suggested that Napoleon was not a great tactician, that his tactics are those of the Revolution, and that the "Napoleonic" use of artillery was foreshadowed by Frederick a generation before. However, Napoleon's fame does not rest on that alone.

European tactics at the start of the French Revolution bore the stamp of the Potsdam drill ground. A triple line, faultlessly dressed by officers with survey instruments on their staffs, advanced at 72 paces to the minute, pausing now and again to fire. Long years of drill were needed, and the conscripts of the French Revolution were short in time, but full of ardor. How best to use that ardor was the problem. The solution was a double one. A mass of skirmishes to distract the long, thin, enemy line; a column of cheering fanatics to advance under cover of the distraction. Even if in the early battles the column was more like a cheering mob, no great harm was done, for the essence of the matter was to get to hand strokes in a hurry. Reflection suggests that a mass of skirmishes to prepare an assault is not a good substitute for a mass of artillery fire. This may be obvious today, but given the weapons of 1800, the conclusion was not so plain. Then cannon did not have an effective range much greater

than muskets, and so the fire power of many skirmishers was a respectable factor. But with the experience of battle, especially Friedland, and with the slow decline in the quality of the French infantry, Napoleon turned to the mass of fire.

The happy inspiration that produced the first use of massed artillery in the Napoleonic manner was that of Senarmont, who commanded the artillery of the I Corps at Friedland. The French attack had been repulsed, their right was wavering and a counterattack might have been disastrous. Senarmont seized the initiative, formed the divisional artillery of the corps into two great batteries of 15 guns each and moved forward with the advancing French reinforcements. Opening fire at about 400 yards, Senarmont soon closed to 200 and moved beyond the French line. Seeing the maneuver, Napoleon was thunderstruck, and cried out: "My God, Senarmont deserted!" An aide de camp sent after Senarmont came back with the answer: "Let me go with my cannoneers! Je reponds de tout!" Napoleon drew the proper moral, as will be seen in his 92d maxim on the conduct of war: "In a battle, as in a siege, skill consists in converging a mass of fire on a single point; once the combat is opened the commander who is adroit will suddenly and unexpectedly open fire with a surprising mass of artillery on one of these points, and is sure to seize it."

Thus, at Wagram, Lauriston was ordered to take 100 guns and prepare the way for Massena's great attack. At Borodino, some 400 guns were aimed at the great redoubt near the center of the Russian line. Napoleon's enemies learned the value of massed artillery from him, and when at Leipzig the Emperor saw the massed guns of the allies beginning their work, he looked at them in silence, then muttered some words to the effect that at last he had taught them something!

At the end of the Napolenic era, the status of the field artillery was as follows:

1. It had become part of the army, and its civilian character was gone.

2. Its tools were made in accord with mathematical research--the old aura of witchcraft had been removed.

3. The guns were muzzle-loading smooth bores, rarely used at more than 1000 yards, and relying on direct laying alone. They fired shell, shrapnel, solid shot, grape, and various crude incendiaries.

4. Guns, men and horses were formed in regiments and batteries. The distinction between divisional and corps or army artillery was understood.

5. The principle of massed fire was understood and clearly verbalized. Reserve artillery was common, for a short-range gun once committed to a certain sector of front could not intervene on another.

From Napoleon to the Late Nineteenth Century

To complete the study of the development of field artillery, several post-Napoleonic eras should be noted. First, there was the period of the American Civil War, when the smooth bore reached its peak; then the transitional times which introduced breech-loading and rifling; and last of all, the era which saw the first rapid-fire field gun using indirect laying.

In 1859 an Englishman, Armstrong, produced a fairly successful breech-loading rifled field piece. It was not thought satisfactory for field service and not until 1876 did the British adopt such a gun as standard. With the appearance of these rifled breech loaders, which were still laid by direct laying, and which recoiled back on their wheels, we enter the transition period which lasted until the appearance of the French 75 of 1897. In 1898 the American artillery went bravely off with the 3.2-inch breech-loading rifles of 1880 and 1892. There was no recoil system, and the gunner laid directly on the target with the old Civil War sight, somewhat improved by a windage scale and a spirit level. Shell, shrapnel, and canister were fired by black powder which hid the battery positions in dense white smoke, often obscuring the target so that firing had to halt until the range cleared.

The desirability of improving the fire power of the light field piece by improving its rate of fire had long been admitted, and many attempts made to secure that end. Using special devices, Saxon artillery of 1780 could fire 14 to 16 rounds a minute. But as the gun bounced back over the ground, because there was no recoil system, it was necessary to re-aim the gun after each shot, and one wonders if the Saxons did that. The method of loading, shoving the cartridge down from the muzzle, then carefully ramming it home, was slow. Finally, the black powder soon wrapped the gun position in a fog through which the coughing gunner would peer in vain to find his target. In 1871 an Italian, General Biancardi, proposed a general solution to the recoil problem, the connection of a hydraulic brake with a pneumatic cylinder. The liquid would be pushed by the piston through a valve into a cylinder filled with compressed air and cause a

further compression. When the shock of recoil was absorbed, the liquid would be forced back in its cylinder, and the gun returned to firing position.

The practical artilleryman of that, or any other day, had to examine any proposed improvement from the standpoint of its effect on mobility. If it lost any tactical mobility, it had to be vetoed. The sailor, on the other hand, could make use of heavy machinery, and so the sailors of the 1870's could put heavy guns and massive recoil cylinders in their turrets. It is believed that the first practical hydropneumatic recoil systems, ancestors of all we have today, were put in HMS Thunderer in 1875 by George Rendel, a partner of that Sir William Armstrong who created the first practical breech-loading rifled field gun.

A second requirement of rapid fire was easy and rapid loading. This was supplied by the combination of a quick-acting breech and brass cartridge cases, introduced in 1881 by the rival gunsmiths, Hotchkiss and Nordenfeldt. These cartridge cases could be easily loaded and extracted, and they swelled under pressure of the explosion, thus forming a gas-tight seal against the breech. Although these quick-firing guns were built for naval use, the makers built field guns on the same principle, but without recoil mechanisms, so that the guns bounced rapidly back across the battle field. No great power adopted them. Progress in naval gunnery was so fast that by 1886 an English 30-pdr was built which, remodeled the following year as a 4.7-in gun, fired 10 rounds in 47 seconds as against the 5 minutes and 7 seconds for 10 rounds by an orthodox 5-in gun. The artillery pattern for the future was growing clear. Although they watched these proceedings with great interest, artillerymen noted that these deadly cannon were mounted on steel pedestals two feet through, formed of steel several inches thick, and well able to absorb the shocks of firing with the short 12-in recoil. No such apparatus could be lugged about the battlefield.

Even if such a rapid-fire cannon had been built early in the 19th century for artillery use, it could not have been used at full efficiency unless capable of firing at unseen targets from positions shielded from hostile infantry fire. A system was needed which would permit the gunner to point his gun at one object by aiming his sight at another. Fortress cannon, in the good old days, were laid for direction at night by lining up the carriage with chalk lines on the platform on which the gun was mounted, or by sighting down the tube from muzzle to breech at a light hung in the fort. The French in 1870 had sought to escape the superior German artillery by concealing their own cannon, thus having their attention most forcibly brought to the

subject of indirect fire. After the war they tried to work out a practical method. Thus, the 90-mm De Bange piece of 1880 vintage had sights which made it possible to set off an angle, of which one leg was parallel to the axis of the bore. With this sight they could aim the gun at the target by sighting along the other leg at an aiming point. The problem thus became the mathematical one of calculating the angle of aiming point to gun sight to target.

The problem of lightness and mobility was being solved by the invention of modern steels. Alfred Krupp in 1847 built the first modern steel gun of crucible steel, steel made in a closed vessel which excluded air and furnace gases. Contemporary accounts called it a marvel of lightness and strength. Thus, in the 1880's there were present all the ingredients of the modern field piece, waiting for some genius to combine them.

The Modern Field Gun

In 1886 a young German engineer, Konrad Haussner, became interested in cannon and their recoil. His fancy had been stirred by an American magazine article telling how the combustion of gases had been used to propel a balloon, which suggested to him that the gases from firing might be used in a recoil mechanism. His experiments failed, and he was baffled until 1887, when in the Krupp Museum at Essen, he saw a field piece built on naval lines with a carriage in two parts. The upper portion recoiled against a pneumatic cylinder and slid into place by force of gravity acting along a plane inclined to the front. His first idea, a gun with a separate counter-recoil mechanism, failed. He then built the first long-recoil mechanism that had the counter-recoil an integral part of the whole. He patented it in Germany and France in 1891. The mechanism had two tubes, one within the other, the inner containing a liquid and a piston, the piston connected to the end of the outer cylinder which contained air. The gun was to recoil, pulling the piston back in the inner cylinder. The inner cylinder would be fixed to the carriage, would slide out of the outer cylinder, lowering the air pressure in it so that the pressure of the outer air would force the gun back into firing position. This counter-recoil system was absurdly weak, Haussner later realized it, and in 1896 he made a gun with a workable spring counter-recoil system. Krupp would have none of it, as he would have none of Haussner's earlier work.

The French had been told that Krupp was making a gun with a hydropneumatic recoil based on the Haussner system. This report

later proved false, but General Matthieu, Director of Artillery, called in Major Deport, of the Puteuax arsenal, gave him the situation as it then appeared, and put him to work. Luckily for the French, Haussner had been so disgusted by Krupps' treatment of him, that he had let his patent lapse, and the French were free to use it. Deport, like Haussner, realized the defects of the patent of '91, but unlike Haussner, he was able to find the answer, a column of liquid whichwas forced through small holes, thus absorbing the recoil and compressing a column of air which supplied the force to return the gun to battery.[1]

As the work progressed, the French learned they had been misinformed, that far from adopting a new gun, the Germans were earnestly re-arming with old fashioned cannon, guaranteed to bounce back after every shot, like Frederick's cannon. Highly amused, the French waited until Krupps had completely equipped the German artillery with these museum pieces, and then brought out the famous French 75 of 1897. This masterpiece of the ordnance art, with its quick-loading Nordenfeldt breech, its brass cartridge case, light weight, long-recoil system, and indirect line of sight revolutionized field artillery. No more could the gunners of Napoleon or Gustavus or Elizabeth have taken their place in a battery. This was the first modern field piece, and modern tactics and technique had to be devised to make the best possible use of it.

---

[1] It would be wrong to think that the secret of the French 75 lay in any use of the Haussner system. Official French sources show this. A letter of the French High Commissioner, March 28, 1918, on the subject of guarding knowledge of the 75, states: "The secrecy of the 75 m/m recoil mechanism residing mostly in the assembly and the adjustment." "The first assembly drawing of the counter-recoil mechanism ever made, was prepared in order to be sent over to this country as prior to this no assembly drawing of any kind ever existed in France." The parts of the mechanism under question were assembling of the regulator, the free piston, the counter-recoil mechanism, and the adjustment and tests of the counter-recoil mechanism. In another letter of April 9 the High Commissioner quotes a cable from home as saying "The secret which is kept because unknown to our enemies, consists in the manufacture and the special precautions in machining and assembling the different parts."

How was the new weapon to be used? Reading a text written in 1903, The Tactical Employment of Quick-Firing Field Artillery, by a French officer, Gabriel Roquerol, we learn that fire on an area, rather than fire at a point, should be standard technique, a return to the ideas of Guibert and Frederick the Great. The delivery of this fire was to surprise the enemy. The angles at which the guns were to be laid, the elevations, the time of burning of the fuzes, were to be obtained beforehand by instruments, by reconnaissance, by measurement on the map or by preliminary fire. "The ideas above quoted," Roquerol wrote, "lead to the logical conclusion that the fire of quick-firing artillery should be characterized by very violent gusts of short duration, separated by more or less prolonged intervals of calm." No artillery should be kept in reserve. "In other words, with long range guns the reserve of artillery could be considered as formed by the artillery in position. It followed, therefore, that, aggreably to the leading principle that in war no force should remain idle, the whole of the artillery had to be engaged from the very first."

This is still current doctrine and current technique, and quite valid in 1944. It was not the official doctrine of the French army before 1914.[1] But the disagreement was not whether these methods could be used, but whether they should be used, and the actual teaching of war brought them in favor by approximately 1915. The important point is that by 1903, and Roquerol's book, European artillery had been revolutionized and was clearly modern. Old materiel, old doctrine, all had to be changed, and troops trained in the new. With change and experiment in the air, the times were favorable for the founding of a school to teach and develop the new techniques in the American Army.

---

[1] French artillery tactics of 1914 were impressed by a fancied superiority of maneuverability over fire power. War was to be short, marked by maneuver and open warfare. The battle would be between infantry units, between men rather than between materiel. Only light artillery was thought really essential; heavy artillery was included just to provide for the unexpected. Concentration of several 75-mm batteries was not thought necessary, thanks to the power of the gun, and one should not be "overloaded" with artillery. Fortunately for the French, dissatisfaction with this official doctrine had forced a program of heavy and medium caliber weapons, comparable to those the Germans had developed up to the pilot model stage. The rest of the doctrine was under violent attack but had not left the field of controversy. General Frederick Georges Herr, former Inspector General of the French Artillery, Field Artillery Journal, 17:221.

Bibliography

The Origin of Artillery, Henry William Lovett Hime. Longmans Green and Co. London, 1915.

History of the Art of War in the Middle Ages, Charles William ChadwickOman. Methuen and Co. London, 1898.

History of the Art of War in the 16th Century, Charles William Chadwick Oman. E. P. Dutton and Co. New York, 1937.

Field Artillery Journal

16th Century Artillery Drill, Fletcher Pratt. 23:426-430, Sept. 1933.

Breitenfeld--The Battle That Changed the World--1631, Fletcher Pratt. 24:244-254, May 1934.

French Artillery, Past, Present, and Future, General Frederic G. Herr. 17:221-246, May-June 1927.

Observations Upon the Evolution of Field Artillery Construction and Employment, Joseph M. Hanson. 13:423-439, Sept-Oct 1923.

Artillerist's Manual and British Soldiers' Compendium, Frederick A. Griffiths. E. Jones, 2d Edition, 1840.

The Artillerist's Manual, John Gibbon. D. Van Nostrand, New York. 2d Edition, 1863.

American Artillerist's Companion or Elements of Artillery, Louis de Tousard. C. and A. Conrad and Co. Philadelphia, 1809-13.

Manual of Field Artillery Exercises. H. M. Stationery Office; London, 1877.

The Tactical Employment of Quick-firing Field Artillery, Gabriel Rouquerol (Translated by Capt P. DeB. Rad liffe). Hugh Rees, London, 1903.

Marlborough and the Rise of the British Army, C. T. Atkinson. G. P. Putnam's Sons, New York, 1921.

Achievements of Field Artillery, Major E. S. May. R. A. Institution, Woolwich, 1893.

Napoleon (A History of the Art of War), Theodore Ayrault Dodge. Houghton, Mifflin and Co. Boston, 1904-07.

European Ships of War and Their Armament, J. W. King, U.S.N. Government Printing Office, Washington, D. C., 1877.

History of the Development of Field Artillery Materiel. Field Artillery School, Fort Sill, Oklahoma, 1940.

Makers of Modern Strategy; Military Thought from Machiavelli to Hitler, Edward Mead Earle. Princeton University Press, Princeton, 1943.

Roots of Strategy, Thomas R. Phillips. The Military Service Publishing Co., Harrisburg, Pennsylvania, 1940.

The Tools of War, James Roy Newman. Doubleday Doran and Co., Garden City, New Jersey, 1st Edition, 1942.

Napoleon and His Marshals, Archibald G. MacDonell. The Macmillan Co., New York, 1934.

L'Artillerie Francaise au XVIII Siecle, Ernest Picard. Berger-Levrault et Cie, Paris, 1906.

Unpublished Correspondence of Napoleon I, Ernest Picard. Duffield and Co., New York, 1913.

Journal of the Royal Artillery

The Battle of Friedland, Sunday, 14 June 1807, Major A. F. Becke. 44:81-94, 1917-18.

A History of Artillery, Ralph Flenely. 47:230-242, 1920-21.

The Coast Artillery Journal

The Dawn of British Artillery, Major General Sir John Headlam. 83:444-451, Sept-Oct, 1940.

Revue D'Artillerie

L'Emploi de L'Artillerie au Cours de L'Histoire de Marignan a Waterloo, General M. Peyregne. 123:429-452, May 1939.

Course of Instruction for Artillery Gunners (Artillery Circular F and I, 1893), U. S. War Department, Adjutant General's Office. Government Printing Office, Washington, D. C., 1893.

Encyclopedia Britannica. 14th Edition.

Nelson's Encyclopedia.

New International Encyclopedia. 2d Edition.

Decisive Battles: Their Influence Upon History and Civilization, J. F. C. Fuller. Charles Scribner's Sons, New York, 1940.

CHAPTER TWO

HISTORICAL BACKGROUND OF THE FIELD ARTILLERY SCHOOL

It would be a mistake to think that the opening of the School of Fire (as the Field Artillery School was then known) in the fall of 1911 marked the beginning of the first artillery school on the North American continent. As early as the 17th century a "school" was in existence in Boston. Also, the Army had artillery schools which included the study of field artillery at a time when the very location of the present Field Artillery School was thought of as part of the Great American Desert. One of the treasures of early Americana is the will of Capt Robert Keayne of Boston in the Massachusetts Bay Colony, for it describes the household goods of an early settler in great detail. The artilleryman of today will be more interested in knowing that Capt Keayne was a most ardent gunner, a member of the Ancient and Honorable Artillery Company of Boston, and that in his will the good captain made provision for a sort of artillery school. This was 1656. Keayne gave a room to the company to be used for an armory, and 5 pounds "towards the erecting of a platform planked underneath for two mounted peices of ordnance to stand upon." The platform was to be built at a convenient part of the training place so that the pieces could be fired against a backstop. Let no one think his bequest a matter of some 20-odd dollars, for in buying power it was near to several hundred in a day when wampum, furs, and whisky passed as money. With the money went much sage advice on getting an expert gunner to instruct the militiamen in their trade.

Experience in the field during the Revolutionary War suggested that a school where the artilleryman could learn his profession would be of value. Thus, Col Henry Knox, in September, 1776, suggested to a Congressional committee that an academy be created where the whole theory and practice of fortification and gunnery would be taught. Though the suggestion came from Washington's Chief of Artillery, there is no record of its having immediate results other than a rather curious authorisation for the commanding officer of the artillery, Knox, presumably, to send officers to visit foundries, laboratories, and manufactories, and at the discretion and concurrence of the Commander-in-Chief, to station officers at laboratories.

When plans for the post-Revolutionary army were being discussed, Alexander Hamilton, himself an artilleryman, proposed

no less than four schools, one of them to be a school of application for artillerymen and engineers. It must not be thought that there was anything startling or novel in these ideas, sound though they were, for the French had long had a system of artillery schools, and French military thought was thoroughly familiar to the soldiers of the Revolution.

After the Revolutionary War, in June, 1784, the Congress decided that standing armies were dangerous to the liberties of a free people, and dismissed all but about a hundred officers and men. Indian troubles very soon forced the re-establishment of a standing army, the scalping knife appearing more of a menace than a standing army. One of the features of this army was the establishment (1794) of a Corps of Artillerists and Engineers, to which cadets were attached for instruction in these arts. It was soon found that the cadet in a regiment, like the midshipman on a ship, did not receive proper instruction, and so the United States Military Academy was begun in 1802. The Military Academy, then as now, was not a service school, for professional training for artillerymen was not given in it. The cadet received a thorough liberal education and the sound beginnings of his military education, but he did not emerge a finished soldier. Only experience and professional schooling on the graduate level would do that.

To supply that post-graduate training and to improve the training of the arm in general, a school for artillery was ordered established at Fortress Monroe, Va., April 5, 1824. John C. Calhoun, the great Southern orator, then Secretary of War, had been engaged in re-organizing the army and was most active on behalf of this school as part of his plan. Eleven companies of artillery, from the several regiments, were to be assembled there for instruction. Graduates of West Point who were newly assigned to the artillery were to go there for a practical course of instruction before joining their units. The companies were to rotate annually, so that all of the artillery would receive the benefit of specialized training at the school. Materiel was also to be tested there. The scheme of rotating the companies lasted until 1828, when economy supervened. The school itself, the first service school in the Army, lasted until 1835, when the beginning of the Seminole War made it necessary to transfer all the troops from the school to Florida.

Establishment of schools of instruction for artillery companies was suggested again in 1855 by Jefferson Davis, who proposed a two year course to the Senate Military Affairs Committee. In 1857 a Lt Col Harvey Brown was instructed to begin organizing

such a school, and its work began in 1858. There was a two year course of instruction for the artillery companies, and graduates of West Point spent a year there before joining their units. The course they studied covered the whole range of studies and practice with which the artillery officer must be familiar. The school itself was known as The Artillery School. The Artillery School this time was not to be so long-lived as before, for the Civil War was at hand. In 1860 the U. S. Army had 16,006 men, of whom 929 were in the Department of the East, the remainder being stationed in the Departments of the West, Texas, New Mexico, Utah, Oregon, and California. Plainly, no men could be spared from the task of coping with the South. The school was not used for officer training during the Civil War, and did not reopen until 1868.

Artillery Schools After the Civil War

This time, a more comprehensive attempt was made to set up a system of officer training. West Point, of course, continued its invaluable work. For garrison training, regimental commanders were to receive reports from their battery commanders as to the sort of training given and then forward abstracts of these reports to Washington. A mild form of training and supervision, admittedly, but even so it was a step forward. The Artillery School was revived. Five batteries, one from each regiment, were stationed there. The scope of the course was essentially that given in 1858. This school had one great drawback: it offered only one course for officers. This meant that a man who had served throughout the Civil War, had worked his guns at Malvern Hill, and had seen the dead lying in the Wheatfield and the Devil's Den, sat in the same class with a boy just out of the Military Academy, to whom such stories had begun to be faintly boring. The only variety in artillery studies was gained by passing officers through both field artillery units and foot artillery units (as heavy artillery was then known).

The first school for Field Artillery was a short-lived experiment at Fort Riley, Kan., where in February, 1869, four batteries were ordered to assemble to form a school. Its course would have covered the brigade (our battalion) and its use, the horse, maneuvre, firing, and drill. This interesting attempt lasted but two years, because of the Indian troubles. The troops were used as cavalry on the frontier. The men were often taken for use as teamsters, the horses were broken down by improper use, and finally the batteries were scattered about the country again. In 1887, Congress authorized a school of instruction for drill and

tactics for cavalry and light artillery, which was established 1892 at Fort Riley. It was to include a regiment of cavalry and not to exceed five batteries of field artillery. Its staff was to be the commanding officer and the field officers of the units present. The principal object was the combined operation of cavalry and light artillery; ultimately, it became The Cavalry School.

During these years, the school at Fortress Monroe had continued its work. An interruption occurred with the outbreak of the Spanish-American War in 1898. The school opened its doors again in 1900 and offered a one-year course for the many new officers coming from the increase of the army after the war. In 1907 the Artillery Corps was separated into the Coast Artillery and the Field Artillery. The Field Artillery was to be six regiments of six batteries each, leaving the Coast Artillery as a corps. While this act put the Field Artillery in its proper place in the army organizational structure, at the same time, it deprived it of its school. Fortress Monroe, on the Virginia coast, was most unsuitable for a field artillery post. In the old smoothbore and black powder days, this was not so, for the coast defense gun and the field gun could both be pointed out over the waters and aimed at a floating keg. The modern field gun, in existance by 1907, demanded different facilities, for its mission was quite different from that of its cousin in the Coast Artillery. Thus, one very pressing reason for the establishment of an artillery school arose from the re-organization of 1907. A second arose from the great changes that had been made in field artillery materiel and techniques in the late 19th century, described in our first chapter. A third reason was the general dissatisfaction with the condition of the Field Artillery, as shown by its work in the war with Spain. In 1908, Theodore Roosevelt wrote in his autobiography, "Our artillery was still very inferior in training and practice to the artillery arm of any one of the great powers such as Germany, France, or Japan--a condition which we only then began to remedy."

One of the remedies the President had in mind was sending Capt Dan T. Moore to visit foreign artillery schools for a study of foreign methods of gunnery and instruction. In 1909, Moore received permission from the Imperial Government to attend the German Artillery School at Juterbog. This school and its founding, because of the impression it made on Moore, affected formation of the School of Fire at Fort Sill. Also, the German school was founded under conditions rather like those surrounding the founding of the American school. Like the American school, the German

school followed upon a great technical change in artillery materiel: the introduction of the rifled field piece. Then, too, its founding followed a war in which the artillery was not pleased with its own performance.

The German Artillery School

The German artillery began the introduction of rifled cannon shortly after 1860, and by 1864 it had instituted a simple School of Gunnery in which to teach the use of new weapons. Two years later, they were at war with Austria. After that brief struggle, the German artillery knew that their counterparts in Austria, though with the defeated army, felt they had done all that brave and skillful men could. The Germans were less satisfied with their artillery and tactics. "Nowhere, during the whole course of the campaign of 1866," wrote Prince Kraft zu Hohenlohe Ingelfingen in his Letters on Artillery, "did our artillery play a decisive part with regard to the other arms of the enemy's army. . . . After the campaign of 1866, we all, as I have already said, felt that we had not shot sufficiently well." The German solution was the artillery school at Juterbog. So thorough was the work there, and such was the effect on the German artillery, that in 1870-1871 it completely mastered the French, which since Napoleon's day had thought itself the best on the Continent. It was to this school, with the prestige of St. Privat and Sedan still about it, that Moore went in 1909.

According to Capt Moore's report, Juterbog taught officers of the army how to shoot, developed and improved methods of fire, tried new methods, tested materiel, and collected statistical data. It offered five courses for officers: one for second lieutenants who had completed three years with their regiments; one for captains and senior first lieutenants; one for field officers and senior captains; one for reserve officers; and one for junior officers. There were two terms a year, each of about four months. The reserve officers came five times a year, for terms of 42 days. The course for senior first lieutenants and captains covered target practice for the battery, battalion, and regiment; tactical use of field artillery, principally the selection and occupation of position; choice of ammunition and methods of fire; ammunition supply service of German and foreign armies; description of German materiel; and field artillery of other armies. Teaching methods were intensely practical in that there were no texts and no recitations. The student officers solved problems or gave lectures themselves. All target practice was divided into school practice and battle practice. In school practice, the object was to bring out and explain every mistake as soon as made. Time was no object, and there was no fire for effect.

In battle practice, there was fire for effect, the student was not interrupted by the instructor. In judging these problems, the hits obtained and the time and ammunition needed were considered. These courses were not suspended in a vacuum, so as to speak, but were carefully coordinated with the unit training programs so that they were a continuation and extension of the course given in each regiment during the yearly training program. In comparing this school with the one at Fortress Monroe, Moore stated that at Monroe one would learn to calculate a range table by use of the appropriate formula; at Juterbog one would learn how to use the range table to get hits.

The scale of the school is of some interest in comparison with the early American efforts. It had a commandant assisted by two captains. There were two assistant commandants, four officers in the research department, and 18 instructors. Nine batteries of school troops did the firing. Sharing the same reservation was a school of heavy artillery, under the commandant of the school we have been discussing, with a staff of six, and four batteries of school troops. The German school differed considerably from the Field Artillery School of later years, however. The German courses were very largely gunnery and of a fairly simple nature. Indirect fire was neither stressed nor regarded as normal.

Probably because of Moore's experience with modern field artillery schools, an order of November 23, 1910, sent him to the Commanding Officer, Fort Sill, Oklahoma for duty in connection with the establishment of a school for field artillery. A December order formed a three-man board to meet at the post to make detailed plans for establishing the school at Fort Sill or some other suitable locale. Members of the Board were Lt Col David J. Rumbough, 1st FA; Capt Dan T. Moore, 6th FA; Capt Jesse G. Langdon, 1st FA.

Why was Fort Sill chosen? It was then very remote from the centers of population and industry. However, since 1905 much artillery had been concentrated there, and the 51,000 acres of the reservation gave ample room for target practice. Furthermore, the War Department had in mind a School of Fire for the Mobile Army that would include both infantry and artillery. It was thought that Fort Sill offered plenty of room for such an ambitious program. The reservation contained a great variety of terrain that offered good observation and had many tactical possibilities. Medicine Bluff Creek lay north of the post, and ran generally northwest-southeast. South of the post buildings it was fairly flat, rolling country, with little gullies. This belt of flat ground swept around to the west

of the post, an area about 6000-7000 yards across until it reached the hilly ground that began just north and west of the post buildings. West of this fairly level ground lay McKenzie hill, which was about west-south-west of the post buildings; Signal mountain (1747 feet), which lay due west; and finally March ridge and Jones ridge with Brush canyon between them. This corridor ran east and west, and at its east entrance was Mount Hinds (1584 feet). To the east of Mount Hinds were Heyl's Hill, Rumbough Hill, and the Medicine Bluffs, with Medicine Bluff No. 1 touching the northwest corner of the built-up area, and with Medicine Bluff creek running below and on the other side of the Bluffs. To the west and north of the ridges and mountains described above lay still others, some only hills, some dignified with the name of mountain. Intermittent streams and small creeks ran in the low ground and there was plenty of wooded ground for concealment. To the northwest was the Wichita National Forest. In climate, the area tended to be dry, windy, and sunny. The dryness sometimes proved an embarrassment, and the heat of summer was always a trial to students and troops.

Fort Sill itself was established January 8, 1869, by General Philip Sheridan, and so named in August after a classmate of his, Brigadier General Joshua W. Sill, who fell at Stone River, Tenn., in 1862. The mission of the post was to keep an eye on the Kiowa and Comanche Indian tribes, who rode the war trail in Southwest Oklahoma until 1875. A garrison was stationed at the post, and they lived in the low buildings made of native stone by soldier labor. Also, an Indian agency, which lasted till 1901, was established. At that time the reservation was opened to white settlement, and nearby Lawton was founded. These Indian associations deeply colored the life of the post, even after the founding of the School of Fire in 1911. A troop of Indian Scouts was stationed at the post until 1897, and when the Apaches of Geronimo's band were captured, it was to Fort Sill that they were finally sent. Geronimo himself lies in the Apache cemetary on Cache Creek, within the limits of the Post. When in the early years of the School of Fire it was once evicted from its buildings to make room for the School of Musketry, the store of the Indian trader, William H. Quinette, was purchased and used as the school building.

Bibliography

MS. History of Field Artillery Schools in the United States, Sgt Morris Swett, Ret., Field Artillery School Library.

Historical Sketch of the Organization, Administration, Materiel, and Tactics of the Artillery, United States Army, William E. Birkhimer, 1st Lt 3d Regt., U. S. Artillery. Thomas M. Gill & Co., Washington, D. C. 1884.

The United States Army in War and Peace, Oliver Lyman Spaulding, Col U. S. Field Artillery. G. P. Putnam's Sons, New York, 1937.

Letters on Artillery, Prince Kraft zu Hohenlohe Ingelfingen, Translated by Col N. L. Walford, RA 3d Ed. Edward Standford, London, Cockspur Streets, S. W., 1898.

Carbine and Lance, the Story of Old Fort Sill, Capt W. S. Nye. University of Oklahoma Press, Norman, 1938.

MS. Report on the German Field Artillery School, Juterbog. Capt Dan T. Moore, Field Artillery School Library.

CHAPTER THREE

ESTABLISHMENT AND FIRST YEAR OF THE SCHOOL

The three-man board selected to plan the school--Rumbough, Langdon, and Moore--met at Fort Sill, January 2, 1911. Most of the details of the work fell on the energetic Moore. Colonel Henry M. Andrews, 1st FA, became a member of the board vice Lt Col Rumbough in March, as the latter was obliged to proceed to Hawaii. The difficulties encountered in planning for the new school were preserved in correspondence between Captain Moore and Colonel E. St. John Greble of the General Staff, who supervised the project. Especially troublesome were: relations with the Apache prisoners of war still on the reservation; securing an adequate number of capable personnel; and finding an ample water supply. Interestingly enough, in the letters, the housing problem, later such a trial to Moore and his successors, got only passing mention.

The Indian prisoners of war, the remnants of the band with which Geronimo had terrorized the Border, were living on the reservation with their herds which needed almost the whole of the reservation for their grazing. School regulations for the conduct of fire, prepared by the Board, were disapproved by the Adjutant General's office because they did not sufficiently protect the lives and property of the Indians. This, Moore found confusing for the regulations were based on what had been the actual practice of the post, and so he wrote (Moore-Greble correspondence, letter of March 17, 1911):

> "It depends in the first place, upon what is understood by property rights, for if this reservation belongs to the Indians in the sense that a farm belongs to its owner, then we have no right to use it for target practice...without the consent of the Indians. This can, however, not be the case, for by law it is a military reservation and therefore can be used as such..."

He closed by saying: "This is such a magnificent reservation for military work that it would be a shame to lose it...," possibly by an accident to an Indian stirring up a bad public reaction.

March 23, 1911, Colonel Greble replied:

> "Concerning the question of your regulations for the conduct of fire on the range, let that go. The War Department will probably decide what is to be done with the Apache prisoners and I think they will probably be removed from the reservation, but until the question is settled there is no use giving a weapon to the friends of the Indians. They and their property rights have been protected in the past firings and they can be protected in the future firings without making a rumpus."

Actually, the Indians were present when the school opened its doors in the fall of 1911, and were there until 1913. If any difficulty arose, it does not appear in the records.

Securing Personnel and Water

The next problem was that of school personnel. There was need of a large school detachment, and with members able to do the expert work required; there was a need of good instructors; there was a need for an administrative staff; there was the problem of providing trained school troops. Moore's basic plan called for a white and a colored detachment, the former to furnish skilled artisans, the range detail, etc.; the latter, horse-holders, janitors, etc. In more detail, Moore wanted a carpenter shop, smithy, paint shop, target detail, a statistical and record department, range guards ("(I)t is impossible to keep the people off these roads unless a guard is placed over every gate.") In selecting them, he wanted good men with rank to give compensation and authority appropriate to the task assigned.

Col Greble doubted that the detachment asked for could be obtained without specific legislative authority. Although Moore promptly cited a paragraph in the 1909 appropriations act, which in his judgement covered the point, Col Greble still felt Moore would not initially get the number of men desired, and strongly hinted that he should not labor the point (letters of March 31, April 18, and April 25). His attitude may be summarized as: "Get the school started and we can build it up later." The high cost of civilian help made it impracticable as a substitute. In all this correspondence, Moore was adamant about the necessity for getting skilled men who could successfully use limited equipment, since, in his opinion, unskilled personnel would botch the

best equipment. A proposal to dismount a battery, assign it to Fort Sill, and use its members for orderlies, was also rejected by Moore. He pointed out that such action would destroy the combat value of the battery (the army then having but 36) and that its officers and men would be thoroughly displeased at such an interruption of their work. The Board's report of April 25, 1911, suggested a white detachment of 61 and had earlier added a colored detachment of 47. In the end, the school detachment numbered 42 and had no colored troops. Captain Moore cheerfully accepted the smaller detachment and stated: "Your letter of the 31st received and my but it was a relief. I now feel that the school is well started and that if we do not succeed it will be our own fault."

Getting the right men for the school staff and faculty and to command the "instruction batteries" (school troops) was a trying problem. In considering the personnel problems that beset the School's founders, it must be remembered that the Army then had less than 300 field artillery officers. Every man had to be used to the best advantage and bear his share of the load. Accordingly, instructors would also be battery officers in the school troops and would do their full duty in each sphere. Thus Moore must have pondered long and earnestly before making his requests for the staff and faculty. Only one of his requests was approved, that asking for Lt Ralph Pennell for secretary, and with that approval came the War Department's thrifty suggestion that Pennell command the School Detachment. Lt Roger S. Parrott, formerly with Ordnance, was assigned to the school without solicitation, perhaps as a good-will offering by the Department. He proved a god-send to the harassed Moore. Therefore, when the time came to begin school, the actual instruction for the Fall term officers' courses was handled by Moore, Pennell, and Parrott. Lt John C. Maul of the 5th FA instructed the Noncommissioned Officers' Course.

When the instruction batteries arrived (A and B of the 5th FA), they materialized in the form of uninstructed, gun-shy recruits (letter of August 8) that had to be whipped into shape by September 15, which had been chosen as the opening day of the Fall term. Moore wrote; "For personal reasons I naturally do not want to fail but there are reasons which make personal reasons seem insignificant, namely, the good of the Field Artillery. As post commander I am using all my authority to train these batteries in the essentials with one object in view, to prepare them for the school work, and I am going to accomplish that or burst in the attempt."

In the earlier portions of the Moore-Greble letters, the water problem, which with the housing problem was to plague the Field Artillery School for so many years, was not stressed. Moore did feel some concern about it, noting tersely: "The Fort water supply is still going down;" which drew the equally terse reply: "Give up that drink habit." In acknowledging the news about the school detachment (June 3), Moore wrote exultantly: "Everything seems to be coming our way now, even the water supply, which can be considered solved for the present. They were digging around the other day and accidentally unearthed a spring, which at the present time is giving about 2,000,000 gallons a day." But by June 14 the spring had dropped to 15,000 gallons a day and was still going down. All but one of the old wells were dry, and a new underground gallery was giving only 20,000 gallons a day. All of Moore's worries about "drink" were back, and he wondered gloomily if establishment of the new school at Fort Sill was justified. The cause of the shortage, in his opinion, went back several years to the damming of Medicine Bluff Creek to supply water for nearby Lawton. The dam greatly lowered the creek, which in turn dried up the Post's wells that relied on seepage from the creek. As a result, the water level was dropping an inch or two every day. A 2000 foot well was put down in the vicinity of the present power plant with little success: only a trickle of sulphur water. The solution finally adopted was to borrow water from the 10-inch pipe line Lawton had crossing the reservation to its new reservoir, and to use great economy in drawing water from the old wells. With the aid of pumps, the two reservoirs at the Fort were kept full except for one brief period of shortage. By the time the first classes arrived for the opening of school, the dam had been built, the reservoir was almost full, and water, such as it was, came through the pipes in fair quantities. The water was not all it could be, though. The new reservoir, called Lake Lawtonka, was then small and shallow. It evaporated rapidly in hot weather, and during dry periods it quickly acquired a coating of green scum. Residents were warned to keep a clean sock or rag tied over all faucets to strain out minnows and the larger particles of rock and mud. This was necessary as the water came into the mains with no purification.

With these problems out of the way, or at least postponed, work on the actual opening of the school proceeded. In July Moore asked for full use of the Old Post, that square of low, gray, stone buildings dating from 1870, but the War Department refused, having in mind the eventual location there of the School of Musketry. Nevertheless Moore was permitted to locate the school there temporarily. About 500 yards northwest of the Old Post stood William Quinette's Trader's Store, a large, frame, barn-like

building. About one mile due west stood the New Post (1910-1911), also a square, its extent shown in the map in back of the book. Both the Trader's Store and the New Post were used as sites for the School during the days of the great evictions.

The First Class and the Early Courses

When the School of Fire opened its doors September 15, 1911, the staff and faculty consisted of four men: Capt Dan T. Moore, 1st Lts Ralph M. Pennell, Roger S. Parrott, and John C. Maul. Lieutenant Maul was borrowed from the 5th FA to teach the noncommissioned officers; Pennell was secretary; and Parrott, the supply officer. Of the 42-man detachment, only 17 had arrived.

What was the background of these men? Moore was an Alabaman, born in 1877. He began his military career as an infantryman in 1898 with the old 3d Connecticut Infantry. From there he went to the Regular Army in 1899, transferring to the Artillery Corps in 1901. In 1904 he was an honor graduate of the Artillery School at Fortress Monroe. Moore had served as aide to President Roosevelt. Parrott was West Point '08 and had gone from Field Artillery to Ordnance. Pennell was West Point '06 and had begun as a cavalryman. Maul was a classmate of his and had begun in the infantry.

Four courses, known as Courses A, B, C, and D were offered to students as follows:

Course A	Battery officers
Course B	Field officers
Course C	Enlisted men
Course D	Militia officers

These courses stressed gunnery very heavily, and what tactics was presented was given as a tactical framework for a gunnery problem. Hence the name "School of Fire," for it was a school to teach artillerymen how to fire and not yet a school to make artillerymen.

Fourteen captains reported for duty as students on September 15, followed by five field officers in November.[1]

The board had carefully planned a course of instruction for these men, but after a few days trial it was thrown away. In drawing up the course a certain level of experience had been assumed, however, it soon became clear that no experience should have been assumed. At the end of the year Moore reported: "The average student officer was so deficient in elementary knowledge that it was impossible for him to derive commensurate benefit from the expenditure of ammunition." The students were extremely deficient in locating targets, sometimes never seeing them at all. Correct observations often led to no changes of data, and doubtful rounds were often sensed erroneously. Many officers could not remember the range they had last commanded and had to peer at the recorder's sheet. Calculation of firing data took about 20 minutes at the beginning of the course, and the interval between the sensing of a shot and the next round was about one minute. One man, placed at an observation post one and one-half yards above the battery, a distance too small to register accurately on the instruments, or indeed to make any difference in the shooting of the piece, spent 10 minutes trying to figure data to compensate for it. This quest for extreme accuracy was not stupidity on the part of the men; it merely reflected the evil effects of years of gunnery instruction in the classroom instead of on the range.

---

[1] The Captains were: Wm. S. Guignard, 2d F.A., Henry W. Butner, 2d F.A., Brooke Payne, 3d F.A., Augustine McIntyre, 3d F.A., Thomas W. Hollyday, 3d F.A., Wm. McKay Lambdin, 4th F.A., Geo. M. Brooke, 4th F.A., Albert S. Fuger, 4th F.A., George M. Apple, 5th F.A., Roger O. Mason, 5th F.A., John B. W. Corey, 5th F.A., Arthur F. Cassels, 5th F.A., Wm. S. Browning, 5th F.A., and Jos. F. Barnes, 5th F.A.

The field officers were: Colonel Alexander B. Dyer, 4th F.A., Lieutenant Colonels George W. Van Deusen, 2d F.A., Samuel D. Sturgis, 3d F.A., Majors Ernest Hinds, 6th F.A., and Ottho W. V. Farr, 5th F.A.

The Germans 45 years earlier had learned to their dismay that their artillery could not handle its new weapons. Their successful remedy was the one that was to be applied with equal success to the American artillery: a practical school. Faced with the same sort of situation surrounding students, Moore threw away the agreed-on course and improvised another.

Under the revised plan, the first month was largely devoted to work with flash targets, preparation of firing data, and methods of adjusting fire on the target. The flash target was a mechanism on the end of a long stick. It was operated by a soldier and would explode in the air, simulating a burst, after the soldier had run to a location that would be appropriate for the command announced by the student. After the training in fundamentals, the students were allowed to proceed to actual firing with the guns, with better results. There they were taught that the adjustment (getting correct data by observing the fall of the shot) had to be as quick and economical as possible, and that instead of a mathematically accurate adjustment, one had to be satisfied with the smallest appropriate bracket. Then they were taught to cover the bracketed area quickly with fire. The students' minds were still filled with notions dating to the old smooth-bore days when the gunner squinted down the barrel, like Dan'l Boone, and let fly a solid cannon-ball at the enemy. Thus, the students attempted to place a shell directly in a machine gun emplacement or drop one exactly in a trench. With modern high explosive and shrapnel, this practice was a sheer waste of time and money, but that was something that could only be revealed on the range.

After the experience of the fall course, the School of Fire was able to offer a spring course to another group of officers that was better adapted to their backgrounds. In the Field Artillery Journal, Volume II, 1912, are the course notes of Capt William H. Burt, 4th FA, which permit a reconstruction of Course A for that term in some detail. There was one lecture on conduct of fire. Then the class started on panoramic sketching and locating targets. There were three sessions on probabilities (that branch of mathematics on which methods of conduct of fire rest), and then some work on determination of firing data. In the seventh "exercise" simulated fire began; it lasted until the 23d "exercise." At that point service practice began and dominated the course until its end. Below is a detailed break-down of the course, by half-day periods:

Panoramic sketching and target location	27
Lectures	5
Conferences (11 on conduct of fire, 3 on probabilities, 1 miscellaneous)	15
Panoramic sketching and simulated fire	13
Firing instruments	1
Firing battery	1
Effect of fire	1
Ballistics	1
Simulated fire	7
Critique of fire	3
Practical work on preparation of data	3
Service practice	21
Tactical exercises	6

Every problem was followed by a critique, except when weather made it absolutely impossible. The fall of the shots was plotted so that class-room critiques might be given with absolute mathematical knowledge of what had happened. However, in these critiques no student was criticised for breaking hard and fast rules, for the School laid down none. For work along more general lines, the students were formed into committees to study and report on various aspects of the ammunition supply problem for the several divisions of the field armies. Boards were also formed to investigate and report on matters of interest to the field artillery. There were several field exercises in which every command and post of a two-battery battalion was filled by student officers.

Course D, the Militia Course, was held May 15 to June 15, 1912 as a "joint regular army and militia field artillery encampment." The peculiar phrasing of this name must have arisen from the lack of funds for sending militia officers to a service school; whereas, funds were available for an annual summer "encampment," such as the militia had held for years. Thus, the militia were sent to school, and the class was called an "encampment." In the orders which he received, Moore was told that, under the post commander, he would have charge of the execution of details connected with the selection of camp grounds, preparation and execution of programs of instruction, drills, exercises, and the collection and forwarding of reports, which were to be rendered by every regular and militia officer joining in the "exercises." The salient idea was to give the militia as much instruction and training as possible in the use of materiel, especially with reference to efficiency of fire and the duties of each man in the battery. The officers to attend were to be designated by the Chief, Division of Militia Affairs. Similar orders went to the Quartermaster

General and Paymaster General, informing them of the encampment, for Course D.[1] At the end of the class, the students were to be "mustered for pay," by the Paymaster who would come up from San Antonio. This money, incidentally, came from the appropriation for the encampment and maneuvers of the organized militia.

Less formal orders came to Moore from Major William J. Snow, then in the office of the Chief of Staff, Division of Militia Affairs, the same Snow who later became the first Chief of Field Artillery. Writing May 9, 1912, he said:

> "As far as a program of instruction is concerned, that I think is more or less a matter of form, my idea being that you and McNair (later Lt Gen Lesley J. McNair, commander of Army Ground Forces) will go ahead and pump into the militia all the instruction that they can absorb. This instruction should be as practical as possible but at the same time you need not limit yourself to such character of work, but go ahead and make the best Field Artillerymen you can out of the officers who will be sent you. I think that you will find they are an intelligent lot of men and can readily absorb knowledge, and that they are greedy for work. Keep them good and busy."

On arrival, the class was divided into four sections, each section being assigned to a different instructor:

> Section A, Capt E. D. Scott, 6th FA.
> Section B, Capt W. F. Morrison, 2d FA.
> Section C, Capt J. B. W. Corey, 5th FA.
> Section D, Capt Marlborough Churchill, 5th FA.

Class work began on Thursday, and the same instruction was given on that day and the following Friday and Saturday.

> 7:30 A.M. to 9:30 A.M.: battery drill; panoramic sketching.
> 9:30 A.M. to 12:00 A.M.: simulated fire; target identification; sketching; keeping of records.
> 2:00 P.M. to 5:00 P.M.: use of probability tables; lecture by Capt Augustine McIntyre; informal discussion.

---

[1] The unhurried pace of army life inthose days was shown by the orders being personnaly signed by the then Adjutant General, E. F. Ladd, and being written as a very formal letter, rather than as an order as we know it today.

In the following weeks, Mondays, Wednesdays, Fridays, and Saturdays were devoted to target practice, lunch was taken, and the whole day spent in the field regardless of weather. On Tuesdays and Thursdays, the mornings were given to battery drill, sketching, simulated fire, and identification of targets. The afternoons were used for critiques of the previous day's firing, based on reports of the range party which plotted every round fired. Some of these critiques may have been conducted by the students themselves, judging by the reports they rendered. Of the afternoons scheduled for critiques, a few were devoted to lectures on materiel and ballistics.

The student was first taught how to use observation instruments and to record his findings. Then came blackboard firing to teach the proper sequence of commands and corrections for deflection, height of burst, and range. Next came smoke bomb practice, followed by percussion fire and time fire on fixed and moving targets. All students not at the battery recorded their observations, which were in turn corrected and returned to them. The student firing a problem first criticised it himself, and then the instructor criticised it. At times there was a good deal of congestion around the student firing, and the audible sensings of his classmates sometimes interfered with his own plaintive "Lost, three zero right!" The firing batteries, contrary to instructions, sometimes helped militia officers out of trouble by supplying missing commands, correcting foolish ones, and occasionally, even laying on a familiar target before it had been officially designated! Before the formal class-room critiques, each student was given the record of commands of the students firing, together with the report of the range party that plotted the actual fall of the rounds.

The diversity of texts used (in the 1913 course) is of interest. The French, German, and Russian firing regulations, school manuscripts on occupation of position, calculation of firing data, and reconnaisance and communication for field artillery, were in use. Not until the school year 1912-1913 did the School of Fire get a press of its own.

The students' reports, which were called for in the orders of the Adjutant General to Moore, reveal no doubt that this was no encampment but a "tour of duty at this school as a student," as one of them put it. Nor do the reports leave one in doubt about the students appreciation of the School. One wrote: "Opportunities to conduct or even witness firing of service charges by field guns has been rare." Another: "Even the most experienced among us was a novice in conducting fire...." One student strongly objected to publishing the records of effective and non-effective rounds

"The result in some cases has been the display of obnoxious conceit that has been nettlesome." Among the suggestions for improvement made by students were requests that only officers previously attaining a certain standard of efficiency be allowed to attend and that the course be held twice a year. Actually standards of proficiency were set for National Guard and Reserve officers, and classes for them were held twice yearly. Attendance at the school, it should be noted, involved some sacrifice, both in loss of regular income and in travel expense, which were not borne by the government.

Little information has survived on Course B, that given field officers. General Order 72, 1911, prescribed that the course should cover: duties of artillery commanders; target practice; reconnaisance and occupation of position in accordance with concrete tactical problems; fire direction for the organization of which their rank gives them command; ammunition supply service. From the briefness of the course (November-December), the small number of students, the smallness of the school, which ruled out seperate attention, and the absence of independent mention, one may assume that these field officers joined freely in the work of Course A, which then was in its most advanced phase. They probably received duties proper to their rank in the several field exercises, and were allowed to fire for effect in their problems.

Courses for Enlisted Men

Two courses for noncommissioned officers were conducted simultaneously with the two courses for battery officers. The fall class was conducted by 1st Lt John C. Maul 5th FA, and the spring class by 1st Lt F. W. Honeycutt 5th FA. The course was entirely practical in nature and taught students those duties they might be expected to perform in war. It covered the preparation of firing data, signalling, telephones, sketching, scouting, and observation of fire. At the end of the last course, two of the best students were allowed to conduct fire during service practice.

At the close of the year, Moore sat down to write his report and make his requests, which should be noted in the light of the table in the rear of this history giving the size and cost of the U. S. Army from 1911 on. He wanted an instructor for each 13 students, or two instructors in all, since he expected but 26 students at a time. A range guard of 17 men would be helpful, for there was continual trespassing on the range during service practice. Fourteen men for the stable detail would be useful for the school troops had to care for the school's mounts as well as their own. All in all, he wanted 56 more men, plus two officers to specialize in instruction, and four for instruction and administration.

Summary of First Year of Operation

COURSES

Regular Army	1911 Sept-Dec	1912 Jan-Jun	Total Off.	Total EM
Course A (Battery Officers)	10	13	23	
Course B (Field Officers)	3	6	9	
Course C (Enlisted Men)	18*	20		38
Militia				
		May-Jun		
Course D (Militia Officers)		21	21	
	Total		53	38

* Academic Records File

Bibliography

Moore-Greble Correspondence, Field Artillery School Library.
Annual Reports, U.S.F.A.S., 1911-12--1926-27.
Summer Camps File, Post Headquarters, Fort Sill, Okla.
Academic Records Files, Field Artillery School.
Field Artillery Journal, vol. II, 1912.
Proceedings of a Board of Officers 1911-1920, Field Artillery School Library.

CHAPTER FOUR

FROM SECOND YEAR TO CLOSING IN 1916

"This post was struck by lightning yesterday," worte Moore to Major Snow on June 27, 1912. "Colonel Miller of the Infantry arrived with instructions from the War Department to make arrangements for the permanant location here of the School of Musketry. When is it coming? This school is to move over to the New Post. How they are going to be able to quarter us over there nobody knows." Room was found in the barracks formerly occupied by one of the batteries stationed at the New Post, and on September 24, 1912, the School began moving into it.[1] This bad news was typical of the jolts that were to come in the next four years, which were among the most troubled of the School's career. However, these misfortunes could not be seen as the fall work began. There was one improvement over the year before, for the school now had an officer specifically assigned as an instructor. This was Capt Augustine McIntyre, known as the "Villian" ever since his Academy days. The rest of the five instructors were taken from the instruction batteries, or school troops. Thus Moore, the Commandant, actually commanded A of the 5th FA, and Capt Marlborough Churchill commanded B. Capt Robert Davis, who was to instruct the spring noncommissioned officers course, was a battery officer in Churchill's battery, and a member of a board, besides. McIntyre, Moore, and Churchill joined in instructing the officer class, dividing it into two sections, of which McIntyre took one, and Churchill and Moore alternated on the other. In that class were some who became outstanding artillerymen: Major Charles P. Summerall, Capt Conrad H. Lanza, 1st Lt Lesley J. McNair, and 1st Lt Edward P. King.

The organizational changes of the next few years tell a story of modest growth and progress. For example, after McNair finished the fall course at the school, he reported for duty February 1, 1913, as statistical officer. Assisted by a noncommissioned officer he was engaged exclusively in that work. A careful survey was made of the range, and over 40 stations accurately plotted on the map. For each day's firing, the battery and target were carefully located with respect to these stations, and when plotted gave the range within about five yards. Shots fired were located by flank observers, and by observers at the firing point. The range could

---

[1] The rival school did not actually appear for two more years.

then be directly and accurately scaled. Data thus obtained was of immense value in developing simple and satisfactory methods of conducting fire.

Moore, Parrott, and McNair kept their posts until 1914. Moore was relieved at his own request September 15, 1914. The strain of organizing the school and of fighting for his ideas on the proper handling of artillery had taken its effect in the form of considerable opposition to him. As Moore left he could take with him the satisfaction of having done a vitally important job. A memorandum for the Chief of Staff, signed by Brig Gen M. M. Macomb, Chief of the War College Division, December 18, 1914, states: "The improvement made in the firing efficiency of the Field Artillery by reason of this school has been beyond expectation, and the scheme of instruction has been one of constant progress and improvement."

Captain Moore was succeeded by Lt Col Edward F. McGlachlin. Parrott and McNair were relieved in January and April, 1914, respectively. The number of instructors grew slowly and steadily. In the school year 1912-1913, only Captain McIntyre was listed as an instructor for the officers courses. In 1913-1914, Capts McIntyre and Churchill were shown as instructors. In 1914-1915 there were three: Capts Fox Conner, John W. Kilbreth Jr., and Daniel W. Hand. In 1915-1916, there was but one, Capt Edward T. Donnelly. There was never more than one instructor for the noncommissioned officers, nor were there more than 4 for the militia. Instructors for the noncommissioned officers were:

1912-1913	Capt Marlborough Churchill, fall course
	Capt Robert Davis, spring course
1913-1914	1st Lt Edmund L. Gruber (composer of the "Caisson Song"), fall and spring courses
1914-1915	1st Lt Robert M. Danford (later Chief of Field Artillery), fall and spring courses
1915-1916	1st Lt Kenneth S. Perkins, spring course (no fall course given)

Instructors in the militia courses were:

1913	Capt Robert Davis
	Capt J. B. W. Corey
	1st Lt William H. Shephard
	1st Lt J. A. Crane
1914	No Course
1915	Capt C. Deems Jr.
	Capt C. M. Bunker
	Capt D. F. Craig
	1st Lt Ralph McT. Pennell

All of the instructors for the 1915 course had been students in the preceding course for Regulars and had been held over as instructors. There was no course in the spring of 1916, because of the Border troubles.

As for changes in the staff, Lt Parrott was replaced by 1st Lt Webster A. Capron in February, 1914. Capron remained as Supply Officer until the final closing of the school in 1916. McNair's relief in April, 1914, left the post of Statistical Officer vacant until Lt Edwin Pritchett arrived March, 1916. Pennell was relieved as Secretary March, 1915, and Capt William Bryden held the post from May 1915 until the school closed in 1916.

Despite its forced move to the New Post, the School of Fire found cause for mild rejoicing when it began its fall course, since the entering class had had better elementary instruction than its predecessors. The rate of fire was a good deal faster. This was believed to be only partly due to better training by the batteries, whose men, it will be remembered, were very green in the preceding year. The number of rounds that students sensed as "Lost" or "Doubtful" increased sharply, with a correspondingly sharp decrease in the number incorrectly sensed.

In the course ending December 15, there were several small tactical problems using two companies of the 9th Infantry. The tactical phase of artillery work, aside from the several field problems, was merely touched on. The first officer to fire each day put the battery into position in accordance with the problem given him. At first he did this by verbal orders issued from immediately in rear of the position, but later greater effort was made to simulate real tactical conditions.

In the fall of 1913, the school had to combine its instruction batteries in order to make one 4-gun battery. The 3-inch pieces developed serious weaknesses and deficiencies in the carriages which made it necessary to take them from the post for repair. It may have been at this time that a course in communications was offered, to fill in time left open due to a shortage of materiel, ammunition, and instructors. At any rate, such a course was offered in the period covered by this chapter, though the time is uncertain.

Improving the Enlisted Course

The scope of the noncommissioned officer courses offered from the fall of 1912 on was broadened to include instruction in the

theory and practice of conduct of fire. The purpose was to prepare enlisted men to take over when officers were disabled, to assist in service practice, and to ready them for war-time commissions. The aim of the first courses had been more modest, merely to train them in war-time duties as noncommissioned officers. Now, something was to be done about a supply of officers for emergencies. To make these men proficient members of the battery detail, they were instructed in map reading; receiving, carrying, and delivering messages; reconnaisance and identification of targets; route and panoramic sketches; road reports; the telephone; and the use and care of instruments. To qualify them as possible officers they were instructed in selection and occupation of position, preparation of firing data, and conduct of fire. The hours of practical work and the time devoted to indoor instruction coincided with the work and instruction of the officers' courses, except that the enlisted men frequently had to work outdoors in the afternoon as well as in the morning. The enlisted students were used a members of the detail while instruction was being given officers in the reconnaisance, selection, and occupation of position. Members of the class not absorbed in these details were required to reconnoiter and identify targets and make sketches just like the student officers. Also, like student officers, they were required to record and observe fire. On days of service practice, members of the class assisted the range officers, the time keeper, the officer taking the height of burst, etc. Tests were given at the end of nearly every week. On the whole, the work of these men was thought to be excellent, in many cases better than the student officers. The spring course of 1913 emphasized work of the battery and higher headquarters details and closely followed the officers' course.

This coordination of the noncommissioned and commissioned classes was carried a step further the next year (1913-1914) in that the noncommissioned officers assisted student battery commanders in the preparation of firing data. As for instruction in duties peculiar to the detail, every day some simple scouting problem was solved, problems in which the enemy was always outlined by men manipulating canvas targets and firing blank ammunition.

It is interesting to record that 1912-1913, which saw a press installed at the school (even though from lack of man-power full benefit could not be gotten from it) also saw moving picture cameras added to the School of Fire equipment. The pictures taken were used to study the workings of the gun squads and of the materiel itself.

Eviction and Closing of the School

The range facilities at the disposal of the School (south of Medicine Creek and west of the railroad) could be used more freely after April 13, 1913, because of the removal of the Indian prisoners of war on that date. They were given their freedom and their choice of allotments of land in Oklahoma or of transportation to the Mescalero Apache Indian reservation in New Mexico. Eighty-seven chose to stay in Oklahoma, and each received an 80 acre allotment. Major General Hugh L. Scott was largely instrumental in having the Apache prisoners moved from the post, just as he had been instrumental in having them brought here.[1] This relief was probably soon forgotten in the next eviction of the school. In September, 1912, the School had been moved from the Old Post to the New Post. (The School of Fire was under the post commander at this time; he was well within his authority in so disposing of it.) There it had settled down in a group of buildings designed for a battery of field artillery, although retaining for its use as a shop and a store room one building and part of another in the Old Post. The student officers had framed and netted tents and a temporary structure for a mess hall. Lt Col McGlachlin, commenting on this arrangement shortly after becoming commandant, wrote; "...entirely unsuited for comfortable and effective study during the windy and inclement weather experienced during part of each regular term."

On November 8, 1914, Lt Col McGlachlin had to write: "On October 24, 1914, the school was dispossessed of its buildings in the new post because of the approaching arrival of the last battery of the regiment stationed here, and put into two barracks of the Old Post formerly used by an infantry battalion." These buildings were unsuitable for the school and their continued use uncertain, because of the impending arrival of the School of Musketry, which was to occupy the buildings. Apparently this eviction was enough for McGlachlin, for he proposed moving the School of Fire from Fort Sill. McGlachlin's frame of mind is quite understandable. In February 1915, the commander-to-be of the School of Musketry, Col R. M. Blatchford arrived and assumed command of the Post, and also, of course, of the School of Fire. What diplomacy McGlachlin used to stay on the Old Post until July, 1915, we can only imagine, but he did manage to avoid an eviction during the school's spring courses. He was preparing to move that summer when Blatchford strode into his office July 3, and inquired as to his moving plans.

---

[1] His memory was perpetuated in the name of the south entrance to Fort Sill on the Fort Sill Boulevard, Scott Gate (Gen. Order No. 7, 1934, Field Artillery School).

On learning them, Blatchford shook his finger in McGlachlin's face and shouted: "You get the hell out of here and get out quick!" So the school detachment spent its Fourth of July holiday moving into the last place of refuge left to the School of Fire at Fort Sill, the old Trader's Store of William H. Quinnette, which had been acquired as the only possible solution. Moving of the School of Fire from Fort Sill would never have been approved by the War Department, which was still holding to the plan it had had in 1911. At that time Moore had been warned that the School of Musketry would come to Fort Sill, and the implication was made that the two schools would be made into one.

The housing problem was soon to be overshadowed by another and graver one. Revolution in Mexico was threatening the safety of American citizens in the Border states, there was no knowing what mad ambitions might appeal to irresponsible insurrectos, and a heavy concentration of American troops on the Mexican border began. The National Guard was sent to the Border where the state of its training caused alarm. A wire of August 23 from the Adjutant General to the Commanding Officer, Fort Sill, read:

> "The Secretary of War having decided that he considers duty with National Guard on border as instructors one of the most important duties that an officer can perform, he directs that you be informed that as long as demand for officers for duty as instructors for National Guard obtains, it is not the intention to open service schools. Officers who have already left border or stations and are at schools or on temporary duty at posts awaiting opening of schools will not be distributed at present. If conditions become such that officers are not needed for duties above specified, and it is deemed advisable to open service schools, notification to this effect will be sent from War Department as soon as it is positively known that schools will be reopened."

On September 1, the post commander, then Brig Gen William A. Mann, replied that both school batteries had been sent away. His letter indicated that plans for consolidating the two schools had not been abandoned: "The matter of continued training for the two schools will be given (consideration) when the school session begins, and it is believed that a start can be made looking towards their consolidation into the school of fire for the mobile army."

The School of Fire opened its doors again, but briefly, February 20, 1916, when a class of 14 officers and one of 24 noncommissioned officers reported. On May 9, 1916, the then Commanding Officer of Fort Sill, a Colonel Adams, wired the Adjutant General: "Reference your telegram this date designating all field artillery troops this post for service Mexican border, recommend School of Fire for Field Artillery be closed, and all officers of regiment on duty therewith be available for duty with regiment." His recommendation was approved by wire that day. The School of Fire was closed, not to open again until 1917 and the First World War. From July 9, 1916 to July 2, 1917, there was no Field Artillery officer on duty with the school. 1st Lt R. H. Kelley, 34th Infantry, was in charge of the school and its property until August 1916, when he was replaced by Capt C. R. Lewis, 34th Infantry.

COURSES	1912 Sep-Dec	1913 Feb-May	1913 Sep-Dec	1914 Feb-May	1914 Sep-Dec	1915 Feb-May	1916 Feb-May 9**	TOTAL
Regular Army								
Course A (Battery Off)	13	18	17	13*	11	23	15	110
Course B (Field Off)	3	1	8		1	2		15
Course C (Enl Men)	25	28		22	15	15	18	
Militia		May-Jun				May-Jun		
Course D (Militia Off)		20				17		37
							TOTAL	162
							Enlisted Men	123

*Course not completed but certificates given.
**School closed May 9, 1916, certificates given 15 officers.

Bibliography

Annual Reports, U.S.F.A.S., 1911-12-1926-27, Field Artillery School Library.

Academic Records File.

Proceedings of a Board of Officers, 1911-1920, Field Artillery School Library.

Carbine and Lance, the Story of Old Fort Sill, Captain Wilbur S. Nye. University of Oklahoma Press, Norman, 1938.

CHAPTER FIVE

THE WAR YEARS

The troubled situation in Mexico, the uncertain course of the war in Europe, and growing tension with Germany arising from her attacks on American shipping had caused grave concern over the state of American defense, a concern which led to the passing of the National Defense Act of 1916. Whatever the wisdom of its provisions, the timing of its passage was such that there was a great dilution of the trained personnel of the Field Artillery as we entered the war.

The Act provided for a salutary increase in the Field Artillery from 6 regiments to 21 at the annual rate of 3 regiments a year. Accordingly, in 1916, 4 regiments were split up and given enough recruits to make 7 regiments. In the fall of 1916 this created a most serious shortage of officers, so that even after 55 had been transferred from other arms, there were no second lieutenants. Of the 9 artillery regiments which existed when we entered the war, 2 could be said to be trained. Of the grand total of 408 Regular officers in the arm, 275 had had more than one year's service. Of the enlisted men, there were 5,253 with more than one year's service. The Field Artillery of the National Guard (the old militia), the one reservoir, had 541 officers and 12,975 enlisted men. War experience was to show that the stay on the Border, while of great benefit in improving mobilization procedures, had made little significant improvement in their state of training. The burden, then, of providing efficient artillery to support an army of millions of men rested very largely on the shoulders of the 275 experienced Regular officers. It was little enough leaven for so large a mass. The training of additional officers was therefore an urgent problem.

A telegram was sent July 10, 1917 to the Commanding Officer at Fort Sill, Colonel R. M. Blatchford, warning him that an artillery school would be re-established. This caused little excitement, for Colonel Blatchford had troubles of his own in expanding the School of Musketry. On July 15 he was advised that seven students were on their way down from Oklahoma City, so Sgt Morris Swett, then librarian of the School of Fire, and a member of the skeleton detachment kept to watch the school property, was told to prepare for them. Sgt Swett prepared for 7, and 21 climbed from the train--and faced the drab reality. There was no dinner, no quarters, no guns, texts, or instructors, and, in fact, there was not even an artillery officer. There was nothing but the Quinette store, two frame shanties, and some tents. It was a grim welcome for the new students, many of

whom were transferred from other arms. Sgt Swett managed to provide half a loaf of bread and a jar of jam for the 21 students, and the School of Fire began its wartime life.

The first instructor for the School, Lt Col F. E. Hopkins, arrived, and on the same day, July 19, 1917, Colonel William J. Snow received orders at Syracuse, N.Y., to proceed to Fort Sill and organize the School of Fire. Snow was one of those rare men who deserve the adjective "remarkable." Before coming to Fort Sill he organized the Field Artillery Association and the Field Artillery Journal. During his brief stay at Fort Sill he created the wartime School of Fire, and as Chief of Field Artillery, he successfully organized and trained the wartime Field Artillery. After a brief visit in Washington to get instructions and advice, and to forage for instructors and equipment, he proceeded to Oklahoma, where he found the temporary commandant, Colonel A. S. Fleming, grappling with the instruction of the forlorn group that Sgt Swett had met at the station a fortnight before. By then the class had swollen to 108. There were 20 from the Field Artillery, 20 from the Cavalry, 40 from the Coast Artillery Corps, 28 from the National Guard Field Artillery, and 23 noncommissioned officers, included as prospective officers. There was no course of instruction, and Snow and Fleming made no attempt to set one up until all students had been given a grasp of fundamentals. This class, because of its checkered career, was not included in the list of war classes, but was always known as the "zero class."

Snow relates that from the day of his appointment as Commandant he felt that the School of Fire had to be expanded a hundred-fold if it was to supply enough trained officers to meet the needs of the wartime Field Artillery. On arrival at Fort Sill he continued to mull over the idea in his spare time, which was after he had retired for the night. Fort Sill was a little too hot for comfort in the summer time, and so as Snow tossed and turned in the sweltering heat, he sifted the project through his mind. On mentioning the matter at an instructor's meeting, he found that Captains F. W. Honeycutt and R. M. Danford had been thinking along the same lines, so the three of them began working together. Snow's recommendations for the School were made August 4, and to push the matter through the War Department, he took leave and arrived in Washington about the 15th. The Snow Plan, as approved September 12, 1917, had five points:

1. Enlarge the school to accommodate 1,200 students plus the necessary instructors.

2. Provide a course of 12 weeks, 100 officers entering every week.

3. Organize 6 departments: Artillery Tactics (firing); Liaison; Engineering; Practical Ballistics; Artillery Materiel; and Artillery Transport. The instruction was to cover: field artillery drill regulations; tractors and motors; materiel; use of range tables; probabilities; field artillery sketching; topography; use of maps in the war zone; fuzes; ammunition and ammunition supply; hippology; optics; plotting boards; map firing; communication; artillery engineering; functions of different artillery weapons; open warfare; close shooting; firing and observation of fire; administration; tactics; and service firing.

4. Furnish necessary housing.

5. Build up school troops and a larger school detachment. For the plan, Snow received $750,000 for construction, and the promise of school troops, instructors, and equipment.

Building the Wartime School

The contract went to the Selden-Breck Construction Company of St. Louis, Mo. They brought in two or three thousand workmen and had most of their work done in 40 days. Snow had no time to brood over architect's plans, so he looked over the Air Service buildings going up at Post Field, chose those whose plans he liked, told the contractor to add an extra story, and build similar ones for the School. Actual supervision of the construction was turned over to Col A. S. Fleming, who on Snow's recommendation took over as Commandant when Snow was called to assume command of a brigade. The construction gave each class a dormitory to itself, with two large sleeping rooms, shower rooms, a mess hall, etc. The instructors were lodged near the central building, Snow Hall. As then arranged, Snow Hall had eight lecture rooms, each capable of holding about 200 students, a room for showing moving pictures, smaller rooms for the sections into which classes were divided, and the offices of the Commandant. There was a library, a mess for instructors, and various shops for tailors, barbers, and the like. The streets were named, and the buildings numbered, like the streets and buildings of a town. The School of Musketry was about 300 yards away in the Old Post.

Six departments were set up to instruct the incoming students:

1. Department of Firing
   Firing instruction, firing data, blackboard and terrain board work, smoke-bomb practice, observation of fire, service practice.

2. Department of Liaison
Communication and liaison with infantry and the air service.

3. Department of Field Engineering
Sketching, maps, cover, and shelter.

4. Department of Field Gunnery
Elementary probabilities, range tables, fighting maps, barrage tables, correction for the day, calibration, slide rule, etc.

5. Department of Transportation
Harness, harnessing, and draft for light artillery; motors and tractors for heavy artillery.

6. Department of Materiel
Practical study of all available French and American materiel.

At the service of these departments during 1917, for use as School troops, were the 14th FA, which was organized at Fort Sill in May 1917, and the 1st FA, which arrived from Hawaii December 23. The 1st FA, long to be associated with the Field Artillery School, is an old and famous regiment. Battery D, as Capt Moses Porter's Company of Artillery, was a part of "Mad Anthony" Wayne's Legion in its expedition against the Indians in 1793 and 1794. Battery E could trace its ancestry directly to Braxton Bragg's battery of Buena Vista fame. The present regiment had been organized in 1907, and its battle honors were such as to be an inspiration to all soldiers: Indian Wars; Seminole War; Palo Alto; Resaca de la Palma; Monterey; the Peninsula; Antietam; Fredericksburg; Gettysburg; the Wilderness; Manassas; Chancellorsville; Virginia 1862, 1863, 1864; West Virginia 1863; Cold Harbor, Petersburg; Puerto Rico; San Isidro; and Luzon 1899, 1900. Nine batteries of school troops in all were available when the second war class entered the School.

In considering the work of the School during the First World War, it should be noted that only two courses were offered. By far the more important of these was the course for field artillerymen. To it went colonels of long service, and newly commissioned second lieutenants. The only differences in course content came about the midpoint of the course, when there was specialization to some degree on different weapons and means of transportation. The other course was a brief one in artillery fundamentals for air observers (mentioned later). The primary and final object of the course for artillerymen was to teach shooting. In addition, it taught battery officers

things they had to know if they were to produce efficient batteries, and it taught field officers how to instruct or supervise instruction. Tactics and liaison techniques were introduced, but for mastery of them the student had to go elsewhere. Gunnery was the star of the Fort Sill show. A memorandum to the Chief of Field Artillery from the Commandant, Col Fleming, February 23, 1918, stated:

> "The present war course at the School of Fire is predicated on the assumption that the students have had no artillery experience prior to the present war, but that they have been taught a few of the most elementary essentials in their regiments; that they have had at least an average high school education, and have average intelligence. The constant effort at the School is to develop any possibilities a student officer may possess. In no case are any such officers relieved for incompetency unless they have established conclusively that they are hopelessly incompetent. The primary object is to train artillery officers in their elementary duties rather than to make elimina-tions."

However, in October 1918 the Commandant was authorized to send incompetent officers back to their regiments.

The course had been laid down by Snow, embracing those subjects which he thought a field artilleryman should know, plus some of the new methods which had been developed in France. Insofar as the course conveyed any doctrine, Snow was adamant about teaching the doctrine of open warfare, since he regarded the trench warfare of 1915-1917 as abnormal. The new wrinkles in warfare were to be covered by a French mission, which arrived August 3, 1917, at the School of Fire: Major G.R.C.F.X. Reille, Captains E. Durette, Trives, C.P.F. Pierret, and Monroe, and later, Lt Negre.

Regarding instructors, some 14 or 15 had arrived at about the time Snow did. Others were taken from the "zero" class and given some special training.

The students for the first class of the School of Fire arrived September 27. Their backgrounds and experiences were of the most diverse sort, captains from National Guard and National Army, cavalrymen from converted regiments, coast artillerymen, etc. Classes that fall arrived on Sunday morning as a rule, a few brave

spirits on Saturday, and the course started with a talk by the Commandant on Monday morning. The day went from 7:30 in the morning to 11:30, and from 1:30 P.M. to 4:30, not counting time spent going to and from the range. Lectures were often given from 5 until 6 in the afternoon. Service practice began the fifth week. Each student fired every other day. Toward the end of the course, there were several battery and battalion problems with aviation present. During the last week, an organized infantry sector was occupied for 24 hours. All communications were established, and different fires executed, especially during the night. There were examinations every Saturday, and officers failing them went before a board of instructors.

With the experience gained in the first few months of the regular classes, the School changed its structure and the methods of instruction and handling of students. In the last reorganisation, that of June 1918, the number of departments was set at three, but with that exception, a description of the School of February 1918, as taken from Document 48, February 28, 1918, the School of Fire, gives a fair picture of the 1918 School. The staff and instructors numbered 95, of whom 5 were French. The detachment numbered 300 enlisted men, plus 15 enlisted French artillerymen. There were two light regiments of school troops, the 1st and the 14th, and one heavy regiment, the 9th. These manned a variety of guns, the American 3-inch piece, the French 75-mm gun, two 4.7-inch guns, two American 6-inch howitzers, one French 155-mm howitzer, and one French 155-mm gun GPF. Classes had been 100 men each, but on February 9, this went up to 120. They were graduating every two weeks, and since February 23, had been entering weekly. Light and heavy artillerymen were given different instruction starting February 9.

There were four departments: Firing, Tactical Method, Field Gunnery, and Materiel. The four departments had been evolved from the six mentioned before by consolidating the Departments of Communication and Engineering into the Department of Tactical Method, and the consolidation of the Departments of Materiel and Transportation into the Department of Materiel. Instruction in equitation and hippology was dropped. The Assistant Commandant regulated ordinary matters of detail in developing courses, coordinating departments, and revising publications. There was a weekly meeting of directors of departments, the Commandant, the Assistant Commandant, the Secretary, the head of the French Mission, and when necessary, the statistical officer.

Certain entrance requirements had been set for students, and on February 5, the Commandant received authority to return to their regiments all officers who failed to meet them. Students

who were backward or ill had to repeat their work, while those who made exceptional progress advanced into another class. An entirely unsatisfactory student was returned to his regiment. A card record of the student's daily work was kept for all subjects which admitted of such treatment. There was a further check by the regular Saturday morning examinations. Using these records, student personnel matters were discussed at the weekly meetings of the Commandant, the directors, et al.

Further Expansion

After turning the School over to Col Fleming, Snow (now a General) went to the command of a brigade of field artillery in the Carolinas. On February 1 he was ordered to Washington to assume the newly created post of Chief of Field Artillery.

When Snow arrived, he asked the Chief of Staff what his duties were. The answer was, "I don't know!" So, Snow had to create his own job. After a few days of orienting himself, he turned to the status of the arm of which he was the new Chief, using a stack of reports he had borrowed from the Inspector General. Subsequently, he sent telegrams to all Field Artillery brigade commanders seeking certain information. He followed that by a questionnaire. When this data was in, the appalling truth was before him. There were 275 Field Artillery officers of more than a year's experience, and 100 of these had been sent overseas. Nor was the National Guard a source of strength. In the summer of 1917, only 18% of its personnel had had more than a year's service; 31% of the officers and 47% of the men were war volunteers with no previous experience.

Snow began to develop a comprehensive scheme for training the Field Artillery. An enlarged School of Fire was a vital part of that plan. On March 27, Snow presented his general plan which called for:

1. An artillery replacement training center;

2. A central officer's training camp (officer candidate school);

3. Expansion of the School of Fire to a weekly intake of 200 officers;

4. Brigade training centers, for unit training of brigades before overseas duty; and

5. Inspector-instructors to visit the various brigades to assist and supervise.

On April 15 this plan was approved, and Snow began sending more instructors to the School. The supply of students could not increase sharply until the new officer training schools commenced their output, however, and the input did not hit 200 a week until October. The number of instructors increased from 95 in February to 247 at the armistice, the number of students, from 700 to 1554, plus 419 air service cadets.

The departmental organization of the School was somewhat changed in June with the Departments of Firing and Field Gunnery being consolidated into the Department of Gunnery, and the Department of Tactical Method being renamed the Department of Reconnaissance. Col Laurin L. Lawson was then Commandant, as of May 11, and served until the end of the war.

The War Course

Document 48, previously mentioned, and the annual report of the Chief of Field Artillery for 1919, which covers the war years at the School, gave a detailed description of the course during the year 1918. By weeks, the course was as follows:

1st week: Entrance examination; the trajectory, drill of the gun squad; demonstration by firing battery; drill regulations; drill in marching; guns and carriages; instruments; fuses; electricity; sketching.

2d week: Firing data; terrain board; drill of gun squad and firing battery; drill regulations; dispersion; guns, carriages, and ammunition; military explosives; instruments; care of materiel; telephones and buzzers.

3d week: Firing data and terrain board; drill regulations; dispersion; guns, carriages, and ammunition; maps; French ammunition; sketching; reconnaissance; tactics; telephones and buzzers.

4th week: Smoke-bomb practice; dispersion; drill regulations; care of ammunition; harness and draft for light artillery sections; motors for heavy artillery sections; telephones and switchboards; and reconnaissance.

5th week: Firing data and terrain board; close shooting and devices; observation of fire; harness and draft for light artillery sections; motors for heavy artillery sections; reconnaisance and organization of battalion position; handling of battalion detail; light signals; and general organization of communications.

6th week: Close shooting and devices; maps; service practice; air-ground communication; harness and draft; and tractor and motors.

7th week: Service practice; maps; air-ground communication; and shelter and concealment.

8th week: Service practice and tactical study of emplacements (sections alternating); maps; air communication; and shelter and concealment.

9th week: Service practice, and organization of trench positions.

10th week: Service practice, and visits to emplacements.

By departments, the course was organized as follows. The Department of Materiel, which at first had had only the American 3-inch gun and 3.8-inch howitzer, had a full assortment of materiel, the American 4.7-inch gun and 6-inch howitzer, the French 75-mm gun and 155-mm howitzer, and the French 155-mm gun GPF. Classes had 42 hours in this department, and were divided into "light" and "heavy" sections. The light sections studied the 3-inch gun, the 75-mm gun, and the 6-inch howitzer. The heavy sections worked with the 4.7-inch gun, the 155-mm howitzer, and the 6-inch howitzer. The course began with a lecture by the Assistant Commandant on the history of the field gun, the general principles of gun construction, and their practical application. A typical example of instruction was that given on the excellent American 3-inch gun. The first day was given to a general description of the gun. On the second day, the recoil mechanism was assembled and disassembled. On the third day, the breechblock and the elevating and traversing mechanisms were covered. The fourth day was given to adjustments of the sights and quadrants. The department devoted four hours to ammunition and its care. Oddly enough, it was this Department that covered the subject of battery administration. Officers in light artillery regiments had 13 hours of instruction on harness and draft, five hours of which were devoted to lectures. Officers of the heavy artillery

units gave 13 hours to motors, 10 to trucks, three to tractors. The class did not receive driving instruction and spent most of its time in the lecture room, although it did have access to a stripped chassis, sectionalized motors, spare parts, etc. Capt L. P. McCarter of the Department of Motor Transport (1944) was then an enlisted man and one of the drivers in the demonstrations for motors students. Capt McCarter would pilot a 5-ton tractor and 4.7-inch gun through the mud of what is now Rucker Park. His recollection of the course was that it was not successful, being too theoretical in nature.

The Department of Gunnery, heir to the Departments of Firing and Field Gunnery, tried to teach quick, accurate sensing and decision. Methods of fire proper for open warfare formed the greater part of the course. Students were told to keep their bursts low and to seek the smallest possible bracket. Subjects covered were: computation of firing data; the firing battery, simulated fire, service practice; the trajectory; dispersion; application of the laws of dispersion to field artillery; firing; meteorological corrections; and use of maps to prepare firing data. There were about 25 students to one instructor. The study of dispersion was no more than a simplified presentation of the subject of probabilities, given a different name and different approach to avoid frightening students. Its purpose was to acquaint the artillery officer with the errors surrounding his work, and the action to take in event of change in their values. Methods of this department conformed in general to those used at the School before the war.

The Department of Reconnaisance gave courses in tactics and reconnaisance; topography and panoramic sketching; shelter and concealment; ground communication; and air communication. It opened with lectures on the technique of battery reconnaisance and the general principles of artillery tactics. Then came a week of field work, two hours a day. The first two were given to a demonstration of the reconnaisance, selection, and occupation of a position, the rest to tactical rides in which an attempt was made to give facility in handling a battery detail. The second week began with lectures on battalion reconnaisance and fire direction, and the technique of handling battalion details, followed by a week of practical work. It finished with inspections of the lectures on prepared positions and methods of occupying and improving fortified positions. In the work on topography and sketching, the department tried to give students sufficient preparation for their work in gunnery. There were six hours on maps and five on sketching. Practical work in sketching was obtained in the course on artillery reconnaisance. Nine lectures were given on shelter and concealment. Twenty-four hours were devoted to ground communication. Fourteen hours went

to elementary electricity and the buzzer circuits. Eight hours were given to the use and tests of the service buzzer and the rest of the course was devoted to miscellaneous subjects. Little could be given on switchboards and the larger telephones, partly because of lack of equipment, and partly because the course was intended only as a foundation. The work on air communication was only such as was necessary to the officer in charge of a ground receiving station, using radio and panel. There were ten hours on theory, and four hours were spent inspecting balloon and airplane equipment. The practical application was under the Department of Gunnery.

A Section of the Front

One of the outstanding training aids was the "Apache Gate Sector," as described by Major Harrison Fuller in volume 9 of the Field Artillery Journal. An area in the vicinity of Apache Gate was turned into a most realistic representation of a sector of the Western Front and used as a gunnery range. There were targets of every kind, each in its proper relation to the others. The observation dugout, capable of holding 25 students at a time, was on Chrystie Hill (after Capt Phineas Chrystie, killed by explosion of a 155-mm howitzer) looking west. Rumbough hill and Heyl's hill were the south boundaries. There were two distinct areas within the enemy lines and others in the process of being built up. The one just west of Chrystie Hill had a close net-work of communication trenches, with observation posts, command posts, and front line, support, and communication trenches. To the north was a more extensive trench system. Six main communication trenches joined the enemy's front and support lines. There were no less than 11 enemy lookout and listening posts, some within 80 yards of our front lines. Among the targets were an emplaced battery, a crashed airplane, tanks represented as supporting an infantry attack, and all of them as obscure as they would be in real war. Aerial observation was often used for adjustment of fire from any one of the ten main battery positions that were regularly used for firing points against these targets. There were two 12-line switchboards on Rumbough hill to handle this traffic.

The School's Doctrine and Theory

From a description of training we come naturally to a discussion of the underlying principles. Every effort was made to coordinate instruction given at Fort Sill with that being given in the American schools in France, and returned officers were used as instructors wherever possible. The School, however, never

interpreted this as a directive to specialize in the methods of trench, i.e., siege warfare. On the contrary, these methods were illustrated, but the methods of the war of movement were stressed. Some members of the French mission were most importunate in their efforts to revise the doctrines set forth by Snow and the School of Fire into something closer to their notions. One officer, not a member of the group regularly assigned to Sill was sent there by the mission without Snow's consent or knowledge, and immediately offered the Commandant a plan to reorganize the school along completely different lines. Snow was forced to have him recalled at once to Washington.

Snow's attitude was justified. In the files of the Chief of Field Artillery was a letter from General George R. Allin to General Snow (November 14, 1918/350.05 Serial A) in which General McNair is quoted to the effect that artillery overseas was far behind the doctrine being given at the School of Fire. Artillery overseas was firing by the map (unobserved fire) and by sector, instead of concentrating on forward observation and pushing itself forward to give the infantry adequate support. He commented bitterly that the infantry was taking heavy losses due to the artillery's keeping too far behind the lines. From that day forward, the School worked on methods of using observed fire to support the infantry, the very antithesis of the elaborate unobserved fire methods advocated by the trench enthusiasts of World War I.

These teachings by the School were presented in a comprehensive series of texts, printed on the School press, which had attained the dignity of a new building all its own.

In all this it can be seen that the School had evolved from a simple school of fire into something very closely approaching a true artillery school. This evolution was a direct response to a dire need--that of instructing officers who were ignorant of all branches of their profession and not of just gunnery alone. The beginning of the extension of the School of Fire into an artillery school had been made before the war. In his very first report, of July 1, 1915, Moore's successor, Lt Col E. F. McGlachlin made certain proposals, which, had they been accepted, would have created a true artillery school before the war, and just in time to have it ready when it would have been most urgently needed. Briefly, he recommended that Course A, the course for battery officers, be extended one month, and the fitting of harness, draft, and motors be added to it. The officers were to be put in touch with the work of the Field Artillery Board, which probably meant instruction in materiel. He recommended further that Course A be limited to captains and senior first lieutenants and that a 10 months course be

set up for second lieutenants; that a course for militia officers of low grade similar to that given noncommissioned officers of the regular army be instituted; that militia noncommissioned officers be permitted to attend the class for regular army noncommissioned officers; and that an indefinite number of militia officers be permitted to attend their course, Course D. Considered in the light of later events, these proposals were most wise and showed considerable foresight.

Wartime Problems

There were many problems besetting the school during the war. Perhaps six deserve mention: relations with the School of Musketry; the mathematical background of entering students; the water supply; the excessive turnover in instructor personnel; mess; and morale. The expanded School of Musketry, the School of Fire, and Camp Doniphan, first the camp of the 35th Division and then a Brigade Training Center, all shared the reservation. Despite a spirit of mutual helpfullness, there simply was not room enough for all. A board of infantry and artillery officers was set up to coordinate use of the range, but try as they did, they were "continually stepping on each others toes," as Snow put it. By July, 1918, the subject of the removal of the School of Musketry had come up in official correspondence, and on September 12 a decision was reached to send the School of Musketry from Fort Sill.

The officer shortage being what it was, General Snow was desperately anxious not to lose one man of possible merit, and so he personnally checked reports of officer failures at Fort Sill. Discovering that weakness in mathematics was a prime cause, as in the present war, he decided at once to have a qualified mathematician investigate the requirements of the School of Fire. Professor Lester R. Ford, of Harvard, was recommended. After some search, Snow located him as a private in a Depot Brigade. Knowing very well that a private would be unable to investigate the School and its methods, Snow put the professor in civilian clothes and sent him off with a letter introducing him as Professor Ford of Harvard. On Ford's return to Washington with a most satisfactory report, Snow commissioned him and sent him to the Field Artillery Central Officer's Training School at Camp Zachary Taylor, Ky., to form a department teaching the candidates just that amount of mathematics needed for success at the School of Fire. Ford was solemnly adjured not to spend a moment on unnecessary instruction. Professor Ford and his assistants were successful in this work, and Snow wrote that: "I had plugged one leak."

In the summer of 1918 the water problem had become such that General Snow several times had to consider moving the School from Fort Sill, and at one time was so concerned that he had a weekly telegram sent advising him as to the water situation. Nor were the experts of any great help, for they disagreed, as experts will. On May 12, 1918 Lt James Follin stated that at the present rate of consumption the reservoir, Lake Lawtonka, would be empty September 15. On May 16 Lt Col Dabney H. Maury pointed out that the rainy season was coming so he thought it safe to say there was a strong possibility of no water shortage.

On May 30, 1917, shortly after the beginning of the war, the city fathers of Lawton met and resolved that whereas the reservoir was so full that it was often overflowing, they would be glad to let the War Department have any part of the water then in the reservoir, or that might accumulate there in future, reserving for the city 1,000,000 gallons daily in winter, and 2,000,000 gallons daily in summer. As a practical step, the city undertook construction of a 24-inch pipe line from the reservoir to the post and contracted to furnish the post 2,000,000 gallons a day through this line and two 10-inch lines owned by the Government and connected with the Lawton main. In September 1917 the city further agreed to turn over exclusive use of the 16-inch line. Alas, for the good intentions of the Lawtonians, a drought occurred after these plans were made and by August 17, 1918, Col Edmund Gruber, who was a former instructor and was now in command of the brigade training center at Camp Doniphan, urged abandonment of Fort Sill about September 10. He felt that with the water situation, 2,000 officer students, the school for aerial observers, and two field artillery brigades could not be accomodated. By this time the Lawtonians were thoroughly alarmed and plans had been approved June 4 for raising the dam's height from 50 feet to 60. Apparently the citizenry regretted the overflow that had been passing over the dam in 1917. Plans were prepared for a filter plant, to make drinkable as much as possible of the remaining water,[1] but these were not approved until January, 1919. For his part, Snow removed every non-essential activity from the post, such as the Remount Service. Moving the School was in his mind, but there were two good reasons against it. For one thing there was no other place to put it. For another, had he found a place, at least three months would have been required to put the School into operation again with all its equipment, and a loss of three months supply of officers was not to be thought of then. The Fort Sill plant was complete with its buildings, guns, and school troops, and the reservation had been accurately surveyed.

---

[1] In Kipling's phrase, "It was crawling and it stunk!"

A geologist sent to Sill by General Snow found nothing in the way of more water. The problem ultimately was dissipated by the providential fall of heavy rains sometime before October.

Because of the shortage of officers, there was a constant demand for instructors from the School of Fire, and it may be assumed that many of the personnel of the school, chafing at being kept in the United States while their friends were going overseas, were gently stimulating some of the demand. The tremendous expansion of the Army had placed a burden on the Adjutant General's Department which it was then unable to handle, and so the policy on relief of instructors was often most erratic. As an example of the exceedingly difficult personnel situation, one may mention that shortly after Snow became Chief of Artillery, he asked the Adjutant General's office how many officers there were in the artillery, only to be told that the office didn't know. This confusion resulted in officers on detached service with the School as instructors being relieved as their units became eligible for overseas service. The trouble was chiefly caused by an indiscriminate selection policy by the Adjutant General's Office. In May of 1918 the School felt compelled to protest to General Snow against a practice of the Adjutant General of transferring instructors from the School without warning. This was finally adjusted by Snow but not until many officers had been taken.

Feeding the personnel at the School was often a vexing problem. The post is not on the main railway line from Oklahoma City south, and the neighboring farm areas produce very little garden produce. Even though supplies came through in carload lots, and a herd of cattle was imported from Wisconsin to establish a dairy, the management of the mess became increasingly difficult. Snow turned to Fred Harvey, of the Harvey Restaurants, who could not accept, but did suggest the name of a hotel keeper as a possible reinforcement. He was hired, but was only fairly satisfactory.

There were a number of morale depressants at work during the summer of 1918, and there was concern that they might affect the operation of the school. The post was an isolated one, with the little town of Lawton the nearest community. Wichita Falls and Oklahoma City, which were within a hundred miles, had not yet had the development of the 1920's. If a student displayed exceptional ability he was apt to be kept as an instructor, if he did not make the grade he would be eliminated from the service. The summer heat, the eternal hot wind, the dust seeping through the cracks in the frame buildings, the sense of pressure, all combined to make the summer less than pleasant. As for the school troops, they worked their guns

14-16 hours a day, from before dawn to after dark. It is a tribute to the American soldier of 1918 that the School's work was done, and done well and cheerfully.

Aerial Observer Training

The date on which the School began instruction for aerial observers is uncertain, but Document 48, February, 1918, showed that it was being offered then as a two week course. The course covered the organization of artillery and of a sector of the front, artillery targets and tactics, and the principles of observation. On its completion, the students entered the Air Service School at Post Field. In March 1918, when Snow was forming his general plan for training of the arm, he also considered the general problem of air observers. Their status was unsatisfactory, for although they were shown on the Tables of Organization of their regiments as artillerymen, they were usually snapped up by the Air Service on completing their training at Fort Sill. This made regimental commanders most unwilling to send good men to the School for training as aerial observers. The solution finally reached was to keep these men in the Field Artillery, but detail them to the Signal Corps, which then controlled the Air Service. There still remained the problem of getting these observers in sufficient quantity and with sufficient training. The Air Service agreed to cooperate and a seven week course was set up for both flying cadets and field artillerymen. The flying cadets received Air Service commissions, the status of the field artillerymen was as indicated above. The first of these classes entered August 25, 1918. The School of Fire suggested later that the intake be set at about 100 a week, as against the existing rate of nearer 60, in view of the removal of the School of Musketry. However, this was not agreed to by the Director of Military Aeronautics because of the epidemic of influenza. (For a fuller discussion of air training at Fort Sill, consult the Appendix.)

The Artillery Training System 1917-1918

Some mention should be made of the general scheme of field artillery training during the First World War. Then the situation at the School of Fire will more likely fall into its proper perspective.

First, the problem of creating officers. Except for the flying cadets, all the students who came to the School of Fire were officers. Some, of course, were Regulars from other arms, some were National Guards. Where did the others come from?

The first attempt to meet the deficiency in officers was made by creating officer training camps, which gave a three months course. These were emergency stop-gaps to produce officers before the first draft arrived in training camps. The first two camps took men directly from civilian life, the last one took them from the first draft. Depending upon their standing in class and age, graduates were commissioned in ranks up to and including major. Very few of these men were qualified as officers. After some sort of divisional organization had been created, each division was directed to set up its own officer candidate schools, for all arms. Thus by March, 1918, there were 25 or more officer candidate schools in as many divisions, as well as the third camp, trying to produce artillery officers. Snow remarked that the only uniformity was in the inadaquacy of the equipment and the poorness of the instruction. The instructors were graduates of previous classes in the same sort of school, so what little might have been learned from some harassed artilleryman in Class No. 1 was watered down to nothing by Class No. 10. Consequently, the establishment of a central officers training school, where rigid standards could be enforced, was an essential part of Snow's grand scheme of artillery training. There was a good deal of opposition to Snow's plan in staff circles, and the circumstance that compelled its adoption was the departure of several divisions for France. The move posed the insoluble problem of what to do with the divisions' officer candidate schools. General Snow received authority to open his officer candidate school, known as the Central Officers Training School on May 20, 1918, and it opened June 15, with 160 instructors and 3,800 students. Six months later, according to General Snow, it had 14,000 students.

A memorandum by Lt Col William Bryden, Assistant Commandant of the School of Fire, gives a good picture of COTS in operation. As the candidates entered from either the army or civilian life, they spent two to four weeks in the "observation area," being processed, taking physical training, learning close-order drill, and brushing up on their mathematics under the Professor Lester Ford mentioned earlier. The candidates were observed and graded with about 5% being weeded out. Every week about six batteries of 200 men each went to the training area on the other side of the valley, "crossing the ditch" as the students called it. These batteries are of interest, for instruction was carried on within them by the attached officers. These battery officers, when acting as instructors, were under the five departments of the COTS, Mounted Instruction, Fire Discipline, Gunnery, Reconnaisance and Miscellaneous Instruction. Practically all duties in and around the barracks except cooking were carried on by the candidates, about 90% of whom were college graduates. At times the school was so short of instructors that candidates had to be

used, notably in draft, equitation, and smoke-bomb practice. It was hoped to relieve this condition by getting ten graduates of every class of the School of Fire assigned as instructors. There were 5,214 men commissioned from this school, a class of 2,454 graduating in August, 1918.[1] From this Camp they were to go to a replacement depot for two months, and then to Fort Sill for the three month course.

Replacement centers were part of Snow's plan. He stated that their need was recognized by the Army before the war, but that it doubted the temper of the American people and feared that the cry would go up, "A hundred thousand men are already being trained to step into the places of dead men." Thus replacements were formerly obtained by breaking up brigades in this country. Moreover, there were no training centers where enlisted specialists could be trained for Field Artillery. By spring of 1918, it was no longer possible to indulge in the luxury of useless fears, and the Replacement Depots were authorized. The first was organized at Camp Jackson, S. C., May 8, 1918, and a later one at Camp Zachary Taylor, Ky. Courses were given to officers, preparing them for the School of Fire, as well as for enlisted men. At these two depots, a total of 8,125 officers and 73,235 enlisted men received training. General Hinds, Chief of Artillery of the A.E.F., gave Snow a monthly estimate of what he needed by way of enlisted specialists, which was then divided between the two depots. The training period was set at 72 days for enlisted men, but the demand was so great that the average stay was about 45 days.

The idea for brigade firing centers came from France. General Pershing had set some up there, and the French Military Attache had several times suggested them to General Snow, who felt he did not have the necessary guns. Finally, Snow offered to establish them if the French could furnish the guns. Eventually, the centers were begun, giant schools at which whole brigades of artillery would be pupils. One of these was begun at Camp Doniphan, on the Fort Sill reservation. When the brigades began arriving at training centers, it was found that the state of their training was such that proposed courses had to be abandoned, and elementary training given to both officers and men. It must be remembered that the great bulk of artillery officers were not products of Fort Sill, but rather from the old training camps of the first days of war, from the divisional officer candidate schools, and in the case of the National Guard brigades, 31% of their officers were commissioned from civilian life by the governors of the states, with no military training whatever.

---

[1] The average class was about 400. The class after the August 1918 group graduated only 150.

A report from Col Edmund L. Gruber, commanding the firing center at Camp Doniphan, October 4, 1918, gives an idea of the work there. There was a ten to twelve week course, beginning with three to four weeks of preliminary instruction, then four weeks of battery instruction and school firing practice, two weeks of battalion field exercises and firing, and two or three weeks of brigade exercises and firing. In the brigade exercise period, the brigade occupied an organized sector, was constantly in the field, organized its fires and liaison, and did everything as it would at the front. On arrival in France, the brigade should be ready for the front after two or three weeks in a training center over there. Col Gruber was lucky in that he could call on the School of Fire for help, both in instructional material and in the loan of instructors. By the signing of the Armistice, seven brigades had passed through the centers.

Since the Field Artillery always was a highly technical arm, it required a great many technicians. In World War I, the Field Artillery required at least the following types of enlisted specialists: drivers, cannoneers, supply sergeants, stable sergeants, mechanics, cooks, horseshoers, saddlers, wagoners, buglers, bandsmen, bakers, tailors, shoemakers, clerks, machine gunners, automatic riflemen, trench mortar men, draftsmen, radio men, painters, telephone operators, linemen, motorcycle drivers, motor mechanics and carpenters. Officer specialists included radio experts, artillery observers, motor experts, liaison officers, staff officers (supply, operations, administration and intelligence), and experts on unobserved fires (fires prepared from map data). The great bulk of the enlisted specialists were trained at the Replacement Depots. However, the civilian Committee on Education and Special Training furnished 22,550 specialists, including 3,443 mechanics, 627 radio operators, 2,090 truck drivers. Fifty privates a week were sent to the Air Service Radio School at Austin, Texas, and 500 more enlisted men went to the Ordnance plant at Raritan, N.J., to become motor and tractor specialists. Officer training was also scattered among a great many places. At first, radio officers were sent to the Signal Corps school at College Park, Md., for a ten week course, but after September 7, 1918, ten graduates of the School of Fire were sent weekly to the Air Service Radio School at Columbia University, New York City, for a three weeks course. The training of air observers has been mentioned. Fifty motor officers went to the Ordnance School at Raritan, but after September 1, 1918, this instruction was given at the brigade firing centers and at Camp Jackson, S. C. Instruction in communications, liaison, and unobserved fire was also given at the brigade firing centers, as was a course in staff training.

Summary

1 Oct 1917--4 April 1919

COURSES

Student Officers

Total student officers reporting	6,211
Total graduated	3,215
Total completing course but failed to graduate	515
Total relieved, discharged, etc.	2,481
(NOTE: Many relieved as units went overseas)	

Aerial Observation (cadets)

Total cadets reporting	715
Graduates	515
Transferred and discharged	198
Died	2

Bibliography

Report of the Chief of Field Artillery to the Secretary of War, 1919. Washington, Government Printing Office, 1919.

Signposts of Experience, World War Memoirs, Major General William J. Snow, USA Retired, Chief of Field Artillery, 1918-1927. United States Field Artillery Association, Washington, D. C., 1941.

Annual Reports, U.S.F.A.S., op. cit. supra.

Carbine and Lance, op. cit. supra.

Files of the Office of the Chief of Field Artillery, Field Artillery School Library.

Document 48, Scheme of Instruction, School of Fire, February, 1918.

Captain E. Durett, French Army, Field Artillery Journal, Vol. 13.

Records of the City Engineer, Lawton, Oklahoma.

File on Water, Post Headquarters, Fort Sill, Oklahoma.

The Apache Gate Sector, Major Harrison Fuller, Field Artillery Journal, Vol. 9.

CHAPTER SIX

FROM DEMOBILIZATION TO CONSOLIDATION

At the close of World War I, the Field Artillery numbered 22,393 officers and 429,760 enlisted men, thanks to the achievements of the programs described in the last chapter. With the beginning of the peace, the Army was faced with the problem of demobilizing this great force and of creating a peacetime army adequate to the missions our policy might assign it. After the armistice, classes at the School of Fire were continued, for resumption of hostilities was thought not impossible. However, a November telegram from General Snow to Colonel Laurin Lawson, who was still Commandant, advised that weekly classes would be cut to 60 each. These men were COTS men, either from the Replacement Depot at Camp Jackson or from the COTS itself, and from the graduating class at the Military Academy. The War Department was not receiving resignations but was endeavoring to discharge officers as quickly as possible. Those officers wishing to be discharged were placed in three classes. The first were those who wished to sever all connection with the Army; the second, those who wanted a Reserve Commission; the third, those who wanted to be in the Regular Army. The first two were to be mustered out first, the last would be kept on pending legislation on the permanent organization of the Army.

In February 1919 the School began adjusting its structure to the changed conditions. Small monthly classes, receiving a three-month course, were begun February 3, when the first, and as it happened, the last, class of 13 reported. Six more were to be added from the school troops. No additional students were to come until the course had been completely recast. According to the strength return of February 2, there were at the School of Fire 114 instructors, 332 students, and 3 cadets. No less than 24 students had been discharged in the week, and Class No. 46 had been so worn by attrition that only 13 graduated.

As fast as Regular officers of experience became available, members of the staff and students who desired to remain in the Regular Army were to be sent to basic training schools, there to be prepared for their career as Regulars. With this directive to recast the course, and fit it into a place between a basic course and an advanced course, the new Commandant, Brig Gen Dennis H. Currie, and the new Assistant Commandant, Col Rene E. DeR. Hoyle, went to work.

Between the last wartime class, No. 54, which graduated April 4, 1919, and the first Battery Officers Class, which entered April 21, the School of Fire changed its name and function. It became the Field Artillery School, and its mission was to train well-rounded artillerymen in the battery grades. It was no longer just a gunnery school, or primarily a gunnery school, it was an artillery school.

The course, as tentatively outlined in a letter March 3 from Col Robert M. Danford to General Snow, was to last from January to December, with three terms of 15 weeks each, and five weeks added at the end. There would be 400 hours for Gunnery, 590 for Tactics, 570 for Materiel, and 240 for Equitation. For the first year the course would start in April and continue exactly as though it had begun in January--a rather confusing prospect. There would be four departments conducting the course as given above, plus a fifth, a department of research. A five months advanced class for field officers and senior captains was suggested, also.

The Field Artillery School and its work as actually laid down for the balance of 1919 conform favorably to Danford's letter. There were the Departments of Gunnery, Materiel, Tactics, and Research, each with a director and two assistants, and Equitation with a director and one assistant. The functions of four of the departments may be inferred from their names, but the Department of Research, which evolved from the Statistical Office, deserves a word of explanation. In 1919 it studied such subjects as were referred to it by the Commandant or the Field Artillery Board. Such projects then included studies of the coefficient of slope, of dead space, of corrections of the moment, and the investigation of new methods of calculating range tables. For the School, it habitually prepared meteorological data, located targets and triangulation stations, and collected and preserved topographical data about the reservation. Col Walter S. Sturgill was then director. By 1921-1922 its duties had expanded to include all drafting for the School, for the Field Artillery Board, and for the Field Artillery Training Regulations Board, as well as the preparation of texts on sound and flash ranging and the development of a circular slide rule for computing differential corrections for the 75-mm gun.

The First Postwar Course

The course offered was one of 35 weeks and three terms covering the duties of battery officers plus some work on handling the battalion. Of the 40 officers who began, 23 were relieved before the end of the course, presumably demobilized. The several departments offered their subjects concurrently, with classes five days a

week from 8:00 to 11:30, 1:30 to 4:00, and evening study. Thus, on the second day of the course, there were classes in map scales, military history, optics, and equitation; on the third day, mechanics, algebra, and equitation.

An analysis of the course is interesting, since it occupied the mid-ground between a basic course and an advanced course. The program of instruction offered work a good deal more technical than any offered of recent years. The Department of Tactics taught: topography (the use of maps), 54 hours; field engineering (battery emplacements, camouflage, and a deep gallery shelter), 40 hours; military history (largely research, study, and a thesis), 65 hours; map problems (including field orders and reconnaissance), 52 hours; tactical problems, 105 hours; and liaison (including communications), 46 hours. The Department of Materiel offered instruction in: elementary mechanics; optics and fire control instruments; chemistry and explosives; interior ballistics; guns and carriages; ammunition; machine guns and automatic rifles; electricity, telephone, and radio; and motors and motor transportation. Motors received 86 hours, electricity, radio and telephone, 63 hours; guns and carriages, 54 hours; elementary mechanics, 39 hours; and the rest, varying lesser amounts. The Department of Gunnery gave 30 hours to mathematics, 26 hours to exterior ballistics, eight hours to range tables and meteorological bulletins, 13 hours to computation of firing data, 12 hours to dispersion, 26 hours to the terrain board, and about 115 hours to service practice. About 160 hours was given to equitation during the year, 18 hours of it to draft. The primary purpose of this course was exercise and recreation.

Housing, 1919 Style

The housing situation that met the first students and instructors of the Field Artillery School was described in an unsigned memorandum for the Chief of Field Artillery, dated July 30, 1919.

> "The permanent post of Fort Sill is distinctly separated into the Old Post and the New Post, these two parts of the post being about one mile apart. In addition there are various areas temporarily occupied. The School of Fire area with the school buildings, barracks, and quarters, all emergency wooden buildings, is located between the Old and New Posts; the post hospital (formerly the base hospital) is north of and adjacent to the New Post; the Remount depot southwest of and adjacent to the Old Post; the cantonments of the

1st and 9th Field Artillery about one mile south of the New Post; Post Field, about two miles south of the New Post; and the former Camp Doniphan area, west of and adjacent to the New Post."

"In the Old Post there are quarters for 20 officers, 24 noncommissioned officers, and barracks for 350 enlisted men; the New Post contains quarters for the officers and enlisted men of one regiment of Field Artillery; the School of Fire area contains quarters for 48 married and 96 unmarried officers, no noncommissioned officers, and barracks for the School of Fire detachment and 1,200 students by crowding; but all these quarters are of an emergency nature and the officers' quarters unsuited for occupancy by officers on permanent duty; Post Field has quarters and barracks similar to those in the School of Fire area for the personnel of the aviation school; the artillery cantonment, the Post Hospital, and the Remount Depot have only quarters and barracks of a very temporary nature with no quarters for married officers or noncommissioned officers; there are no quarters or barracks in the Camp Doniphan area, this having been a tent camp."

The quarters "unsuited for officers on permanent duty" were occupied by officers on that status for many years to come. Officers' wives tried to cope with the Oklahoma dust in the summer by stuffing rags in the cracks, and sought wintertime warmth and comfort from coal stoves. Thanks to the board partitions, the officer struggling with interior ballistics could hear a soprano voice three apartments away exclaim: "With all her husband's fogies, I would most certainly think she could afford a new dress!" In 1919, the cost of this establishment was estimated at $3,460,000. How a value could be placed on buildings erected by soldier labor in 1870, or on entrenchments, is not clear, but it was a most valuable plant, and that was the one great obstacle against moving the school that eager proponents of Fort Benning or Fort Bragg could not overcome.

School Troops

School troops present were the 1st, the 9th and the 14th Field Artillery, all of them sadly understrength. For example, the 14th

had 22 officers and 225 men; the 1st, 25 officers and 397 enlisted men, as of October 1919. Under the circumstances, it was hard to get a battery together. In the winter of 1919-1920, the 1st FA was organizing itself into a motorized regiment and in 1920 moved into the Post Field area, which April 10, 1920, came under the Commandant of the School, then General Ernest Hinds. The 9th Field Artillery was put into the base hospital area, and the hospital unit went into the old Post Hospital. The extreme shortage of personnel ended in 1920. In the fall of that year, the 1st Field Artillery was armed with the French and American 75-mm guns and the 4.7-inch gun; the 14th Field Artillery had the French and American 75-mm guns and the British 60-pdr; the 9th Field Artillery had the 155-mm howitzer, the 155-mm gun GPF, the 8-inch howitzer, and the 9.2-inch howitzer. There were only two batteries available for firing four afternoons a week for students and two mornings a week for instructors--to keep them ahead of their classes. This arrangement lasted until August 1921, when the 9th and 14th were inactivated under War Department General Order No. 33, leaving the 1st organized as a horse-drawn 75-mm gun regiment, with one motorized battalion. Its new colonel, Ralph S. Granger, had a real problem ahead of him in whipping the regiment into shape to fire for the School. General Hinds wrote October 19, 1921: "Granger is hustling with his new regiment. He sent out recruiting parties in trucks and has gotten over 100 men. After two weeks drilling he had them firing for the School yesterday. McLeod's battery was firing 23 out of 24 men at the guns who had been 14 days in service." With the activation of the 1st Battalion, 18th Field Artillery, at Fort Sill, December 1922, the field artillery component of the school troops reached the form it held for many years.

The Postwar Commandants

The Commandants who grappled with the problems of the School are as follows. Brig Gen Dennis H. Currie assumed command December 24, 1918, and was relieved June 10, 1919 by Brig Gen E. T. Donnelly. Donnelly was relieved July 25 by Col R. H. McMasters who held the fort until Brig Gen Ernest R. Hinds became Commandant on October 25.

General Hinds was West Point '87, an honor graduate of the old Artillery School at Fortress Monroe, Va., and served in Cuba and the Philippines. From being Chief of Staff of the Philippines Department, he went to France in 1917 where he was Commandant of the American Artillery School at Saumur. From Saumur he became Chief of Artillery of the American Expeditionary Force.

His services in the war earned him the Distinguished Service Medal.

Course Content: Technicalities and Trench Warfare

After the first term of the first Battery Officers Course, a feeling arose among some of the instructors and students that it had been far too technical. One old cavalryman complained he had to work 15 hours a day. Currie, then Commandant, called a meeting of the Director of Instruction and the senior instructors to discuss the elimination of chemistry, gun design, and interior ballistics. The consensus was against dropping them but favored their simplification. Col Walter Sturgill, whose department presented them, was instructed accordingly, and told to report when ready for further discussion. It was thought too that shortening the theoretical instruction in the first term would allow more time for tactics and liaison, thought highly desirable by officers with front experience.

The controversy raged between the exponents of open warfare and those who thought that barbed wire and the machine gun would make trench or siege warfare the normal thing. The devotees of trench warfare thought themselves the modernists, the radicals. In December 1919 General Hinds ordered the Assistant Commandant, then Major Augustine McIntyre, to survey the various courses to note the weight being attached to open warfare and position warfare. Major McIntyre concluded that the right doctrine was not being hammered into the students sufficiently, but at the same time they were not being taught anything incorrect. Twenty-seven per cent of the time spent on firing problems was devoted to the methods of open warfare. This must not be taken at face value, for it reflected the relative difficulty of teaching the two. Half of the time spent on tactical problems was spent on position warfare, the greater part of this being devoted to French orientation methods (survey, which was then and for some years after taught by the Tactics people). In the next course given, this proportion was to be definitely changed, and 60 to 75 per cent spent on open warfare.

1920

The second postwar year, 1920, is of interest for the establishment of a comprehensive system for the instruction of enlisted specialists, the institution of a class for National Guard officers, the extension of the Battery Officers Course to a full year, and the real establishment of the Motors Section of the Department of Materiel. December 2, 1919, Lt Col Fred T. Austin reported to organize instruction for enlisted specialists. To accommodate this change, the School was for a time divided into an Officers' Division and an Enlisted Specialists' Division (until October 1920). In May of 1920, instruction began with

classes of 15 weeks each for saddlers, horseshoers, and stable sergeants. In the fall, a 22 weeks course for communications specialists got under way, covering elementary electricity, telephones, radio, signalling, line construction, and tactics. The course for National Guard officers lasted from August 23 to November 20, and allotted 96 hours to animal transport, 167 1/2 hours to the firing battery, 36 hours to topography, 28 hours to communications, 57 hours to motors, and 95 hours to gunnery.

In welcoming the incoming Regular Officers' class of January 1920, General Hinds, the Commandant, outlined the Army educational system, that is, the basic, battery officers, and advanced schools for artillerymen, and the higher schools of the line and the General Staff. Then he went on to say that what they would learn at the Field Artillery School under the orders of the Chief of Field Artillery, would be open warfare, for that gave instruction which would meet the greatest number of possible situations, while unobserved fire methods applied only to special situations: "The refinements of trench warfare will not be taught until open warfare has been mastered." And the General closed by saying that he would be delighted to see members of the class at his quarters when it would be convenient for them. The course that these officers were to take was given in three 15-week terms that were separated by one-week intervals. Four hundred and twenty-nine hours were given to tactics, 413 to materiel, 508 to gunnery, and 215 to animal transport. Despite the claims that the previous course had been too technical, it is notable that the Department of Materiel still offered work in applied mechanics, optics, chemistry, and interior ballistics. The course also covered instruction in telephones, radio and visual signalling, practical and theoretical work on different weapons from the automatic rifle to the 9.2-inch howitzer, and on motors and tractors. The work given by the other departments was the same as they gave previously, except for the longer hours.

At the post itself, several changes occurred between July 1919, and April 1920. On September 2, the buildings of Camp Doniphan were sold to contractors for removal. The Liberty Theatre, whose white semi-classic pillars were the scene of so many graduations, was opened September 25. In October, Post Headquarters moved from the hospital building of the Old Post to the Administration building of the New. And on April 10, Post Field came under the jurisdiction of the Commandant.

The firm establishment of the Motors Section of the Department of Materiel might be traced to a trip east by Captain A. E. Higgins in 1920, to get engine assemblies and equipment. Captain

Higgins came back with some four-wheel drive trucks (FWD's), some Indian motorcycles, and some White reconnaissance cars. From some source, he also obtained some airplane engines, including one Gnome-Rhone rotary. At this time, the Department of Materiel did not have the organized group of enlisted instructors it later created. Enlisted men might be called on to take a class occasionally, for with a small staff every man had to turn his hand to whatever came along, but they were not carried as instructors.

It was in this year that flash and sound ranging was taught for the first time at the Field Artillery School.

Paragraph 1, General Order No. 132, War Department, 1919 exempted service schools from corps area control in matters pertaining to the courses of instruction, or their separate organization and administration as schools. This directive prompted great discussion as to its precise meaning regarding the relationship of the School to other echelons of authority. It probably meant that the instruction and interior administration of the School were under the Chief of Field Artillery, while the supply of the School, its role in the summer training of civilian components, court martial jurisdiction, etc., were under the 8th Corps Area. Between the two poles of authority lay a twilight zone where authority was not well defined. For example, in 1920 the Corps Area requested the Post Commander to fill a quota for a clerk's school from school troops. The Commandant believed that school troops were exempt from Corps control except for discipline and instruction and quoted General Order No. 18, War Department, 1920, as saying: "...exempted from the control of the department commander." Corps Area replied that they thought the contention just. But since there would be a large reduction in the clerical force at Corps headquarters which handled much of the supply and discipline for the post of Fort Sill, they thought it only just that the post should furnish its share of the men. A compromise provided that the School should train 17 clerks with its own facilities, they being subject to future duty at Corps Area headquarters. Further, Corps Area agreed to consult with the Commandant before issuing orders in similar cases.

Changing the School Year

Sometime during the spring of 1921, perhaps about March, the decision was made to change the academic year from that previously chosen, January--December, to the more normal September--June. One motivating factor may have been the great summer heat characteristic of Fort Sill. With an academic year of the usual kind, one could teach theory work indoors during fall and winter and have the pleasant

Oklahoma spring for the more practical, tactical exercises and service practice. As a consequence, the Battery Officers' Course for 1921 was sharply cut. This may have been welcomed by the students, for they were receiving intensive instruction that year. There was a shortage of officers, and the Schools were trying to cope with the situation. General Hinds wrote to General Snow, February 24, 1921:

> The regiments will have to get on with the absolute minimum until June 1922. There's no other solution. We must run the schools at full blast because in that way only can we have competent officers to train the regiments.... We have a good spirit here in both the student body and the regiments. We are working them almost unmercifully, but I'm holding out the promise of better times for them after one year more, June 1922.

Three courses for officers were offered in this "short year." They were: the Battery Officers' Course for Regulars; the Air Service Observers Course for Regulars; and the Battery Commanders Course for National Guard Officers. Although shortened to six months, the Regular Battery Officers' Course was still a complete one. Gunnery went into such refinements as sound and flash, and high burst, ranging; Materiel found time for chemistry, explosives, and interior ballistics. Exterior ballistics and mathematics had been dropped by Gunnery. Five South American officers from Guatemala, Peru, Ecuador, and Chile attended this course.

The students of the National Guard class had had little experience in their work and had to receive a good deal of instruction in the fundamentals. Their class was 58 hours shorter than the one in the previous year, but the totals were adjusted by cutting some 70 hours from Animal Transport. Circular 143, War Department, 1920, prescribed that aerial observers for artillery had first to take a special course at the Field Artillery School, followed by the Observers' Course at Post Field. Complying with this directive, a course of 466 1/2 hours was offered to members of the Air Service in the spring of 1921. The tactical aspects of the course covered only topography, and practical map problems and terrain exercises. Of the 74 hours allotted to materiel, communications subjects took 50. The gunnery work was quite thorough with 33 hours on elementary mathematics and dispersion. Barrage, counterbattery, and precision firing were well covered. Twenty hours were spent on the terrain board, 6 hours on time fire,

and 48 hours on precision. As for the time given students to fire these gunnery problems, it is stated in a letter that the Commandant doubted if eight problems per battery could be fired in one afternoon.

In this year, the enlisted specialists courses reached full development. Eight courses were offered, one of them, because of its length of 45 weeks, ended in December 1921. The courses were: master sergeants; battery clerks; battery mechanics; motor mechanics; communications; horseshoers; saddlers; and stable sergeants. The course for master sergeants lasted 45 weeks, or 1,490 hours. Subjects covered were: stenography; typing; administration (special regulations and Army Regulations); elementary electricity; materiel; tactics; and gunnery. Gregg shorthand was taught. "Electricity" was really a thorough course in wire communication, up to the brigade net. There were 27 afternoons of service practice. Plainly, the level of this course suggests preparation for a reserve commission. The battery clerks class of 22 weeks included only stenography, typing, and administration, these being practically the same as the master sergeants' work. The battery mechanics' work of 22 weeks was almost all practical, on the British, French, and American 75-mm guns, the mountain gun (the old Vickers 2.95-inch) and the 155-mm howitzer. Vise and bench work, welding, blacksmithing, and carpentry were taught. The Motor Mechanics Course is self-explanatory. The mission of the Communications Course was to make efficient members of the various details. There was a complete grounding in electricity, telephone and radio, then work in topography, visual signalling, training and use of the details, and the operation of radio stations. Horseshoeing was both theoretical and practical, and the men were taught to do pathological shoeing on the diagnosis of a veterinarian. The Stable Sergeants Course was both theoretical and practical, part being given by a veterinarian, part by an artilleryman. It tried to develop men who could run a stable in garrison or field, condition animals, diagnose injuries and diseases, and do simple medical work. The work in the Saddler's Course was entirely practical, and they were taught the manufacture of various parts of the harness.

The school year 1921-1922 marks the first conventional school year, and the first course for Reserve Officers to be presented, plus four more courses for enlisted men. The Air Service schools left Post Field, making this reservation solely an artillery post. The Battery Officers' Course, called the Field Artillery Technical Course, saw a sharp increase in the number of hours given to tactics, with corresponding cuts in materiel and animal transport. For the first time, instruction in aerial observation was given in the

Battery Officers' Course. There may be some connection between this innovation and the fact that this year saw the last class for air observers until World War II began. Instruction in ballistics, chemistry, optics, and explosives was still given, but the Annual Report of the Commandant suggests the elimination of chemistry and explosives as a subject was under consideration.

The cut in the hours allotted to Animal Transport was only to be temporary, as events turned out. General Hinds thought that the annual horse show that year had been "horrible" and determined to double the allotment of hours for Animal Transport in the coming year. He was very disturbed over the falling off in the standard of horsemanship and thought the level of draft even worse. In his opinion, the automobile was responsible for the great lack of interest shown.

Ammunition allotments for the students were most generous as compared to prewar days, being 600 as against 57.

A course for National Guard officers was held in the fall, and one for Reserve officers in the spring, each of about three months. They followed the general lines of the Battery Officers' Course (or Technical Course) but omitted ballistics, sound and flash, and high-burst ranging, elementary electricity, buzzer, optics, chemistry, machine shop work, and automatic weapons. The Air Observers Course was a condensation of the pertinent parts of the Battery Officers' Course, omitting barrage, sound and flash, tactical employment of field artillery and animal transport. The Enlisted Specialists Division dropped its course for master sergeants and added extra classes for horseshoers, battery mechanics, battery clerks, and saddlers of the Regular Army, and a horseshoers class for the National Guard.

The Old Museum

The present Field Artillery School museum should not be regarded as the first of its kind at Fort Sill. After World War I a very fine Ordnance Museum was established in the extreme north C-building in the old School area. In it was a fine display of equipment of all kinds from the War, German equipment, small arms, harness, etc. As the building was a wooden one without any special safeguards, it was not long before these items began to vanish. By the period of 1920-1921 there was so much of this theft that it was decided to change the Museum to a display on the second floor of the Materiel building, and to put the rest in storage in the old stone warehouse, No. 22. Eventually everything was moved there and so remained until the present museum was established.

COURSES

	1919	1920	1921	1921-1922
	Apr-Dec	Jan-Dec	Jan-July	Sept-June
Regular Army				
Battery Officers	15	50	36	70
Enlisted Men		191	146	
Air Service Officers				
Observers			Jan-Apr 19	Sept-Dec 26
National Guard				
Battery Commanders		Aug-Nov 11	Mar-Jun 11	Sept-Dec 12
Reserve Officers				
Battery Officers				Mar-May 12

TOTALS

	Officers	Enlisted Men
Regular Army	171	337
Air Service Officers	45	
National Guard	34	
Reserve Officers	12	
	262	337

Bibliography

Files of the Office of the Chief of Field Artillery, op. cit. supra.
Annual Reports, U.S.F.A.S., op. cit. supra.
Recollections of Capt McCarter.

CHAPTER SEVEN

CONSOLIDATION OF THE ARTILLERY SCHOOLS

After the War, a comprehensive system of service schools was set up for the personnel of the Regular army and the new civilian components created by the National Defense Act. For the Field Artillery, these included the Basic Course at Fort Knox, the Battery Officers Course at Fort Sill, and the Advanced Course at Fort Bragg. After completing these schools, an officer was, if selected, to go to the general service schools, the Command and General Staff School at Leavenworth, and the Army War College. By 1922, it was felt that the system did not accomodate post-war conditions. Consequently a board headed by Brig Gen Edward F. McGlachlin, the former commandant of the School of Fire, was chosen to consider the situation and make its recommendations. Besides McGlachlin, its members were: Brig Gen Ernest Hinds; Brig Gen Fred W. Sladen; Brig Gen Hanson E. Ely; Brig Gen Malin Craig; Col Richmond P. Davis, Coast Artillery Corps; Col Paul B. Malone, Infantry; Col Harold B. Fiske, General Staff; Maj Thomas DeW. Milling, Air Service; Lt Col Samuel R. Gleaves, General Staff, recorder.

The letter of instruction sent to the board by General of the Armies John J. Pershing, February 4, 1922, summarizes both the existing system and the objections to it. General Pershing wrote that the system of military education was based on first deductions from the lessons of the war, and on the educational requirements both of a Regular Army of 280,000 and the newly instituted civilian components (the Organized Reserves and the National Guard). There were the further needs of educating a large number of young officers and of giving the latest lessons of war to Regulars who had not been overseas. Liberal appropriations to support this system had been expected. However, the usual post-war reaction was setting in, and appropriations were once again being cut to the lowest possible terms. Moreover, the system did seem too large and cumbersome for efficiency, with its overlapping of courses and confusion of doctrine between schools. General Pershing wanted the board to study the whole system of army education with a view to its simplification. The Board should set the exact place of each school in the scheme and include development of a comprehensive system of instruction by correspondence course for the National Guard and the Organized Reserves.

The mission of the board was to study the army school system and make recommendations for better coordinating existing courses, reducing the time and expense involved, and developing adequate courses of instruction for the civilian components. The board's procedure in fulfilling its mission was to visit Fort Knox, Fort Sill, Fort Leavenworth, Fort Benning, Camp Bragg (as it was then known), Fortress Monroe, Langley Field, Camp Humphreys, Camp Alfred Vail, the Military Academy, Camp Meade, and Washington, D. C. The plant and curricula of each of the schools visited were inspected, and in Washington the Board conferred with the Chief of each arm concerned, or with his representative.

After due deliberation, the board established the post-war framework of the army educational system. Mentioned here are only those recommendations that deal with the Field Artillery School.

The board urged that the artillery schools be concentrated at Fort Sill at the beginning of the school year 1922-1923. The reasons given were principally those of economy: economy in overhead of officers and men; economy in the cost of maintenance directly chargeable to the combined schools; less mileage, as changes of station to Fort Sill would average 400 miles less than changes to Camp Bragg; and economy in utilization of water and sewage facilities, those at Fort Sill being permanent whereas those at Bragg were of wood. Yearly savings were estimated at $240,000. There would also be better coordination in the subjects taught. The board voted 5-4 to recommend that the Field Artillery School be moved to Fort Benning as soon as funds could be obtained to erect an artillery post there. As for courses of instruction, the discontinuance of the basic course was recommended, and it was suggested that new officers of the Regular Army receive their basic training in troop schools conducted by their units. As soon as this training was completed and openings were available, they were to go to the service schools which would offer:

> Battery officers courses--To give as thorough a technical knowledge as one year would permit;
>
> Advanced courses--To complete the tactical and technical training of the officers of the arm;
>
> Special courses--National Guard and Reserve officer courses and refresher courses for field and general officers;

Enlisted courses--To train certain selected enlisted men as technicians and instructors in the duties of enlisted specialists of the arm in the Regular Army and the civilian components.

The battery officers courses were not to be radically different from the existing basic courses except that certain basic subjects, common to all arms, like military courtesy, would be dropped and technical artillery matters substituted. There was to be no change in the advanced course other than the minor ones coming from the combination of three courses into two. Enlisted specialists courses were to remain the same. There were to be no changes in correspondence courses, which would continue to be conducted by corps area commanders. As an amplification of its request for special courses for officers, the board listed courses for officers detailed in or transferred to the Field Artillery from other arms. All officers below field grade, or field officers with little or no experience, were to be required to take either of the two officer's courses.

The Consolidation Opposed

Opposition to the proposed consolidation of the schools came from General Snow, who was still Chief of Field Artillery, and Brig Gen Albert J. Bowley. Snow felt that as the Regular Army grew smaller, the prospective burdens on the service schools in an emergency would increase, and therefore he advocated not one two, but three artillery schools, Bragg, Sill, and one on the West Coast. General Snow was also of the opinion that the investment in Fort Bragg and the large range there should be utilized. In his opinion, the slight economy of lowering the cost of utilities was far outweighed by the advantages of keeping the schools seperate. The only consolidation he would approve would be moving the basic course from Fort Knox to Bragg. General Bowley stated he wanted the school to be moved to Fort Bragg because that reservation had not been paid for, and if a school were maintained there, there would be a better chance of keeping the reservation. He tried to persuade General Pershing to his point of view, in a conversation in which General Pershing listened affably but said nothing. (Bowley to Snow, May 22, 1922, files of the Office of the Chief of Field Artillery.) General Bowley's activities on behalf of the Bragg site continued for many years. In the end, the schools were consolidated at Fort Sill. It is known that General Pershing disapproved of moving the Field Artillery School to Fort Benning, and it may be that he also disapproved of moving it to Fort Bragg.

In May and June of 1922 the staff of the Field Artillery School took it more or less for granted that the schools would be consolidated at Fort Sill, and they planned accordingly. It was necessary to rearrange existing housing facilities to create new ones, to plan the new courses, and to get the personnel who would arrive from the other schools comfortably settled before the students arrived in fall. In June, General Hinds asked for all the school property from Fort Knox, furniture, printing press, 200 horses, everything movable and valuable. In 1921, Hinds had obtained $181,000 with which to convert temporary bachelor quarters into quarters suitable for married officers. He then received authority to convert one of the C-buildings into 18 family apartments. Sixteen good barracks in the base hospital area were next made into married officers' quarters. Officers on the post had been marrying at a rate which complicated the housing problem, and the General feared some of them would have to take tiny four-room beaverboard apartments. The quarters situation was solved, however, for the time, by the new construction, by the removal of the Air Service Schools, and by the departure of the 9th and the 14th Field Artillery regiments. These arrangements opened up enough room for the Commandant to request the stationing here of a demonstration battalion of infantry and a full aviation squadron for work with the officers courses. There was room for most of the 1st Field Artillery at the New Post, and for an infantry battalion, an artillery battalion, and the headquarters battery of the 1st at Post Field.

An order June 9, 1922, to the Commanding General, 5th Corps Area, directed the sending of 7 majors, 6 captains, 20 first lieutenants, 2 warrant officers, 1 field clerk, and 84 enlisted men from Camp Knox to Fort Sill. The movement included all school property except guns, carriages, trucks, and tractors. An order of the same date and to the same effect, to the Commanding General, Camp Bragg, mentioned only the detachment of 29 enlisted men, and such books, papers, records, and maps as the Chief of Field Artillery might direct.

The Fort Bragg detachment arrived July 1, 1922, and the Fort Knox officers and enlisted men, including the colored detachment, August 12. On the arrival of the colored detachment, the men camped on the site of the present Administration building, according to Master Sergeant James C. Johnson. Their eventual quarters were war-time wooden barracks just south of the station hospital. The detachment brought with it an excellent baseball team which won its first Post championship cup in the summer of 1923.

Courses Offered

After the consolidation of the schools at Fort Sill, six courses were offered for officers in the school years 1922-1923 and 1923-1924: the Battery Officers' Course; the Advanced Course; the Refresher Course; the Course for Field Officers Detailed to Four Years in the Field Artillery; the National Guard Officers' Course; the Reserve Officers' Course.

The Battery Officers' Course devoted much more time to equitation than had previous classes, carrying out General Hinds' intention of the year before. In the 1922-1923 class, the rules of procedure for lateral firing were liberalized, leaving a good deal more to the judgement of the student. Although this lessened pressure on the student, the class of 1923-1924 replied to the Department of Gunnery's request for suggestions with a recommendation that there be no stop watch held on the first problems and that instructors intervene to suggest better commands. They further objected to the practice of calling all deficient students into the Commandant's office in a group, as being rather embarassing. The hours devoted to Gunnery were cut down from 508 in 1921 to 358 in 1923-1924.

The Advanced Courses heavily stressed tactics, and the Department of Tactics for many years had the responsibility of the detailed planning of the course. In round figures, in the first Advanced class, Tactics had 11 times the hours allotted other courses, in 1923-1924 it had six times the hours allotted the next highest, Gunnery. Even in this second year the Gunnery course was a refresher course rather than instructional, and student sentiment thought it should be enough to bring them thoroughly up to date. They felt themselves rather confused by the use of British, French, and American materiel in the work. In the previous year, the comment of the School had been that few of the class could be considered thoroughly competent instructors of their junior officers.

The Refresher Course as given in 1924 to a general officer was described in a letter to General Snow. The student was not bound to any regular class and followed a tentative schedule of instruction. On one day, selected as typical, he spent two hours with the Department of Tactics covering essentials, one hour taking up the use of the battery commander's telescope and the range finder, and one hour on the preparation of firing data. In the afternoon he went out with a battery on a problem in reconnaisance, and spent a short period at a firing point. In some cases he went with

the Advanced class to certain conferences or demonstrations; at other times he accompanied a battalion commander inspecting his battalion. The idea was to prepare him to command an artillery brigade and enable him to coordinate instruction, to see faults, and to correct them. Not until 1926 were refresher courses attempted for officers of lesser grade.

The course for field officers of Cavalry and Infantry detailed to four years with the Field Artillery was about 655 hours long, and was thoroughly criticized by the Commandant, General Hinds, in May, 1923. He urged in its place that such officers take the advanced course. He felt they would be of more use in the three years and three months left than if they had only had the abbreviated course, for they would feel more sure of themselves.

The National Guard and Reserve Officer Courses given in 1922-1924 were the same as previous years as far as content was concerned. However, in the fall of 1923 the courses were changed insofar as they were combined into one course, and provisions were made for two classes each year, one in the fall and one in the spring. This course became the pattern for the Officer Candidate, Battery Officer, and Basic courses of the Second World War. The course was not an easy one. One reserve officer, writing in Volume XIII of the Field Artillery Journal, said: "It is the rare and highly ambitious young man who devotes as much as eight hours of solid unremitting work to his business; fourteen hours a day of high-pressure work is no unusual average for a student in the Reserve course at Sill."

The enlisted specialists' department in these two school years of 1922-1923 and 1923-1924 suffered a great contraction of its activities and at no time was operating near capacity. There were only five courses offered in each year. In the first, there were communications courses, one each for Regulars and National Guardsmen; horseshoers courses on the same basis; and a battery mechanics class for Regulars. In the second year, there were horseshoers and communication classes for the Regular Army and National Guard together, and horseshoers, battery mechanics, and saddlers courses for the Regular Army only.

The only formal change in the organization of the school in this two year period saw the demise of the Department of Research in September, 1922. The Book Department began during the school year 1922-1923. The correspondence on its founding has been lost, probably in the fire that destroyed Snow Hall. It was intended to play a role like the then existing Book Department of the Command

and General Staff School. It began with a small amount of cash on hand--and through the courtesy of several business houses who shipped goods on consignment. Since there were no Army Regulations dealing with the subject, it was modeled as closely as possible after the Post Exchange. The staff at this time was probably an officer, a steward, whose duties were those of a Post Exchange steward, a bookkeeper, and a shipping clerk. There were then no civilians employed. The Book Department sold both by mail and over the counter. It furnished students with non-issue supplies at a reasonable price and was the financial agent of the Reproduction plant in distributing instructional literature. In 1923-1924 the Book Department-Reproduction plant combination expanded its field to include the manufacture of maps, overprints, zinc etchings, and photo lithographs.

Organization of the 18th FA

December 1, 1922, the 1st Battalion of the 18th Field Artillery was reconstituted at Fort Sill. In 1923 the War Department approved the stationing here of a demonstration battalion of infantry, and on June 7, 1923, the 3d Battalion of the 20th Infantry appeared. Their arrival fixed the combination of units that was to last for so many years, until the activation of a battalion of the 77th in the thirties. It should be noted that the 20th Infantry was not a war-strength battalion. It was the settled policy of the School to have all units authorized as war-strength units and to keep them as close to that as possible. In 1924-1925 the Chief of Field Artillery recommended accordingly. The reasons for this policy were that nowhere else within the Continental United States could an artillery officer learn to work with the war-strength units that would be his to handle in time of emergency. At that time, however, mention of the policy would have produced a sardonic laugh, for the school troops were well below their authorized strength. In October 1923 they were 400 below strength, and the batteries had to use cooks as drivers and cannoneers. There was prosperity in the oil fields; there was rejoicing in Wall Street; and men were purchasing discharges as rapidly as possible. In both 1922 and 1923 the 1st, 2d, 3d, 4th, 5th, 6th, and 7th Corps Areas were directed to recruit for Fort Sill, and did so with little result, obtaining a scant 53 men in 1922, for example.

School Organization and Agencies

The end of the Department of Research did not by any means mean the end of research and experiment at the School. As an

example, in 1923, the Advanced course, in Field Exercise No. 9, had its targets in "hostile" territory invisible from any ground held by friendly troops, and all firing was based on photos prepared by the Air Service. About two days were needed to prepare the firing charts based on the aerial photographs, which were taken of the entire corps zone of action from about 6,000 yards behind the friendly lines to 10,000 yards behind the enemy. Some 69 small photos were pieced together on a scale of 1/10,000 and re-photographed at 1/20,000. An aerial observer would note the hectometric coordinates of a target and send the location to a battery whose position had been spotted on the chart by survey. In one case, fire for effect was opened on receiving the necessary data, and four hits out of 30 were secured by one battery on a target 200x200 yards.

The War Department's General Order No. 53, 1915, directed that the Field Artillery Board be composed of: the permanent regimental commander of the Field Artillery regiment stationed at Fort Sill, who will be president; the lieutenant-colonel of the same; the Commandant of the School of Fire; the commanding officers of the two instruction batteries, A and B of the 5th Field Artillery; and the Secretary of the School of Fire, who would be recorder. In 1918-1919, General Snow succeeded in having the Commandant made president, and communications went through him. In 1920, the Commandant was still president, and the Board had added one officer from the Chief's office, an ordnance officer, and four officers chosen by the Chief. The Board was still charged with the preparation of regulations, although there was also a Drill Regulations Board. In 1922, the Board was moved from Fort Sill to Fort Bragg, no doubt to lighten the burden on the Commandant and to make use of the facilities then made available at Bragg.

On September 5, 1924, post headquarters and school headquarters became one. In 1911 the School of Fire had been under the Commanding Officer, Fort Sill, Okla., a situation not always to the liking of the School. After the war, the Commandant of the School had through senior rank become commanding officer of the Post of Fort Sill as well as of the School, but the two headquarters had been kept separate. Old timers tell of General Irwin, as Commandant, sitting down in the morning and sending himself (as Post Commander) an official letter, then that afternoon, seating himself in Post Headquarters and answering his own letter. One is reminded of Braxton Bragg, who, occupying the dual roles of Post Commander and Post Quartermaster, before the Civil War, managed to stir up a hot quarrel in official correspondence between his two incarnations. The annual report for 1924, which was written

in June of that year, recommended merging the two headquarters, and that summer General Snow as Chief approved it. General Order No. 1, Headquarters, Field Artillery School. September 5, 1924, created the new organization.

All post and school activities are grouped in four divisions: the School Headquarters; the Academic Division; the School Troop Division; the services. The School Headquarters consisted of the Commandant, his aide or aides, and his staff. The Academic Division, under the Assistant Commandant, included all the activities formerly referred to as the Field Artillery School, more formally, all activities connected directly with the instruction, discipline, and administration of the student body. The School Troop Division included many of the activities formerly grouped under the Post. It included responsibility for all combat troops stationed permanently at the Field Artillery School. The Commanding Officer, School Troops, commanded this division, and was responsible for its training, discipline, and administration. The Services included: the Adjutant; Quartermaster; Ordnance; Engineers; Signal Office; Post Surgeon; Post Veterinarian; Finance Office; Provost Marshall; Fire Marshall; Staff Judge Advocate; Recruiting Officer; Chaplain; School Exchange; Guidon (post newspaper); and the Red Cross.. The services also furnished the administrative staff of the Field Artillery School.

The executive was primarily charged with the coordination of the several divisions and services. The Commandant's office was put on the south side of the south wing of Snow Hall, the Assistant Commandant on the right, the executive on the left, and the Secretary across the hall. The administration building in the New Post was turned over to the services.

The New Commandant

The new Commandant, Maj Gen George LeRoy Irwin, who arrived July 1, 1923 was largely instrumental in making these new arrangements. General Irwin was West Point '89. After graduation from the old Artillery School he spent five years on garrison duty and then went to the Philipines for two years. On his return to the United States he spent eight years on various duties before attending the Army War College. After the War College came Panama, and after Panama, France, where General Irwin commanded the 32d Division in the Second Battle of the Marne, receiving the Distinguished Service Medal for his work there. On returning to the United States he was assigned to the Inspector General's Department until 1923.

COURSES	1922-23 Sep-Jun	1923-24 Sep-Jun	TOTALS Off.	EM
Regular Army				
Battery Officers	120	75	195	
Advanced Course	26	33	59	
Refresher Course	4*		4	
Field Officers Detailed in the FA for 4 Years	4	22	26	
Enlisted Men	58	75		133
National Guard	Sep-Dec			
Battery Officers	30	70**	100	
Reserve Officers	Mar-Jun 13		13	
			297	133

* Various times during the year
** National Guard and Reserve Officers combined this year and all following courses 3 months, Fall and Spring

Bibliography

Files of the Office of the Chief of Field Artillery, op. cit. supra.
Annual Reports, U.S.F.A.S., op. cit. supra.
"Fort Sill through a Reserve Officer's Field Glasses," Kingsley Moses, Field Artillery Journal, Vol. XIII.

CHAPTER EIGHT

THE SCHOOL BECOMES PERMANENT: 1924-1930

The years of 1924-1930 were significant in the history of the school. The first of these was the year when the School and the Post were consolidated, and the last, the year in which Secretary of War Patrick J. Hurley approved Fort Sill as the permanent location of the Field Artillery School. In between these dates, new courses were established, there was progress in the organization of several departments of the School and in the training activities and methods used, more students came to the institution, and the housing problem became severe. Also, there were the great fires of the middle and late twenties and the Cruikshank Board which recommended that the Field Artillery School be permanently established at Fort Sill.

Civilian Component Correspondence Courses

The McClachlin Board had recommended that a system of correspondence courses for the instruction of the civilian components be created. August 28, 1924, a Correspondence Course Board was begun, composed of Major William F. Sharp and five assistants. The Board was charged with the preparation and forwarding of all correspondence courses, in addition to their other duties. The courses paralleled those given at the School, and were divided into the Basic, Battery Officer's, and Advanced courses. Subjects covered included:

The Basic Course

1. Organization of the Army
2. Elementary battery training:
   a. for horse drawn units
   b. for motorized units
3. Elementary gunnery
4. Artillery movements mounted
5. Field Artillery ammunition
6. Care of animals and stable management
7. Motorized transportation

The Battery Officer's Course

1. Preparation of fire
2. Reconnaisance, selection, and occupation of position; combat orders
3. Preparation of fire (a continuation of 1 above)
4. Observation of fire
5. Field Artillery signal communication
6. Conduct of fire
7. On the march and in bivouac

The Advanced Course

1. Special fire missions
2. Combat orders and problem solutions
3. Tactics I--the battalion in the advance and in rear guard actions
4. Tactics II--Field Artillery in the offense
5. Tactics III--Field Artillery in the defense
6. Tactics IV--Field Artillery with the cavalry division
7. Methods of training

Since these courses were prepared by members of the Board in addition to their other duties, a real strain was placed on them. This was remedied April 27, 1925, by reconstituting the Correspondence Course Board as a Board of Review to pass on courses prepared by the several departments. After the reorganization, it was estimated that some three and one-half months were needed from the time a course was begun to the time it was put in the mail. No clerical or enlisted aid was provided so that a total of 1,000 hours was spent on these courses by members of the reorganized board. By March, 1926, a total of 599 National Guard officers, 2,024 Organized Reserve officers, and 98 other individuals were taking these courses, but previous experience indicated that only 20 percent would complete their courses. This figure of 540 was about 15 times the number of students who took the National Guard and Reserve Officer's course at the School during the school year 1924-1925, thus despite the mortality, the courses brought about a substantial increase in the School's overall usefullness.

A yearly program of revision of existing courses and addition of new ones was begun in the school year 1925-1926. In the year 1927-1928 the Board was changed again to the Correspondence Course Section. The new Section included one member chosen by each department plus the Assistant Secretary. Subcourses prepared by a

department were reviewed for the Section by the member from that department and by the president of the Section. The Assistant Commandant then gave the final approval. One handicap that bothered the Section was that since the courses were actually conducted by the several corps areas, the members of the Section had no contact with the officers who were giving the courses and had little idea of how many students were taking them.

A course for National Guard field officers, which had been requested by the Chief of the Militia Bureau, was first offered November 1, to December 12, 1924. Ten officers were scheduled to attend, but only seven did so. Tactical studies occupied 133 of the 206 hours allotted.

A branch assignment group course for Reserve officers was given September 7-19, 1925, to 21 officers. More than half of the course was devoted to gunnery.

Resident Officer Specialist Courses

Courses for officer specialists were introduced September 15, 1927, with the offering of advanced instruction in horsemanship. The mission of the course was to qualify officers to act as instructors in driving, draft and equitation in their units. Battery officers on arriving at the School had previously showed that they had had little instruction in their units. Four officers began the course, and one more was added from the School horse show team. The course allotted 400 hours to driving and draft, 915 to equitation, 81 to animal management and horseshoeing, and 18 to the horse show and the transportation show. The course was thought by the School to have been successful.

The Advanced Course in Motors began in September, 1928 in compliance with the following instructions from the War Department: "It is the policy of the War Department to send officers of the Field Artillery to various motor transport schools, to provide at least one officer in each motorized unit who is a qualified motor mechanic and who can train the enlisted men to be mechanics and operate motor transportation skillfully and economically." The School felt it could comply with the directive by setting up an Advanced Motors Course at the School with equal emphasis on the knowledge of mechanics, maintenance, operation, and training.

The course was actually organized by Capt Malcolm Cox and Sgt David Hagen, according to Sgt (now Capt) Hagen's recollection. The first course was not fully satisfactory. For one thing,

it was too short, lasting only five months. For another, there was no modern equipment at hand for instructional purposes. The Commandant, General Aultman, very bluntly called the course a "flop." In the next year it was extended to a full nine months, and motor equipment was borrowed from Lawton motor dealers so a student could see motor assemblies of postwar vintage.

"Honors" courses were instituted under the provisions of a letter from the Adjutant General's Office, August 22, 1930, which authorized service schools to offer courses in advanced professional, technical, scientific, or cultural subjects, for which they had qualified instructors. The subjects covered were to be in fields such as law, pedagogy, economics, foreign languages, metallurgy, etc. Students doing exceptional work could volunteer for the course but could not actually take it without the approval of the School. The course was to culminate in a thesis. Satisfactory completion brought either a letter of commendation or an appropriate entry on the efficiency report.

No such courses were taken in 1931, and the subsequent history of the venture may be quickly surveyed. Almost every year, several carefully selected officers with fine potential and acceptable topics would enroll only to find in the spring that they were far too busy to complete their work. One officer, in 1932, Capt P. W. Allison, of the Advanced Class, did satisfactorily complete an Honors Course on the Self-Propelled Battery. Capt H. C. Harrison Jr. was unable to complete his work in 1933 because of the closing of the school in the CCC emergency. No courses were taken in 1934 or 1935, and it having been made discretionary with the Commandant in 1935 as to whether such courses were offered, they were then dropped. Few if any instructors then at the school were capable of giving instruction along the broad cultural lines laid down in the original letter.

Training Techniques

Good progress along technical lines was made by the Department of Gunnery in this period 1924-1930. Aerial observation was covered in both the Battery Officers Courses and the Advanced Course. Night adjustment of fire from forward observation posts, aided by airplanes dropping flares, was practiced in the same year. The sending of firing data by radio from forward observation posts, a most significant advance, and the use of aerial photos in the preparation of fire, were techniques employed more often in those years.

Extensive use was made of the terrain board as a means of instruction, no less than 25 percent of every indoor period being given to it in the year 1923-1924. One of the boards used was the Baranoff terrain board, a most elaborate machine made in Germany. It could produce any effect found in actual firing, including dispersion. The student looked through a hole in a screen at a stretch of terrain, which through lighting effects was made to seem most realistic. The scale was such that instruments could be used with the board. The machine was also used in the aerial observation training given to Advanced Course students.

Both students and the School were dissatisfied with the gunnery part of the early Advanced courses, since the time was heavily weighted with tactical subjects and gunnery offered more as a refresher. The Advanced Class which graduated in June 1924 formed a committee, at the suggestion of the Commandant, to report on their gunnery course. They suggested that the course be instructional rather than refresher, that there be more terrain board practice, that service practice start in January and be preceded by explanations and demonstrations. The School had given members of this class over 30 hours extra instruction over the Christmas holidays and during evenings. The records suggest that not every phase of this course had been graded, which resulted in a tendency to omit the work required. Be that as it may, the years saw a steady increase in the gunnery component of the Advanced Course, from 98 hours to 158, from 158 to 208, 208 to 217 (before the development of modern methods of fire direction) and on up to 333 hours in the last Advanced class given.

During the school year 1925-1926 the Department of Gunnery's methods of instruction were somewhat changed. In teaching the theory of gunnery, the instructor covered the subjects assigned in a conference, then the student went to the blackboard and solved practical problems emphasizing the points covered. Every effort was made to teach, rather than to find out what the student knew. In practical gunnery, demonstrations covered every point, and the instructor fired a type problem, beforehand. Stop watches were used only for statistical purposes and had little bearing on the problem. Students knew the standard sought and were encouraged to consult the instructor. Almost every problem was completed even if the instructor had to assist the student. A student's skill was judged by his work in the later periods of the course, the first part being instructional only. In 1930, in service practice, the student was not required to stand on his own feet entirely, according to a memorandum of March 1. Certain minor departures from book procedure were

permitted the battery executive in assisting the student by interpreting incorrect commands. Correct commands in incorrect sequence, for example, would be executed correctly.

The gunnery grading system of 1925 was as follows. No matter in what manner the proficiency of an individual might be accomplished, it would automatically fix the proficiency of individuals standing above him on the relative scale. Low men in the class averaged 32 problems. Every student had five free problems. Any student who received a satisfactory mark on half of his problems was proficient. A board of three instructors passed on all problems to secure uniformity in grading. A problem once rated as "S" by them could not be re-graded "U." As applied to a type of problem, axial adjustment of shrapnel, the initial data counted 15 %; choice of ammunition 5%; commands 5%; sensing and ranging 25%; handling of sheaf 20%; handling of corrector 20%; and general estimate 10%.

The Department of Tactics, then handled both the technical and tactical aspects of communications as well as most other tactical matters. In the school year 1924-1925, in addition to regular instructional duties, the department handled the tactics part of the Correspondence Course work, reconnaisance problems in the field, research, the writing up of field exercises for the Field Artillery Bulletin, and preparation of the annual tactical inspection of school troops. The department was organized in 1924-1925 into a command section and six other sections, whose instructional subjects were:

Command Section:	Artillery tactics.
1st Section:	G-1 functions; military organization; field engineering (including orientation, topography, work with aerial photographs).
2d Section:	G-2 functions; Artillery intelligence; military history.
3d Section:	G-3 functions; training and leadership; methods of instruction; Artillery staff duties; combat orders; solution of map problems.
4th Section:	G-4 functions; logistics.
5th Section:	Signal communications; liaison.
6th Section:	Tactics of associated arms; tactics of separate arms.

These subjects were the primary assignments of the instructors of each section. Each map problem was gone over by a board of review in the department and would be solved by at least one officer. The assignment of subjects to a section varied from year to year, but the type of organization was not changed.

The amount of practical instruction was held at the highest possible level. Thus, the first instruction in the reconnaissance, selection, and occupation of position consisted of moving blocks about a terrain board. The instruction emphasized the importance of the light field artillery battalion with stress being laid on speed and simplicity of installation. Demonstrations of battery and battalion problems in reconnaissance, selection, and occupation of position included problems in conduct of fire in the first, and fire direction in the second. The Advanced Class had one series of problems for the battalion in which the batteries and details were outlined, and another series in which each student commanded a complete battalion. Eighty per cent of the problems given were in open warfare. In 1926-1927, the department added demonstrations of the conduct of fire by artillery units supporting attacking infantry, and of the ammunition supply of division artillery. A field exercise showing the operation of all artillery staffs of division artillery was added. A five-day general field exercise was held for the second time, replacing the former two three-day exercises.

Experimentation in better communication in moving situations, so as to give better support to the infantry, went on actively. In 27-1928, the SCR-77-B radio was used for liaison communication with the infantry by being broken down into series of loads and manhandled from place to place by perspiring doughboys. It was powered by a 35 pound battery, which was in turn made mobile by an infantryman. In 1927-1928, an SCR-109-A was installed in a horse-drawn wagon, converted from a former ambulance, by Master Sergeant Clarence Burleson. The antenna was 24 wires strung two inches apart and running the length of the wagon under the bows. The battery containers were two longitudinal box seats against the sides of the vehicle. The set had a good range and was able to operate while the vehicle was in motion. Sgt Burleson convinced the Assistant Commandant, Lt Col William P. Ennis, of the set's worth while on a march. A horse having been injured, Ennis directed that at the next halt a message be sent requesting a veterinary ambulance. At the halt he inquired if the message was being sent, and was told that it had been sent while on the march almost immediately after he gave it. The colonel simply had not realized that the set could transmit so far while in motion. From then on he was an advocate of vehicular radio. By 1931, the School

had three radio wagons and a radio truck, and each regiment of school troops had a radio wagon.

The Department of Animal Transport was responsible for some 13 activities: equitation, driving and draft, animal management, saddling, correspondence courses, stables, pastures, construction, riding hall and riding pens, saddle room, administration, and supply room. A good deal of the instruction was given in a former airplane hangar, 200 x 67 feet, which was re-erected across from where the Administration Building stood in 1944. If a class had more than one section, the other section had to work out-of-doors, since the hall only held one at a time. There were some 300 government horses at the Department's disposal.

The Department of Materiel, in the late twenties, had a dual role, instruction and automotive maintenance. There were three commissioned instructors, one of them the director, and an officer in charge of the motor pool. Of the enlisted staff, two were instructors in the machine shop, one was instructor in the gun room, three were in charge of the motor shop and supply, and eight were assistant instructors in the motor mechanics and Battery Officer courses. These figures were as of 1925-1926, but the organization did not vary. Methods of obtaining enlisted instructors differed. In one case, a notice was put in the Daily Bulletin asking for applicants. In another, a young soldier who had attracted attention by his work with the 1st Field Artillery was asked if he cared to transfer after his current enlistment.

The Department gave instruction in automotive vehicles, guns and carriages, ammunition and explosives, machine guns, and sighting and aiming devices. In each subject, a background was laid by one or more lectures on development of the machine, how well it served its purposes, and future employment. Other lectures followed, accompanied by demonstrations, and in turn followed by practical work. In field artillery combat weapons and ammunition, the lecture and demonstration method was the basic form of the instruction. Instruction was given on the three types of 75-mm guns, the 155-mm howitzer, the 155-mm gun GPF, the Vickers mountain gun, the 8-inch and 240-mm howitzers, and the heavy machine gun, caliber .30. The enlisted courses covered in detail the construction, operation, and efficient maintenance of all materiel issued to the Field Artillery, such as motor vehicles, the French 75-mm gun, the 155-mm howitzer, except fire control and communications equipment. Instruction in machine shop practice including practical work, was also given.

During the school year, two mechanics and two assistant mechanics working under the truckmaster made minor repairs and adjustments. When the Battery Officers course was studying motors, thus putting an extra strain on the auto shop facilities and personnel, these four made all repairs necessary to keep academic division transportation in running order. Monthly inspections were given by one mechanic who went over a different vehicle every day, thus averaging 35 days between inspections for each vehicle. Routine daily inspections were made by the chief of the section to which the vehicle was assigned. During the summer months, the enlisted instructors gave a good general overhaul to all vehicles.

In 1929, General Pelham D. Glassford made an interesting comparison of the Command and General Staff School, the Infantry School, the Cavalry School, and the Field Artillery School, showing the attitudes of the several schools on the relative weight given to classroom and field instruction. For the Advanced course at the Field Artillery School, 42.5% of the time was spent outdoors as against 43.8% for the Infantry School, this despite the highly technical nature of the artillery arm. The Command and General Staff School spent 14% of the time outdoors the first year, and 11% the second. In courses for officers of company or comparable grade, the percentages of outdoor instruction were: Infantry School, 61.4%; Field Artillery School, 56.6%; Cavalry School, 38.0%. In courses for civilian components, the Field Artillery School took the lead in the courses for field officers, and was second in those for officers of company or comparable grade.

It should be emphasized again that the Field Artillery instruction was well-geared to warfare of the thirties and forties. Both Battery Officers and Advanced Officers courses received instruction in air adjustment of artillery fire and in preparation of fire from aerial photos. In 1924-1925, "practically all" of the battery officers at the School fired at moving targets. Forward observer radio sets were in use as early as 1923-1924. National Guard and Reserve officers in the field exercises usually held the roles that would be theirs in their home organizations. An economy move in 1927-1928, the substitution of 37-mm subcaliber ammunition on a round for round basis for a large percentage of the School's ammunition allotment handicapped instruction, for far more rounds were required for each adjustment of fire, thus cutting down the number of problems that could be fired.

The Horse and Transportation Shows

One of the most colorful events of the school year was the annual Horse Show, ordinarily held in the spring and first held in 1923. The site was first the horse show ring, which was south of the present Officer's Club, and just about where the tennis courts are. Later it was put on in Rucker Park, north of the present hospital. The show took the better part of three or four days. Judges included some of the outstanding local horseman and civilian and military enthusiasts from other posts. The show differed from the ordinary horse show in that many events of strictly military character were introduced. Thus, in 1929, there was a competition between troopers' mounts, for enlisted men only. There were events for artillery horses and officers' chargers. Jumping events were set aside for officers' jumpers, school troops' officers' jumpers, enlisted men's jumpers, and remount jumpers for the Advanced Class in Horsemanship only. Cups were offered to stimulate interest in features of a military character. The Commandant's Cup was offered to members of the Battery Officers' Class riding government mounts, the American Remount Association Cup was open to the Battery Officers Class only, for remount training, and the Pierre Lorillard Cup was given to a member of the Advanced Class in Horsemanship for remount training. Beside the cups mentioned above, others were offered yearly by Maj Gen Baird Markham and John McEntee Bowman.

The Transportation Show, a strictly military version of the Horse Show, was held yearly, either in the spring or fall, as a scheduled part of the curriculum. It served to demonstrate the highest standard of condition and appearance of personnel and equipment, to demonstrate the standards that could be obtained with issue equipment, and to arouse interest in maintenance. Sometimes two weeks or more would be spent in cleaning individual harness. Gun wheels would be sandpapered before repainting, and rough metal castings would be carefully smoothed. Some equipment was saved for the event and not used for the rest of the year, one organization going to the length of saving an especially shiny and well-maintained escort wagon just for the show. Between shows it was carefully lifted into the eaves of a building, where moth and rust could not corrupt, nor inspectors break in and make unkind comment.

The competition eventually became so cutthroat that by 1930 the unit commanders had to certify that all work was done by enlisted personnel using issue supplies, except paint for insignia and engine blocks, and that the vehicles and animals were those regularly issued.

Also that no shoe polish was used on the harness. Events in the motor drawn class were: trucks; artillery reel and cart, "20" tractor; trailer kitchen, etc.; and in the horse-drawn class: draft test, 6-horse teams; battery reel, 4-horse teams; gun section; escort wagon, etc. Perhaps the most spectacular event was the figure eights through narrow staked spaces that horse-drawn reels and gun sections would execute at the trot or gallop.

The Field Artillery School Horse Show Team participated as such in local shows and in shows in neighboring cities. Its members were trained in the arts of jumping, cross-country riding, and the higher equitation to include whatever was needed to prepare a horse for the three-day event at the Olympic Games, the idea being that by competing with the best talent in the world, these men would develop into excellent instructors for the horse-drawn units of the artillery. Only competition would reveal in peacetime whether the School's methods of training and conditioning were sound. Members of the team in 1928-1929 were: Major C. P. "Toddy" George, 1st FA (in charge); Capt J. J. Waters, 1st FA; Capt N. J. McMahon, 1st FA; Capt W. H. Colbern, 1st FA; and 1st Lt E. Y. Argo, 1st FA. George and Argo were members of the 1928 Olympic team. Members of the School team joined in the Syracuse, National, and Toronto shows as members of the Army team. As the School team, they took 75% of the prizes at the November and February Shows at Oklahoma City.

The Summer Training Program

A good portion of the School's resources were devoted annually to the training of the National Guard, the ROTC, the CMTC, and the Organized Reserves in their summer encampments. This was in addition to the preparation of correspondence work for those groups. Adequate assistance was not given until the School had begun the common type of school year, leaving its summers free. A memorandum from General Snow's office, issued during the 1922-1923 school year, suggested his wish then to have "All officers of Field Artillery....employed during the summer months every year in some form of instruction duty in connection with the civilian components of the Army, for all Regular Field Artillery troops will be so employed." It was always necessary to reconcile that sentence with the fact that for the School, the summer months were the only ones in which leave could be granted, equipment repaired, and troops refreshed and retrained for the demands of the coming school year. During the summer of 1923, the School troops furnished a battalion of infantry, two batteries, and some 80 men for cooks, mess sergeants, orderlies, and instructors for the summer camps. There were in

addition constant calls on the School for motor transportation. The band of the 1st Field Artillery was practically turned over to the National Guard for the summer.

In the summer of 1924, the School did succeed in concentrating its attention on its problems, but from 1925 on the civilian components were a summer responsibility of the School. Thus, in 1925, the 203d and 206th Coast Artillery (AA) were trained at Fort Sill, for the cost of sending them to the sea coast had been found prohibitive. Three groups of Reserve officers, totaling 75 men, were also present at various times. Despite technical difficulties, the camp was regarded as successful, and was held again in 1926. As for demands on the School troops, in 1928, for example, the School furnished one battery each to the ROTC and CMTC as long as their camps lasted.

Methods of Grading

Practical and theoretical work was graded independently. Each department built a marking scale for each type of problem it gave, the scale being based on 100 points and fixing within narrow limits the cuts a student would get for errors committed. It was objective in nature. All problems or exercises were so marked but the student would be told only that the work was satisfactory or unsatisfactory although points missed would be brought to his attention. Sixty-five per cent was satisfactory. At the end of a course students were not graded as first, second, etc., but as "Satisfactory" or "Unsatisfactory." A student satisfactory in every subject received a diploma and a certificate with proper notations as to his ability to instruct in each course. A student rated as unsatisfactory in one or more subjects would get a certificate showing his rating as satisfactory or unsatisfactory in each subject and his qualifications as instructor in any particular subject. The student's safeguard was that even if a department marked him as unsatisfactory, his proficiency in the final analysis would be determined by the faculty board on the basis of whether he would be an asset to the Field Artillery.

The School's Role in Formulating Artillery Doctrine

June 25, 1928, the Chief's office wrote to the School that two Renault tanks were being shipped to Fort Sill from Fort Leonard Wood for use as targets or as otherwise desired. They were used as targets, but the Chief thought the results inconclusive. In 1930 the War Department called on the Chief's office for data to support the claim that the Field Artillery could deal with tanks. The Chief's office asked the Field Artillery School to supply the data.

At this time, the School had no data on firing against the fast tanks then being built. The old Renaults plodded along at 3 miles per hour, the pace of the infantry they had been built to escort in the role of armored, self-propelled guns that French doctrine had envisaged. However, there were three railway targets on the reservation which could be used as "fast tanks." One was on the south slope of Mt. Hinds, one was south of Arrow Ridge in the eastern part of the reservation, and the third was in the Punchbowl just north of Medicine Bluffs. This last was operated by truck and cable, the others by gravity. To get data, the School undertook to have each member of the Battery Officers' Course fire three problems against these moving targets, and each member of the Advanced Class two.

Three methods were tentatively developed. In the first, the officer conducting fire announced appropriate corrections. In the second method, the gunner kept his settings the same, but led or trailed the target by the amount his shots were leading or trailing. In the last, he corrected by putting the center hair on the place where his last shell burst.

The above is an example of the steps in the formulation of doctrine: the request for a solution, the stating of a hypothesis, and the use of current classes to test the hypothesis. The School's role is obvious. It is interesting to note also that in testing the hypothesis, the School students received the best current instruction on the manner of meeting the problem.

Organization and Related Matters

How was the machine constructed that presented instruction, undertook research, and published volumes of materials? At this stage in its development, the Field Artillery School had come almost to be a small university. How?

The activities of the Field Artillery School fell into four groupings: the Commandant, his aides, and staff; the academic division under the Assistant Commandant which comprised all activities connected directly with the instruction, discipline, and administration of the students; the School troops division made up of all combat troops permanently stationed on the post; the services (adjutant, quartermaster, ordnance, chaplain, etc.) whose heads formed the administrative staff.

The Commandant at this time (1928-1930) was Brig Gen Dwight E. Aultman. The general was a graduate of the Academy, class of '94. He was a field soldier who had fought at San Juan Hill

and in France and had received the Croix de Guerre with Palm and the Distinguished Service Medal. He had also been an instructor at Leavenworth and the War College. His staff consisted of the Assistant Commandant, then Lt Col William P. Ennis, the Secretary, the Assistant Secretary, the Commanding officers of the Colored and the White Detachments, the Supply Officer, the Range Officer, and the commanding officer of the 3d Ammunition Train (motor transportation).

The faculty was organized into four departments: Tactics, with a director and 18 instructors; Gunnery, a director and 11 instructors; Materiel, a director and two instructors; Animal Transport, a director and six instructors. The allowance of instructors was based on those required for the Command and General Staff School, a sore point with the School authorities, who felt there was no similarity between the two. They did not want to have more than 20 students to an instructor at a firing point, and on problems in the reconnaissance, selection, and occupation of position, felt they needed 3 instructors for every 6 students. These were problems not faced by Leavenworth, which had others peculiar to it.

The faculty with the Commandant's staff formed two boards, the Faculty Board and the Academic Board. The Faculty Board included the Commandant, the Assistant Commandant, the senior instructors in the four departments, and the senior member of the Correspondence Course section. This board advised the Commandant on all matters pertaining to instruction, but the final decision was his. The Academic Board consisted of theCommandant, the Assistant Commandant, the senior instructor of the four departments, the Secretary. It determined all matters relative to the standing, rating or classification, and proficiency or deficiency of students. A majority action of the board was subject only to War Department review.

The functions of the faculty itself extended to many fields beyond instruction. They prepared the correspondence courses, reviewed the tactical inspections of Field Artillery made by Corps Area commanders, reviewed and revised field artillery training regulations, published the Field Artillery Bulletin, tested and reported on various types of materiel as requested by the Chief, answered various questions submitted by the Chief, and corresponded with all service schools, with the Command and General Staff School, and with the Field Artillery Board.

As for the duties of the members of the staff, the Secretary and the Assistant Secretary were veritable Pooh-Bah's. The former was Mess Officer; Library Officer; supervisor of motor transportation;

supervisor of the routine business administration of the Academic Division, of academic records, and of the preparation of weekly schedules, and, in addition, was responsible for the assignment of firing ranges. The Assistant Secretary was in charge of the reception, housing, and departure of all students, and was responsible for the Reproduction Department, print shop, bindery, photographic studio, drafting room, mimeo room, lithographic section, and, in addition to his other duties, was personnel adjutant of the Academic Division.

The Field Artillery School Library, as indicated above, was under the Secretary. In direct charge of the library, from its founding to 1944, was Master Sergeant Morris Swett, USA-Ret. In the years 1922-1929, Sgt Swett built up the library from 18,068 volumes to approximately 34,000. The circulation in that period rose from about 13,000 to about 23,000. In 1924-1925, fire destroyed some 5,000 volumes, some of which were replaced by the generosity of the other service schools. The library bought its books through the Book Department at substantial savings, and had its own bindery which was useful not only in the preservation of books but in preserving the many documents the School accumulated.

The library was often enriched by books bequeathed by officers and enlisted men. Formerly, the interested and expert soldier had to accumulate his own military library, for the system of training literature was not complete, and the libraries of the service schools, when existing, were not impressive. Consequently, many individuals built libraries of great professional and literary value, from which the School in time benefited.

The adjutant's office was organized as a service of the School September 5, 1924. It was charged with the issuance of all orders, and the preservation of all orders, except those pertaining exclusively to the interior administration of a department or service. It also acted as a stenographic pool, trading stenographers back and forth with the other services. Personnel included the adjutant, his assistant, and 10 enlisted men (1925) who were detailed on special duty from organizations at the Post. Each of them had specific duties assigned in addition to those usually coming under his general designation. Thus the stenographer recorded, cross-indexed, and announced in orders the assignment and termination of noncommissioned officers' quarters.

The personnel adjutant acted as such for Post headquarters, the Field Artillery School, the various Ordnance and Quartermaster companies, and the casual detachment. He was in charge of the

orders section, all correspondence on enlisted men, miscellaneous reports, and of supervising and checking the reports and records of Reserve officers reporting to the Post for active duty.

The White and Colored Detachments had a total strength of 300 men and were commanded by instructors from the Departments of Tactics and Animal Transport respectively. The majority of the White Detachment were instructors, assistant instructors, and technicians in the different activities of the Academic Division; the Colored Detachment took care of Animal Transport activities, such as the Horse Show Team, stables, etc., provided maintenance men for the barracks and mess halls, and for the school buildings. Promotions were slow in the Colored Detachment because of the low turnover. Men tended to re-enlist, and noncommissioned officers stayed in the Army until they had reached the retirement age. Many of the detachment were excellent riders, and the trophy case of their barracks was filled with ribbons won not only at the Post shows, but at shows and fairs in nearby communities. One of the unofficial activities of the detachment was the mounted escort, which was drilled as cavalry and would turn out for great occasions on the Post. The detachment was largely recruited by the efforts of the men themselves who would persuade friends and neighbors to join. (Account of Master Sergeant James C. Johnson.)

The White Detachment took an active part in Post athletic events, winning the YMCA track meet in 1925-1926 and in that same year the Post football championship (for the second year). To supplement their rations, and aid in taking care of the enlisted specialist students who were attached for rations and quarters, the men operated a 120-acre pig farm, with 109 acres of corn, alfalfa, and green vegetables. In one winter, 17,400 pounds of pork was produced. The living quarters were very poor, were heated by stoves, and had inadequate sanitary facilities. The suspension of recruiting caused the detachment to drop in strength in 1926-1927, and it was sometimes necessary to borrow men from the School troops, despite the many demands on the latter.

The range detail, 46 men under a master sergeant (1926), was divided into the range detail proper, and the communication detail. The former took care of targets, building and repairing observation posts, gun emplacements, dugouts, roads, and bridges. The communication detail built and maintained the network of range telephone lines. The range detail, as a whole, supplied range guards, and also did general construction work on the Post. In summer, it helped the civilian components in outlining safety measures, instructing range officers and range guards, and in keeping communications open with the range guards.

Correspondence course activity in December 1929 attained the dignity of autonomous status when General Aultman took it from the Academic Division and placed it directly under himself. This did not, of course, operate to reduce the work of the Academic Division, since all courses continued to be either written or reviewed by it. However, this did not meet with the full approval of the Chief, and in the following year the section returned whence it came.

It was in that same year, 1929, that the subject of survey, then called orientation, was transferred from the Department of Tactics to the Department of Gunnery.

The planning of the yearly schedules was done by the Assistant Commandant and the Departments of Gunnery and Tactics when the course involved the work of more than one department, e.g., the Advanced Course; and by the Assistant Commandant and the department in question when only one department was involved, e.g., one of the officer specialist courses. For courses of the first type, the Assistant Commandant would send around a calendar showing the hours per week set aside for instruction, and the total number of hours available to each department that year. The directors of the various departments would then submit to the Department of Gunnery (for the Battery Officers Course) or to the Department of Tactics (for the Officers Advanced Course) an appropriate distribution of departmental time per subject, the sequence of periods for each subject and the hours for each period, and special requirements with respect to troops and areas. The department charged with the preparation of the schedule would combine the wishes of the four departments, and then submit it to the Assistant Commandant, who would coordinate the various courses. In the case of specialist courses, the department concerned would follow the same process but deal directly with the Assistant Commandant.

Previously mentioned was the so called "exempted" status of the School and of the differences of opinion which sometimes existed because of the twilight zone of authority in which the bounds of power were obscure. In the school year 1928-1929, discussion arose over the assumption of court martial jurisdiction by the 8th Corps Area, and over its demands on the School for troops for the summer camp and for various details during the school year. In November 1928, a demand was made on the School for cooks and bakers, and the Commandant, General Aultman, felt obliged to point out that the School troops were already so far understrength that batteries were firing with only two and three gun sections instead of the normal four. Because of the never-ending problems, demonstrations, and service practice, School troops had a far heavier load here than at ordinary

garrisons, so that taking men away during the school year put a still heavier burden on those who were left.

That same winter an attempt was made to lighten the burden on the School caused by the yearly summer camps. In the summer of 1928 school troops had given 967 man-days to the ROTC, 259 man-days to the CMTC, and 79 man-days to the reserve officers, as against only one battery in 1926. However, nothing came of the attempt.

These practices by 8th Corps Area must not be regarded as a jockeying for position, or an attempt to hoard men on the one hand and extend authority on the other. The Corps Areas had a very real problem in training civilian components, and did their utmost to solve it. Indeed, they would have been ngeligent had they not. On the other hand, the report of the Inspector General, March, 1928, states that demands upon school troops were "unusually severe." The assumption of court-martial jurisdiction was made in the spring of 1928. Here General Aultman felt there would be no conflict in practice, and in the interest of cooperation and good feeling, no issue was raised in the matter by the Chief's office.

The policy under which students were sent to the School from the Regular Army, as laid down December 6, 1929, was as follows. On appointment, officers were to be assigned to their units for three years, where they would receive their basic training. The Battery Officers' Course was to be taken as soon as possible after this three-year period. On completion of that course, followed by a period on other duty, or after the completion of 11 years duty, the Advanced Course was to be taken. Courses were to be completed before the student could be assigned other duty. Until 97% of the officers of a branch or arm, except the Air Service, of more than three years service and less than 50 years old, had had a one year course at their school, the total of the arm's school quota would be 8% of its actual commissioned strength. The age limits for admission to the Battery Officers' Course were made the same as those for the Command and General Staff School. Otherwise than in exceptional cases, the limit for the Advanced Course was 50. An officer with 11 years or more years active service need not have taken the Battery Officers' Course to be eligible for the Advanced, but an officer who had taken the former should have had at least three years of other duty.

It was noted in 1928 that entering students showed many deficiencies in knowledge and background. Their knowledge of

field service was poor, and many did not know how to care for themselves and their animals in the field. Concealment was never attempted, and speed rarely stressed. They were weak in both tactical knowledge of handling batteries and battalions and in the use of the details, and the mounted drill of the battery was new to many.

Some discussion arose in 1926 as to whether National Guard and Reserve Officers should be given diplomas or certificates. The Commandant, then General Irwin, had proposed that diplomas be given National Guard and Reserve officers on their successfully completing a course at the School, in place of the certificates of proficiency usually awarded. General Snow, then Chief, feared there might be confusion between this document, which would actually mean no more than the old, and the diploma that was given to Regulars, leading these officers who had taken the shorter course to misunderstand the nature of the course they had completed.

The last of the organizational matters to be mentioned, that of designing the Field Artillery School's coat of arms, is of more general interest. The subject was raised as early as December 1924 by an officer of the General Staff charged with providing heraldic bearings for army organizations. In March of 1925, some designs were submitted by Capt Lewis E. Regnier, a student at the School whose hobby was heraldry. They included a cross-bow, one cannon, three cannon, and a profile of the cannon that has become so familiar, with the crest and arm in armor grasping three thunderbolts. The Chief's office took the barrel of our familiar cannon, and displayed the top view. The arm with the bolts was made that of Saint Barbara, patron Saint of artillerymen, the Chief's office rejecting the suggestion that the Saint grasp a table of logarithms. The design was then submitted to the General Staff's heraldic expert. He disapproved very strongly of the suggested design and particularly of the cannon used. That an officer from another branch should tell the artillery what sort of gun it should have in its School crest, and a very junior officer at that, brought correspondence from the School whose tenor can be imagined. Nevertheless, with patient guile, Major Edward P. King, then in the Chief's office, waited a few weeks until the offender was transferred from Washington, and then re-submitted the design. It was approved by the Adjutant General's office, April 8, 1926. We might note in passing that a shoulder patch was also suggested, the familiar profile of Signal Mountain and its blockhouse on a contrasting field.

Houses and Firebugs

During these years the School was harassed and bedeviled by a housing situation that almost drove the School from Fort Sill. To begin with, the physical plant was intrinsically poor. There were the buildings erected in 1869 and 1870 by soldier labor, whose design conformed to ideas of comfort and convenience proper for the frontier of that era. There were the wartime emergency buildings of frame, tarpaper, and beaverboard, whose builders would probably have scoffed at the notion that they would be doing yeoman service 10 and 15 years later. There were the buildings of the New Post, built in 1910 and 1911, good sturdy buildings, but far too few for the needs of the Post. This in itself would have been a handicap, though no more than a nuisance and headache to the Assistant Secretary when classes arrived. But in addition, for several years the Post was plagued by a gang of firebugs whose exploits seem unbelievable until one recalls what they fired: lumber, beaverboard, and tarpaper.

Successive Commandants recognized the housing problem and made the best possible use of their resources to alleviate the situation. A comprehensive housing plan was drawn up in the school year 1924-1925 to guide future efforts. A riding hall was built by soldier labor. Fireproof buildings were built for records and fire control instruments. Steam heat was installed to try to cut the fire hazard, before its nature was realized. A fireproof annex was built for the library, and a few bungalows were built for battery officers.

But these efforts at self-improvement, laudable though they were, did little to ease the aggravation of the housing situation coming from the fires that racked the Post from 1921 to 1929. Between 1921 and 1926 there were no less than 19 fires at Fort Sill of a nature serious enough to be mentioned in official correspondence. Among the losses were: the officers' quarters D-1, plus three lesser fires in 1921; three fires in Snow Hall in 1922-1923; the Old Post stables in December, 1924; the School library in August, 1924; the School motor shops in December 1924; the Service Club, December 22, 1924; 106 officers quarters (seven buildings) June, 1925; the million dollar ordnance warehouse fire, 1925-1926; the Officers' Mess, June, 1926. The most spectacular of these were the destruction of the ordnance warehouse and the 106 quarters, but all were very serious fires. Given the prevailing high winds of Oklahoma, there was always the chance that fire might get out of control and sweep the whole of the School area. There was always that chance, and that was one of the sinister goals of the gang of firebugs who threatened to destroy the School.

There had been so many fires from coal stoves, and the buildings were of such inflammable character, that more or less of a fire hazard was expected. Not until 1924, after the Library fire, was the existance of a firebug suspected. Even then some two years of detective work and the help of J. L. Fallon, an agent of the Justice Department, were needed to locate the ring, which was finally found to be centered in the Post Fire Department, some of whose members were setting the fires for excitement. The first clue to the identity of the ring came when one of its members, assigned the job of burning an ordnance warehouse containing more than 2,000 hand grenades and 1,500,000 rounds of ammunition, became frightened and gave the alarm after setting the fire. He was unable to give a good explanation for his presence in the area, and the breaking of the ring followed. Thirteen enlisted men pleaded guilty in Federal District Court, in Lawton, October 11, 1926, and received sentences ranging from two to 32 years. The men attempted later to dig their way out of the jail but the attempt was discovered in time.

The destruction of the 106 quarters made it necessary for many of the officers and their families to live in Lawton. A board of officers was formed which, working with the Chamber of Commerce, had little trouble in finding accommodations for the 50 or more families forced to move. Some difficulty occasionally rose if there were a number of junior officers in a class, for their rental allowance and pay would make it difficult for them to meet the cost of living off the Post. There was, in addition, the added trouble and expense of securing transportation between the Post and Lawton.

Discovery of the firebugs did not end the fire hazard, unfortunately. Quarters B-5 went up in smoke in 1927, and there were two fires in B-6 that year. The warehouse in which officers furniture was stored burned to the ground May, 1928; Hanger No. 4 at Post Field followed suit, January, 1929, and on August 8, 1929, Snow Hall burned to the ground. Most of the correspondence and records stored in the building must have gone, for the files in the Administration building today do not go beyond August, 1929.

The acting Commandant, Col George P. Tyner, went to work with great energy, and re-established the School in three temporary buildings which were to be known as the Academic Building, the Faculty Building, and the Headquarters Building. The latter two had been 24 sets of bachelor quarters. This used up the last reserve of buildings, and left the School plant as: The Academic Building; the Headquarters Building; the Faculty Building; the Library and its annex; the Print shop; the book bindery; the instrument room; the film

room; the Materiel Building; the Motor Building; the three academic garages; the blacksmith shop; the Animal Transport Building; the horseshoeing shop; the stable guard house; the Riding Hall; two wagon sheds; seven stables; the veterinary hospital; the carpenter and paint shops; the storehouse; two target sheds; and the range communication shed. All students were put in Lawton on a rental basis, since the bachelors also had to be moved off the post.

The Cruikshank Board

The series of fires at Fort Sill, culminating in the destruction of Snow Hall and hence calling for a program of reconstruction, contributed to the need for deciding whether the School was to be located here permanently. For many years, Fort Bragg, N. C., had had its partisans, who did not neglect to urge its advantages as a site. Paragraph 2, Special Order No. 4, War Department, 1930, appointed Brig Gen William Cruikshank, Brig Gen Louis H. Bash, assistant to the Quartermaster General, and Lt Col William Bryden, to report on the most suitable permanent location for the Field Artillery School.

Besides Forts Sill and Bragg, the board considered Brady, Texas, Jordan Narrows, Utah, and Camp Knox, Ky. The last three could be ruled out. The Utah reservation was too small, and it had neither regular army troops nor permanent facilities. Brady, Texas, had no reservation, no troops, no facilities. The Camp Knox reservation was too small, there were no permanent housing facilities, and practically no range facilities, nor was its climate very good for winter operations.

The board was then able to embark on a detailed study of the two favorites. The climate at Fort Sill was warmer, drier, windier, and sunnier; not comfortable, by any means, but still permitting outdoor instruction almost every day. Fort Bragg had a good deal more rain, and about 30% more snow. The suitability of the terrain for artillery instruction, as between the two posts, seemed a matter of individual opinion. If it were extensively cleared of timber, the terrain at Fort Bragg would probably have been better than that at Fort Sill, the board thought, but it noted that the post there was not in the center of the reservation, and that footing was not good off the roads. Further, there was considerable haze and mist. Fort Bragg was closer to centers of population, but their places of amusement cost a good deal. It was difficult to tell which post was more popular with enlisted men. For the three previous years, Fort Sill had had more desertions, but also more re-enlistments.

In housing facilities, despite the fires, Fort Sill had the advantage. There were no quarters at Fort Bragg for the battalion of infantry; there were quarters for about 60 officers as against about 80 at Fort Sill; and the nearest town was 12 miles away. Fort Sill had elaborate range equipment consisting of 300 miles of telephone wire, 4 miles of underground cable, 36 range guard posts, 22 concrete battery emplacements, 15 dugouts with overhead cover, etc., all of which were lacking at Bragg. The water supply at Fort Sill was poor, but on being told May 5 that locating the School here depended largely upon an ample supply of good water, Lawton voted a bond issue of $600,000 to improve it. The Board was most careful to wait until this had been done before it reached any decision.

Having considered all these things, the Board reasoned that further construction at Fort Bragg would be necessary before the School could be moved there, and that there would be an inevitable drop in efficiency for some months following the move. The advantages of Fort Bragg over Fort Sill, as advanced by the witnesses who favored the move, were not such as to balance this in the judgement of the Board. Accordingly, Secretary of War Patrick J. Hurley approved the Board's report December 10, 1930, and Fort Sill became the permanent home of the School.

Graduates 1924-1929

COURSES							TOTALS	
Regular Army	1924*	1925*	1926*	1927*	1928*	1929*	Off	EM
Battery Officers	75	67	71	69	68	71	421	
Advanced Officers	33	25	27	24	29	27	165	
Refresher Course		8[d]	9[d]	1[a]	3[d]	5[a]	26	
Refresher Course for General Officers	1[a]	1[d]	3[d]	1[d]			6	
Advanced Motors					5[e]	5	10	
Adv. Horsemanship				5	6	6	17	
Enlisted Men	60	83	79	71	76	97		466
National Guard & Reserve Officers								
Battery Officers	37	48	37	46	55	66	289	
Field Officers	7**	6**	9	9	10	9	50	
							984	466

* All years denote the school year from September of the year indicated to June of the following year.
** Only National Guard Officers in these years.

a--Course of 2 months duration.
c--Course of 5 months duration.
d--Course of 3 months duration.
e--Course of 6 months duration.

Bibliography

The Lawton Constitution, October, 1926.
Annual Reports, U.S.F.A.S., op. cit. supra.
Files of the Office of the Chief of Field Artillery, op. cit. supra.
Correspondence on Coat of Arms, The Field Artillery School Library.
201 File, Maj Gen George LeRoy Irwin, Post Headquarters, Ft Sill, Okla.
201 File, Brig Gen Dwight E. Aultman, Post Headquarters, Ft Sill, Okla.
Horse Show Programs, the Department of Animal Transport, Field Artillery School.
"The Transportation Show," Thesis, 2d Lt D. F. Brown, F.A., Field Artillery School Library.

CHAPTER NINE

A NEW SCHOOL IN A NEW ARMY

The Plans

During the year 1930-1931 the Chief's office prepared an economic survey of the School which serves as a good starting point for the story of its rebuilding in the years 1931-1935. The initial costs of the buildings then used by the School, the class rooms and administration buildings, the officers' and noncommissioned officers' quarters, the barracks, stables, and storage sheds, was set at $755,067.00, as against the $950,000 of 1919. The difference undoubtedly reflects the great fires, and, perhaps, a different statistical base. (The base of 1930-1931 was the initial cost. In the case of the Old Post quarters, this base could not be used, for they had been almost all built by soldier labor in 1870, and so were estimated at their current replacement cost.) The annual cost of utilities was about $35,000.00. The public animals had cost $60,000.00 and their annual maintenance was about $21,300.00. The several supply services furnished $656,474.22 worth of supplies annually, of which $634,795.00 was for ammunition. Pay and allowances of the staff, faculty, and enlisted detachments, plus civil service pay, plus funds for scientific and educational equipment not items of issue, added to other annual charges, made the total yearly expense of the School about $1,154,000.00, of which over half was charged to ammunition. Pay, allowances, and transportation of students came to about $488,000.00. However, it must be noted that this type pay and allowances continued as long as a man was in the Army regardless of whether he was in or out of school. Hence, deducting those figures, the true annual cost of the School was estimated at $714,041.00, broken down as follows:

Civil service pay	$ 7,920.00
Educational supplies	15,385.00
Annual upkeep of public animals for instructional use	21,390.00
Repairs to school buildings, light, water, gas, etc.	34,551.00
Ammunition	634,795.00
	$714,041.00

The Inspector General, writing about the School before the Cruikshank Board had arrived at its decision, stated that officers' living quarters were inadequate and caused hardship to officers, especially lieutenants forced to live off the Post. Because of poor transportation, these students were practically compelled to buy automobiles, and such extra expense ate into their commutation of subsistence and almost forced them into debt unless they had outside incomes. He further felt that the expenditure of thousands of dollars a year on the upkeep of outworn buildings was false economy. His recommendation was that the construction of suitable quarters be begun as soon as a permanent location of the School was decided upon.

With the report of the Cruikshank Board in, and approval probably thought certain, another Board consisting of Col Charles M. Bundel, 1st FA, Lt Col Lesley J. McNair, Assistant Commandant, Maj George M. Peck, Executive, and Maj John M. Mellom, Post Quartermaster, were appointed to draw up a housing program. The Army and Navy Register, January 17, 1931, described this $11,000,000 program, whose major items were:

An administration building
Two artillery barracks on west side of New Post
Infantry barracks opposite the ball park
Medical detachment barracks
Materiel building
Animal Transport building
Six stables
Nurses' quarters
Veterinary hospital
Sixty-bed addition to hospital
Officers' mess
Post gymnasium and theatre
Forty-three noncommissioned officers' quarters
Thirteen battery officers' quarters
Twenty-nine field officers' quarters
Twenty-six apartments
Three bachelor officers' quarters
Laundry, bakery, warehouses, shops, etc.

This program was not completely carried out; for example, no Post gymnasium was built, and an old airplane hanger was used as the gymnasium. However, on the whole this program guided subsequent building efforts.

Effects of the Thirties: the New Deal, CCC, PWA

In 1932, a limited amount was appropriated by Congress to begin reconstruction of the Post. These funds were used to provide for troops then in temporary quarters at Post Field. Barracks for one battalion each of infantry and artillery and for two batteries of artillery; five sets of battery officers' quarters; ten sets of noncommissioned officers' quarters; three utility buildings; and quarters at Post Field for Air Corps personnel were also provided. Shortly after the inauguration of Franklin D. Roosevelt, an emergency public works program was begun as one of his administration's measures to revive the national economy. On September 21, 1933, the War Department announced that the Public Works Administration had allotted $4,392,000.00 for Fort Sill.

This building program could not be nicely adjusted to the needs of the academic year, for one of the main elements of the Roosevelt plan was speed in putting these appropriations into circulation. Accordingly the building of a new Fort Sill was pushed energetically, and the School adjusted itself to the program. During 1933 and 1934, units were shifted from building to building like pieces on a checkerboard. The stone barracks in the Old Post, which had been occupied by the Ammunition Train, the White, and the Colored Detachments, were taken over for School use. The Ammunition Train went to Post Field. The Colored Detachment went to its old wooden barracks alongside the hospital, which had been used for the overflow from the hospital. The patients were to be put in a building formerly occupied by Animal Transport. The Department of Materiel moved into a rebuilt ordnance warehouse. The Communications Section of the Department of Tactics went into a reconditioned building which was destroyed later. School Headquarters was placed in the brick building later the Post cafe. Despite all efforts, the quarters for married students could not be finished in time for the usual opening of school in the fall of 1934, so it was necessary to postpone the opening until October 8.

The Administration Building was completed in 1935, and with that the School was fairly well settled in its new barracks, quarters, and classrooms. The Motors Section of the Department of Materiel moved near the railroad tracks at this time, the buildings given it being old Motor Transport Corps sheds from the last war. Salvaged lumber was used in their building.[1]

---

1. Standing in one of the sheds, one can look up at the roof (1944) and see the beams all charred and blackened by one of the disastrous fires of the 1920's.

The building program was only a part of the general impact of the New Deal on the School, for it was called on to play a vital role in the organization of the Civilian Conservation Corps in this area. This activity took three forms. Fort Sill was used as a reception center for incoming members of the CCC; members of the staff and faculty and School troops officers were placed on duty with the Corps; and the Commandant was placed in control of 41 CCC companies in Oklahoma, Texas, Colorado, and Wyoming.

Preparations for the reception of the CCC began April 28, 1933, and at first were handled almost entirely by the 1st Battalion of the 38th Infantry. By May 11 there were 650 CCC men here, by May 26 there were 2,400, with more arriving at the rate of 400 a day. These men were housed in the National Guard camp, known as the "concurrent camp area." Some 60% of the staff and faculty were released for duty with the CCC, in addition to calls upon the School troops. This left but two officers per battery, plus about 18 key men of the Academic Division. It was not possible for the School to carry on its work while so shorthanded, and so it closed May 22, 1933. By June 30, no less than 7,300 members of the CCC had passed through the reconditioning process at the concurrent camp, well ahead of the deadline set by Presidential order.

During the summer of 1933, it was feared that there might be some trouble in opening the School in the fall unless most of the officers called away for CCC duty were returned. For the most part, only those who had been actually carried as instructors were returned, but a few extra men did come back. To supplement the number of instructors assigned as such, the School, in common with other service schools, had made use of School troops officers, and it was their lack that was being felt. The responsibility for the administration and discipline of the CCC companies lasted until April 25, 1935, when it was taken from the Commandant and his staff and given to a headquarters in Oklahoma City.

With the new Administration, which was defense mindod and convinced that governmental spending could start the stalled economic machine, the field artillery was able to enter on a long range program of technical improvement calling for more mobility, better gunnery, better weapons, better communication, and better training. The method used was that of taking full advantage of the latest developments of American technology in all fields, from motors to pedagogy. The first great step was the substitution of the motor for the horse as the prime mover for the guns.

On November 9, 1931, the War Department approved the organization of a truck-drawn battery, which was described to the public in a press release the following April 16. The battery used Ford trucks as its prime movers, the idea being that in an emergency, prime movers could be secured from any automobile dealer on any Main Street. The 75-mm guns were modified for high-speed towing by pneumatic tires and new axles. Major General Harry G. Bishop was then Chief of Field Artillery, and was most active on behalf of this project. It proved successful and, since the new Administration was more defense minded than its predecessors, funds were forthcoming from the Public Works program for the motorization of all light artillery in the National Guard, March 23, 1933. The motorization policy for the Regular Army was announced the following December. Under it, all field artillery in the Philippine and Hawaiian departments, one half of the divisional 75-mm batteries in the Continental United States, one battalion of 75-mm guns in the mechanized cavalry brigade, all medium and heavy field artillery units, and the field trains of horse-drawn, horse, and pack artillery units were to be motorized. Having these changes in mind, in August 1933, the Chief of Field Artillery requested the School to alter its courses so that officers of the civilian components would receive the utmost instruction in truck-drawn artillery. On August 23, the Commandant replied that it had been done.

The Commandant then was General Cruikshank, whose board had recommended that Fort Sill be the permanent home of the School. He became Commandant February 8, 1930, succeeding General Aultman, who had succumbed to ill health. General Cruikshank was another West Pointer, of the class of '93. He had twice returned to his Alma Mater as an instructor in mathematics, had fought in Cuba and in France, winning the Distinguished Service Medal and the Legion of Honor. After the war, General Cruikshank was assigned to the operations division (G-3) of the General Staff, following this by three years in Panama, after which he became Commandant.

Reorganisation of the Artillery; the School's Role

The motorization program was promptly followed by an increase and reorganization of the arm, effective December 1, 1934. Within the Continental United States, all light battalions, with a few minor exceptions, were to have two active gun batteries and one inactive battery. A considerable number of inactive units were reconstituted in order to form more battalions so that more officers might have experience in command. Under this program, the 1st Field Artillery was to be completely motorized. The 18th Field Artillery underwent considerable change: Battery C was inactivated,

while the regimental headquarters and headquarters battery, less the band, the service battery, and the 2d Battalion, less Battery F, were activated and stationed at Fort Sill. The field trains of the 18th and 1st were motorized. The 1st Battalion of the 77th Field Artillery was activated at Fort Sill as a completely motorized unit. The 4th Field Artillery Brigade headquarters and headquarters battery was likewise activated at Fort Sill.

By July of 1935, 7,487 enlisted men were added to the field artillery, making it possible to have nine cannoneers for each gun section, a fifth section for each battery, and an assistant driver for each vehicle. And, most important, it became possible to bring the school troops to full war strength. After these changes, the status of the field artillery as of September 13, 1935, was as follows. There were 44 gun or howitzer battalions and an even 100 firing batteries, an observation battalion with but one battery, and an ammunition train. Of these firing batteries, 86 were divisional artillery, one was corps artillery, and 13 were in GHQ reserve. Of the 100 firing batteries, 41 were truck-drawn 75-mm gun batteries, (including two mechanized batteries in GHQ reserve), 18 were 155-mm howitzer, truck-drawn, and there were two batteries of motorized heavy artillery. All elements of brigade ammunition trains and service batteries were motorized, so overall motorization was about 70%, more than that of any other Great Power.

This picture of the organization and strength of the Field Artillery was given by its new Chief, Upton Birnie, Jr., in an address at the Army War College, September 13, 1935. Of the status of doctrine, he had this to say:

> "Through a development in our system of fire direction, wherein the battalion commander through a staff officer gives firing data direct to batteries, we have made it possible to reduce the dead time between designation of targets and fire for effect, . . . and at the Field Artillery School . . . increasing insistence (is being placed) upon the need of closer, more prompt, and efficient support of the other arms . . . and a demand that our officers develop the ability to engage targets at short and mid-ranges and to deliver prompt and accurate fire without the utilization of accurate maps, . . . working away from the intricate technique of preparation of fire, and emphasis is being placed more and more on simplicity . . ."

Of these and kindred developments, General Douglas MacArthur, then Chief of Staff, wrote in his Annual Report for the fiscal year ending June 30, 1935:

> "The present year definitely marks the beginning of a long deferred resumption of military preparation on a scale demanded by the most casual regard for the nation's safety and security ... (I)t (the War Department) frequently, between 1922 and 1935, expressed its conviction that in the conditions then prevailing resided grave potentialities for disaster."

The Field Artillery School did its part in supporting the new mobility concept. May 5, 1933, the Chief's office ordered the School to test an experimental battalion of light, truck-drawn field artillery. In that same year, Battery A of the 1st Field Artillery was given modern, truck-drawn equipment, and it proceeded to make tests of new traction devices, field kitchens, and methods of laying wire with trucks. The Field Artillery School, meanwhile, proceeded with its test of the light battalion, handing in its first report in September of 1935. This was not satisfactory and was returned for revision and extension, which was completed October 14, 1935. The report concluded that motorization should continue gradually as engineering defects were eliminated and an adequate supply of vehicles was assured. As for considerations of battle efficiency, experience in exercises had shown that the maneuverability of motorized artillery in forward areas approached that of horse-drawn artillery and exceeded it in rear areas. There was little choice between them as to ease of finding cover and concealment, but motorized artillery was less vulnerable and less liable to fatigue. Specifically, the School urged that combat trains, regimental headquarters batteries, the service batteries of horse-drawn regiments, and ammunition trains be motorized. Maintenance sections were recommended for both regiments and battalions. As for maintenance practice, the report suggested that simple repairs be taken from 3d echelon maintenance and assigned to operating units when time and road space permitted. These conclusions were the result of tests made in general field exercises and carefully kept records of all operating details, costs, and repairs.

Then as now, mobility meant maintenance problems. The motor maintenance system of 1931 was largely based on the Quartermaster Corps. First echelon was those repairs made by driving personnel using the vehicle tool kit; second, repairs by battery personnel, who were limited to preventive maintenance, inspections, and assisting the first echelon. Third echelon repairs were made by

divisional units of the Quartermaster Corps. The annual progress report of the School for 1931 took mild exception to that by remarking that such progress had been made in motor maintenance that the Field Artillery could assume greater responsibilities. A report dated October 31, 1931, was much more specific, stating that the Field Artillery could easily make repairs that were the monopoly of the Quartermaster Corps, that the latter immobilized vehicles for days and months; and that the necessity of bringing vehicles to the Quartermaster for repair would result in a constant rearward motion during combat.

This report proposed that the battery be the first echelon, that the battalion (if independent, otherwise the regiment) be the second, and that the two between them have adequate personnel to do everything but complete overhauls, which meant breaking down and reassembling the vehicle. Third echelon was to be brigade motor supply with no additional personnel, and fourth and fifth echelons were left as before. The combat arms would be self-sustaining to include all ordinary repairs, even major ones.

Studies by members of the Motors Section of the Department of Materiel and by members of the Advanced Motors Class convinced them that the Field Artillery should be allowed to make its own repairs up the limit of its capabilities, and that it would be practicable, with very little increase in overhead, for a battalion of field artillery to be practically self-sustaining for quite extended periods. Reflecting these attitudes, as well as the impression that the Quartermaster could not be depended on, the Department of Materiel in 1934 and 1935 was doing 3d, 4th, and 5th echelon maintenance on vehicles of the School troops and of the School itself. Parts were drawn from the Quartermaster to do this work, and the School mechanics thought nothing of reconditioning a motor and issuing it to School troops in exchange for another. This attitude was reflected in the purchase of tools both by the School and by School troops. The tools desired were not items of issue, so no objection was raised to their purchase by battery and School funds (1931 et seq., account of Lt Rudolf Eppler).

With these studies and practical experience behind it, in November 1934, the Field Artillery School suggested that the rather confusing system of weekly and bi-weekly inspections prescribed at that time, which involved no considerations of mileage, be discarded for a 1000-mile or monthly inspection, whichever condition arose the sooner. This was to include the correction of mechanical deficiencies, lubrication, appearance, and adjustment, and must be considered a direct step toward the practices of 1944.

To gain practical experience in the field of doctrine, in 1935 the School was conducting experiments in the artillery support of an advance guard during its deployed advance to and from successive phase lines. Truck-drawn artillery moving cross-country under adverse conditions of terrain and weather was repeatedly tested. The General Field Exercises afforded splendid opportunities for such work.[1]

Tactical Concepts in the Thirties

Again in the field of doctrine, the Chief of Field Artillery in 1935 called on the School to assist him in commenting on the proposed triangular (three regiment) division, a type devised for great mobility and more ease of control. Lt Col Lloyd E. Jones, Lt Col Archibald V. Arnold, Lt Col John E. Lewis, Major Rex W. Beasley, and Major William H. Cureton were appointed a board, and reported December 6, 1935, the Commandant, Major General Henry W. Butner, concurring. The report began with the assumption, popular then, that the future Army would probably be confined to the North American continent. The square division, they thought, was well adapted to a breakthrough, if its flanks were secure on impenetrable obstacles, but it had no strategic mobility. In recent experiments, all but rifle companies of the division had been motorized, numerical strength cut, and weapons of greater fire power supplied. The board accepted those principles, and tried to find the means of giving the resulting division adequate artillery support.

Assuming that only the 75-mm gun and the 155-mm howitzer would be available for division artillery on the outbreak of war, the board tried to supply enough for the minimum needs of the division. This it set at 3 four-battery battalions (48 guns) of light artillery and 2 three-battery battalions (24 guns) of medium artillery. The tank company would be taken from the division on the theory that "normal tactical employment of tanks requires their concentration in impressive numbers on favorable fronts." A reconnaissance group with air observation, armored cars, and motorcycles was suggested. There would be no organic antiaircraft. Earlier, in 1931, Major Carlos Brewer, had strongly opposed mixing calibers in the battalion, as some then favored, on the grounds that the new method of fire direction could not operate under those conditions and the Board made no move in that direction. This board report, with its emphasis on mobility and adequate artillery support, and its conceptions of the use of armored units, was important; it accurately indicated the trend of tactical thought at the Field Artillery School.

---

1. Memorandum of Lt Col L. E. Jones, Oct 30, 1935, File 353, FAS.

During the school year 1935-1936, a study was made of the use of artillery in the support of, and defense against, wide envelopments, a prominent tactical feature of the Second World War.

In its concern for mobility and continuous support, the School ventured to take exception to a War Department letter of April 1935, which laid down that motorized artillery would proceed at two and one half miles per hour when in a column with foot troops, and would hold its accustomed place at the rear of the column. The rough draft of a School letter to the Chief of Field Artillery, October 1935 (file 353 FAS) stated that paragraph 392 b of the Field Artillery Field Manual prescribed that the field artillery of the advance guard should advance by bounds. The School had tested that method with its battalions of infantry and concluded that it was the most efficient and economical means of advance. The letter further urged that artillery with the main body of the column also advance by bounds. This method was especially necessary, the School felt, because the advance guard was being taught to advance semi-deployed from one phase line to another, rather than by the old columnar system of point, support, advanced party, etc.

New Developments

Its concern for the mobility of the Field Artillery did not lead the School to neglect the various problems of gunnery. Antitank firing was carefully studied, especially in the years 1930-1932. Experiments prior to 1930 had involved two condemned Renault tanks, sleds drawn by horse or limber, and railroad targets. There was uncertainty as to the best gunnery methods, but it was agreed that shell was the only projectile, that telescopic sights were essential, that fire should be direct and opened under 2,000 yards, and that the 75-mm gun M1897 was not suitable for the mission. Serious study began with the request for data from the Chief of Field Artillery mentioned in a previous chapter. In 1931 firing by the School contained a good deal of work on moving targets to develop the best means of antitank gunnery, and data thus obtained was carefully recorded.

In February of that year, the School had two methods of antitank gunnery. In both, ranges to critical terrain features were determined and the deflection set at zero. In the first method, the battery commander identified the target and commanded an appropriate deflection shift appropriate to the speed of the tank. The battery commander also ordered range changes of about 100 yards per four rounds, assuming 12 rounds per minute. The gunner changed deflection by spotting the burst with respect to a mark on the horizontal hair and used that for the next round. In the second method, the battery commander ordered both range and deflection changes.

By September of 1931, three more practical methods had developed. In the first, the battery commander identified the target and announced the range. The gunner tracked the target, estimating the lead, using the appropriate mark on the horizontal scale, and commanded "FIRE." The first burst was sensed with regard to the horizontal scale and the target tracked with the graduation at which the burst was sensed. The battery commander handled the range throughout. When using the collimator sight, the gunner made appropriate changes in the amount of his lead. In the second method, the battery commander gave both range and deflection changes, which were set by cannoneers other than the gunner. The gunner simply tracked the target and commanded "FIRE" when the gun was laid. In the third method, the battery commander ordered deflection shifts, and the range finder operator called out the ranges, tracking continuously. Method number 2 above was adopted by the Chief's office May 1932.[1]

In December 1931 the School gave its report to the Chief's office on the year's antitank firing, in which the first method of those listed above scored consistently better results than the second. There were 52 problems with 37-mm ammunition and 46 with service ammunition. With the 37-mm, the first method averaged .85 hits per problem as against .64 with the second, and results with the third method were comparable with the latter. Suggestions for a practical antitank weapon were of interest. It was thought the gun should have a shell only powerful enough to put out a tank by a direct hit; high velocity, tracer projectiles; automatic fire; self-propelled mount, with the gun perhaps removable; and all-around traverse. With such a weapon, the tank could be driven from the battlefield, in the School's opinion.

General Birnie's remarks on the status of the Field Artillery included some comments on a new and greatly improved method of fire direction that had been developed at the School. During World War I, there had been considerable dissatisfaction within the artillery at the support it had been able to give the attacking infantry, and that dissatisfaction spurred postwar attempts to find a remedy. Major Carlos Brewer, then head of the Gunnery Department, 1931, concluded that part of the fault lay in the existing method of massing the fires of the battalion by descriptive reference to a terrain feature or by giving the guessed-at coordinates of the target to the batteries for them to plot. Brewer's idea was to use a firing chart on which a base point was plotted with fair accuracy, battery positions located by survey, and targets designated with reference to the base point by the method used in aerial observation of fire.

---

1. File 352.16 FAS.

Targets were plotted as soon as the observer completed his adjustment, and the data telephoned to the batteries. The first demonstration of this new method was held in the spring of 1931 and was fully successful. To eliminate the triangle of error at the target caused by differences in site, Major Orlando Ward, then head of the Gunnery Department, suggested that the batteries register on the base point and be plotted on the chart by their adjusted data. Using an observed fire chart based on this method, it was possible in 1935 to mass the fires of a battalion on a target with great speed and accuracy, far better than the results obtained in the First World War.

Interest in the development of better weapons for the Field Artillery was constant. In March and April 1930 the School was called upon to test an experimental self-propelled gun, a 75-mm gun M1916 on a Mark VII mount. Comparing it with the performance in the same tests of a horse-drawn 75-mm gun M1897 and the 3-inch gun M1902, the School found its mobility fully equal to the horse-drawn pieces, but its mechanical reliability low, with the motor constantly overheating and actually losing parts. The School's report concluded: "For the reasons stated above, the self-propelled mount tested is unserviceable and unsuitable as an accompanying gun or for any other purpose. Nevertheless, the basic ideas embodied have much merit and are entitled to further consideration." Further studies and the building of other models were urged.

Four 105-mm howitzers were issued to Battery F, 1st FA, for test in October, 1931. In the course of these tests the pieces were moved 820 miles, fired 657 rounds. Again it was a case of the School finding the model tested unsatisfactory, but expressing its faith in the basic idea. During these same years, the 4.2-inch chemical mortar was used as an experimental substitute for the 6-inch mortar of the last war.

One of the interesting projects of 1931 was the development of a truly "all-purpose" gun, which in the American army took the form of a 90-mm gun-howitzer capable of antiaircraft missions. Sketches in military journals of those years show divisional artillery of the future blasting away at enemy aircraft. The German 88-mm gun was somewhat like this in conception, but with one vital difference, it was not a howitzer (a weapon of low muzzle velocity that can lob shots over a hill). The School strongly opposed development of such a weapon, saying it would be more effective either as gun or howitzer. The muzzle velocity of a piece with howitzer characteristics would be too low for attacking aircraft, while the computing equipment would be another load to carry. Further, it pointed out that enemy aircraft on bombing missions would not be apt to harass front line troops.

In June 1933 the Office of the Chief of Engineers submitted for War Department approval its proposals for wartime map-making. This forbade instrumental work ahead of the front lines, thus ruling out location by intersection, and did not provide the 1/20,000 map which the Field Artillery was accustomed to using for fire control purposes.[1] The School commented accordingly to the Chief's office. During the next school year, 1933-1934, more attention was paid to survey, to remedy the lack of this type of map, but the School was not satisfied with this alone. In February, 1934, the Chief's office was requested to furnish data on the role of the Engineers in mapping, which was not clear, and permission was requested for the School to publish a text on survey. In this text the following principles were to be laid down: location of geodetic points by the Engineers; supply of air photos by the Air Corps; using these as bases, field artillery survey to insure coordinated firing charts and overlays about 24 hours after survey began.

Approval of those principles came speedily from the Chief's office, which noted that the existing methods of Field Artillery survey were based on the situation in the last war, when beautifully detailed maps of Northern France made it possible to locate battery positions by short surveys. Present day operations in poorly mapped country demanded survey methods, personnel, and equipment with which the Field Artillery was not equipped. The School was accordingly directed to begin the necessary studies of the survey problem.

The simplification of method began to receive increasing emphasis after 1933. In an address by Maj Gen Henry W. Butner to the Regular Class, October 8, 1934, it was stated that "The tendency at the School today is to frame our instructional matter for reserve officers newly commissioned to meet an emergency. Simplicity in procedure is recognized as important..." New regulations for the conduct of fire were prepared after TR 430-95 was issued, embodying many of the ideas of a Col Spaulding. These led the student from axial fire to small-T, and from small-T to large.

In the late twenties there was but one sound and flash ranging battery in the United States, and detachments from it were sent to the School to give demonstrations in the location of hostile artillery by its sound and flash. In the 1931 demonstration, the equipment was placed near the Horse Show Ring, where Butner Field and the

---

[1] File 061, FAS.

tennis courts nor are (1944), and two bombs were exploded near Signal mountain. These bomb bursts were located by the operators, and a platoon of howitzers was registered on them later. By April, 1932, sound-ranging equipment had been installed at the school, and it was planned to train school personnel to operate it. During the spring of 1932, its operation was largely due to the cooperation of Capt P. W. Allison, of the Advanced class, an expert on sound and flash work.

Work on better communication went forward side by side with work on better mobility and improved gunnery. In 1933, possibly influenced by the success of the ambulances that had been converted into radio wagons, the Communications section of the Department of Tactics modified the standard SCR-161 for use as a vehicular radio and supplied sets so modified to liaison officers in general field exercises. Following this action, the School suggested to the Chief's office that sets so modified be made an item of issue. This the Chief could not approve for, although he was most careful to urge continued experiment, it was his policy that only standard equipment that would be available in war should be issued. Communications practices in fire direction were improved during the school year of 1933-1934 by adopting special telephone procedure for the routing of fire missions and by utilizing the commercial practice of simplexing, which provided a net with greater capacity.

When the triangular division was under discussion in 1935, the suggestion was made, as it had been in 1929, that all communications within the division be placed under the Signal Corps. The School was asked to comment on this proposal since it related to the artillery. A board comprising Lt Col Loyd E. Jones, Lt Col Archibald V. Arnold, and Maj A. C. Stanford was emphatic in condemning it. They pointed out that communication was vital to the success of the artillery mission. Should it fail, who would be held responsible for the failure to give support, the Field Artillery, or the Signal Corps? Demands on communications details were so varied that they could only be prepared for by training with the other members of the artillery team. And they summed it up by a quotation from Gen G. S. Gibbs, Chief Signal Officer in 1928, to the effect that any communication system which operated as a single system with all of its systems interconnected must be under single management.

Training Literature

All of the advances in the three great functions of the Field Artillery would be of little use unless the Regular Army and the civilian components were trained in them. Of the enlisted men of the Regular Army, of the civilian components of all grades, only a minority could expect to pass through the Field Artillery School. The majority had to depend upon the training literature prepared by the Army, and so did officers who had been to school and desired to keep abreast of their profession or whose turn to go to the School was still years in the future.

The training literature system of 1929 had six parts. There were the training regulations written for reference use by the instructed officer. They were prepared by a section of the Field Artillery Board and revised by the Field Artillery School and the Chief of Field Artillery. There were the texts prepared at the School for use with extension courses (correspondence courses). There were the texts used by the ROTC, some of which were official, and some of which were published by houses specializing in that work. There was the Basic Field Manual, with matter common to all arms. There were technical texts, such as the ordnance handbooks. Lastly, there were the Field Artillery School Notes prepared for resident instruction but no doubt straying far and wide from the fort.

Lt Col Lesley J. McNair became Assistant Commandant June 23, 1929, and held that post until June 30, 1933. As Assistant Commandant he was in charge of instruction and seems to have turned his attention to the problem of training literature soon after his arrival for in 1929 he wrote many letters and reports on the training literature situation. His suggestions included the following: moving the training literature section of the Field Artillery Board to the Field Artillery School and printing all Field Artillery literature there; having only two classes of publications, a series of texts for the civilian components and the new or student officer, and a Field Artillery Manual written as a reference work for the experienced officer. He then proceeded, during his four years at the School, to try to carry out these reforms.

In February of 1930 the Adjutant General's office, in a letter to the Chief of Field Artillery, surveyed the existing situation and gave its views on what the ideal should be. The 1930 system of training regulations was to be largely superseded by field manuals. These manuals were to make available in condensed form for ready reference in the field approved principles, doctrines, and methods and were also to be sufficiently comprehensive for

garrison and school training. Technical regulations and training manuals were not expected to be superseded. The manuals of each arm were to give all the information needed by that arm for mobilization, training, and field service, except that given by the basic field manuals, which were not to be duplicated.

Those views were unexceptionable, for no one could object to the perfect field manual as outlined above, but when the manuscript of the new Field Artillery Field Manual was sent to the School for comment, exception was taken to much of the new text in an indorsement written by Lt Col McNair, July 2, 1930. He noted that the training mission of the Army was broadened immensely after the war and that it included troops in being, classes of all kinds at the Field Artillery School, extension course students, and the ROTC. This mission could not be met by the manual sent to the School. It was suitable only for troop training by the experienced officer, thus did not meet the requirement of suitability for school use. The text as a whole lacked clarity, simplicity, and uniformity. Objection was taken, for example, to the rule that automobile vehicles should be serviced "by the numbers." Some of the manual's comments on organization were better fitted for a volume on tactics.

In this correspondence, the argument was sometimes advanced by the School that in its extension course texts it had the closest existing approach to the ideal text for the civilian components and the uninstructed officer. Those texts, as the name implied, were written for use with the extension courses: they were an "extension" of resident instruction. However, in 1930[1] the Chief of Field Artillery said that delay in the approval of certain training regulations had made it necessary to issue special texts for extension courses. These special texts were printed at the School, and a supply over and above that needed for the extension courses was on sale at the Book Department. The extension courses themselves were printed by the Government Printing Office.

Recommendations to change this system were made by the School several times between 1930 and 1932. In 1930 it was suggested that the literature section of the Field Artillery Board be moved to the School. In 1931 it was recommended that the ROTC and extension course texts be combined. When this was done, and the two merged in the Field Artillery Book series, it was next recommended that the Field Artillery Books be the only instructional texts for the Field Artillery and that in its next revision, the Field Artillery Field Manual be made only a source of reference for the instructed officer.

---

[1] Sept. 27, file 300.7 FAS.

However, there was one drawback to School publications. Although they were approved by the Chief's office before publication, nevertheless, unorthodox, i.e., not yet approved methods, tended to appear in them to the great confusion of officers in the field, who would see one method outlined in the Field Manual and yet another in the latest text from the School.

Complaints to this effect influenced the Chief's office in June 1932 to restate the relative status of the various texts. It was prescribed that all field artillery literature would conform to the Field Artillery Field Manual, though experiments should continue and results be recorded. No changes except to correct errors were to be made to the Field Manual until July 1, 1934. Until then all Field Artillery training literature would conform to the Manual.

Two illustrations of how this policy affected the School might be given. In the one case new Tables of Organization and new radio equipment were received at the School neither of which were contemplated in the Field Manual. A new Field Artillery School Note, T-45, was written for temporary local use covering these matters, and the School asked to what extent the new equipment, new Tables of Organization and new School Notes could be used in resident instruction. The Chief's office raised no objection but did make some changes in T-45. In the second case, it was discovered that TR 430-85, the official gunnery text, prescribed no method of handling the sheaf to compensate for staggered gun positions. Publication of a school note covering this point was approved, providing that it not be referred to, labeled, or considered as a change to TR 430-85.

In February 1933[1] the special texts and the Field Artillery Books were merged into one Field Artillery Book series of which some were primarily for extension course use, 13 primarily for the ROTC, and six for use by the School and the service in general. The Field Artillery School Notes, it was decided in November, 1934, would end as such and instead would become instructional memoranda for instructors conferences. They would be available only to the School and the Chief's office and would contain references to the specific paragraphs of the official texts that were being explained.

The Field Artillery Field Manual was revised by the Field Artillery Board, under its president, Col Augustine McIntyre, and submitted to the School for its comments in 1934. The Commandant named a board for that purpose: Lt Col R. E. D. Hoyle, Lt Col

---

[1] February 24, file 352.9, FAS.

Carl A. Baehr, Maj Rex W. Beasley, Maj Orlando Ward, and Maj J. E. Lewis, who submitted their report, January 11, 1935. They outlined in detail a program of field artillery training literature, and their program was approved. Briefly, it called for the Field Artillery Field Manual to be issued as a series of pocket size reference books containing doctrine, principles, and data in convenient and condensed form. A detailed chapter by chapter outline was given as part of one book. The Field Artillery Books of the 1934 series would be completed for use as instructional texts. These and the Field Manual would be the entire Field Artillery training literature for peace and war. The Field Artillery School was to prepare all training literature except that on subjects with which it was not closely concerned, e.g., pack artillery.

A letter from Maj Gen Upton Birnie Jr., then Chief of Field Artillery, to Col McIntyre, dated January 24, 1935, suggested that the Field Artillery Board may have had rather similar ideas. Indeed, he stated that in his opinion the School's suggestions conformed in general to the Board's ideas, but that he wanted their opinion before coming to a decision. Presumably their concurrence came quickly, for his directive of March 7, 1935 provided that except for calibers and weapons not at the Field Artillery School, its Commandant was charged with revision of the Field Artillery Field Manual and all training literature supplementary thereto, the task to be known as the Field Artillery Literature Project. Revision of the former was to begin at once and continue until completion, tentatively set at 1937. It was to have approved principles and doctrines in convenient and condensed form. Service of the piece would be included, and, if need be, consideration would be given to issuing it in two or more volumes. The rest of the report of the Field Artillery school board was also approved subject to some minor changes, such as not numbering chapters consecutively.

This new project was a clear-cut victory for the School and, though he was no longer Assistant Commandant, it should be regarded as a victory for the principles laid down by Col McNair five years or more before. Henceforth the role of the School was to be an even more important one, for now it was in real truth the fountainhead of Field Artillery doctrine.

About September 1934 the Chief of Field Artillery suggested the establishment of a "Field Artillery Digest." Its scope was to be the tactics and technique of Field Artillery, but also it was to treat new matters or those not fully covered in official literature. The School, in an indorsement prepared by Maj Carlos S. Brewer, concurred, and the beginning of the Digest was ordered in November.

It was to be a yearly publication to be distributed free to all Regular Army officers and at a nominal charge to Reserve and National Guard officers. The first edition was to be submitted by the School for approval about August 1935, and it was to appear the following month. It was duly prepared. The first issue appeared in October, 1935. General Birnie was moved to write to General Butner, then Commandant, that the Digest had received many favorable comments.

Course Schedules

Prior to November, 1933 schedules were prepared, as we have indicated before, very largely by the two Departments of Gunnery and Tactics. November 28 a letter from Capt Frederick H. Black, then Secretary to the Assistant Commandant suggested the appointment of a board of three officers, one from Tactics, one from Gunnery, and the secretary of the academic division to prepare the Battery Officers, Advanced, and National Guard and Reserve officer courses. On December 19 it was decided that a board so organized would prepare the courses handled by two or more departments.

Relationship of FAS to C&GS

The relationship of teachings at the Field Artillery School to those at the Command and General Staff School, as the Chief of Field Artillery wanted to see it in 1935, was something like this:

a. The Field Artillery School to keep in step with the general tactical doctrine (reinforced brigade, division, and corps) as taught at the Command and General Staff School and adapt its artillery instruction thereto in conformity with the Field Artillery Field Manual.

b. The Command and General Staff School, in its artillery instruction, to adhere to the methods of artillery employment taught at the Field Artillery School.

Comments on Instructional Methods

One aspect of certain FAS courses not covered previously was the thesis requirement. Students in both the Battery Officer and Advanced Class were required to prepare theses which counted for 5% of their final grade. This requirement was begun by General Snow in 1923. He had been disturbed by the lack of contributions from the Field Artillery for service journals and wrote to General Irwin, then Commandant, seeking his reactions to a requirement

that each student officer prepare an essay on some field artillery subject at the end of his course. Irwin was in accord and suggested a length of between 1,500 and 4,000 words and with publication of the most suitable ones in the Field Artillery Journal. By 1930 the required thesis was to be 2,000 to 5,000 words long, its subject one of military nature or capable of military application to be chosen by the student but approved by the Assistant Commandant. In it the student was to support or demolish his hypothesis by carefully marshalled data. In grading theses, directors were to allow 20% for originality, 30% for supporting data, 30% for keenness of analysis and logical presentation, and 20% for the soundness and completion of the conclusion. In the grading process, theses were thoroughly analyzed, and their faults pointed out to the student. Absence of data supporting the conclusions advanced was one of the more common faults. Though these theses were to demonstrate ability in research on the baccalaureate level, students were prone to record their observations and opinions as self-evident conclusions. The better theses were later submitted to the Field Artillery Journal for publication. Because of the late opening of the School in 1934 the requirement of the thesis was suspended for that year only.

Teaching aids left something to be desired at that time. The Department of Materiel used training aids in some form or other almost from its beginning, for example, a cutaway of a 1917 Packard axle was used for years. In the late twenties and early thirties it was necessary to borrow vehicles from Lawton automobile dealers in order to demonstrate modern motor practice, the Green Chevrolet Company of Lawton landing the School a 1932 Chevrolet chassis in January, 1933. School funds were also used to purchase second-hand Ford and Chevrolet equipment. In 1932 the Department of Materiel built a cutaway Buick with display material given by the Buick people and a cutaway Buick frame salvaged from a bad fire in Oklahoma City. The use of assemblies for training purposes was begun before 1934 by Capt C. C. Brown (account of Master Sergeant C. W. Carter) who put his assemblies under a protecting sheet of glass together with a worksheet or information sheet. The Armament section of the Department of Materiel had one cutaway of the recoil mechanism of the 75-mm gun M1897 and a few charts, nothing more. Its training aids were the guns themselves, and its examinations were of the essay type. (Account of Lt Rudolf Eppler). At least 50% of the work consisted of conferences.

This condition in the Department of Materiel led to an illuminating exchange of correspondence between the School and the Chief's office. In 1932 the School submitted a proposed school text on materiel to the Chief's office for approval. This proposal

drew in reply a criticism of the whole course in Materiel. The Chief noted that the course devoted 42 of its 70 hours to lectures. This was very poor distribution, for in his opinion the course should have been about 95% practical work. This letter was given the Assistant Commandant, Lt Col Lesley J. McNair, for his comments. McNair remarked that the course was too short for detailed study, that intensely practical work was more appropriate for a battery mechanics class, and finally, that in work of this sort, the time spent on purely mechanical tasks often far exceeded the instructional return. As for the text itself, it was pointed out that it was a condensation of some 2,000 pages of source material, a great aid to students.

The reply made by the Commandant, then General Cruikshank, was accommodating in spirit. Cruikshank said the purpose of the text was to make it unnecessary to search through many manuals for technical information and that its approval would permit cutting lecture hours from 42 to 15. He added that the term lecture was misleading for the materiel was actually on display before the students and was handled by them during the lecture. The intent of the School was to give an understanding of the principles involved leaving it to the student to acquire detailed familiarity after he went back to his unit.

This reply did not fully satisfy the Chief, although the point raised by the School on the desirability of compiling material scattered through a number of manuals into one instructional text was later accepted by the War Department. Under the Chief's orders the materiel course was thoroughly revised by cutting out lectures, devoting 59 hours to practical work, 7 to conferences, and 4 to examinations. Sights and ammunition received 20 hours and the rest was devoted to guns and carriages. Still along the line of increased practicality, the Chief objected to the undue stressing of probabilities. The use of coins, cards, and dice was to be confined to elementary instruction.

The correspondence course revision which was completed in 1931 offered the Field Artillery a complete method of instruction in artillery. According to McNair, it was "the first time the achievements of the School could be used by everyone in the arm." Practically all of it was based on texts printed at Fort Sill, no less than ten being prepared for this revision. The lessons themselves were printed or mimeographed by the Adjutant General's Office, and the courses conducted by the Corps Areas, but in 1932 the War Department ordered 21,500 copies of extension courses printed at the School. In 1935 the kit for one problem included: two small grid sheets; one map of Fort Sill on the 1/62,500 scale; one combined protractor and field artillery plotting scale; a photo mosaic; and five pieces of tracing paper.

The scope of extension courses and the hours of credit allowed were fixed by the War Department and not by the School. In theory courses for the various arms were of approximately equal length and completion of corresponding subcourses was supposed to bring officers of different arms to corresponding stages of development. The importance attached by the War Department to these courses is shown by the fact that successful completion of a certain number of courses was a prerequisite for promotion in the civilian components

Course Changes

There were several changes in the courses offered at the School--either from a desire to keep abreast of technical progress or from economy--which resulted in consolidating the Battery Officer's Advanced Courses into the Regular Course. In January 1932 a letter from Fort Sill to the Chief of Field Artillery remarked there were only a few technically qualified communications officers in the arm and no attempt was being made to remedy the need. The Battery Officer's and Advanced Courses were not designed to prepare such experts. The Chief's recommendation, presented later, was to allow more time for communications in the Battery Officer's Course or to have an advanced course in communications, preferably the latter. A six months course was suggested, to begin at a time that would allow two months work before the enlisted specialists class arrived and to be followed by four months with them.

On October 31, 1934, the School formally requested approval to start such a course stating as its reason that the Signal School course did not offer enough practical schooling in the problems of smaller troop units. Approval was given in December. The course was later criticized, in the fall of 1936, as being too short to familiarize the uninitiated student with electricity and magnetism, the fundamentals of both radio and telephone. Without such preliminary training, it was suggested, the student could not master radio procedure and theory.

As a result of the creation of this course, the Advanced Motors Course was cut to 21 weeks so that there could be eight officers in each course. There were to be no more than eight officers at a time charged against the arm's quota for service schools. Another class for motor mechanics was instituted in the school year 1934-1935 to meet the increased need for mechanics so that such courses were then being offered fall and spring.

Much of the burden of training National Guard units was borne by some 62 sergeant instructors. National Guard regulations prescribed that these men devote three months of every four-year tour of duty to appropriate refresher training. The Chief of the National Guard Bureau moved to put this provision in effect and accordingly a sergeant instructor's course of three months, to include such subjects as might be required to refresh them in the latest tactics and technique of field artillery, was approved by the Adjutant General February 7, 1936. The School was requested by the National Guard Bureau to report in detail on any sergeant instructor thought unqualified for his post as well as on each student's knowledge of his arm and his general qualifications.

Consolidation of the Battery Officer's and Advanced Courses was first mentioned in a letter of August 22, 1932, from Lt Col Robert M. Danford of the Chief's office. Danford warned that the arm's 1933-1934 quota for all service schools was being cut to 58 and suggested several expedients for meeting this situation such as merging the two officers classes, cutting their enrollment 50%, shortening them, or dropping the Advanced Course completely. Of these proposals, the School felt that cutting the size of the classes was the only solution. Although this would make for a seemingly large overhead per student, still it was justly argued that the productivity of the School was not to be judged by its output of students alone but by its texts, its extension courses, its development of doctrine, and its testing of materiel. There was strong opposition to dropping the Advanced Course, Major Orlando Ward pointing out that it was the laboratory for the maneuver of fire and the study of fire direction.

By October the Chief's office was in favor of merging the two classes and suggested that the elimination of common matter plus an entrance examination for the purpose of weeding out the unprepared would permit a satisfactory course on a high level. The School accepted the idea of an examination, which it thought should be held about March of the spring before the student's entrance. As for changes in the courses, the School suggested taking 124 hours from the Animal Transport part of the Battery Officer's Course, 80 hours from Gunnery, 50 from Materiel, and adding 313 to Tactics.

A three months "senior course" was considered but was never carried out because of the uncertainty regarding living quarters in the fall of 1934, when the opening of school was postponed because of a lack of quarters. Opposition on the part of the General Staff to the idea of an entrance examination for the Regular Course prevented such an interesting experiment from being attempted.

Major Edwin F. Parker Jr., writing in Volume 24 of the Field Artillery Journal, page 202, made a detailed comparison of the two old courses and the new one.

	BOC	Regular	Advanced
Animal transport	315	200	164
Motors	195	134	149
Gunnery	443	347	233
Tactics	265	532	724
General field exercises	192	212	192
Materiel	70	50	27
Fire direction		105	

This course was approved December 7, 1933. The consolidation of the Battery Officers and Advanced Courses proved a windfall to ten members of the Battery Officers Course of 1932-1933 in a most unexpected way for, when the elimination or reduction of the Advanced Course began to seem probable in the fall of 1932, the Chief reversed an earlier decision and authorized the Commandant to transfer from the Battery Officers Course to the Advanced Course the maximum number of graduates of the old Basic Course whom the Commandant regarded as qualified.

Caliber of the Students; Entrance Requirements

The interest shown in entrance examinations for the new Regular course was perhaps part of a wider concern with entrance examinations as a means of improving the caliber of students attending the Field Artillery School. In 1931 Lt Col Lesley J. McNair, then Assistant Commandant, sent a questionnaire to all Battery Officers Course students with less than eight years commissioned service. Of the 48 who returned the questionnaire, 38 had received no systematic instruction from older officers apart from troop schools. Of 24 who had been with a motorized unit, 16 had had no systematic training in motors. Forty-six had had little or no training in the deliberate preparation of fire. These examples might be continued almost indefinitely and revealed the haphazard, casual nature of the training given young officers. It was found that student performance at the School was directly related to length of troop duty with a gun battery. Superior

students averaged 5 years and 4 months of such duty, excellent averaged 3 years, and satisfactory averaged 2 years and 11 months. This clearly revealed that a young officer's "training" was simply what he managed to pick up and that if left to himself, he would in time learn his job.

The School, commenting on this, stated that troop schools should not be used to prepare for the Field Artillery School but that extension courses might well be used for that purpose. The Chief of Field Artillery in turn asked for a list of courses that students should take. This was sent the following fall, together with the results of a questionnaire given to the students of the next Battery Officers Course -- which had yielded the same results as the earlier questionnaire.

In January 1932 Maj Gen Edward L. King, Assistant Chief of Staff, suggested the use of extension courses as a basis for troop schools which would also tend to make students better prepared for the service schools. Although its comment was not officially requested, the opinions of the School were revealed in semi-official letters to the effect that the first years of an officer's stay in the Army should be given to instruction on practical subjects, such as horseshoeing, which could not be taught by mail. On the whole, however, King's idea was thought to be an excellent one, suggesting an approach that might greatly improve troop schools.

At this period entrance requirements for Reserve and National Guard officers, in the form of extension courses completed, did exist. In 1931, for National Guardsmen, at least two years service was required, preferably a captain's rank, and completion of subcourses on the Firing Battery, Preparation of Fire I, and Organization of the Field Artillery. Field officers had to complete those, plus Conduct of Fire I and Combat Orders I. From officers with that background state adjutant generals filled their assigned quotas and had alternates as well. States without quotas for any one year chose alternates only. Field officers were recommended from the National Guard as a whole. The requirements in terms of extension courses for Reserve officers were higher than for members of the National Guard, and the Commandant, General Butner, sought in 1934 to have the National Guard requirements raised to match those of the Reserves stating that the class standing of the two groups reflected the difference. These requirements simply reflected the requirements for promotion to the next higher grade in the Reserves, and in 1935 the Adjutant General's Office informed the Chief of Field Artillery that requirements for entrance of Reserve officers would be changed to a specific list of extension courses.

Not until the year 1933-1934 were entrance requirements set for enlisted students, and then they were set in modest, general terms. Motor mechanics, horseshoers, saddlers, and battery mechanics were to have such character, experience, technical ability, and past and prospective service as would indicate their suitability for further training along those lines. Motor mechanics were to be capable of becoming motor sergeants; battery mechanics, chief mechanics. Communications course students had to be members of a brigade, regiment, or battalion headquarters battery, have an 8th grade education, or its equivalent, plus certain technical skills.

The School Troops

School troops at Fort Sill performed a variety of chores, among which were the training of civilian components, the organizing and staffing of the CCC, testing of new equipment, and the routine support given the School. The Citizens' Military Training Camp held yearly at the Post was the job of the infantry battalion, which during these years 1930-1935 was the 1st Battalion, 38th Infantry. Thus, in the summer of 1931 it conducted a camp for 1000 students and in addition gave active duty training to the officer cadres of four infantry regiments of the Organized Reserves. This activity was continued through the next four summers. The 18th Field Artillery during the fiscal year 1930-1931 trained 60 Reserve officers and during the summer periods supplied instructors, firing batteries, and technicians. The 1st Field Artillery gave similar aid, and in 1931 noted that its summer duties had been "not excessive."

The 38th Infantry processed the CCC, as mentioned before, a task comparable to running several CMTC camps at once. The other units of School troops supplied officers to the CCC from 1933 until after the end of this period in the School's history.

The testing of new equipment went on continually. The 18th Field Artillery in school year 1930-1931 tested panoramic sights M1917 for the field pieces, automatic rifles for antiaircraft defense, the experimental reel cart RL-23, and the 12-drop switchboard. Tests of sights and automatic rifles continued in the following year, and in 1933-1934 a 75-mm pack howitzer was studied. The 1st Field Artillery in 1930-1931 received four 105-mm howitzers for testing. These were assigned to Battery F as alternate armament. Panoramic sights were issued the regiment for test in 1931. Equipment for an experimental truck-drawn battery was issued March 26, 1933. Tests were conducted with traction devices, methods of carrying and laying wire, field kitchens, and modifications of truck bodies, and periodic reports were rendered to the Chief of Field Artillery. Battery E in

the same year was given a 75-mm pack howitzer for test. The newly activated 77th Field Artillery made five tests of motor equipment over difficult terrain.

These School troops faced a variety of problems. The 38th Infantry was for many years plagued by poor range facilities. The pits at the range were in poor shape because of the rotting of wartime timber. The area swarmed with flies following occupancy by the civilian components, and it was necessary to pitch tents on the earth during a season prone to rain. The problem of personnel was often vexing. In the summer of 1930 the 18th Field Artillery was overstrength, thanks to an influx of recruits, and at the end of the school year was under strength again. Recruiting was suspended in the last three months of 1932 so that the next school year began with the 1st and the 18th short 145 men and the infantry battalion short 32. These recruiting restrictions were removed in November 1932 which brought temporary relief. The reorganization of 1935, with its increase in the strength of the arm, did much to aid in solving this problem.

Summer camp activities, however necessary, were a drain on the troop's strength, as has been mentioned before. Until 1934, vehicles older than 1920 were in use, and often not even too many of them, so that problems of maintenance and administration were serious. A questionnaire from the Chief of Field Artillery's office to the 1st Field Artillery brought the reply that their most important problems were: "... proper motorized equipment for the motorized battalion. Maintaining highly trained batteries ... for the Field Artillery School."

Work for the School went beyond the usual duties in service practice and general field exercises. Battery B of the 77th was for some months the Post Military Police Detachment. When the Army was undergoing motorization in 1934, the 1st Field Artillery gave courses for officers and men of units to be motorized.

Mounted Activities

During the school year 1930-1931, the Horse Show team was put under the department of Animal Transport and its members used as instructors as much as their duties permitted. Capt Edwin Y. Argo of the 1st Field Artillery, a member of the team, was also a member of United States Olympic Team in the Los Angeles Olympics in 1932. He distinguished himself in the steeplechase, where he went on to take 40 jumps after his shoulder was dislocated. In 1933 the members of the Horse Show team were called back from CCC duty

to try out for positions on the Army Horse Show Team which was to compete at New York and Toronto. Half of the members of the team were to be from the Field Artillery, and the Chief, General Bishop, was most anxious that so long as the arm was not completely motorized, it keep its name for good horsemanship. Members of the Field Artillery School horse show team were members of the Army Team at New York, Chicago, Toronto, and Miami. It should be noted in passing that team expenses were paid by the horse show committee and individual expenses by team members themselves, which could be defrayed from the winnings, if any.

Later in 1933 General Bishop wrote to the Commandant that it was desired the Field Artillery School sponsor mounted sports and horsemanship in the most effective possible way. He inclosed a proposed directive for the School's comments. Of these comments, only one is important, namely, that the officers of the team be charged with the instruction of the class in Advanced Horsemanship. The directive was accordingly issued February 2, 1934, ordering that the Horse Show Team and the Polo Team be maintained at the Field Artillery School as agencies for increasing the general efficiency of Field Artillery officers in horsemanship and in the care, training, and conditioning of animals. Members of the team were to be assigned to organizations at the Field Artillery School, and while they could not be used as instructors in general, they could give such equitation instruction as would not interfere with their primary mission. Under this directive, mounted activities at the School prospered (refer to the next chapter).

Reestablishment of the Museum

One of the projects in which General William Cruikshank was most interested while Commandant was the revival of the museum at Fort Sill. On its behalf he corresponded with the Chief of Field Artillery and various other interested persons to secure exhibits for the museum. For his part, the Chief, Maj Gen Upton Birnie, Jr., gave hearty cooperation. The first curator, 1st Lt Harry C. Larter, was highly praised by the next Commandant, General Butner, for his perseverance and interest. The Geronimo Guardhouse, where the old Indian had been confined to sober up after his periodic sprees, was converted into a museum building, and the Field Artillery Museum was officially opened by General Birnie, December 10, 1934.

The Museum included arms and equipment from the last war, examples of American uniforms and equipment from past wars, a fine collection of Indian relics and pictures and documents of interest to

members of the Field Artillery. No funds were allotted to it specifically, but were obtained from Book Department funds by request to the Assistant Commandant. Interest increased steadily, with 9,370 visitors in 1938, and 13,735 in 1939.

Graduates 1930-1934

COURSES	1930*	1931*	1932*	1933*	1934*	TOTALS Off	TOTALS EM
REGULAR ARMY							
Battery Officers	66	49	48	43		206	
Regular Course					52	52	
Advanced Course	33	50	48	12		143	
Refresher	4[a]		1[b]		1[b]	6	
Adv Communications					4[c]	4	
Advanced Motors	4	6	7	4	4	25	
Adv Horsemanship	6	5	6	4	3	24	
Enlisted Men	86	85	73	128	163		535
NATIONAL GUARD RESERVE OFFICERS							
				(Fall only)			
Battery Officers	58	58	65	19	51	251	
Field Officers	7	7	10			24	
						735	535

* -- The year denotes the school year from September of the year indicated to the following June.

a -- Course 2 months duration
b -- Course 1 month duration
c -- Course 5 months duration

Bibliography

Annual Reports, U.S.F.A.S., 1927-1928 to 1939-1940, The Field Artillery School Library.
Files of the Office of the Chief of Field Artillery, op. cit. supra.
The Field Artillery School Files.
201 File, Brig Gen William Cruikshank, Post Headquarters, Ft Sill, Okla.
201 File, Maj Gen Henry W. Butner, Post Headquarters, Ft Sill, Okla.
"New Construction at the Field Artillery School," by Major Edwin F. Parker, Jr., The Field Artillery Journal, Volume 24.

CHAPTER TEN

FROM DISARMAMENT BY EXAMPLE TO MOBILIZATION

In our last chapter it was pointed out that the Field Artillery had entered upon the final phase of a technical revolution--the full application of every field of modern technology to field artillery--a technical revolution which began with the invention of the modern field piece by Deport, and which still continues. In the early thirties the American Field Artillery began to leave every vestige of the pre-machine world behind. The horse that had drawn the guns of Napoleon, just as it had drawn the chariot of Hector, began to lose its role. Whereas targets had been pointed out by gesture or description, even as the Chevalier Bayard had pointed out the Swiss to the Master Gunner of France four centuries before, they were now given to the batteries in terms of mathematical quantities. Everywhere the machine and machine-like, i.e., mathematical, habits of thought replaced the old ways. The next step taken by the American Field Artillery was to be the acquiring of a more powerful weapon drawn by a more reliable prime mover. This materialised in the substitution of the 105-mm howitzer and the 6 x 6 truck for the 75-mm gun and the 4 x 4 truck respectively.

Developments in Maintenance

The first contributions of the Field Artillery School were made in the field of maintenance. In April 1936 the Chief of Field Artillery, Maj Gen Upton Birnie, Jr., directed the School to appoint a board to conduct a series of field service tests of the echelon system of motor maintenance with reference to its suitability for war-time, to determine the practicability of the existing record, and to set up Tables of Organization for motor maintenance units within the field artillery. The members of the board as appointed were: Maj Roland P. Shugg; Capt Leonard S. Arnold; Capt Lawrence E. Heyduck; Capt Frank A. Henning; 1st Lt Charles R. Hutchison. The board studied the operation of two civilian fleets, plus the fleet at Fort Sill, devised and tested different maintenance systems in general field exercises, and studied pertinent War Department documents. Its partial report was rendered in July of 1936.

This report designated the first three echelons as follows: The first echelon was the driver and his assistant, who were to be made responsible for minor repairs and general everyday upkeep of their vehicle. The second echelon was the battery, which was

charged with caretaking, minor repairs, and replacements that could be made in two hours. The third echelon was the regiment (or separate battalion) which would reinforce the efforts of the batteries, supervise all work, and install unit subassemblies.

The conclusions of the final report were based upon extensive field tests of three methods devised by the board. In the first of these, the battery literally did everything, with the regiment left only administration and supply. In the second method, the battery was left only fleet operation and supervision of drivers, the regiment doing everything else. In the third, the battery was given the same responsibilities it had been given in the first method above, but the regiment was given a maintenance platoon with substantially similar equipment to that in the battery, to "reinforce" the latter. This was the recommended method.

With this final report the Chief of Field Artillery could not concur. His disapproval showed appreciation of the board's thorough work, and he pointed out that the system of maintenance prescribed by him in 1937 conformed to that outlined in the first or partial report, in which the battery performed the simple, and the regiment, the complex tasks. But he could not concur with the final report, for he felt it placed a great load on the battery which that unit, a fighting, not an administrative unit, should not have to bear. He further objected to the creation of a regimental motor platoon which duplicated that in the battery. It will be recalled that earlier there was an attitude of independence in the arm in regard to motor maintenance, an attitude to which the Chief now referred, saying that whatever conditions may have been in the past, there was now no need for the arm to burden itself unduly with motor maintenance.

General Birnie accordingly directed that the School teachings and practices conform in every respect to the motor maintenance system set up in 1937. The Quartermaster Corps and the Field Artillery were planning to set up a model third echelon at Fort Sill for test and demonstration. The scope of the motors courses were accordingly changed in the spring of 1938. The heavier repair operations, which the Field Artillery had thought itself forced to perform were taken over by the Quartermaster Corps in full. The scope of the courses then covered only: the echelon system of motor maintenance; the tools, equipment, and personnel provided; motor supply; practical work on unit assemblies and vehicles; technical inspections; driver training; march maintenance; field expedients; motor park administration, and records.

The idea of "preventive maintenance" was brought to the Field Artillery School by Capt Morris Daniels after a visit to the Detroit plant of General Motors in the summer of 1937. His idea was to have vehicles inspected by a three-man team, two mechanics, and a recorder, with immediate repair of things found wrong or needing adjustment. The idea previously had been to repair after a breakdown. The idea was at once adopted by the School and was being taught in the fall of 1937.

The next development of importance was a report of the Motor Maintenance Board of the School, under Lt Col Roland P. Shugg, September 28, 1938. Stating that for the past two years the operation of military motor vehicles had been under intensive study at the School, the report severely criticised existing concepts of preventive maintenance (which must be distinguished from the maintenance system discussed previously). The report stated that too much depended upon the interpretation of regulations by relatively inexperienced personnel, that inspection meant looking for flaws, and maintenance meant repair after failure. The board proposed a change to AR 850-15 by setting up definite, scheduled, preventive maintenance, with 1000-mile and 6000-mile maintenance services replacing the 3000-mile. Scheduled maintenance services were carefully defined as cleaning, lubrication, servicing, repair, adjustment, etc. Services of vehicles were divided into types, as daily, weekly, lubrication, 30 day or 1000-mile, six-month or 6000-mile. Everything proposed was definite and clear and in contrast to the vagueness of the old regulations.

In February, 1939, the School again urged such a change to AR 850-15, in a letter from Col Shugg to Maj Rex W. Beasley in the Chief's office. The 6000-mile service was seen as a fairly comprehensive one in which all engine accessories such as carburetors, generators, etc., would be removed for cleaning and servicing. The 15,000-mile service recommended by automobile manufactors for civilian fleets was comparable to this, the difference reflecting the effects of driving in low gear frequently, in dusty columns, and cross-country.

Testing of Night Lights

In 1938, the accepted method of blackout marching was described as follows by Col E. H. DeArmond, while acting Commandant: "The leading vehicle of the group when lights are forbidden has nothing to follow on dark nights except a dismounted man carrying a flashlight in the back of his shirt. Hence, our present rate of march on extremely dark nights is the speed of a

man on foot, guiding the truck, in truck-drawn artillery. This is very unsatisfactory." The Quartermaster Corps was therefore actively seeking something better, and in 1938 sent some night-lighting devices for test by the School. Lt R. W. Fletter performed the tests under the auspices of the Department of Materiel. An attempt had been made to provide lights which would illuminate the road and still not be visible from an airplane, but this attempt was not successful until shields were added to the lights. Lt Fletter reported that the lights as issued for test were not satisfactory, and he suggested they be modified by the addition of shields and that enough be issued for the test of a column.

Toward a Better Prime Mover

At this time, the program of modernization and motorization had provided the Field Artillery with a miscellany of civilian vehicles, concerning whose suitability there were doubts. This situation was no reflection on any one concerned since only very large orders would have made the manufacture of special types economically justifiable, and those orders were not forthcoming in peace time. In December 1936 a letter of the Adjutant General called for reports on the suitability of the vehicles issued to tactical units, and a board, Lt Col John E. Lewis, Maj John A. Chase, Capt Ernest V. Holmes, and Capt Oliver W. van den Berg, was set to work on the matter.

The board classed the 4x4 1-1/2-ton and the 6x6 4-ton as the most satisfactory, saying all other field artillery vehicles were unsuited for field service. The board did not say that the existing 4x4 was the answer, only that it was the best of its class. Standardization of a 4x4 type, eliminating the station wagon and the pick-up truck, was urged. For general policy, the adoption of commercial vehicles was suggested, together with the devising of ways and means to use them to best advantage. Design competition was recommended. The board accepted the 4x4 because it was commercially available; its preferance for the 6x6 was clear, and this report was the origin of the 6x6 of today.

In 1938, the Chief of Ordnance asked the Chief of Field Artillery for the Field Artillery's views on the sort of prime movers it needed. As spokesman for the arm, the Chief[1] answered and sent a copy of his answer to the School for its comment. The Chief's letter proposed: A commercial 4x4 with light tractors to pull it out when it mired; tractors to draw the 155-mm howitzer; the use

---

[1] This term "Chief" is used to mean the office over which this officer presided as well as the individual himself.

of commercially available vehicles. With these views the Field Artillery School could not agree. It was pointed out that the very need for tractors revealed the makeshift nature of the 4x4 as a prime mover. In its place the School urged a light 6x6, for it felt that the development of multi-wheeled drive was the outstanding recent automotive development, and in its experience, the 6x6 4-ton Indianas at the School had outperformed everything else. As for the argument of commercial availability, it was thought this point, on which the whole of the Chief's thesis depended, was invalidated by the technical resources of modern industry.

This exchange is cited to show the School's role in the creation of the 6x6 2-1/2 ton truck. The argument turned essentially on a matter of high military policy: Would the United States have time to arm in an emergency? If so, there was time to re-tool for quantity production of the 6x6. Presumably the Chief thought otherwise. The School apparently felt that this process of re-tooling would be so swift that nothing would be lost.

Not long after this exchange, the School was in a position to give a report based on a formal test of a 6x6 and a 4x4. These were standard commercial types, the 6x6 a three ton model being considered as a carrier for the light tractors which each regiment was to have to pull its 4x4's from potholes and buffalo wallows. Both models were powered with the same engine. After testing both in a patch of very muddy ground near the Fish Hatchery, and comparing their performance with that of a six-horse team which was adopted as a known standard (and which outperformed both trucks), it was concluded that they lacked power and flotation.

The Motors Section of the Department of Materiel then provided two trucks built to secure the maximum in power and flotation. A Marmon-Harrington 4x4 was given 8.25x20 dual tires on all four wheels with Hipkins devices to secure maximum flotation and was re-powered with a Hercules Diesel truck engine. The 6x6 that was being tested was given a Buick engine, like that used in early half-track tests at Fort Knox, and dual wheels with traction devices. The tests, under Capt van den Berg, were conclusive. The 6x6 outperformed every vehicle on the Post and actually pulled a tractor out of the mud in which it had stuck. The School's experience of many years of operation of the powerful 4-ton Indiana 6x6 prime mover for the 155-mm howitzers was regarded as confirming the results of the test.

In the report of the tests, the School commented that it was strongly opposed to the 4x4 as a prime mover, but that it was satisfactory as a cargo truck and personnel carrier. It was conceded

that the 4x4 could serve as a prime mover in dry weather, but it was clearly stated that the most satisfactory prime mover for field artillery, including the 105-mm howitzer, was a 6x6 with suitable traction devices. Among the recommended traction devices was listed the front-mounted winch developed by the Braden Winch Co. of Tulsa, Okla., for oil field use. It was suggested that no further time be spent in testing trucks, but that a light 6x6 be developed to be used with 4x4 cargo and personnel carriers, and reconnaisance vehicles.

A Better Weapon

Dissatisfaction with the 75-mm gun M1897 ("the French 75") as the light weapon of the division artillery was expressed in the last war when the gun was at the height of its popularity. Because of its flat trajectory, the weapon could not reach an enemy behind a hill of any size, nor could it be emplaced behind a hill. The projectile was too small to be powerful. On the other hand the Germans in the last war had a 105-mm howitzer that was a satisfactory weapon, and a number of captured pieces were brought to this country for test and experiment. By the end of 1921 two American 105-mm howitzers had been developed. Work on the type continued for the next 15 years but without developing a highly satisfactory model. In 1936 the German army was re-equipping its divisions with horse-drawn 105-mm howitzers, and the other Great Powers were taking interest in the howitzer type. Although this awakened interest in the United States, a large number of 75-mm guns M1897 were left over from the last war, and as a measure of economy, these were being modernized with splittrail carriages. The project of a modern carriage for the American 105-mm howitzer, to match the satisfactory tube which had been evolved, was just too low in priority to get action while the 75's and the 155's were being modernized.[1]

A study of the 105-mm howitzer, to determine what characteristics would be desirable in the piece, and what should be its role in the division, was begun by the School in September 1938, as directed by the Chief. The weapon was, of course, familiar to the School, for both the old German howitzer and various American

---

[1] The last rounds of 3-inch gun ammunition were fired at Fort Sill June 26, 1936, by Maj Gen Upton Birnie, Col E. H. De Armond, Col Charles S. Blakely, Col Donald C. Cubbison, and Col Ralph M. Pennell.

models had been used and tested here. In its report, the School laid down that among the qualities desirable in an ideal 105-mm howitzer were an elevation of 65 degrees, a variable length of recoil to eliminate the necessity of digging a recoil pit, and a traverse of 45 degrees. The elevation was insisted upon because experiment had shown that shell-fire delivered at ultra-high angles was much more effective than that delivered at a low angle of impact. The 105-mm shell, it was noted in passing, per pound of shell fired, was much more effective than the 75-mm shell. As for the role of the piece in the division, the School suggested a combination of 105-mm and 155-mm howitzers, although the directive under which the report was made asked only for a choice between the piece as the sole weapon in the division, or as a companion to the 75-mm gun.

In December 1938 the Chief warned the School that should war break out in the near future, the Field Artillery must expect to make use of the 75-mm gun M1897 with collimator sight. Development of the present model of 105-mm howitzer was progressing steadily during these months, and in May, 1939, the suggestion was made by the Field Artillery School that there be no further test or experiment of the piece, and that immediate manufacture and distribution be begun of the existing pilot model. Purchase of 132 of these weapons was recommended by the Chief of Field Artillery in October 1939.

New Methods of Transfers of Fire; Shells

During the years 1935-1940 the Department of Gunnery worked on tests of transfers and transfer limits, on time shell, aerial photographs, calibration of pieces by measurement of wear in the tube, air-ground observation, fire direction, statistical analysis of the arm's service practice, sheafs, and on accuracy of various concentrations and methods of preparing initial data. In these tests of transfers and transfer limits, attempts were made to find the most accurate way of transferring fire from one target to another, and within what limits of range and deflection fire could be accurately transferred from one target to another without recomputing the corrective factors applied to the basic data. There were three types of corrective factors under test, and so, three types of transfers.

The K was a corrective factor, equal to the difference between the elevation of the check point range computed from map data and the elevation determined by adjustment, reduced to plus or minus yards per thousand yards of range. In other words, it was the range correction per thousand yards.

The VE was another corrective factor, equal to the difference between the elevation for the check point range computed from meteorological data and the elevation determined by adjustment, reduced to a plus or minus feet per second, and applied to the range effect in yards of a one foot per second change in muzzle velocity at the range of subsequent targets.

Map data corrected was data determined by measurement from the map, corrected for the effects of the prevailing weather upon the trajectory.

On October 14, 1939, tests were conducted to test the relative accuracy of map data corrected, K transfers, and VE transfers for the 75-mm gun M2. Nine guns were used, representing the base pieces of a brigade, and the transfers were based on registration of a single gun. Tests were also conducted to determine the accuracy of K and VE transfers for the 155-mm howitzer between low-angle zones, based on registration in one zone, and also to determine probable errors. In tests of the 75-mm guns, average error for map data corrected for deflection was 11.4 mils, for range, 80 yards; for K transfers, deflection error, 11.8 mils, range error, 96 yards; for VE transfers, deflection error, 11.2 mils, range error, 46 yards.

After the base point registration, each of the nine guns then registered with a precision adjustment on its own target in the transfer area. The adjustment elevation, in each case, was compared in turn with computed initial data for map data corrected, a K transfer, and a VE transfer, thus determining the range errors. The survey was by transit. Inasmuch as VE transfers depended for accuracy upon artillery survey, meteorological data, non-standard conditions, and initial laying of guns, they should, if correct, have in theory no limits so long as the same powder charge is used. FM 6-40, para. 429, stated: "However, for targets outside of transfer limits, the VE correction should on the whole give better results than the K change." The School report commented that the K transfer limits were probably adopted because a quick, workable rule was needed, and that, given premises of equal accuracy, VE transfers were better than K and cover a wider area. Map data corrected was said to be good for any direction and range if initial survey was accurate, corrections for non-standard conditions were accurate, and initial laying was accurate. Tests of 155-mm howitzer transfers revealed that transfers between zones would be erratic.

Further tests, held in December, 1939, confirmed the results of the first series. Again nine 75-mm guns M2, representing the base pieces of a brigade, were used. Centers of impact were fired

with shrapnel, each burst being plotted by two to four observers. Comment on these tests was that for guns and howitzers as a whole, VE transfers were better than K transfers, and that map data corrected fires, on the whole, were as good as the transfers.

World War I experience had showed that as a projectile, shrapnel lacked the lethal effect of shell. However, there were many who correctly inferred that the trench warfare of 1915-1917 would not be the pattern of future warfare, but incorrectly held that shrapnel would again come into its own in more mobile future war. In 1928, General Aultman, then Commandant, flatly stated that shell was the only artillery projectile. In the years 1935-1940 experiments were conducted at Fort Sill to determine the best methods of firing time shell. Demonstrations in 1937 and 1938 featured time fire.

Developments in Techniques

The study of aerial photographs of all kinds--oblique, vertical, wide-angle, mosaic--was constant during 1935-1940. In the beginning of the period, research and study was conducted to discover means of using oblique photographs for the conduct of fire. Strip mosaics on a 1/20,000 scale covering a front of 7,000 yards were in use then with very satisfactory results. Continued emphasis was placed on air photos as a basis of survey operations and preparation of firing data. Instruction in the use of aerial photographs was a scheduled part of the Regular, National Guard, and Reserve courses between 1935 and 1940. Wide angle photos were tested as firing charts in the school year 1939-1940.

In 1936 each officer of the Regular course, unless he declined, made two flights, one for orientation and adjustment of the radio in the airplane, and other as an artillery observer. The time spent in the air came to about an hour and a quarter. There was also a half-hour balloon flight for orientation only. National Guard and Reserve officers, unless they declined (and the nature of insurance policies must be kept in mind) received a 20-minute balloon flight for orientation only. Airplanes were used in demonstrations and field exercises, 72 hours of flying time being thus expended in 1936-1937.

The status of fire direction in 1936 was covered in a letter from Lt Col Orlando Ward to Maj Gen Upton Birnie, April 16, 1936, giving suggestions for points to be covered in Birnie's next address to the students of the Army War College. His suggestions were:

> "Stress the flexibility of our observed fire using our present means of fire direction and then show the greater

flexibility given by radio. Enunciate the principle that our methods are now such that the man who sees the target shoots at it, that in the battalion any observation post is available to any battery, and that all batteries are available to any observation post. That the exact location of the batteries insofar as the observers are concerned is not as essential now as in the World War. That we can get fire in five minutes or less with a battery and in ten minutes or less with a battalion. That the effect of a battalion is considerably greater than a world war battalion. In the Napoleonic Wars, in the Franco-Prussian, and in the Civil War it was necessary to mass artillery on the front line in order to mass its fire. Not so with the modern long range gun with our present methods of technique of communication."

The service practice of the various Field Artillery units was a valuable source of gunnery data and cast much light on the state of training of the several commands, when subjected to critical analysis. Up to 1935, the School supplied statistical data on the results of its own firing, but in the spring of that year it was requested by the Chief of Field Artillery to analyze the results of the service practice of the whole arm by six-month periods. These reports, as prepared at Fort Sill, tabulated data on types of problems fired, times required for solutions, methods of obtaining the initial range, average errors of initial data, the allotment of problems as between junior and senior officers (the results often showed that human nature is frail), the ratings of problems by the organizations, and brief comments by the School on the organization's conduct of its service practice. In later years, the six month period was changed to a calendar year, and reports were so rendered for 1938, 1939, and 1940. On February 7, 1942, the School requested that, because of the pressure of wartime expansion, it not be asked to perform the task for 1941. This relief was given a week later.

Tactical Changes

A meeting of representatives of the Departments of Gunnery and Tactics in December 1937 elected to standarize certain elements of fire commands in liaison and air-ground missions for greater speed. Commands from the fire direction center were to include only the base deflection shift or new compass, the range, and an appropriate command for any element differing from a prearranged standard. A 90 yard sheaf and a site of 300 were to be standard. Col E. H. De Armond then proposed that the battery habitually adjust with a parallel sheaf, changing as appropriate when beginning fire

for effect. By April 1938 there had been sufficient experience with the 90 yard sheaf to justify a negative report on its utility. A report by Capt Thomas A. Roberts seemed to prove that staggering of pieces would not in practice be so great as to make the parallel sheaf impractical in the majority of cases. The Director of the Department of Tactics, Col Lloyd Jones, recommended use of the parallel sheaf, as materially reducing the amount of time needed for computation by either the battery commander or the executive and calling for fewer commands at the gun position.

Tactical research went forward at the same time. During the school year 1936-1937, attention was given to the artillery support of mechanized forces, and to support of and defense against wide envelopments. A most intensive study was made of the proposed triangular division. The scheduled instruction of the Regular Course was changed to permit test of certain aspects of the new division. Twenty-seven problems and field exercises were changed from an assumption of the old square division organization and based on the new division. Special tests were made employing the new communications platoon of the regimental headquarters battery and the 81-mm mortar battery, then proposed as a part of the division. The class was given special instruction on the employment and organization of the division, especially of its artillery, involving detailed studies of organization, communication, supply, command and staff, and employment of the mortar battery. Data was worked out covering road spaces, march formations, and vehicular loads.

An intensive test of the six gun battery and four battery battalion was made in 1939, the report being dated August 2. It was found that the battery had greater fire power and greater density of fire, but was harder for the executive to control, and was definitely more cumbersome. Concealment was a problem. Overhead was not increased. The four battery battalion was only a little more difficult to handle on the road and going into and out of position. More time was required for the reconnaissance, selection, and occupation of position, and the establishment of signal communication required more time, materiel, and personnel. Fire direction was no more difficult. From the organizational standpoint, the principal advantages lay in better support for the infantry in displacements. It was recommended that if the number of guns in a division were increased that the increase should be incorporated by adding a fourth battery to each battalion. After that was done, then consideration should be given to the six gun battery.

In 1936 a letter was received from Brig Gen Walter Short, then Assistant Commandant of the Infantry School, in which exception was taken to the current teaching of the Field Artillery School that the supported infantry commander could give the supporting artillery an

expected development of the attack on which a schedule of prepared fires could be based. A lively discussion arose in which Lt Col Orlando Ward remarked in a letter to the Chief, General Birnie: "(T)he direct support artillery's control should be by spots rather than by line, and by call rather than by time." Lt Col Ward used that phrase in commenting adversely on an article which used the term "phases of action," which to him implied something not far from the old time schedule and rolling barrage. General Birnie's reply was that "phases of action" were used to estimate the groups of fire to be placed on important terrain features in the best way to assist the infantry through the various phases of the action: "These groups are placed in selected areas, lacking better information, but are flexible in character... our adopted fire direction methods which allow abandoning... the schedule should better information of the enemy be available."

The doctrine taught at the School was modified along the lines defended by Lt Col Ward to provide that schedule fires were not always possible in every phase, particularly in the beginning of a moving situation. To eliminate the "30-minute phase lines" in planning schedule fires, the term "schedule fire" itself was redefined to include all prearranged fires, including those fired on call. A letter of the new Chief, General Robert M. Danford, to Col Augustine McIntyre, November 29, 1937, stated that in the past the School unduly stressed schedule fires but that the new edition of Field Artillery Book 224 corrected this.

Courses and Instruction, 1935-1940

Course schedules were set in the following manner: The interdepartmental committee, referred to before, first received its directive and definitions from the Assistant Commandant for the Regular course, the National Guard and Reserve Officers' course, the Refresher course, and the Sergeant Instructors' course. The several departments then submitted chronological lists of instructional periods, and under each period gave its duration, title, whether theoretical or practical, and the troop and area requirements. The schedule was then prepared by the committee and submitted to the Assistant Commandant. The Battery Mechanics' course was prepared by the Director of the Department of Materiel and the Academic Division Supply Officer. Schedules for the other courses, e.g. Advanced Horsemanship, were prepared by the director of the department conducting them and submitted to the Assistant Commandant. However, in March 1938, this was changed in that hours were allotted by the Assistant Commandant as well as the master schedule prepared by the schedule committee minus the member of any department which did not instruct in the course.

The requirement of the thesis was continued until October 1938 when it was dropped "due to the variety of instruction which it is necessary to give in a course." Because the Regular course of 1939-1940 was cut in half, one may surmise no thesis was required in that year either. Military History was preferred by the School as a subject for the last few years of the thesis, though mathematical and engineering subjects were permitted. The best of them were to be reviewed by a board consisting of the Assistant Commandant, a field officer from the Department of Tactics, and a company officer from the Department of Animal Transport. A $50.00 prize was awarded the best by the Field Artillery Journal, which would publish it. Instructors were assigned to aid students in the preparation of their theses in the school year 1937-1938, and each received a 100-word critical review. Thanks to this helpful supervision, rather like that given a graduate student, that year's theses were all satisfactory, and most of them were thought excellent. In lieu of theses, the Motors Section of the Department of Materiel conducted seminars for advanced students to which the officers of the Post and School were invited; the Communications Section of the Department of Tactics still required theses from its advanced students.

During the 1935-1936 year an experimental wartime motor officers' course was given to selected enlisted men of the School troops who were either reserve officers or of a type to become such. The course was very brief, being largely in the nature of a refresher course, and intended to fit the men to become motor officers. The 1936-1937 school year saw the Motor Mechanics course almost double in attendance, so that instructors had to be borrowed from the School troops. The students did repair jobs on the School troops fleet in two hour periods, had one hour practical work, 50 minutes theoretical, and a ten minute writ. A trouble-shooting laboratory was set up that saved School troops the use of some 60 vehicles. An interesting feature of the course was a 750 mile motor march through the Kiamichi Mountains.

In the spring and summer of 1937 the practice was begun of sending both enlisted and commissioned instructors for summer visits to commercial plants and government arsenals. It will be recalled that the idea of preventive maintenance as known today was the fruit of one of those trips. The widespread use of training aids also dates from that period, for these instructors-turned-student were able to study the methods used by various large corporations to train their employees. In only one way was the use of training aids curtailed. This was in the Department of Gunnery, in which terrain boards and the Field Artillery Trainer (miniature guns) were used just enough to make sure the students could use them in training the civilian components. The elaborate Baranoff machine was put into storage after the Administration building was opened.

General Birnie, while Chief, sought, via a letter of November 21, 1936, to make the Refresher course a means of priming those senior officers who were the best material in the artillery. He tried to get the arm to recognize the importance of troop service by picking carefully the men for those assignments and then giving them the chance to take the Refresher course. It should be noted that taking the Refresher course often meant a financial hardship, for the officer had to maintain himself at Fort Sill and his family at his permanent post.

General Field Exercise No. 8, the "five-day war," was one of the high spots of the year, the culmination of its work. "GFEx 8" for 1938 lasted from Tuesday, May 31, to Saturday, June 4, inclusive. On Tuesday there was a march in several columns from Fort Sill to a concentration and bivouac area in the Forest Preserve. Students made march tables, joined the units at the gun sheds, and conducted the march. Antiaircraft defense was stressed. During the first night information was received which led to the decision to assume an active defense, and the covering force occupied its position. On June 1 there was the reconnaissance and occupation of a position on the reservation by an infantry brigade and part of the artillery, with firing of interdiction, counterbattery, and harassing missions. The enemy attacked at dawn the next day, and a counterattack enveloping the hostile left flank was launched at 8 A.M. Following a wide envelopment of the hostile flank during the night of June 2-3, the enemy withdrew at about 4 A.M. On June 3, Friday, there was development of the hostile lines in the South Arbuckle area, followed by a decision to attack by a wide envelopment of the north flank. The night of June 3-4 was spent in movement to attack positions, and the attack was launched shortly after dawn on Saturday.

There was firing at all appropriate times during these days. The students planned and conducted the marches and had a chance to familiarize themselves with their commands before the attack really got under way. Practically all students joined in the attack requiring a preliminary maneuver, about half in the counteroffensive phase of an active defense, and about half in the main attack by a wide envelopment.

The duties of student officers were as prescribed in the regulations of the School. When acting as commanders of School troop units, they could give the necessary orders for the tactical employment of the unit. They could assume no training or disciplinary functions. Their only administrative functions were those necessarily arising from the tactical handling of troops. In service practice (1939 et seq.) Regular course students acted as executives, being

supervised by the battery executive and being countermanded only when danger was imminent. Students were also safety officers, but were closely supervised by the regular safety officer, who was still held responsible.

While it was intended that the Regular course give the same instruction to all, a certain amount of specialization was practiced. Beginning in 1937 a brief course in meteorology was given to eight selected officers of the class, "to keep the course alive." In 1939 the scope, though not the length of this short course, was increased to offer enough instruction to permit the selected officers to later train the meteorological section of the brigade headquarters. Sound and flash ranging instruction was offered in 1939 on a similar basis. In May 1939 the 1st Observation Battalion was at Fort Sill to instruct classes at the School and carry out a 14 day training program. Eleven hours of instruction was given the Regular course, and 8 hours to the National Guard and Reserve. Eight officers of the Regular class were selected for 8 days of instruction, June 12-20. It was hoped to offer the work again in 1940 but the Second World War prevented this.

The Instructor Problem

Between 1931 and 1934 the number of officers assigned to the staff, faculty, and detachments dropped from 39 to 32. During this period, the School greatly expanded its functions, as had been indicated above. To remedy the deficiency, School troop officers were used in instructional capacities, as circumstances permitted. This was not a satisfactory remedy, and one Commandant after another pressed for an increase in the officer strength of the School. This was never possible, for there was an actual shortage of artillery officers in the United States. In 1939, 26 School troop officers were being used as instructors, and Col Augustine McIntyre, the Commandant, asked the assignment of 26 officers to the staff and faculty so that these might be released to full duty with the School troops. The Chief replied there were 537 officers allotted for assignment to troops in the United States, on the basis of organization quotas, among which the Sill units were favored as much as possible, and were four to 11 men in excess of their quota. The total excess was 24, almost the number requested as additional instructors. Given the condition of shortage, and the War Department's opposition to a further increase in overhead, the Chief did not feel he could ask for 24 more officers. McIntyre did not win his battle until the school year 1939-1940 when the number of authorized members of the staff and faculty was set at 60, releasing the School troop officers. After June, 1940, the war cast the problem of officer instructors into different forms.

The problem of enlisted instructors was thought to arise from a lack of enough grades and ratings to hold good men, for a man who became qualified as a motors or communications expert also qualified for a well-paying job in civil life. Various efforts were made to provide additional grades and ratings and also make service at the Field Artillery School more attractive. In 1936-1937 the Road Maintenance Section of the Academic Division was abolished in order to release grades and ratings for instructors. Men would be transferred back and forth between departments, and between the School troops and the White Detachment. Communication instructors were often obtained by taking men from School troops to serve from January until June. In this case a solution was sought by placing the Meteorological Section with its four grades and ratings in the Communications Section, and placing men in it who could be qualified in both fields. In this one instance it proved very hard to get men of that caliber.

Efforts to make service more attractive took many forms. The provision of decent living conditions was supposed to raise the morale of the whole command, but of course it also tended to reduce enlisted turnover. Classes were held in which men could qualify themselves for better positions, e.g., shorthand classes which were given in the White Detachment in April 1937. This detachment provided three pool tables, a weight lifting class, eight sets of golf clubs, a volley ball, a complete set of baseball equipment, and eight tennis rackets for recreational use. The Colored Detachment organized an orchestra, had dances at the service club, and built a new reading room. For self-improvement, it offered courses in arithmetic, English, history, and typing. The colored soldiers were very successful in their athletics, and their trophy case had five cups won in the two years at Camp Knox, and Fort Sill baseball trophies for 1923, 1939, 1940, 1941, and 1942. There were also cups from the 1925 and 1932 Horse Shows, and a Transportation Show cup from 1926. All in all, they had 15 cups plus innumerable horse show ribbons.

Although enlisted instructors were often borrowed from School troops, this was no part of Col McIntyre's policy during these years, and he did his best to spare the School troops from such calls. A last prewar attempt to secure grades and ratings was evidenced by his recommendation that the headquarters and headquarters battery of the 4th Field Artillery Brigade and the combat train of the 1st Battalion of the 77th Field Artillery be inactivated to release grades and ratings. This was disapproved, on the grounds that it would go against the Chief's efforts to activate other units. Only the coming of war and conscription substituted other problems for this one.

Correspondence which was exchanged in the cases of nine enlisted instructors who wed without permission sheds some light on the type of soldier who held such a post. These nine were used as instructors in both officer and enlisted classes in the Department of Materiel. Most of them had attended civilian or Ordnance training classes, and all of them were qualified for promotion to higher ratings as soon as such became available. The average length of service was nine years, and the average pay, $48.00 a month. None had debts other than for cars or homes, and none gave evidence of family troubles.

Extension Course Growth

The role of extension courses was growing. At this time the War Department ordered 2000 courses on each of the four levels of the Field Artillery extension courses, from which it may be inferred that the number of enrolled students, assuming students would take several courses, was at least two or three thousand. This number was many times the yearly attendance of the School and considering the size of the American Army in peacetime, was a group of considerable proportions. In May 1939 there were, according to the Adjutant General's Office, no less than 103,000 students, mostly officers, in the extension courses of the Army, so the above estimate is well within the limits of probability.

The extension course revision of 1936-1937 removed the distinction between officers assigned to motorized units and those assigned to horse-drawn units; made unnecessary any distinction in the 20-series (for lieutenants) as between ROTC and non-ROTC graduates; established one common series on marches and shelter, and on the reconnaissance, selection, and occupation of position; and added a course to the 10-series (for beginners) on materiel, to make the work on the firing battery more intelligible.

The ideal extension course lesson, as defined by the Adjutant General's Office in January 1938, avoided questions that could be answered with one word, or directly from the text. The student was to get only the principles from the text, and by applying them solve a brief, explicit problem with little background material. By background material is meant any encumbrance describing the old war between Blues and Reds with a lengthy dissertation on Blue's economic situation, or a long and irrelevant discussion of the strategic background of the problem. Finally, the time limit was to be estimated with realism and the student encouraged with an occasional short lesson.

It was necessary to keep the extension courses abreast of the latest developments in technique, usually done through the yearly revision, but at times these revisions had to be shifted about to meet an unusual situation. Between December 1938 and January 1940 it was necessary to revise five Field Artillery Books and 12 subcourses. Six of these twelve were the gunnery courses, the revision of which was concentrated in this period to leave the next year free for revisions arising from the new triangular division. This load, according to Col McIntyre, was about 50% above normal.

Other changes in extension courses came from War Department directives which altered their content, scope, and texts. Thus, in April 1939, the War Department directed a drastic change of previous policy to be carried out in the three years beginning 1940-1941. Both courses and texts were affected. As for courses, it was ordered that only such instruction be given as would prepare the student for his duties on mobilization. About 75% of the course was to be devoted to instruction appropriate to the grade, and 25% to the duties of the next higher grade. Previously, courses had fitted officers for the next higher grade, and one may perhaps see in this step a reflection of the European crisis. If practicable, the course length should be about 30 hours. The first step in carrying out this directive would be to eliminate the Command and General Staff courses from the 50 and 60-series and substitute suitable arm and service courses. The second step was to be a readjustment of the other series along the lines above.

Special texts, such as the Field Artillery Books, were to be used only in the absence of War Department publications on an essential subject, for subcourses which would otherwise require the use of small portions of several War Department publications, or when economy overrode all other considerations. In meeting such problems, first consideration should be given to amplifying memoranda with the lessons.

The department that prepared these courses, the Extension Course Department, was under a director with the rank of major, and was composed of the Book and Text Section with two officers, the Subcourse Section with two more, and the Illustrations Section with one. The primary mission of the department was the preparation of all field artillery extension course material, but it also prepared texts for ROTC use, and edited and coordinated all instructional material for resident instruction. The average yearly production was about three texts and eight subcourses revised or prepared. The printing of all strictly field artillery material was done at the School printing plant.

In preparing this extension course material, a routine was followed. During one school year, the revision program for the following year, both subcourses and texts, was blocked out in conformity with the Chief's orders. In preparing the first draft, a member of the Extension Course Department worked with a member of the department teaching that subject. The department itself then prepared the finished manuscript.

The Training Literature Project, 1936-1940

The training literature project, noted in the previous chapter, was to be completed by 1937. How was it faring? In 1936, the training literature system included: the 430-series of training regulations; the Field Artillery Field Manual in two volumes, Organization and Drill, Tactics and Technique; the Field Artillery Book series; the Field Artillery School instructional texts (instruction memoranda, Field Artillery School notes, etc.). The training regulations were a series of loose-leaf pamphlets; the Field Manual was in part a duplication of the training regulations and in part like a textbook.

The status of the Field Artillery Books may be shown by an illustrative incident. Since in 1936 the parts of the new Field Artillery Manual on gunnery and the firing battery could not be completed on schedule, the School suggested issuing Field Artillery Books 161 and 162 to the troops, at the expense of the Book Department. The Office of the Chief of Field Artillery approved, but the War Department did not concur, saying it could not approve a general distribution, and instead ordered revision of War Department literature.

The origin of two of the Field Artillery Books may be of interest. Field Artillery Book 161 began as a gunnery instruction memorandum August 1935, pending its final approval as a Field Artillery Book. FAB 120, Motors, was based on instruction memoranda M-26 to M-49 inclusive, reduced about 12%. It was used in its entirety for the Regular and Motor Mechanics courses, but the Advanced Motors course used it only as a review in the first part of the course, since it needed more advanced texts and used some civilian books.

Work was progressing steadily on the new Field Artillery Field Manual and by the summer of 1937 the School had completed Parts Two, and Four to Eleven, inclusive. Criticism of the field manual by the Adjutant General and the Office of the Chief of Field Artillery, and revision to meet these criticisms, took until February 1939. In April 1939 the field manual was back again, the War Department saying it was thought advisable to hold up the revision until changes incident to the new divisional organization could be announced, and some points

of doctrine also were raised. In the same month the Adjutant General's Office announced the number-block system of numbering field manuals, under which the Field Artillery's manuals became the 6-series. For example, under this system, Volumes III, IV, and V of the Field Manual became FM 6-20, 1940 edition. Portions of the Field Manual revised according to this latest plan began going back to the War Department in May 1939, and the first portions of it began appearing in the fall of 1939.

It will also be recalled that the Field Artillery Books had been outlined as an integral part of the training literature project. Under the topic of extension courses, it was noted how they were affected by the directive of 1939 which changed the scope and content of the extension courses. Having traced the Field Artillery Field Manual to its completion by the School, the history of the Field Artillery Books should be traced through the same period of years.

In 1938 the Chief of Field Artillery commented that the scope and content of the Field Artillery Books was correct and well established. Further revision, it was believed by that authority, should be handled in this manner. Changes should first appear in instruction memoranda at the School and be ironed out in instruction and experiment there. These little texts would bear the warning "Experimental, for use in resident instruction at the Field Artillery School only." Changes in the Field Artillery Field Manual under preparation would be authority for changes in the Field Artillery Books at their next revision. As for the coordination of text and subcourse revision, the School should try to revise the text before the corresponding subcourse was up for revision, and revise ahead of schedule, if the demand warranted. No texts were to be revised in 1939-1940 because of the change in army organization. Minor changes could be put in notes in the subcourses and, lastly, because of the cost, revision should be undertaken only when necessary.

Eventual elimination of the Training Regulations series was foreseen by the Assistant Chief of Staff, Brig Gen R. M. Beck, Jr., in June 1938. In the spring of 1939 came the War Department directive, previously referred to, which marked the Field Artillery Books for eventual extinction, however long they might linger as ROTC texts. After weighing this directive, the Office of the Chief of Field Artillery in October 1939 considered that the War Department wanted the new Field Artillery Field Manual to be suitable for use with the ROTC and other civilian components, and to eventually replace all but five Field Artillery Books. The Field Artillery Books would be continued as ROTC texts until the new Field Manual appeared, and

then it would be seen to what extent it could replace them. The Field Manual would also be used at the School supplemented by instruction memoranda.

With the growth of interest in training aids, moving pictures grew in importance and by 1939, if not earlier, there was a training film program, with films listed in order of priority, and each arm allowed a quota. If the Field Artillery School were called on to prepare a film on the 75-mm gun in any of its incarnations, the School would prepare an outline or "picture plan," which would go to the Chief's office, from there to the Signal Corps, and thence to Wright Field, where a scenario would be prepared by the Training Film Field Unit. This would return to the Department of Materiel, from there to the Extension Course Department, and out from them, via the Assistant Commandant. A liaison and technical director were at the Field Artillery School to convey the scenario to the officer in charge of the film unit, and to work with him and the film crew that shot the picture.

Sales and production of training literature were handled by the Book Department and the Reproduction Department respectively. The Book Department was the sales agent for the Reproduction Department. It sold instructional literature and non-issue supplies, for example, essential training literature, school supplies, subcourses, and the training literature for civilian components. The Reproduction Department did the necessary printing and reproduction for the School, plus work for local units and activities at cost. Absolutely no private work was handled. The volume of work done was most impressive. During the school year 1935-1936, chosen at random, it made 4,296,733 impressions in doing 902 jobs. The etching department made 566 etchings, 31 halftones, and 211 brass plates. The memeograph department ran 840,498 copies of 3,703 stencils. The lithograph department made 77,855 lithograph impressions and 103,860 multilith impressions. Plainly, there was the capacity to handle the emergency requirements of 1941-1946.

The Field Artillery Digest was suspended indefinitely in May 1939. No issue had been published in 1938, General Danford agreeing to put what material was available in the Field Artillery Journal. In 1939 the School argued that what material was at hand was unsuitable, being merely descriptive of technical processes which were either being covered in new manuals or were else insufficiently crystalized. With some regret, General Danford agreed.

Student Quotas and Requirements

Officers of the Regular Army were sent to the Field Artillery School under a policy which except for an increase in the yearly quota, did not change during 1935-1940. In June 1936 the quota of Regular Army artillery students was trimmed from 58 to 56. In order to send as many of these men as possible to the Field Artillery School, the occasional details to the Infantry and Cavalry schools and to foreign schools were eliminated, but even with this, the tendency would be to build up an increasing backlog. It was feared that by 1942-1943 the majority of entering students would have had six years service whereas previously the average was four. This General Birnie managed to avert by an increase in the yearly quota, which may be noted in the table at the end of this chapter. The War Department quota for service schools did not at this time reflect economic considerations as much as it did a shortage of officers for troop duty.

Students in the Regular Course who were selected under this quota did not have to apply for detail to the Field Artillery School but were selected by the War Department on the Chief's recommendations, though in exceptional cases the initiative might come from the War Department. An age limit of 48 years was set in 1936, effective in the fall of 1938, but since students tended to enter while in their twenties, the rule was of limited application. National Guard officers who wished to attend applied through channels to their state's Adjutant General, who in turn forwarded it through the corps area commander to the Chief of the National Guard Bureau. The Reserve officer applied through his corps commander. The Allotment of Reserve officers by branch to attend service schools was set up annually by the War Department and given to corps areas. Officer specialists, motors, horsemanship, communication, applied to the Chief after completing the Regular Course, but by 1938 they also had to have the recommendation of the Commandant and to have been members of the most recent Regular Course.

After graduation from the course, Regular Army students could select their next station from a list of available vacancies. Up to 1939, the Chief's office tried to favor school troops in making such assignments, but that practice was slowed by the activation of 20 new batteries in that year. Officer specialists in seeking admission to their particular course had to sign a statement that they would not seek a detail to another arm until they had completed four years postgraduate service with the Field Artillery. Graduates of Advanced Motors were distributed among motorized units as equitably as possible.

National Guard and Reserve officer requirements, in more detail, stipulated that the applicant pass a physical examination immediately before submitting his application and that he pass another on reporting to the School. He had to be less than 40 on the opening day of the course and could not be serving at his own expense. Until the fall of 1937 only a few subcourses were required to have been completed, but after that date 16 were required. It was not the policy to send officers of the civilian components to more than one course as officers.

National Guard enlisted men were also required to pass the two physical examinations and to have at least a year to serve in the Guard after completion of the course. A certain technical proficiency in their specialty was required, and, like officers, they could go to only one service school, though they might go again as officers.

When a battery commander in the Regular Army sent one of his enlisted men to the Field Artillery School in 1938, his "approval of each man should be equivalent to a certificate that the man is qualified in the grade which he now holds and shows every indication of suitability for a higher grade. . . (and) provide good instructor material for his organization." In more detail the requirements were: battery mechanics, an 8th grade education and three to six years experience as a machinist or carpenter; communications specialist, an 8th grade education, one year in the communication section of a headquarters battery, qualified to send and receive ten 5-letter code groups per minute, and receive and transmit five characters per minute by semaphore; horseshoers, at least one enlistment with one year's apprenticeship, literate, of sturdy physique and even disposition; motor mechanics, 8th grade education, at least one year's experience in military automotive maintenance, able to instruct, able to receive and give instruction on the duties of a regimental or battery motor sergeant or senior mechanic; saddlers, literate, one year's apprenticeship, one enlistment; sergeant instructors, completion of the following sub-courses: Firing Battery I, Preparation of Fire I, Field Artillery Signal Communication I, and Conduct of Fire I. Except for the requirements for motor mechanics, the above were suggested by Col McIntyre in his letter of March 1, 1938.

Enlisted classes that were not filled from the service were filled by drafts from school troops, but demands on these courses were rising in 1938, and so Col McIntyre suggested fall courses for battery mechanics and communications specialists. In many cases, enlisted students did not meet the entrance requirements.

Of the 203 students in enlisted communications in the years 1937, 1938, and 1939, 90 men from 76 different organizations did not meet the requirements for proficiency in code, and a similar situation, according to the Assistant Commandant, Col LeRoy P. Collins, existed in other courses. The Chief's office ruled that if the instructions for the current year did not produce improvement, the only remedy would be to report offending organizations to Corps Area commanders.

A complete academic records system for enlisted men was installed in 1937-1938. The changed system showed the grade attained and the student's rating, as against the bare statement of previous years that the student had graduated or failed. These records, however, were not broken down by subcourses.

There was also a system of requirements that enlisted men had to meet before enrolling in the extension courses, based on the principle that students must meet age and education requirements for a commission in the organized Reserves and may be expected to meet other requirements incident to appointment. This was interpreted by AR 140-29 as meaning practical knowledge about equal to that acquired by a graduate of the CMTC Blue Course. For organizations under his command, Col McIntyre took the regulations to require the rank of sergeant or higher. Any others had to be men of exceptional ability who could meet a practical test in conformity with an order of the 8th Corps Area during their current enlistment.

Two Commandants

In this chapter we have often mentioned the names of Maj Gen Henry W. Butner and Col Augustine McIntyre, and it may be well to say something of their army careers. General Butner graduated from West Point in 1898, and except for a year at the Staff College, was on troop duty until 1918, when he went to France, winning the Distinguished Service Medal there. From 1920 to 1924 he was Assistant Commandant of the Field Artillery School, and followed this with duty in the Phillipines and Hawaii. General Butner was Commandant from 1934 to 1936.

Colonel Augustine McIntyre, his successor, returned to the Field Artillery School for the fourth time in 1936. He had been a student in 1911, senior instructor from 1912 to 1914, Assistant Commandant in 1919 and 1920, and in 1936 took over the School as its Commandant. In 1914-1915 he was a military observer with the Royal and Imperial Austro-Hungarian forces. From there he went to Hawaii, and from Hawaii to France as a Brigadier General.

His postwar service, after leaving the Field Artillery School, was spent with troops, in Hawaii, and as President of the Field Artillery Board, from which highly responsible post he came to Fort Sill.

Expansion of Mounted Activities

The Chief of Field Artillery's directive of 1934, establishing the Polo Team and the Horse Show Team as among the important activities of the School, and directing attention to the importance of mounted work, had its desired effect. Horses and horsemanship flourished at Fort Sill between 1935 and 1940. Was this a step backward? Many of those who criticised the American army, urging it to adopt the mechanized warfare of the Germans, were unaware that the bulk of the German Army was made up of infantry divisions. These divisions, including their artillery, were organized on a horse-drawn basis, and were so organized during their great days of 1939-1940. In 1940, as in 1935, the American infantry division was more highly motorized than its opposite number in Germany. Interest in the horse was not, then, a step backward. The horse shows and polo teams, moreover, were legitimate training activities. Both represented competition at its keenest and thereby severely tested the artillery's methods of horse training and horse management.

Between 1935 and 1940 the Department of Animal Transport greatly expanded its activities to include many things beyond formal instruction. Additional instruction in polo and equitation on a volunteer basis was given to students of the Regular course. Classes were also held for women and children, for the Boy Scouts and Girl Scouts, and a mounted troop of Girl Scouts was organized. The Department sponsored and organized the two biggest horse shows of the year, the Field Artillery School Horse Show and the Interpost Show, held in the equestrian stadium which was rebuilt in 1936-1937 and named in honor of the late Lt Col William H. Rucker. The Interpost Horse Show included the spring hunter trials and race meet, and featured teams from other posts. Fall hunter trials were also held, and informal horse shows were held monthly in the riding hall throughout the winter and early spring. These mounted activities all came officially under the Department of Animal Transport in April 1936.

The facilities with which the Department did its work were a mixture of the very good and the very poor. Rucker park was an admirably equipped equestrian stadium and a beauty spot besides. The new barracks and headquarters of the Department was a modern,

well constructed building. The old stables of the department had been where the Administration Building later stood, and its construction, of course, made a change necessary. The new stables were new in name only, being built of salvaged lumber, and were of the open shed type. The tack rooms were not weatherproof. The horse show shop was put in another building made of salvaged lumber, and was regarded as a fire hazard.

One of the activities stressed in the Chief's directive of 1934 was polo. This game was regulated by the Polo Association which divided the United States into six circuits, of which Fort Sill was in the Northwestern (Oklahoma, Colorado, Kansas, Missouri, Nebraska, Iowa, Idaho, North and South Dakota). There were two big tournaments, the National Intercircuit, and the National 12-Goal Championship. Most of the School's games were of course in intracircuit tournaments. The association gave financial aid to teams appearing in the national tournaments.

The first big polo year was 1935-1936, when Lt C. K. Cusack, No. 1, Capt C. N. McFarland, No. 2, Capt Eugene McGinley, No. 3, and Capt H. W. Kiefer, No. 4, with Lt V. B. Barnes, substitute, won 16 of 22 tournament games. Five of the six games lost were lost by one goal. This polo activity was not by any means confined to the "varsity." In all, there were five polo teams at the School, 36 officers played, and about 80 public mounts were engaged. This number of officers must have been close to half the number permanently stationed at the post and does not include the students who played after class for recreation and exercise.

As for the type of polo played, the policy was to concentrate on 12-goal and intercircuit competition, which was held within reach of most players. Horsemen of a class good enough to enter competition for the junior championship were thought better employed coaching younger players. Within the limits thus set, the Polo Team did consistently well. In 1936, Capt Hugh Cort, Capt C. N. McFarland, Lt E. A. Walker, and Capt H. W. Kiefer won the circuit tournament, and the Devereaux Milburn Cup, with Maj H. W. Watson as No. 1. In September, 1936, Maj Watson and Capts McFarland, Kiefer, and Smith won two tournaments at Shreveport, La., beating Houston, then the new National Intercircuit Champions. The next year was even better. The Northwestern Intercircuit was won at Fort Sill in June, 1937. Later in the summer, at Chicago, the Field Artillery School took second place in both the National Intercircuit and 12-Goal Championship tournament. The Devereaux

Milburn tournament and the Northwestern Intercircuit were won at Fort Sill in June, 1938. Members of the team were: Capt John A. Smith, team captain; Capt A. E. Solem; 1st Lt T. E. Walker, and 1st Lt D. W. Smith.

Since 1930, no Field Artillery team had won the National Intercircuit, but under the leadership of Capt J. A. Smith, the Field Artillery School team won the National Intercircuit, the Northwestern Intercircuit, and the Northwestern Intracircuit and went to the semi-finals of the 12-Goal Championship which was never completed because of rain. Members were: Capt. A. R. S. Barden; Capt A. E. Solem; 1st Lt M. W. Brewster. 1st Lt D. W. Sudduth joined after his graduation from the Regular Course, and 1st Lt E. A. Walker played for a considerable part of the year. The Devereaux Milburn Cup was won again June 25, 1939.

The Horse Show team was the other instrument by which it was proposed to keep a high standard of horsemanship and maintain interest in equestrian activities. The Horse Show section of the Department of Animal Transport in the fall of 1936 was composed of: Maj N. J. McMahon, 1st FA (in charge); Capt E. L. Andrews, of the Detachment; and Lt A. E. Solem, all stationed on the Post. With the Olympic training squad were: Capt I. L. Kitts, 18th FA; Capt F. J. Willems, 1st FA; 1st Lt H. S. Isaacson, 18th FA. Kitts and Willems remained with the team as members of the dressage and three-day teams respectively. 1st Lt A. G. Stone, 1st FA, joined the section in December. Members of the team were employed throughout the year in instruction, with McMahon conducting classes in advanced horsemanship, and Capt Kitts teaching the departmental staff three times weekly. Personnel of the team joined in the fall and spring hunter trials; the 1936 Olympics; the Portland, Ore., horse show; the National Horse Show at New York; the Toronto Winter Fair; the International Competition in Chile; the Olympic Horse Show in London.

One of the most fondly remembered exploits of the Horse Show Team was the visit to the Mexico City show, in December 1938, when the team won all but two prizes. The Mexicans had most hospitably invited the team (Mexican soldiers were often welcome guests at Fort Sill) but for some time administrative difficulties threatened to make the trip impossible. When these had been cleared from the way, Maj McMahon, Capt Andrews, Capt L. S. Griffing, Capt H. S. Isaacson, and Lt W. A. Harris made the trip. Nor should their gallant horses, Virginia Navarre, Billy the Kid, Silent Sam, Judge, Honolulu Tomboy, Drummer Boy, Stone Verne, and Orito, be forgotten. The trophies won, equestrian bronzes cast in the

Mexican arsenals, and bearing such names as "Revolucianario del Norte" and "Revolucianario del Sur" were later on display in the Officers Mess at Fort Sill.

Preparations for the 1940 Olympics, scheduled for Finland, went forward in 1939, the team training actively at Fort Riley and Fort Robinson between June and October. After the trials had been completed it was plain that no Olympics would be held for many years, and the members of the team returned to Fort Sill. With the expansion of the Army in 1940, dissolution of the team became necessary.

Construction, 1936-1940

The physical frame in which these activities took place, the buildings and facilities of the post, were constantly being improved during this period. For one thing, the Roosevelt Administration was commited to a policy of aiding recovery through a public works program; for another, the gradual awakening of the American people to the menace of an aggressive Germany led to a slow but steady improvement in the condition of the Army.

Two of the most familiar local landmarks, Theatre No. 1 and the Swimming Pool, date from this period. The graceful white columns of the old Liberty theatre had framed many a graduation ceremony, but the building was believed to be far past the period of economical repair, if not actually dangerous, and in 1936 efforts were made to get early action on it. Unfortunately the theatre at Fort Knox had No. 1 priority, and Fort Sill had to wait for a while. The next obstacle to be overcome was that of a lack of W. P. A. labor, as by December, 1936, the state's quota was filled. Patrons of the Liberty theatre had to be content with glowing tales of the new theatre, which they were told would be like the one at Fort Sam Houston. The local Dramatic Club, whose productions, unlike those of many dramatic clubs, were financial as well as artistic successes, took a deep interest in the project. Through the good offices of the Commandant, Col McIntyre, they were able to have some of their ideas put in the final plans. The Illustrations Section of the Extension Course Department made plans for the scenery, stage lighting, and back stage facilities of the theatre. The theatre was finally opened October 13, 1938. Its appearance, both exterior and interior, was most pleasing. The necessity for economy in construction, for providing a maximum of seating space at a minimum of cost, resulted in a building that was functional and modern, in modified Spanish style, and free of the gimcracks and gewgaws that disfigure so many theatres. It was a true asset to the Post.

Anyone who has ever spent a summer at Fort Sill can appreciate the need for many large swimming pools. They are most essential for relief from the heat. For many years the only pool open to the majority of the command was that formed by damming Medicine Bluffs Creek near the bluffs. There were other pools on the reservation, but unless one had a car, they could not be used. The main swimming pool was often unusable in times of drought because the creek's normal flow decreased to a point that the water in the pool became stagnant and unsanitary. The pool was improved in 1934 by building a rock and concrete dam, and retaining walls of the same material on either side of the creek for about 100 yards.

A drought in 1936 forced the closing of the pool in August, and Col McIntyre moved to get W. P. A. funds for the building of a new pool back of the Officers Mess. The W. P. A. agreed to furnish money for enlisted men's and officers' pools if the School could provide 25% of the cost, and even this figure would be cut to 15% in actual cash by credits for furnishing gravel and machinery. By the use of local funds such as the Education and Recreation fund, it was possible to raise the School's share of the expense, but then it was found that W. P. A. labor could not be obtained. CCC men could not be used on such a project, so in the end the two pools, one just behind the Officers' Club, and one on the shores of Medicine Bluffs Creek where some of the base hospital wards had been in the last war, were built by soldier labor and School funds.

As the international situation worsened steadily in the late thirties, an increase in the Army became unavoidable, and it was increased to about 166,000 men. Of the resultant increase, 600 came to Fort Sill, which called for a change in the School housing program. Col McIntyre accordingly had the plan redrafted, and it was approved by the Chief, General Birnie, substantially as McIntyre submitted it, with costs shaved a little to bring them in line with those of the now obsolete program of a few years back. W. P. A. projects on the post at this time were at a standstill due to the lack of labor, since the state's quota was filled. Col McIntyre also pointed out in November that the lengthy period of uncertainty as to the definite location of the Field Artillery School was another reason why construction at the Post seemed to lag behind the activity at other posts.

Col McIntyre's new housing program was presented to the Washington press in February 1937 as a $6,000,000 five year plan. The more important items were: barracks for the 29th Infantry, the 77th Field Artillery, the 1st Field Artillery, and the quartermaster detachment; an annex to the administration building; post

theatre; 72 sets of noncommissioned officers quarters at Post Field; drill and riding hall; reproduction plant; post children's school; gymnasium and recreation hall. The program was most comprehensive, but was not adopted in its entirety.

The second great building period began with approval by the Bureau of the Budget of $1,290,000 for Fort Sill in June 1938 to be used for barracks for 1,000 men and additional noncommissioned officers and nurses quarters, no doubt a part of the money appropriated to combat the "recession" of 1937-1938. Five hundred thousand dollars in W.P.A. funds was made available if the needed labor could be secured. Col McIntyre was quite appreciative of the work of the W.P.A., once writing that the ever-present scoffing remarks, as far as this post was concerned, were "... entirely unwarranted. These men that we have are excellent workers ..."

A revised construction program was sent in to the Chief of Field Artillery in November 1938, appropos of which McIntyre remarked earlier in the year that he had enough projects on hand to keep the W.P.A. busy for a year. In commenting on the program, General Danford, the Chief, suggested that all motorization facilities be put in one group with one priority and that cuts be made in street lighting and road construction. The buildings in which he seemed most interested were: garages for the School troops; three quartermaster warehouses; a guardhouse; an addition to the veterinary hospital; a reproduction plant; an addition to the Administration building; a materiel building; a drill and riding hall; a gymnasium; and a post children's school. A letter of 1939 stated that the program was favorably regarded by G-4. With the coming of war in Europe, and the resulting need for swift expansion of the Army, in the beginning temporary structures only were authorized, and with the one or two exceptions, no new permanent buildings of importance could be begun while the war was on.

Room for firing was another and most important facility. During 1939-1940 the range was increased by the purchase of land connecting the reservation with the Wichita Mountains Wildlife Refuge on the west, extending the northern boundary to the country road leading to Medicine Park, and extending the reservation farther south, permitting firing south of Signal Mountain. In all, the increase added some 20,000 acres, and permitted firing at ranges up to 20,000 yards.

The National Guard camp at Fort Sill, the so-called concurrent camp, came in for its share of improvement--when its turn came. A letter of December 1938 said that the concurrent camp estimates for

Fort Sill included swimming pools, assembly halls, etc., which the War Department did not normally include until the entire concurrent camp project was in a high state of completion. Further, concurrent camp projects could not be included with permanent construction for the Regular Army, especially since the National Defense Act specifically forbade permanent construction in such camps. Fort Sill was listed for early work (within two years), however. Actually, the time arrived a good deal sooner than that, for in June 1939 General Danford was able to write that $400,000 would be spent on rehabilitating the camp, and it was actually completed at a most useful time, June 1940.

The Water Problem

Early difficulties over the purity of the water from Lake Lawtonka had been well ironed out by 1935, when the problem resurrected in a different form, that of capacity. Agitation began in that year to raise the level of the dam, a project that was speedily approved in Washington but was not immediately carried into effect. Colonel McIntyre entered the scene in August 1936 with a letter to the Chief proposing that since an increase in military population was imminent, an increase in water supply was desirable. Also, the water was then only eight feet below the top of the dam, and any sort of rain would soon send it over the top to be wasted. The Chief's reply noted briefly that the project had been approved in Washington, the rest thus being up to the state officials. There the matter rested for two years.

In 1937 there were rumors of a further increase in troops at Fort Sill, and a meeting between representatives of the Post and the city considered additions to the filter plant, then running at capacity, and the provision of increased water storage facilities. The dam raising project was apparently not mentioned at this meeting and did not arise again until the winter of 1937-1938. Approval of the dam project this time depended on Lawton's raising $90,000.00 of the necessary cost and guaranteeing that a useful unit of the dam could be built for the estimated cost. Colonel McIntyre again urged it strongly as a preparedness measure, and the project was approved by the W.P.A. in February 1938.

When building began, it was necessary for technical reasons to lower the level of the water in the reservoir, and a drought promptly followed. The most severe restrictions on water use were imposed. For example, the latrines were closed in the National Guard camp area in the summer of 1939. This crisis caused a certain concern in the War Department, where some people thought it

might be permanent. McIntyre wrote July 22, 1939:

> "To one who doesn't know the whole story of the present water shortage, there may occur doubts as to the suitability of Fort Sill as a mobilization center in time of war. Many still remember the shortage in 1917 and will think that this is likely to occur again. If I am not mistaken, as a safety precaution the lake was lowered the equivalent of 19 feet during the construction of the new dam. This was followed by the present drought period. Once this is over and the lake fills up to the new dam, the water supply will be permanently solved."

To meet the emergency, Lawton laid a pipe line from Lake Rush to Lake Jed Johnson to Lake Thomas, and tried to dig some new wells, which when completed were thought to contain fluorine salts in dangerous proportions. In April 1940 the drought was still on, Lawton was putting down more wells and was borrowing from the reservoir. A pump newly placed by the Post at the old Ambrosia Springs was pumping 200,000 gallons a day. But these were regarded as makeshifts, and there was doubt that Fort Sill could play its part in the crisis growing more apparent daily.

The School Troops, 1936-1940

Of the many things done by the School troops during the five years or so before the war, there are three that are especially noteworthy: the special duty battalion; the long training marches; and the departure for maneuvers in 1940. The first is of interest as a means of handling an always annoying training problem, the second illustrates a mobility that would have seemed fantastic a decade before, and the third illustrates a happy contrast with 1916.

The work that the School troops did specially for the School may be summed up as tests of one sort and another, service practice firing, the supply of motor vehicles, field exercises, and, for both Post and School, the special duty battalion. In addition to the many tests mentioned earlier, in connection with progress along various lines, one may mention a test of the 75-mm gun M1916 with St. Chamond recoil. This test was made by Battery B, 1st Battalion, 77th FA which found them satisfactory. A test also was made of the gunner's quadrant M1 and the range quadrant M1 in October of 1939. On this occasion it was decided to recommend the gunner's quadrant for all precision firings requiring an accuracy setting down to .2m and to recommend the other for types of firing where accuracy to the nearest .5m was sufficient.

The troops' work in supporting service practice went on as usual thanks to the hard work and dedication of those men. The supply of motor vehicles from School troops for instructional purposes, exclusive of the times they were furnished for administrative purposes, imposed additional hardships. The annual report for 1937-1938 had a table showing the extent of this work. In September, the 1st Field Artillery gave an average of 21 vehicles on each of nine days; in October, 29 on each of 19 days; in November, 35 on each of 26 days. The 29th Infantry had no demands made on it until December, then it furnished 10 vehicles on each of eight days and continued on a like scale to the end of the year. The 2d Ammunition Train in January gave 27 vehicles on each of 25 days; in February, 26 on each of 23 days. The contributions of the 18th Field Artillery range from zero to 37 as against 21 to 130 by the 1st Field Artillery. A motor pool was formed in the following year, which operated its own vehicles as well as those taken from the 4th Field Artillery Brigade, but the report for that year states that demands on the School troops' vehicles continued heavy.

The role of the School troops' officer in the field exercises was an important one. For all purposes he was a part of the School staff on those occasions. The perfect functioning of the School troops was as important as the perfect functioning of laboratory equipment so that the student would be free to grapple with the problem itself. These officers were responsible at all times for the proper training and discipline of School troops. They complied with all orders on the conduct of the exercise that they might receive from instructors, and they acted as assistant instructors when so requested by the Academic Division. They took no part in the tactical handling of their units during these exercises, unless the exercise so prescribed, or it was necessary to prevent damage.

The special duty battalion was organized in 1936, its personnel detailed on a percentage basis and rotated strictly. The reconciling of administrative necessity with training needs is always a problem for any commander, and this was an attempted solution. Under this system, 91.6% of the enlisted men of the combat units were receiving military training. On the other hand, men in administrative details from combat units, such as room orderlies and kitchen police received 23% of the training received by the men in the group above. This special duty unit supplied all labor for Post projects.

Typical of the long training marches were those of the 1st Field Artillery. In October 1935 its headquarters company marched to Ft. Sam Houston and back in five days, a distance of 946 miles. In the following year, it went 1,030 miles to Fort Crockett, Texas, and returned. Battery B with the Band joined in the Pioneer Celebration in Clay County, Texas, 168 miles, and E went to the Fair at Pond Creek, Okla., 363 miles. In 1937 it surpassed itself with a march to Little Rock, Ark., and return, 1,165 miles. For service practice and tactical training, a night march of 109 miles was made from Ardmore, Okla., to Fort Sill, October 1-2, the regiment taking position and firing on the morning of the 2d. It may be that the longest trip by any of the field artillery units from the Post was the 77th's jaunt to Carlsbad Caverns, N.M., and return, 1,236 miles. Professional pride in the achievements of the artillery should not overshadow the fact that the 1st Balloon Squadron probably became Post champions by joining in the 2d Army Maneuvers at Camp Custer, Mich., "marching" a total of 2,329 miles. Clearly, war had taken on a new aspect.

The expansion of the Army (discussed more fully later) resulted in changes in the organization of School troops. On August 1, 1936, the 1st Field Artillery and the 18th Field Artillery were reorganized by reconstituting the headquarters and headquarters batteries and combat trains of the 1st and 2d battalions. The next reorganizations came in 1938.

In March of that year it was proposed to activate Batteries C and F of the 1st Field Artillery by inactivating their combat trains and redistributing their personnel and that of the other four letter batteries and headquarters batteries. It was believed that Batteries C and F of the 18th Field Artillery could be created by inactivating the two combat trains and shifting grades and ratings. The combat train of the 1st Battalion was already equipped with the modified 75-mm gun M1897 and equipment for the other would have to be drawn. This reactivation was part of a larger plan to add 20 more firing batteries, by reactivating with personnel from disbanded service batteries. A spectacular part of the reorganization at Fort Sill was a march made by Battery E of the 18th, bringing horses and guns from Fort Sam Houston, where they had belonged to the 12th Field Artillery. Horses and men arrived in fine shape, having covered 421 miles in 14 days. In all, five batteries were added to the School that winter, including one more for the 77th Field Artillery. Colonel McIntyre was most anxious to inactivate five combat trains to secure their funds and men for the new batteries, but the Chief of Field Artillery disapproved, saying that it was desired to keep them active at Fort Sill as the nearest possible approach to the war-strength type

of organization always sought for the Field Artillery School. The last increase of the period came November 14, 1939, with the creation of the 3d Battalion of the 1st Field Artillery from other organizations in the regiment and from the headquarters and headquarters battery of the 4th Field Artillery Brigade.

Another important organizational change in 1939 occurred when the School Troops Division, one of the four divisions of the Field Artillery School discussed earlier, was abolished August 19. Its functions were discharged by the Office of the Commandant. Thus, there were three divisions left in the School: the Commandant and his staff, the Academic Division, and the Services.

Open fighting in the Second World War began in the fall of 1939, when the Polish Republic elected to resist the German Army. During the First World War, a border crisis had forced the closing of the School. This time our defenses were far stronger, but war in Europe held grave potentialities for us, and its coming brought uncertainty. The School's role was thought to be fairly well defined, but it was not possible to know the future. The first troops left the post in December, when the regimental headquarters and headquarters battery and 2d Battalion of the 1st Field Artillery left for maneuvers in South Carolina. The 1st Battalion of the 77th Field Artillery went to the Louisiana-Texas maneuvers in April 1940, and the 1st Battalion of the 38th Infantry left for the Louisiana-Texas maneuvers in February. That left the 18th Field Artillery present at the post as the only School troops, but even in this there was uncertainty, for the 1939 Protective Mobilization Plan provided no School troops for the School, a serious omission. A new Table of Organization for the School under the Protective Mobilization Plan had been submitted correcting this deficiency, but as of early 1940 it had not been approved. Meanwhile, the 18th carried on. Its 1st Battalion was temporarily organized as a motorized battalion. The headquarters battery of the 2d Battalion became a firing battery and each of the two gun batteries of the 2d Battalion was turned into two firing batteries, thus meeting the service practice requirements of the School. On June 1, 1940, the 3d Battalion of the regiment was organized as a 155-mm howitzer organization, with a cadre of 55 enlisted men from the 2d Battalion of the 77th Field Artillery, the balance being recruits and men transferred from within the regiment.

Growth of the Army

The first sizeable increase after World War I in the enlisted strength of the Army, that between 1935 and 1937, increased the Army as a whole from 137,960 in 1935 to 178,101 in 1937, and brought the Field Artillery close to its authorized strength by the summer of 1937. This was the build-up that brought 600 men to Fort Sill, making something of a housing problem. It also brought another problem that required a sizeable extension of the School's functions: the training of Thomason Act officers.

The increase in the enlisted strength of the Army had aggravated the officer shortage, a problem partially met by the Thomason Act of August 30, 1935, which provided for the annual training of 1,000 young Reserve officers, 50 of whom were to be chosen for commissions in the Field Artillery of the Regular Army. A school system was needed to train them, and to provide a means of judging the comparative worth of candidates.

During the school year 1936-1937 the School reproduced and graded the examinations for all field artillery subjects and one subject common to the arms, but was not called on to prepare the examinations or a course of study. Even so, this task required an average of 18.7 hours from each of 56 officers and enlisted men. For the next year, the Field Artillery School was called on to prepare the field artillery (branch subject) examinations, a common subject (motors) examination, and troop school courses for the training of Thomason Act officers. From then until the time when all Reserve officers were called on active duty, this was part of the regular functions of the School. The preparation of courses for the troop school was made an added responsibility of the schedule committee, working within the limits set by the Chief of Staff and the Chief of Field Artillery. The total number of hours that could be spent in branch subject instruction was set by the Chief of Staff, and the breakdown of the hours suggested by the Chief of Field Artillery. Each course had a guide to insure uniformity as between posts, a list of texts, the schedule proper, and the examinations. The common subject was motor maintenance, concrete proof of the School's authority on this subject.

As for the status of the Regular Army Field Artillery in 1937, and 1938, of the 100 firing batteries in the Army in 1937, 33 were horse-drawn, six were pack, and 61 were truck drawn. The Field Artillery's most pressing problems for 1938, according to a letter to the Army Historical Section were: " ... the development and improvement of gun carriages, time fuses for high explosive

shell, antitank guns, radio equipment, motor transport for heavy artillery, rapid methods of fire adjustment by aerial observation, firing maps and map substitutes, and new Tables of Organization."

The concern for the common safety extended to Latin America, and an Act of June 24, 1938, authorized the President to admit citizens of the Latin American states to receive instruction at American service schools. The President set the annual total at 60 officers and 12 enlisted men, which when broken down between the several schools, allowed six for the Field Artillery School. Between 1920 and 1927, 20 Latin American officers, including 13 Cubans, had attended the School. This act restored the practice.

The crisis in European diplomacy which culminated in the disastrous capitulation of Munich in the fall of 1938 created a demand for a further increase in the Army, which President Roosevelt met in his message to the Congress, January 1939. In it he asked that the armed forces be put in a "state of readiness," and said that a special rearmament budget would follow. A few weeks later an appropriation of $550,000,000.00 was put before the Congress chiefly for equipment of various kinds, but it was followed in April by an increase in Air Corps and officer personnel.

The Chief of Staff's report for June 30, 1939, summarizes the state of the Army at that time:

> "The Army, still struggling towards its absolute minimum under the National Defense Act, was short much of its critical armament and equipment: critical because it was materiel not manufactured by industry except for war purposes, and because the fabrication involved a time factor of from several months to nearly two years. There were deficiencies in personnel, not large, but vital to a force expected to have the great proportion of its strength prepared to operate on M-day. And there was serious shortage in immediate war reserves, materiel needed to keep the war machine running until industry could be geared to produce it. Further, due to economic necessity, it developed that the War Department program had dealt with a restricted defense, one that would limit the power of decision and freedom of maneuver to narrow confines. The people, for the first time since the World War, awoke to the situation and felt the peculiar

shock of helplessness that had been the constant attendant for years of those charged with the responsibility for their defense."

The Chief of Staff was then General Malin Craig.

An authorization of July 1939 provided for more enlisted men, if funds were appropriated. After the beginning of actual fighting, they were forthcoming, and in November 1939, the enlisted strength of the Army crossed the 200,000 mark.

The Field Artillery underwent considerable organizational changes in the reorganization of the infantry division on a three-regiment basis. The brigade was eliminated as a unit, and for its headquarters was substituted the artillery section of division headquarters, as the agency of the division artillery commander for exercising command. One three-battalion, nine-battery regiment of 75-mm guns was substituted for two regiments, each of two battalions and six batteries. The medium battalion was reduced from the three to two battalions, and the brigade ammunition train was eliminated. By October, the Field Artillery was able to supply the full complement of division artillery for five Regular Army divisions and one complete corps artillery brigade.

The School in Mobilization

Originally, it had been planned that on mobilization the Field Artillery School would pass under corps control. Then in 1938, it was decided that: "Except as otherwise directed by the War Department, the existing status as to installations exempted or not exempted from corps area control will continue initially during mobilization until otherwise prescribed." Under the Chief of Field Artillery's 1939 Protective Mobilization Plan, the School was to provide a refresher course for officers and an officer candidate's course for enlisted men. They were to begin at M + 15 and reach a peak load of 4,000 students at M + 110 for the two courses. On March 24, 1939, this role was enlarged, the School being directed to submit plans for enlisted specialists courses of 75 days length, a refresher course of one month, and an officer candidate's course of 12 weeks.

The actual outbreak of war was followed by a period of great confusion as to the size of the Army. On September 7, the Chief of Field Artillery wrote that the Army would expand to 280,000 men, which would involve the Field Artillery in an increase second only to the Air Corps. Fort Sill would be about doubled in troop size. Two days later he was writing that there would be an increase of but

17,000. On September 12 the rumored size was back to 280,000. This period of confusion as to the role of the Army, hence its size, and so the size and role of the School, was not the fault of the Army planners. They had been directed to prepare for a definite and clear-cut war situation with a very apparent menace that could be met by prearranged methods. The situation of 1939 was something else. It was not war, but it would have been dangerous to think of it as peace.

Uncertainty as to how the School might be affected lasted until October 6, when word was received that the School might be closed earlier than usual. The final instructions came October 21, directing that compensating plans previously made be put into operation November 1. The Regular Course and the Advanced Courses in Motors and Communications ended February 1, and the communication course scheduled for February 1 never began. To meet the problem of giving 7-1/2 months instruction in a three months period, instruction was given eight hours a day and during the Christmas vacation. In this way it was possible to cover about 52% of the normal course, and the hours were alloted to give the best possible instruction under those circumstances. Work on the extension courses did not stop, and was carr ed on as usual for the benefit of members of the civilian components not on active duty.

Two Disturbing Problems

Judging by the correspondence, two problems were regarded as especially disturbing in the winter of 1939-1940. These were: the role of the Field Artillery in the new army; what courses the School was to offer in 1940. The concern over the role of the Field Artillery really encompassed three related problems: the correct employment of the division artillery of the new triangular divisions; the training of future corps and army chiefs of artillery and their staffs; the loss of command prestige by the Field Artillery since the previous war. To express itself on the problem of the correct use of the divisional artillery, the School prepared an instruction memorandum, "The Employment of Divisional Artillery in the Triangular Division,"[1] in which its views were set forth, and sought to have the text adopted as official by the War Department for use as a training guide during this organizational phase. The text was thought by the School to conform with the War Department directive of January 24, 1939: "The assistants are primarily commanders, though they may perform some staff functions, in the same manner as does the

[1] File 353, F.A.S.

present field artillery brigade commander." Keeping to this line of thought, the text gave to the division artillery commander the dual role of commanding officer of the division artillery and artillery advisor to the division commander. The new Tables of Organization were said to make no difference in the tactics and technique of the regiment beyond a change in the manner of ammunition supply, and none in those of the battery and battalion. In all this, the School was anxious to retain the division artillery under central command with an eye to the massing of fire and feared a tendency toward dissipation of effort.

The War Department was not willing to publish the text, replying on January 9, 1940, that control was centralized in the division commander, the chiefs of the infantry and artillery sections exercising only such command as he directed. However, this was a tentative arrangement, and publication of the text would be considered again when reports on the spring maneuvers had been made.

This step toward a solution, the study of reports from the field, was also suggested in the School's letter of November 15, 1939, which had posed the three questions. The suggestion was that the field artillery commanders of the nine divisions about to maneuver submit, at the conclusion of the maneuvers, reports which could be studied at the School for the formulation of doctrine. On the second and third problems, those of the training of higher artillery staffs, and the loss of command prestige through the retirement for age of those artillerymen with experience in the echelons of higher command, it was suggested that there be established an advance class of three or four months duration, and that the field artillery extension courses of the 60-series be made almost wholly corps and army artillery subjects, and required of every field officer.

A more detailed proposal for such an advanced course was submitted December 1939 by Col Leroy Collins, then Acting Commandant, who wrote the suggestions above. His plan was a four month course at the Field Artillery School for the higher field artillery commanders and staff officers. The first class was to be chosen with an eye to their doing pioneer work in starting the course. The course proper was to have a one month refresher phase, followed by a three month phase of higher artillery studies, covered by committee studies and reports, interspersed with conferences and map maneuvers.

The second problem was that of planning the approaching school year. The question was opened in a letter from Col Collins January 5, 1940, stating it had been customary to submit recommendations for

the next school year at about this time, and information on the War Department policy would be appreciated. He felt that they might want a shorter year, perhaps ending March 1. In the absence of such data, on February 8 the School made its official proposals which provided for a full-length Regular Course, if maneuvers did not interfere. If they did, it was suggested the course last from August to April. Also suggested were: National Guard and Reserve officer courses, spring and fall; Advanced Horsemanship, 39 weeks; Advanced Motors, 19 weeks in fall; Advanced Communication, two classes; and a three month Refresher Course in the fall. Two courses each could easily be given in motor and communications, and if it proved necessary to cut the Regular Course, an Advanced Course in Gunnery was suggested.

A full series of enlisted courses was also suggested: sergeant instructors, fall; motor mechanics, fall and spring; horseshoers, fall and spring; saddlers, fall and spring; battery mechanics, spring; communications, fall and spring; enlisted horsemanship. All but the sergeant instructors course were 19 weeks long.

To these proposals the Chief replied February 15 by saying he preferred June as the closing date of the School for 1941. The project for two communication classes was disapproved because of the officer shortage. No sergeant instructors course would be given. The course on enlisted horsemanship would have to be confined to students from Fort Sill, since no funds were available to bring them from other stations. A decision on a refresher course was delayed.

The first emergency course of the Field Artillery School was the spring National Guard and Reserve Officer Course, beginning February 10, which was the usual three month course, but which, because of the war, was increased from 45 to 131 students. In April, Denmark and Norway were to fall, in May, the Low Countries, and payment would be demanded for the years that the locust had eaten.

Graduates 1935-1939

COURSES						TOTALS	
Regular Army	1935*	1936*	1937*	1938*	1939**	Off.	EM
Regular Course	51	65	67	61	61	305	
Refresher Course[b]	10	14	9	12	8	53	
Adv. Communications[c]	9	8	8	8		33	
Advanced Motors[c]	9	8	8	8	8	41	
Adv. Horsemanship	3	3	4	4	6	20	
Enlisted Men	239	325	178	193	232		1167
National Guard Reserve Officers							
Battery Officers	95	98	96	87	178	554	
						1606	1167

* Denotes the school year from September of the year indicated to the following June.

** The school year was abbreviated in 1939-1940, and all classes ended in February 1940.

b--Course 1 month duration

c--Course 5 months duration

Bibliography

201 File, Maj Gen Henry W. Butner, Post Headquarters, Ft Sill, Okla.

201 File, Col Augustine McIntyre, Post Headquarters, Ft Sill, Okla.

Files of the Office of the Chief of Field Artillery, op. cit. supra.

Annual Reports, U.S.F.A.S., 1927-28--1939-40.

CHAPTER ELEVEN

THE FIELD ARTILLERY SCHOOL AND THE SECOND WORLD WAR (1940-1941)

Effects of Initial War Efforts

In March of 1940 the Adjutant General wrote to the Chief of Field Artillery that, funds permitting, corps maneuvers would be held every spring. These would be attended by all students and part of the instructional staff of the service schools, after which courses would be resumed. The immediate response of the School was that courses should be lengthened to compensate for the time lost. The Chief disagreed, noting that the plan was quite tentative. As events showed, it was never carried out.

Motor instruction that spring was of some importance for it was one of the courses held despite the emergency. A letter of May 24 to the Pontiac Motor Company says that the officers' course was for a class of eight who showed aptitude and interest. Sixty-five hours were given to principles of design and construction, 274 hours to diagnosis and repair, 368 hours to operation and maintenance, and 32 hours to research. The enlisted classes were held twice a year to make motor sergeants and motor mechanics. Each class was of about 50 men with an 8th grade education and at least a year's apprenticeship. Both courses studied driving in convoy and made trips to nearby manufacturing plants. The officers visited the engineering laboratory at Oklahoma University.

At this time, the drought was continuing. In order to raise the dam, army engineers had in effect built a new dam enclosing the old, which temporarily weakened the anchorage of the old dam, making it advisable to lower the level of the reservoir. This had been followed by the drought which caused a severe water shortage. Two more deep wells were being drilled in Lawton at this time. It was hoped that if they contained fluorine salts, these would not hurt adults' teeth, and an exchange of water could be arranged between the Post and Lawton. In addition, the Post was pumping water from the old Ambrosia Springs, and between the two, it was hoped Fort Sill could accomodate a larger military population. In May, the German Army overran the Low Countries, and Britain and France stood at the edge of disaster. By August, disaster had overtaken France, Britain was fighting to avoid it, and President Roosevelt requested authority to call out the National Guard, including Oklahoma's 45th Division, whose summer camp was at Fort Sill. Was there water enough for it?

The dam had been finished in the summer of 1940, and good rains began to raise the level rapidly, but one could not be sure the drought would not return. Colonel McIntyre was rather sure in July that it would not, and that there was water at hand to supply 30,000 people. The Office of the Chief of Field Artillery doubted the wisdom of sending the 45th Division to Fort Sill, on the grounds that a military population of about 30,000 persons should not be maintained on the Post unless precipitation were at least one-half of normal. This problem was soon taken from Col McIntyre's hands by his retirement July 31. This was made the occasion for a signal honor, the awarding of the Distinguished Service Medal, rarely given in time of peace, and Oklahoma honored the eminent artilleryman and military educator with its Distinguished Service Medal.

His successor was Brig Gen Donald C. Cubbison, West Point '04. General Cubbison followed his graduation with 10 years garrison duty, then to the Phillipines, and back to go into Mexico with Pershing. A period of duty as treasurer of the Military Academy was followed by five years at Stanford University as Professor of Military Science and Tactics. The General was Assistant Commandant of the Field Artillery School in 1937-1938, which was followed by troop duty in Continental United States and Hawaii.

On receiving a radiogram from the War Department that the 45th Division would be concentrated here, Cubbison requested that army engineers be sent to Fort Sill to check on the amount of water available. He also approached the Lawton Chamber of Commerce, urging them to drill two more deep wells, so that he could have something definite to show the War Department. The Lawton people agreed, and began work on two wells in addition to those mentioned earlier. By August 22, Cubbison had the report from the two army engineers, a pessimistic one, on the basis of which he felt it would be inadvisable to concentrate the 45th at Fort Sill.

The Commanding General, 8th Corps Area, had previously requested a report from the City Engineer of Lawton, Wayne Hendricks, and this when received settled the matter. Dated August 23, it stated that since April, 1940, 936,000,000 gallons had accumulated in Lake Lawtonka for the exclusive use of the Post, which was being supplemented by 500,000 gallons a day from the Medicine Bluffs Creek line. As for Lawton, it was receiving 2,488,000 gallons a day from three deep wells and three shallow wells, of which 488,000 was surplus. In addition to these wells, the city was digging two others, which would soon reach the unfailing water table which supplied the other wells. This report clinched the matter, and the 45th was

concentrated at Fort Sill. Hendricks had estimated matters correctly, and the water crisis was over. In October, Lawton did have to draw twice on Lake Lawtonka, but only because alterations were then being made in the city's water pipes. Rain began to fall in November at such a rate that the reservoir was soon full, and in the following year was pouring at such a rate that part of the Post was under water and construction was delayed.

In the light of the later development undergone by the Post, one may wonder what would have happened if the Air Corps board which visited the Post July 29 had succeeded, or had desired, to acquire 16 acres of land for a bombing range. McIntyre had told them there was no land to spare, and the board went its way.

The Horse Show and Polo teams were disbanded by August of 1940. In April, a memorandum from the Assistant Commandant had quoted General Danford as wanting to keep the team on the "highest plane of efficiency possible," as well as desiring a limited amount of local polo. Of the team members, some were kept as instructors, and the team horses assigned to them as mounts. Voluntary polo and voluntary riding classes (there was now a class of newly commissioned Regulars at the School) were begun.

With regard to the plant of the School, on July 5, 1940, the eve of the great war expansion, the reservation proper covered 51,242 acres, from the open prairie of the east to the Wichitas on the west, the whole shaped much like a figure seven. There were standing: Administration Building; Station Hospital; Nurses' Quarters; Officers' Quarters; the Old Post Chapel; Museum; Officers' Mess; New Chapel; and Post Theatre. The 1st Field Artillery was in the yellow stucco barracks on the west of the New Post parade grounds. The 18th Field Artillery was in the barracks to the south of the parade ground, and in two others nearby. In this same area were the Post Exchange, Guardhouse, Signal Office, and Quartermaster Office. South of here were the gunsheds and stables of the 18th. The National Guard camp was a mile and a half south, and Post Field was a little more than half a mile beyond.

The School Troops

The 1939 Protective Mobilization Plan provided for no school troops, a disturbing omission. In 1940 the School submitted an amendment, calling for one regiment less ammunition trains of truck-drawn 75-mm guns, one regiment less ammunition trains of truck-drawn 155-mm howitzers, and one battalion of horse-drawn 75-mm guns. These were to be so organized that when the organizations assigned

to tactical units departed on mobilization, the troops necessary for the School's work under the protective mobilization plan would remain. This was partly done by giving the 18th Field Artillery one battalion of truck-drawn 75-mm guns, one battalion of horse-drawn 75-mm guns, and one battalion of truck-drawn 155-mm howitzers, and by the War Department's action of April 18, designating the 18th Field Artillery as School troops. The importance of this was shown in June, when the Third Army wanted to take the 18th Field Artillery away for maneuvers. With the School ordered to open for instruction July 1, this would have been crippling, but McIntyre was able to cite the above letter, and the Adjutant General later told 8th Corps Area that the 18th Field Artillery was not available.

When McIntyre was in the midst of organizing the 3d Battalion of the 18th Field Artillery (it was activated May 27) orders came transferring the 2d Battalion of the 18th to the 76th Field Artillery on the West Coast. The indomitable McIntyre promptly set to organizing another battalion for the 18th Field Artillery, and pressed General Danford to send some trucks for the 18th by August 1, pointing out that the 1st and 77th Field Artillery regiments were to be away maneuvering at that time, which would place a heavy drain on his motor transportation. The 1st Field Artillery returned to Fort Sill from maneuvers about April bringing back 13 firing batteries and a band. On October 1, they became the 1st, 51st, and 53d Battalions, and together with the 1st Battalion of the 77th were being used to the limit as School troops. The School's infantry battalion, which was part of the 29th Infantry Regiment, was redesignated the 1st Battalion of the 38th Infantry and raised to war strength, so that the 29th Regiment, School troops at the Infantry School, could have their battalion name and records back, and be made war strength.

The 349th Field Artillery, a Regular Army Regiment of colored troops, was activated August 1940 at Fort Sill. Unfortunately for the School, they were armed with 155-mm guns GPF, whose long ranges made them unsuitable for use on the reservation and which were difficult to move over the range roads. This regiment was quartered in a tent camp on Quarry Hill. Not until 1942 were they given field guns and designated as School troops.

Development of new techniques continued in the early months of 1940, and some interesting things were done with quickly developed aerial photographs and with wide-angle photographs. In March the Chief, through G-2, inquired of the military attaches in London, Berlin and Tokyo if those powers had ever made use of photographs developed in the airplane as a means of adjusting artillery fire. Neither the British nor the German armies had ever experimented with it,

but the Japanese had, both in China and at home. They had concluded that the idea was of limited value, and apparently it was not then being used or experimented with. Tests at Fort Sill were conducted June 6 and 7. On the first day, six problems were fired with the 155-mm gun, with two volleys for each problem and a photograph of each. There was one problem on a time schedule, the rest were fired at the observer's command. From the burst of the shell to dropping the photograph at the command post averaged seven and one-half minutes. It was another six minutes before the aircraft could observe the next shot. On the next day problems were fired with a regiment of light artillery. From these tests it was concluded that it would be speedier and simpler to have an observer over the target area. Centers of impact and concentrations could be spotted just as well by plotting them on a vertical photograph and dropping that.

The Field Artillery School in March asked for a wide-angle camera and an aircraft with a tandem aerial camera mounted for further tests on the best type of photographs for fire control purposes. In view of the past work on the subject, the Chief objected to the scope of the tests, and the requests were reduced to a 9-lens composite photograph of the School area and a battle map of the reservation. On July 25, the Chief suggested sending a new standard wide-angle camera to make wide-angle verticals, contoured battle maps, and uncontoured battle maps all at the 1/20,000 scale. In replying, the School suggested covering not only the reservation but also a strip six miles wide around the reservation, since it held the wide-angle photograph to be a basic tool and not a makeshift. The job was done by August 17. The importance the School attached to the wide-angle photograph is shown by an exchange of correspondence, in which the School agreed to a listing of map substitutes in order of desirability; the accurate contoured map at 1/20,000, the controlled mosaic, and the wide-angle (90^{o}) photograph.

Tests of the wide-angle photograph as a firing chart were carried out in May and June, by battery, regimental, battalion, and brigade concentrations, made in response to a request for data from the Chief's office. The first was based on a precision adjustment by an air observer, the second and third were sensed on the mass of fire as a whole, the fourth was an adjustment of the 155-mm gun on a strip made by two wide-angle photographs, scale 1/40,000, the fifth and sixth were transfers based on centers of impact pinpointed on a photograph by an air observer. Comparison of the photographs with the fire control map of Fort Sill showed an average distance error of 17 yards, and an average angular error of five mils, so that the results were as good as could be obtained from a good 1/20,000 map.

Plan and Counterplan for Courses, June-July 1940

The alarm felt at the progress of the German arms through the Low Countries and France may be measured by the question McIntyre asked Danford May 25: Would leaves be cancelled? The answer then was: No. Early in May (May 14) it was thought the Army would get 15,000 men, and after the beginning of the fiscal year, be increased to 280,000. By any sign, the crisis had begun. By June the strain on facilities was seen in such a way that the War Department was considering sending enlisted specialists to civilian schools and perhaps also to regional schools under corps area commanders. To all this the Chief was opposed, preferring to concentrate at Fort Sill. So, McIntyre was asked what would be needed to double facilities for enlisted specialists. The reply was: six 63-man barracks, two 250-man mess halls, two recreation buildings, and two supply buildings. In the meantime, Col McIntyre making his own estimate of the situation, proposed a comprehensive scheme. He wanted to use the School 12 months a year, giving short courses for young officers, special courses for field officers, and training motor and communication specialists as fast as possible. And he was calling in leaves of key men in response to Danford's radio of June 12.

The first authoritative word came in a Danford radio June 15, saying that classes would begin July 1 with a one month refresher for 100 Reserve officers plus three month enlisted specialists courses. On August 1, there would be a three month basic course for newly commissioned Regulars from West Point and the college ROTC units. McIntyre's inquiry if the refresher course would be the one month course prescribed under the Protective Mobilization Plan drew a yes, with added weight from a War Department radio limiting courses for the then new officers to one month. It is not impossible that McIntyre's query was prompted by the beginning of doubts as to the worth of such a course. Probably it was, for that same day he suggested a three month course that could be a true Battery Officers Course, as well as an advanced course for field officers of the Reserves and National Guard.

This suggestion was not answered until July 17, when the Chief radioed that consideration was being given to dropping the one month course and starting a three month National Guard and Reserve Officers Course that would be the same as usual except that Regulars would also attend. To this McIntyre heartily assented, recommending 100 students a month starting August 11. Two days later (July 19) Danford wired that the Chief of Staff was inclining toward such a three month course. And Danford approved McIntyre's recommendation of a three month advanced course for field officers,

covering the tactical employment of corps and army artillery. The first course, he agreed, should be a specially selected group to help formulate the literature on this important subject. Approval by Danford of the three month course came on July 26, with orders to change its name to Battery Officers Course (Special). The first class was to enter August 15.

The War Department Plan for emergency schooling which was hammered out in those hectic days of June and July 1940 was outlined in its letter of July 31 to the Chief of Field Artillery. There were four courses authorized for the emergency: refresher courses for selected officers of all components of the Army; specialist courses for selected officers of all components, including Regulars, National Guards, and Reserves on extended active duty; a special basic course for newly commissioned officers; specialist courses for key enlisted personnel. These would not exceed 12 weeks (this limit was later said to have been set personally by the Chief of Staff), and the detail of National Guardsmen to refresher courses would be expedited.

Meanwhile, what of the one month refresher course? Its opening was postponed from July 1 to July 10 due to the difficulty experienced by corps area headquarters in filling their Reserve officer quotas. When it did open, its instruction was specialized according to the transportation and weapons of the units from which its students came. Thus, the first section studied the 155-mm gun or 240-mm howitzer; the second, the truck-drawn 75-mm gun, or 75-mm howitzer; the third, the 155-mm howitzer; the fourth, the 75-mm gun, horse-drawn, and the 75-mm pack howitzer. This course was criticized on two grounds: (1) It was too short; (2) most of the students needed a true Battery Officers Course since they had nothing to refresh.

The first basic course for the new Regulars ran from August to November. Before describing the course, we can profitably consider some comments by Brig Gen Jesmond D. Balmer on the military background of the students of the basic course, for they illuminate the reasons for maintaining service schools in addition to the Military Academy. In September 1942, Brig Gen Balmer, then Commandant, said: "However, experience at the Field Artillery School has shown that the average ROTC graduate, Reserve officer, and the average National Guard junior officer who attended the above experimental Battery Officers Course and subsequent battery officer courses have been at least on a par with the

average graduate of the Military Academy as far as field artillery training is concerned."[1]

The course given these men was as follows:

	Hours	Totals
Department of Animal Transport		
Animal management (including 14 hours horseshoeing)	22	
Driving and draft	12	
Marches	36	
Equitation	71	
		141
Department of Materiel		
Materiel	55	
Motor transport	64	
		119
Department of Gunnery		
Conduct of fire	28	
Firing battery	26	
Service practice	49	
Preparation of fire	60	
		163
Department of Tactics and Communication		
Artillery tactics	21	
Combat orders	2	
Fire direction	6	
Logistics	2	
Signal communications	36	
Reconnaissance, selection and occupation of position	26	
Military history	2	
Battalion field exercises	9	
		104

---

1. Of the first Basic Class, it was said by Col Collins that at the beginning the ROTC honor graduates had the advantage, but that at the end he thought there would be little if any difference.

	Hours	Totals
General		
Physical training	8	
Dismounted formations and drill	2	
Guard duty, discipline, customs of the service	5	
Mess management	6	
Military hygiene	3	
Clothing and supplies	2	
Records and paperwork	8	
Individual equipment	2	
Military law	8	
		44
Miscellaneous		
Opening exercise	1	
Graduation exercises	4	
At disposition of the Assistant Commandant	6	
		11
		582

On the completion of this course, with the resultant freeing of facilities, the new Advanced Course was to begin.

Five courses were being offered for enlisted specialists, which, with their capacities were:

Communications	144 men
Battery mechanics	64
Motor mechanics	96
Saddlers	18
Horseshoers	18

The enlisted horsemanship classes are not listed with the above, since they had only quasi-official status. The capacity shown above was a real strain on the School's resources as they then were, for the standards of instructions were such as to turn out men qualified to be instructors and noncommissioned officers on their return to their units. As many instructors as possible had been taken from the School troops, therefore, if more could not be supplied, the School recommended that it concentrate on relatively few men of a caliber to return and instruct in their own organizations, rather than try to expand to train individual motor mechanics, battery mechanics, etc. This was not approved. Instead, more instructors were allowed.

The capacity for officer classes during this summer was set at monthly 100 man classes of National Guard and Reserve officers, which could be increased to 125 after the basic course left, and still leave room for a 40 man advanced course. By September, on this basis, the School would be carrying 50% of what had been regarded as its mobilization load.

The School Gets Under Way

The system of Battery Officers Courses (Special) and officer specialist courses for the emergency was established by a War Department letter of August 1. This directed that the refresher course be discontinued after August 9 and its place taken by the Battery Officers Course, which was to be substantially the same as the old National Guard and Reserve Officers Course. The classes were to include Regulars, National Guardsmen, and Reserves on extended active duty (but not Thomason Act officers) who had at least six months to serve after the course was completed. Officer specialist courses would begin August 1 and were to run for three months. A new course would be held every three months thereafter. It would be open to the same categories of officers.

Students were sent to the courses from the corps areas, the four armies, and the armored force. The commanders of the four armies and the armored force, according to a letter from the Adjutant General's office of December 4, could select such a proportion of Regulars, National Guards, and Reserves (except Thomason Act officers) as they thought best. Corps area commanders would select and order to active duty for 12 consecutive months Reserve officers in the grade of captain with not more than four years service in grade. If there were not enough of these to fill their quotas, senior first lieutenants could be chosen instead.

One mission of the battery officer classes was to train battery commanders for replacement centers, which was thought to be a far more urgent mission than the training of officer specialists. The corps areas were calling up their Reserve officers to command replacement center batteries on completion of their courses. By October, even second lieutenants were included in these groups, so pressing was the need.

It was observed that students in one of the early battery officer classes lacked knowledge of basic military subjects, particularly those taught in the Basic Course at Fort Sill. These were listed in the letter as: dismounted drill and formations; guard duty, military

courtesy and discipline; customs of the service; mess management; military hygiene; supply and administration; individual equipment; and military law. The master program for their work was as given below:

	Regular Hours	Extra Hours
Department of Tactics & Communication		
Artillery tactics	37	
Combat orders	4	
Signal communication	33	
Field exercises	20	
Fire direction	3	
History	2	
Logistics	7	
Maps & map substitutes	6	
Reconnaissance	32	
Staff duties	7	
Subtotal	151	
Department of Gunnery		
Fire direction	18	
Firing battery	30	2
Observed fires	96	
Unobserved fires	90	13
(15 extra hours for night exercises)		
Subtotal	234	15
Department of Materiel	30	
Department of Motor Transport[1]	60	
Department of Animal Transport[1]		
Animal management	11	
Driving & draft	32	
Equitation	17	
Subtotal	60	
General: Opening exercises	1	
TOTAL	476	15

1. Students take either animal or motor transport depending on type of transport of the regiment to which they are assigned.

The ammunition allowance per battery officer student in October was 108 rounds of shrapnel for the 75-mm guns and 40 rounds of 37-mm sub-caliber ammunition.

The lack of basic knowledge on the part of a Battery Officer class did not indicate that the finished product was of little worth to the Army. In the fall of 1940, a battalion commander wrote to a friend of his in the School that:

> "The officers coming to us from Sill have a certain air of confidence and they do fine work either in the batteries or on the staff ... If it hadn't been for the Field Artillery School I would have had an almost impossible task trying to handle and speedily train a battalion with these young officers. But all those who come from Sill have sufficient foundation so I can go right ahead with all types of training and schools without any slowup at all."

These same graduates were also to be called on to fill vacancies on the Staff and Faculty of the School. The seasoned Regulars were being called away, Reserve officers called straight from civilian life often lacked familiarity with the latest techniques, e.g., in fire direction, so the graduation of these first few classes was eagerly awaited by the School authorities.

The new Advanced Course (Special) which was to train the higher echelons of field artillery command, and on which such hopes were put, began November 14, for 12 weeks, and was to be followed by a fresh class every 12 weeks. As proposed by the School, September 11, this course had two phases:

Phase I	
Refresher of current doctrine and technique	100 hours
Studies of foreign artillery	16
Unassigned	4
Phase II	
Historical tactical studies	60
Doctrine and method	184
Application	96
Unassigned	4

Phase I was to acquaint students with the modern methods being taught to junior classes and inform them as to foreign artillery. It would bring out the value of thorough training of subordinates in techniques applicable in various field conditions, and would acquaint these senior officers with the technical possibilities that they should have in mind in making demands on lower units.

Phase II was to consist of committee studies and exercises to find and test doctrines and methods applicable to the higher field artillery commands. It was in turn divided into three subcourses. The first was a tactical study of field artillery in selected operations, seeking to learn what happened, and how it influenced the outcome. The second was composed of studies and reports by committees to produce logical conclusions from which an American artillery organization and doctrine could be devised. The third was made up of map and terrain exercises, involving artillery of the division, corps, and army. Both group and individual exercises were provided.

The Chief of Field Artillery thought this an excellent course as outlined but cautioned that in succeeding classes, which would have a large number of National Guard and Reserve officers, the present amount of refresher work should be the minimum. It was also suggested that logistics receive more attention. In the committee studies, attention should be paid to current operations insofar as information was available, but in view of the overwhelming German strength in 1940, false conclusions should not be drawn. Actual approval of the course came October 14. It must be kept in mind that this course was in no sense a revival of the old Advanced Course, but that, in the words of one officer, "It begins where the old course left off."

Of the enlisted courses given at that time (Fall, 1940) only the communications class was open to National Guardsmen, for the policy then was to keep National Guard organizations together. In October, it was found that of Enlisted Specialists Class No. 2, 40% of the students had had three months or less training, and 10% had had one month or less. The course did not by any means permit giving these men their basic training. But, the School's burdens were lightened by authority to retain enlisted students as instructors, which was given September 21. By 1941, it was the practice to send a number of unassigned men from replacement centers to these classes. They could then be kept as instructors if they proved suitable.

A Few Comments on Organization

With the great increase in firing, the range officer had by mid-1940 become a key man. Aided by a 22-man detail, he maintained and operated the range system, furnishing the clerical and technical help necessary, erected and maintained permanent construction (as he had done in the past), operated moving targets (still in use), and destroyed duds. A civilian had once contracted to do the latter task but had been unsatisfactory.

The nervous system of his domain was the complex range telephone system. It had a permanent overhead wire system, with range guard posts and control points on one circuit which connected into the main post system through a switchboard in the Range Office in the Administration building. At each control point was a permanent switchboard. There was a separate circuit for all firing points and concrete gun positions. These circuits ran into the switchboard at the control point. The range guard post circuit and the firing point circuit were tied together through the switchboard at the control point, and the entire system connected with the post system through the board in the Range Office.

In addition to these duties, the range officer was the game warden and custodian of the game warden's fund. The range detail operated a small game farm and planted feed patches in the game sanctuary and on the range.

The Motors section of the Department of Materiel became the Department of Motor Transport in October, 1940, with Colonel Leon R. Cole the first director. The subjects had become so dissimilar that it was advisable to have each taught in a separate department. In recent years motor transport had risen to such importance as a subject that it warranted a department of its own. Besides no officer could then hope to master both motors and materiel and function satisfactorily as an instructor in both.

The great increase in the work of the School had not yet brought a corresponding increase in the number of civil service employees. There are no records earlier than 1935, but we can say that from 1935 to 1940 all hiring was done by the Secretary's office of the School. Requests for help would be sent to the Civil Service Office in St. Louis, Mo., which would in turn send a list of eligibles from which the School would choose the person desired. From 1935 to 1938 inclusive there were but five civil service employees, one draftsman and four typists (aside, of course, from those working for Quartermaster, Ordnance, etc.). In 1939 the number rose to six, and in 1940, to ten.

One of the best known of these civil servants was Master Sergeant Morris Swett USA Ret., librarian of the Field Artillery School for over 30 years. When the time of Sergeant Swett's retirement drew near, his appointment on a non-competitive basis was arranged in recognition of his unique services and abilities. Both the Chief of Field Artillery, General Danford, and Col McIntyre united their efforts on Sgt. Swett's behalf.

The Department of Extension Courses changed it name to Department of Publications on November 2, 1940. This was done because in addition to preparing extension courses, the Department worked on field manuals, technical manuals, and instruction memoranda, and coordinated the various problems and miscellaneous literature prepared at the School with War Department literature and with one another.

New Instruction: Methods and Content

In 1940 some difficulties arose over the teaching and publishing of experimental methods, which in time became the accepted methods of 1942-1944, but were at that time heterodox. It had been noted that West Point Graduates learned one method at the Academy and another at the School. Lt Col Fay B. Prickett, artillery instructor at the Academy, observed that FM 6-40, 1939 ed., taught adjustment with a fork, whereas the School used c; that the text opened from a closed sheaf in percussion bracket, and the School used a 100-yard sheaf. The problem was a difficult one for the new methods were just then being introduced. According to General Cubbison, they had been created largely at the insistence of Col McIntyre who thought the existing methods should be simplified.

General Danford was aware that the situation existed, but did not want to give any instructions on it for he knew that progress had to be made, and progress meant change. However, he wanted the students to understand that the new methods were experimental, and that the official text would be modified when definite changes were decided on.

Colonel McIntyre's methods had been taught for a year, according to General Cubbison. Until the previous July, they had been given together with the old methods, but since then only the new techniques had been taught. As they received this instruction, the students were warned of every deviation from the prescribed method and advised to conform to the existing methods on their return to their organizations, until the new methods became standard.

Aside from gunnery, what changes were being made in field artillery methods in general? General Cubbison was asked that question by a high ranking officer and had the several departments prepare what was meant to be a comprehensive reply. They said the greatest changes in the tactics and technique of field artillery had come from changes in organization: the adoption of a triangular division and standard operating procedure for its use. Orders were made much briefer than before, classing many things as routine after careful training. Speedy reconnaisance, selection, and occupation of position was stressed.

The revision of field manuals by the School kept pace with all these changes. In urging revision of FM 6-40, Firing, which was soon undertaken, the School commented that conduct of fire was being simplified by development of the so-called tangent method, the changes being limited to discarding unnecessary refinements. The existing methods of fire were called unsatisfactory in that they were too complicated, could not take advantage of corrections, and did not facilitate massing of fire. The simplified methods developed at the School met those objections and, it was argued should be published as soon as possible.

A change to Chapter Three, Part Two, of FM 6-20, Tactics and Technique, was forwarded for approval in November, to meet the tactical and organizational requirements for massing of fires. The underlying principle of the change was surprise and mass. To make this possible, the tactical commander was to retain control of all fires delivered in furtherance of the tactical mission. The battalion was made the fire unit and the battalion commander, the fire director.

An instruction memorandum was prepared on the use of the divisional artillery's antitank battery of eight 75-mm guns M1897A2 on the M2A3 carriage (a modernized gun with a split trail carriage for wide traverse). Writing to the School November 16, 1940 the Chief's office said that since it had long felt the need of literature on the employment of the 75-mm antitank gun with the artillery regiment he was enclosing with his letter a monograph by Col C. H. Franke to serve as a start for the discussion of the subject. Copies of this paper had also been sent to the senior artillery officers of the several divisions for their comments, together with a questionnaire on the subject. Since Col Franke was then at the School with the Advanced Course, it was suggested that he be consulted. The instruction memorandum appeared in the course of time.

A different type of training literature was proposed by the War Department, October 9, 1940, for the benefit of Reserve officers awaiting call to active duty. The Department suggested that the service schools prepare troop school problems and training bulletins for schools to be conducted by the several corps areas. Detail of necessary personnel was promised. The material would be subject only to the approval of the Chiefs of the respective arms and would be ordered direct by corps areas. To this, the School's reaction was that the project was worth while but--if reserve officers were put on that duty the first six months would be taken up with their training alone. As for Regulars, those on the staff were struggling with the expansion program. Such a project would require six more officers, four of them good Regulars. The use of unmodified extension course problems was thought to be inadvisable. The Chief's office made it clear that no extra funds or Regulars were available, to which the School replied January, 1941, that it could not under those conditions do the project justice. There the matter rested.

The extension courses were not to be untouched by the war. Their principal market, if one may use such a term, had been with the National Guards and Reserves, and these men were now being called to active duty in ever increasing numbers. Circular 99 War Department, 1940, recognized that officers of the civilian components were now receiving practical experience and training, and it sought to adjust the promotion requirements accordingly. The third provision of the circular exempted all grades and branches from the military knowledge requirements for promotion for those officers who had had instruction, training, or duty which was the equivalent of the specific sub-courses of the extension course. The War Department required such a list of equivalents from the Chief's office for the Field Artillery, and they in turn asked the Field Artillery School. The School thought the proposition undesirable on the ground that an officer would have only to mark time and avoid an efficiency rating of unsatisfactory, and the ripe pear would in time fall in his lap but--the School gave the list nevertheless. The list included the course equivalents of six months active duty, of a year's, and of the successful completion of certain courses at the School. Plainly, this was the first great blow to the extension course system, for it removed one of the greatest incentives to enrollment.

Arrival of the 45th; Housing; Organization

All these officers, all these students, and all these battalions that we have described as moving to Fort Sill had to be given places to live, and on top of the expansion of the School, the 45th Division was expected in the Fall. If that division had arrived about the 15th

of September, they would have found about one-third of the concurrent camp occupied by Regulars and a great many student officers who had lately moved in. A camp they could use in the interim was being built on Gunnery Hill, but the students were still in the concurrent camp when the 45th arrived. The smaller of the infantry barracks was then used as a hospital for the 45th until the cantonment hospital was done.

The housing of officer instructors was also a headache. There were soon to be 90 of them on the staff, mostly married and with families, and with no place to go. The War Department policy then was to pay commutation and let the officer find his own quarters, which had worked well enough in normal times, e.g., after the 1920 fires, but at present there simply were not homes enough in Lawton to absorb the inflow. General Cubbison suggested Federal Housing Administration housing for Lawton, a project which Danford promised to push.

Housing on the post was being pushed with all possible speed to accomodate the enlarged classes. In fact, G-4 was quoted as saying that no construction anywhere equalled the speed of that at Fort Sill. The students of the School began moving into their cantonment area in January of 1941. This speed attracted attention, and an investigation disclosed that the constructing quartermaster also had overhead expenses 33.3% less than the lowest in his zone. Money was saved by his personal attention and small, efficient force. One example of the methods he used was the practice of borrowing trucks from the Post Headquarters as against renting them at $10.00 a day and of repaying the Post by work for it. This devoted and efficient officer, Lt Col Lawrence S. Woods, had $12,000,000 worth of construction at Fort Sill. Every item was completed either on schedule or before, with an overhead of less than 2.6%, and $781,000.00 was turned back in.

This expansion at the Field Artillery School, impressive as it was, was only part of the general expansion of the Field Artillery. By October 15, full complements of the arm had been provided for nine regular army divisions, two armored divisions, two observation battalions, and one corps artillery regiment. This should be compared with the providing of the artillery for five divisions of the year before, a virtual doubling of the arm in a year's time.

The 45th Division completed its concentration September 26, 1940, and a complete change in the organization of the Field Artillery School became necessary, for the commander of the 45th, General Key, outranked General Cubbison. Therefore, on November 12, the Post

lost its exempted status, and everything on the reservation except the Field Artillery School proper, the detachments, the 18th Field Artillery, and the 15th Observation Squadron, passed under control of General Key. General Key took over Cubbison's headquarters staff, the executive, the adjutant, the inspectors, headquarters personnel, etc. This was to be the forerunner of the station complement.[1] The military police detachment was merged with the 45th's military police. In one way, the arrival of the 45th Division was a benefit to the School, for by arrangement with General Key, the batteries of the 45th were to fire for the School beginning in January. A specific area for the training of the 45th was laid out which was to enable both the 45th and the School to keep out of one another's way. If more room was needed by either party for any occasion, requests would clear through the range officer.

Organizational changes were taking place on the staff of the School, which was being increased in size by assignment of Reserve officers. (One interesting assignment was that of an officer from the U. S. Coast and Geodetic Survey, Lt A. J. Hoskinson, who joined the School to spend some time in developing survey methods and in teaching instructors.) A school roster from the spring of 1941 shows 145 officers on the staff and faculty, of whom 88 were Reserve officers. The absence of National Guardsmen does not indicate prejudice against them but simply the War Department's policy of keeping National Guard units together. Animal Transport was the only department in which Regulars outnumbered reserves. Proportions in the other Departments ran from rather less than two to one in Tactics and Communications, to a flat four to one in Materiel. Some of these Reserves were men called to duty expressly to fill a place on the faculty; others were students who had attracted attention. In December 1940 the School's Table of Organization allowance of Reserve officers was far above that actually present for duty. The reason given was that it was expected Regulars would be taken from the School at an increasing rate, in which case there would be authority at hand to call up Reserves as rapidly as needed.

The ammunition allotment for 1941, which these men were to use in instructing their students, was unchanged from that given earlier for the individual battery officers, 108 rounds of 75-mm ammunition, and 40 rounds of 37-mm, but the total amounted to 285,120 rounds of 75-mm ammunition and 105,600 rounds of 37-mm

---

[1] Two officers were left to take care of the personnel records of the 900 officers among the student body and faculty!

ammunition, for 220 officers were expected to enter the course every four weeks. No allowances were included for the advanced and officer specialist classes. The Basic Course allowance was the same as for the battery officer students (the two courses were well--nigh identical), and basic students were included in the 2,640 student officers expected during the year to keep the peak load within the authorized total of 750. The year's allotment of 75-mm shell was later jumped to 428,500 rounds.

The school troops that fired this ammunition were to be, if General Cubbison's December recommendations were accepted: The 18th organized as four battalions, two equipped with 105-mm howitzers, one with 155-mm howitzers, one with 75-mm guns horsedrawn; the 1st, 51st, and 53d Field Artillery Battalions (the old 1st Field Artillery Regiment); the 1st Battalion of the 77th Field Artillery; and one battalion of the 142d Field Artillery, should it arrive. The equipping of these organizations as indicated was still very much in the class of things hoped for. The first four 105-mm howitzers M2 were to arrive about February 1941, the School having lost its other four to the Rock Island Arsenal for modification. In November, the School's two pack howitzers were taken to Alaska for test since they were the only two available. In return, the one at West Point was shipped here.

More Fire Direction Improvements

The first period of progress in fire direction spent itself in 1935, having lasted four years. In this there was nothing very mysterious--it meant only that the men who had worked on it were transferred away from the Field Artillery School in the course of routine army shifts of personnel. Their successors left the matter where it was, and no substantial change could be noted until the arrival of Col H. L. C. Jones in 1939. While an instructor at Leavenworth, Jones had been impressed by the new ideas in fire direction, but after reflecting on them concluded better could be evolved. On leaving Leavenworth he was given a battalion at Marfa, Texas, where he proceeded to work out his techniques. By the time he was ordered to Fort Sill in 1939 as director of the Department of Gunnery, he had made most substantial advances in the methods of fire direction, advances which he then urged upon the arm.

Their worth was almost self-apparent and by November 1940 had acquired such status that they appeared in the Field Artillery Journal as teachings of the School. The most important changes made by Jones, which set fire direction substantially in the form it has today, were to centralize all computation at the fire direction

center for both observed and unobserved fire, so that it was no longer split between battery and battalion, and to prepare both observed and unobserved fires from the same fire direction chart. A team of officers was formed to apply these methods in demonstrations.

One of the members of this team was Capt Abbott H. Burns. In the past, computers had had to leaf through firing tables to convert ranges into elevations in mils and had sweated mightily over the application of correcting factors. Burns did not care to go through this process and invented a graphical firing table, essentially a slide rule, from which elevations could be read directly and which applied corrections by simply moving the slide. This brilliant stroke greatly speeded the process, and by eliminating complicated the time-wasting calculations made it possible to use enlisted computers.

The massing of the fires of the whole artillery of a division, in situations in which no map existed, was developed by Col Einar Gjelsteen in the spring of 1941, in reponse to a suggestion of the Chief of Staff, General George Marshall.

The School Hits Its Prewar Stride

During the greater part of 1941, the Battery Officers Courses dominated the School. By far the greater proportion of officer students were members of that course, and troop and area requirements for every other sort of instruction at the School was adjusted to the needs of those classes. The basic mechanism for filling the classes was the assignment of quotas to various organizations and commands by the Adjutant General's office on the basis of a memorandum from the Office of the Chief of Field Artillery which gave the schedule of classes. In practice, however, the Commandant often had to complete quotas by taking officers from the Replacement Training Center at Fort Sill, a practice limited by the need for officers in the Replacement Center. As a solution to the officer shortage problem, the Chief's office was trying to start an officer pool at each center, but since the country was then at peace and financial restrictions were involved, this proved difficult.

When students began their work, it was soon observed that in this war as in the previous one there was a direct relationship between the student's mathematical background and his performance at the School. Battery Officers Course No. 6 was given a little introductory course in mathematics, and it was noted that the 17 who failed it had below average scores in gunnery. A more detailed

investigation was made of Battery Officers Course No. 10, which had 222 members, 25% of them Reserve officers, the balance, National Guardsmen. The table below gives their mathematical background.

Background	No. of students	
(1) No algebra	8	
(2) No geometry	21	
(3) No trigonometry	78	
(4) No logarithms	72	
(5) None of the above	6	(all National Guardsmen)
(6) Only one of the above	11	(three Reserves, eight National Guardsmen)

All six of those with little background did below the general average of work in gunnery. Of the 17 in groups 5 and 6, two failed the subcourse on Firing Battery; five, Observed Fires; seven, Unobserved Fires; eight passed all three subcourses.

Deficient students whose potential value seemed to justify it were turned back to later classes. It was then found difficult to make artillerymen of infantry officers, many of whom fell by the wayside, which suggested that an officer needed some artillery experience to do well with the Battery Officers Course. Deficient students might themselves ask to be turned back. Directors interviewed students who were deficient, or seemed likely to be. If the student failed to graduate, the information so gained would be of use in reclassification proceedings. As of June, 1941, the students were told either that their work was satisfactory or unsatisfactory, no numerical grades or class standings being given out. Sixty-five per cent or better was satisfactory.

In the Regular course, where all students were artillerymen of some experience, it had been customary for students to act as executives. For a while, this was the practice in the special course but in April this was changed to provide that selected officers would go to the battery positions to observe the organization's executive and safety officer in the performance of their duties. The students would be given such instruction as circumstances permitted, and reports on them were no longer required.

On graduation, students in classes 12 to 22 (and possibly others) could indicate the assignments they preferred on the basis of a list posted on the class bulletin board. The Commandant was given this authority, for the classes indicated above, for Reserve officers ordered by corps area commanders to temporary duty at the Field Artillery School.

The capacity of the Field Artillery School for students in the Battery Officer Classes may be shown by a table.

August-December, 1940 (classes 1-4)	300
December 1940-June 1941 (classes 5-11)	600
June 1941-June 1942 (classes 12-60)	720

The sharp increase in capacity reflects a decision to increase the Army by many divisions. It will be noted too that classes were increased from 100 each, entering every month, to 200, also entering monthly, then changed to about 60, entering every week.

The actual formulation of schedules and programs was done by the Assistant Secretary under the Assistant Commandant. When a course was begun, the Assistant Commandant alloted to each department the number of hours it was considered to need. The department then prepared a master schedule for the alloted hours, indicating whether the subject was theoretical or practical, the number of hours for any individual subject and a brief description of the instruction. Upon receipt of these programs, the Assistant Secretary consolidated them into the master program for the course. When this was approved, he then made out the schedule for the course. These schedules were made on a block system, certain hours being alloted for certain subjects. During the period described in the above tables the Battery Officers Course had three classes at the School at all times. Schedules for the officer and enlisted specialist classes were prepared in the departments having charge of their instruction. If they needed troops and areas, their requirements were fitted into the Battery Officers Course schedules.

The Battery Officers Courses were the controlling factors in the use of range areas and school troops. Certain priorities on these were given to departments for individual instruction. No request for troops could be greater than indicated in the troop and area chart, which was prepared by consultation with the departments. The several departments gave the Assistant Secretary weekly statements of their troop requirements on forms provided for the purpose 12 days before the week involved. Instructors could not change these troop requirements. Range areas were secured directly from the range officer, and transportation was requested directly from the motor pool.

The Advanced Course had not been as successful as hoped, and as early as January 1941 its merger with a proposed field officers' course was suggested by the School. In many cases, officers sent to take the course had not met the standards set for them, and the course was not then much benefit. An analysis of the origin of the

students from the civilian components in one class showed their rank varied from captain to brigadier general, their artillery service, from zero to 24 years. Nor did all of the Regulars who attended meet the requirements. It was also considered that the use made of these students after graduation was a poor return for the efforts expended during the course, for only four of the first class were assigned to duty with the higher echelons of command. This may be partly explained by the fact that under the policy as it was then, National Guard students in the class could not after graduation be taken from their units for duty with the higher echelons for which they had presumably been trained. Of classes 2-5 inclusive, 60% of the class were National Guardsmen, whose assignment was accordingly restricted. In August 1941, a change of course content to include something of value to field officers was proposed by Brig Gen George R. Allin, so that these men could take with them something of use to their organizations. Of course, as the Army continued to expand, many students must have found their way to the higher echelons for which they had been trained.

The Advanced Course as of March 1941 included 120 hours refresher work on current Battery Officers Course subjects and 360 hours of advanced work. In the advanced work were 210 hours on map problems and terrain exercises; 80 hours individual studies on assigned subjects; 70 hours of committee studies. Of the map problems and terrain exercises, 28% of the time was alloted to division artillery subjects, 34% to corps artillery and artillery with the corps, and 38% to Army artillery and artillery with the Army.

To recapitulate, there were several officers' courses that were offered in February 1941. The Battery Officers Course was 12 weeks long and closely paralleled the old National Guard and Reserve Officers Course with a new class entering every four weeks. The Officer Specialists Course was a grouping of three courses: Communications, Horsemanship, and Motors, and was 12 weeks long. A new class entered every 13 weeks. The choice of a name for it was unfortunate, since the officers did not spend four weeks on each of the above subjects. The Advanced Course was just described. It too was 12 weeks long with a new class every 13 weeks. The Basic Course was only for newly commissioned Regulars and was also a 12 weeks course. It was offered once a year.

Merging of the Advanced Course with a proposed Field Officers Course was mentioned above. Another suggested merger was that of the 1941 Basic Course with Battery Officers Course No. 13, which was proposed by the Chief of Field Artillery. Since the two courses were very similar, this would have made little difference, except for the inclusion of animal transport subjects for all students. This plan was opposed by General Allin, then Commandant, and later abandoned. In passing, it may be stated that the Battery Officers Course, the Basic Course, and what was to be the Officer Candidate Course were practically identical and that all stemmed from the old National Guard and Reserve Officers Course. This course, or these courses, will be described later in detail.

The Field Officers Course was the next to be established; its purpose was to fill the gap between the Battery Officers Course and the Advanced Course, where there was no instruction for battalion commanders and senior battalion officers. Class No. 1 began July 7, 1941, and graduated September 3. Class No. 2 began September 10, and the course was offered in this manner until Class No. 13, which was extended to 12 weeks. It seems worthwhile to describe this course in detail; the great majority of the officer students who passed through the School took one of the two courses, Field or Battery Officers.

The course, in general, covered the tactics and technique of the field artillery battalion with special emphasis on command and staff functions of division artillery. The Department of Communications reviewed the latest developments in communication equipment and facilities, only 14 hours being alloted to it. The instruction given by the Department of Gunnery fell into three subdivisions. Thirteen hours were given to observed fires, including terrestial and air observation and conduct of service practice. Unobserved fire received 54 hours. The subjects covered may be grouped under survey, and preparation of firing charts and firing data. Survey instruction covered use of the transit, running a traverse, long and short base intersection, night survey, use of aerial photographs, and survey for fire direction. Preparation of firing charts and firing data dealt with computation of base angles, meteorological data, corrections from registration, and prearranged fires. The third division was fire direction (31 hours), under which the student learned fire direction technique, duties of members of the fire direction team, division artillery fire direction, and battalion and division survey and fire direction plans.

The Department of Materiel acquainted the student with sighting and laying equipment, ammunition, maintenance, and the 105-mm howitzer. (Only six hours were devoted to it.) Motor transport gave 12 hours to covering the latest developments in operation, maintenance, and inspection of field artillery motor vehicles, under the general topics of preventive maintenance, command inspections, and marching. Twelve hours were allotted. The Department of Tactics began with studying the duties and training of the intelligence, operations, and supply sections of artillery staffs, for 51 hours. Then came tactics in general, including artillery in the defense and the attack, in support of armored forces, defense against armored and air attacks, and liaison. Practical exercises and demonstrations were included.

A wire of August 29, 1941, from the Adjutant General's office, gave the Commandant authority to transfer officers from Advanced Course No. 4 to Field Officers Course No. 2 if in his opinion they lacked the qualifications for the former course.

Two classes in survey and fire direction were offered April 30 - May 26, and May 27 - June 23. Members of the classes were taken from among graduates of the Battery Officer classes. In the first two weeks, the students acted as members of survey parties; in the second two weeks, they conducted survey parties. The course provided three three-hour periods in drilling members of School troops fire direction teams. No more classes along this line were held.

Gunnery Innovations

Research and tests continued during these months of expansion. On September 4 and 10, 1940, further extensive tests of the relative accuracy of map data corrected, K, and VE transfers were made using the 4.7-inch gun and the 75-mm howitzer in addition to the 75-mm gun. The firing was based on a transit survey with meteorological messages given every hour, each burst located by the 2d Observation Battalion, and trigonometric computation used whenever possible. It was concluded that when firing with the same charge within transfer limits, there was little practical difference between map data corrected, K transfers, and VE transfers. Outside transfer limits, VE transfers were found to be most effective, and transfers across zones could be effective when massing several batteries.

In April 1941 the School was asked about the relative merits of these methods, and basing its answer on the tests previously mentioned, replied that when meteorological data was not available, and registration was permitted, K transfers should be used. After meteorological data was at hand, VE transfers were to be used. Once the VE was obtained, it was said to be accurate as long as position and ammunition were unchanged, whereas a new K should be obtained every few hours. With a VE, new meteorological messages took care of any corrections necessitated by changing weather. In commenting on this, Maj George Keyser, then director of the Department of Gunnery wrote that VE transfers were nothing more than map data corrected, further corrected by registration factors, and that over a period of years the School had learned that for all around accuracy there was little difference between K and VE.

A photographic grid system was formally submitted to the Chief of Field Artillery September 26, 1941, with the comment that it was based on several years work. The grid system consisted of parallel vertical and horizontal lines 1.8 inches apart and starting in each case with one through the center of the photograph. The vertical center line was designated AA while the corresponding horizontal line was given the designation MM. To the right and upward from the center lines the designations followed the alphabet. To the left and downward from the center lines the designations ran backward through the alphabet starting with LL as the first grid line to the left of the center and with ZZ as the first one below. Being based upon the arbitrary 1.8 inch grid square, regardless of the scale of the photograph, the grid furnished no information as to ground distances, and would give the enemy no information of value if a message referring to it were intercepted.

The new methods of gunnery, referred to before, appeared in print in instruction memorandum G-7, March 1941. Several changes from the 1939 edition of FM 6-40 were included. The text taught the use of c instead of the fork for light and medium artillery except when special accuracy was desired. Deviations were measured, when it was intended to use them, but were not announced aloud. In the various types of bracket fire, there was no set rule for bringing in the battery, and a 100 yard sheaf was used for all calibers. In axial bracket, except in firing at a moving target, fire was opened at the center of the bracket. In small-T, deflection was not sensed until fire for effect was begun; in large-T, range was not sensed until fire for effect was begun.

New methods of fire were approved in May by the Chief's office. The sequence of command was altered, so that the command for shell and charge came just after the command for method of adjustment. The battery commander formed a 100-yard sheaf by announcing deflection differences after getting the width of the battery front from the executive. The term "map data corrected" was discarded, the term meteorological data being used instead. The limits of the K transfer were set at 1,500 yards over and short and 400 mils right and left of the check point. The VE transfer was to be replaced by the meteorological transfer in a manner similar to that for the K transfer.

Training Literature

Some paragraphs back it was mentioned that the Field Artillery School, at the request of the Chief's officer, supplied a table showing what exemptions from extension courses should be granted for completion of various School courses, and periods of service. The School's recommendation was that successful completion of the Battery Officers Course plus a year's service should take care of all of the 20-series, and all but three of the 30-series, Administration, Field Artillery Staff Functions, and Camouflage. Eight of the 40-series and three of the 50-series were not covered. Service in higher grades of course accounted for many of these non-exempted subcourses. It will be recalled that the 20-series covered the mobilization assignments of second lieutenants, the 30-series, those of first lieutenants, etc.

An attempt was made by the School in the spring of 1941 to have the responsibility for approval and revision of subcourses decentralized to the Chiefs of the several arms. The Adjutant General's office would not agree to this, pointing out the very considerable powers over these courses already possessed by the Chiefs. For example, the initial determination of what courses should be revised for any school year, and when they should be revised, rested with the Chiefs. Responsibility for coordination of these courses was the War Department's, and it was not willing to deprive itself of the corresponding power.

The War Department had previously suggested the School prepare instructional material for corps area Reserve officer schools; the School had demurred on the grounds that it could not do a worthwhile job without facilities which the War Department probably would not spare. To this, the War Department replied in February 1941 that training of Reserve officers was now very largely in the hands of other Reserve officers, who required a guide. Elaborate lessons and

problems were not desired, only a sort of brief training bulletin. The Chief issued orders to that effect, so bulletins were planned to provide material suitable for conferences conducted by instructors from the Officers Reserve Corps. The bulletin would be prepared by the Department of Publications, approved by the Chief, printed at the Field Artillery School, and ordered from the School by the several corps areas. Their issue began in April, when a letter was sent to the commanding generals of all corps areas, informing them the bulletins were available.

As the Army grew, and officers grappled with the problem of training swarms of recruits, the demand for training literature grew accordingly. In 1941 and 1942 officers and organizations turned increasingly to the School to supply them with information. Orders came to the Book Department for Field Artillery Books, sensing pads, and graphical firing tables; to the Secretary for instruction memoranda and catalogues, or sometimes just for "all publications available." Requests came for material on various subjects, e.g., antitank defense. Various colleges asked aid in preparing courses, e.g., camouflage, and basic artillery. Librarians asked for books and book titles. A cadet asked for data on which to base a history of field artillery motor material. The new Tank Destroyer School requested appropriate training literature and asked to be put on the School's mailing list. The most interesting request, perhaps, came from an Air Corps officer who was charged with preparing a military training program for Air Corps reception centers in his district. He desired a program which would give the cadets some idea of what the rest of the Army did, how to defend an airdrome, etc., and he had 30 days in which to arrange his course. Specifically he asked that the Field Artillery School draw up a course covering field artillery fundamentals in three one hour lessons, plus a manual for students, and one for instructors. In ten days a detailed lesson plan plus certain instructional matter was on the way. It was not possible to prepare a manual in such a short time, but the School invited requests for further assistance.

A change in the organization producing training literature was made in March 1941 by creating a Training Literature Board which whenever practicable would do the writing or revision of publications and training films. It was not to be a formal board like the Field Artillery Board but rather a small group of officers functioning directly under the Commandant. The Department of Publications was to continue preparing all extension courses, instruction memoranda, and such other literature as might be necessary for the functioning of instruction at the School. Colonel Leon R. Cole was chosen to leave the Department of Motors and lead the board

pending the arrival of Col E. R. Van Deusen, who had compiled the training literature used at the Camp Jackson Replacement Depot in the last war. Other members were Majors Thomas M. Watlington and Wilbur R. Pierce. It was planned to assign Reserve officers as the board swung into its work.

By July of 1941 the School considered itself ready to produce sound films and film strips on new developments of value and training subjects. The War Department was at that time undertaking a comprehensive program of training films and film strips. The training films, in general, were made by the Signal Corps. Requests for films were made by the individual branches, and submitted to the War Department for approval, after which they were shot by a Hollywood trained crew. Major M. P. Echols FA, then in Hollywood, suggested that 16-mm films be made at Fort Sill for circulation in the Field Artillery.

Regarding School troops, in May, the 18th Field Artillery was completely occupied in working for the battery officer classes. Also present were three battalions not previously mentioned in this account, the 70th, 71st, and 83d Field Artillery Battalions, equipped with horse-drawn 75-mm guns. They were earmarked for use by the Officer Candidate School when it opened.[1]

The 45th Division left on February 28 and March 3 of 1941 to make room for the new Field Artillery Replacement Training Center, which was to occupy its area. Originally planned for Fort Knox, the Replacement Center was put at Fort Sill because the Armored Force Headquarters was placed at Fort Knox. With the Replacement Center was a Reception Center for newly inducted men. While these establishments were not part of the School, cooperation was very close between them.

With the departure of the 45th Division, the Commandant again became Post Commander. The School and School troops were an exempted activity under the Chief of Field Artillery. The Post, and the Commandant as Post Commander, was under the Corps Area.

---

1. Despite the war, three horse shows were held this year, a junior show May 10, the Interpost horse show, race meet, and hunter trials as a local show May 30-June 1, and another show in October. Brig Gen C. P. George, the noted horseman, then commanding the Replacement Center, was among the judges.

Corps troops at the Post were under the Commanding General of the Army Corps, and the Replacement Center was under the Corps Area with general supervision over the conduct of training exercises by the War Department through the Chief of Field Artillery.

The nature of the cooperation referred to above may be briefly illustrated. On opening, the Replacement Center was very short of quadrant and panoramic sights, so trainees were sent to the gun parks of organizations on the Post for instruction. Horses, equipment, and personnel were often loaned to the Center, with at least one entire training cycle completed by using the horses of the 18th Field Artillery. When trainees progressed to the point that they could do work for the School in service practice and tactical problems, they were so employed.

The Officer Candidate School

Prewar planning of the Officer Candidate School, "OCS" as it was universally called, may easily be traced to 1934, for a War Department letter of May 3, 1934, speaks of "the various officer candidate schools and other training activities under corps area control." In 1935, the course planned for these schools, whatever it had been before, was revised to make it three months long. The concept of a multitude of training schools under many jurisdictions apparently went unchallenged until about 1937, when General Birnie told Colonel McIntyre that the War Department was thinking of reducing the large number of "officer filler and replacement schools" to a minimum and placing them under the Chiefs of Arms. In 1939 jurisdiction over the schools was given to the several Chiefs.

In 1939 the officer candidate course proposed by the Protective Mobilization Plan was thoroughly revised by the School. A table will illustrate the results:

Before revision		After revision	
Military courtesy, interior guard, organization of the Army, etc.	52 hrs	Military discipline, interior guard, hygiene, mili-law	49 hrs
Care of arms, ceremonies	20	*	

*Ceremonies and inspections in unscheduled times.

Before revision		After revision	
Animal Transport	70 hrs		
Motor Transport	50	Motor Transport	50 hrs
Materiel	13	Materiel	33
Gunnery	174	Gunnery	205
Communications	30	Communications	34
Tactics	85	Tactics	100

It was further proposed by the School that the instruction of candidates be conducted by officers assigned to the batteries in which the candidates were to be grouped. This did not suit the Chief's office, who thought that training in more technical subjects should be conducted by departments as it was in the last war.

The creation of officer candidate schools in World War II was directed by a letter from the Adjutant General, January 15, 1941. The schools were to open July 1, 1941, offering three month courses to warrant officers and enlisted men who had six months Federal service before applying. They were to be no older than 36, would be commissioned second lieutenants, and would have to serve a year after graduation. The Field Artillery was allowed 125 men per class for a yearly quota of 500. With the exception of the Air Corps, the candidate need not have been from the branch in which he desired a commission. A later letter directed the convening of boards of three or more officers, including one medical officer, to pass on applicants for the schools, applications to go from the organization commander through channels to the post commander and then to the examining board.

Later letters somewhat modified the provisions of the first letter. It was provided that an officer candidate with less than three months to serve after graduation could be discharged and re-enlist, that candidates who would be 21 on graduation could be admitted, and that examining boards and corps area surgeons could waive certain defects. In January it was not planned to provide any extra facilities for the OCS at Fort Sill, the Adjutant General wiring the Chief: "Officer candidate courses will be conducted within facilities at your disposal, no additional housing being contemplated."

The School was requested January 24 to forward an OCS course similar to that provided for the 1939 Protective Mobilization Plan. With its reply the School suggested instead a four week basic course after which unsatisfactory students could be weeded out and the rest to take the regular Battery Officers Course. This plan was not acceptable to G-3, who pointed out that it would exceed the 12 week maximum. The quota of students for OCS was doubled even before it opened. On his April visit to Fort Sill, General George C. Marshall inquired what would be needed to handle a capacity of 420 students. In reply, the Field Artillery School requested more firing batteries and about 14 instructors and 10 enlisted men for every 100 candidates. This plan was not carried through, but in the reply to it, the Chief's office wrote that the OCS capacity would be 250, thus doubling it.

A second War Department letter of April 26 provided for 125 man classes entering at six week intervals. It stated that the predominating consideration governing admission to OCS would be demonstrated qualities of outstanding leadership, to which educational requirements would be secondary. Appointments to the Organized Reserves were discontinued, and commissions could no longer be earned via the extension course route. Men who had reenlisted to take the course, as provided above, could if they failed be discharged, if the man so preferred. Others would be returned to their organizations. At this time, it was planned to give reserve commissions to successful graduates.

Since mathematics, or the lack of it, had proved to be such a barrier to many students, it was mildly surprising that the Field Artillery School suggested as mathematical requirements for OCS entrance only a working knowledge of common fractions, decimals, addition, subtraction, multiplication, and division. At the same time, it recommended that college mathematics not be made a requirement for ROTC students, on the ground that many capable men would be excluded from the reserve list, since many colleges did not require mathematics for graduation.

As originally planned in 1941, the OCS organizational scheme called for a commandant of candidates, Major Carl H. Jark, an executive officer, an adjutant, and a supply officer. Each class was commanded by a class tactical officer with one assistant class tactical officer per hundred students. As the school grew, the expanding classes were grouped into battalions, three to a battalion. In the beginning, mess and supply were handled through the White Detachment of the Field Artillery School until the growth of OCS forced the organization of a separate service battalion. Texts and equipment

were issued by the Book Department and turned in by the student at the end of his course. Non-issue supplies, as in the past, were sold at cost. The instructors were drawn from the several departments of the Field Artillery School according to a quota.

The first class of 124 entered July 10, and 79 graduated October 10. The group included four selectees, f an average age of 25, 48 National Guardsmen who averaged 26, and 70 Regulars who were 28 on an average. Until September 1941 it had been intended to give these men reserve commissions, but eventually it was realized that this would create a "hump" in the reserve list like that which existed for so many years in the Regular Army. To avoid this, the graduate of this and succeeding classes were commissioned in the Army of the United States (AUS). In effect, the door to reserve commissions was barred to enlisted men for the duration, for with the opening of OCS they were no longer allowed to enroll in extension courses as a means of advancing themselves. But considering the splendid opportunities opened by OCS, it is not likely that any felt an injustice.

These first classes lived in tents and were warned not to bring dependents to Lawton, for not even tents were available there for wives and children. According to size, each class was broken into sections of about 30 men, under students who were detailed as section marchers. The latter were responsible for forming their sections for all formations, reporting attendance at each, and insuring the proper conduct of the section during duty hours. They also reconnoitered the routes prescribed for going to and from all formations and took the section along the proper route. Marching was at attention at all times unless otherwise directed by a tactical officer. Tho sections were in turn divided into 10 man squads, led by squad leaders who reported late and absent members to the section marcher.

Students performed no fatigue details during duty hours, with the exception of those men who served in the mess halls at meal times, the charge of quarters at the class mail room, and the battalion and headquarters charge of quarters. Rosters were kept by each class tactical officer and duties rotated so that during his stay at the School each student performed all duties enumerated above. Rosters were arranged in the larger classes so that no student did the same duty more than once. This system broke down with smaller classes but was largely rectified by the substitution of enlisted mail orderlies for the day rooms and having but one charge of quarters with simpler duties.

The course given at OCS was very similar to the Basic Course and virtually identical with that given to the battery officers. Considering that almost all field artillery officers commissioned during the war[1] took the course, and that it was the policy to send all officers of battery grade to one like it, its importance must be recognized. Composition of the course was:

Subjects	Regular Hours		Extra Hours
Department of Tactics & Communications:			
Tactics:			
Organization of the army & field artillery	2		
Defense against chemicals	3		
Associated arms	10		
Combat orders	6		
Artillery tactics	9		
Artillery staff duties	7		
Logistics	5		
Camouflage & field fortification	7		
RSOP & battery exercises	45		2
Map & air photo reading	10		
Subtotal	104		2
Communications:			
Signal communication for field artillery	33		
Administration:			
Military discipline, courtesies, customs	2		
Military law	8		
Administration & mess management	6		
Subtotal	16		
TOTAL		153	2
Department of Gunnery:			
Firing battery	30		2
Observed fires	90		
Unobserved fires	76		8
Fire direction	13		
TOTAL		209	10

[1] Some from ROTC and CMTC did not take the course in the early days of the period.

Department of Materiel:			
Materiel & ammunition (motor-drawn sections)		47	
Materiel & ammunition (horse-drawn sections)		33	
	TOTAL	80	
Department of Motor Transport:			
Operation & maintenance		71	6
Department of Animal Transport:			
Equitation		26	
Animal management		15	
Driving & draft		44	
	TOTAL	85[1]	
	GRAND TOTAL	480	18[2]

The course was 13 weeks long. Candidates arrived at Fort Sill on Monday and Tuesday, completed their processing on Wednesday afternoon, and began work Thursday morning. There were eight hours of instruction a day, half in the morning, half in the afternoon. Drill formations and inspections were held before class in the morning. Study hours were from 7:30 P. M. to 1:00 A. M.

The motors course took three days of the first week and six days of the second. It began with a conference, i.e., class-room discussion and a movie on military vehicles and driver training. Then followed four days of conferences and practical periods on motors, transmission, clutch, steering, lubrication, axles, etc., finishing with a complete 1,000-mile maintenance service, "trouble shooting," and a command inspection. One day was given to driving a stake course and difficult driving. The final two days were divided between conferences and practical work on marching, ending with a 10-hour motor march, and a final examination.

The materiel course was given six days of the third week. Two days of conference and practical periods were divided among small arms, the .50 cal. machine gun, the 37-mm antitank gun, the 75-mm pack howitzer, and the 155-mm howitzer. The 105-mm howitzer received four days, covering: sights, tube and breech, recoil mechanism, elevating and traversing mechanism, the carriage, the wheels and brakes, and a final examination.

---

[1] Students take either animal or motor transport but not both.
[2] The 18 extra hours are for night exercises.

Next came gunnery, from the fourth week to the ninth. The subject was introduced with the organization of the firing battery. Then came a conference on artillery arithmetic and fire commands, laying the battery, and firing charts. This was followed by practical work in the use of fire control instruments, laying the battery by compass and base angle, determining the minimum elevation, and measuring the adjusted compasses and base angles. A conference with blackboard problems introduced axial precision fire. After this the candidate could look back on his first week of gunnery and feel that it wasn't so bad.

In the fifth week, a minimum of 12 hours was devoted to subcaliber firing of axial problems. The student was graded on each problem fired, grades being based on initial data, fire commands, procedure, speed, sensing, and effect. Survey was introduced by a conference followed by practical work on the transit, intersection, and short and long base problems. The work of the safety officer was begun as was work on K-transfers and meteorological data.

The sixth week was known as the "bloody sixth" and was laden with examinations. Fire direction was taken up with conferences and practical work. The duties of each member of the team were studied. Target area surveys were taken up, then connecting surveys, and lastly, position area surveys. A conference introduced small-T precision fire. There was a review conference and practical session on the firing battery and the posts and duties of its personnel.

The seventh week was begun with the fire direction team, K-transfers and metro messages. Small-T precision problems were fired on the blackboard, followed by conferences on forward observation. The week also had its quota of examinations.

Forward observation problems were fired in the eighth week. Fire direction teams were formed and given both conference and practical work using photographs, grid sheets, and maps. Practical work was given on survey with a photo map. Large-T firing was brought up via the blackboard route, and more examinations.

The next week, the ninth, gave three days to gunnery, firing large-T precision, and bracket problems. There was a practical period on fire direction using aerial photographs and a conference on the use of the oblique photograph. The final examinations were conquered--by most of the students--and the successful had completed a good 50% of the OCS course.

After gunnery came communications, three days of the ninth week, and two days of the tenth. The course was divided into wire and radio. Under radio, the student studied voice procedure and discipline, the various nets, etc., in both class and practical periods. Under wire, he studied circuits, laying wire, splices, voice procedure, etc. Conferences were held on ciphers, codes, and visual communication.

Tactics began in the 10th week with about 12 hours of mapping, followed by class work on combat orders and combat intelligence, and on the organization and use of the battery detail. Saturday was given to a demonstration on the battery in displacement, reconnaisance, and selection of position.

The 11th week introduced the tactical use of aerial photographs. Army administration, military law, and military correspondence were taught in class. After these came a conference and demonstration of infantry in the attack, camouflage and battery supply. Selection of battery positions was covered in class.

Conferences and practical periods were alloted the 12th week for the organization of battery positions, the use of battery and battalion details, and reconnaisance, selection, and occupation of position for the battery and the battalion. There were conferences on armored artillery, the liaison officer, and infantry and artillery in the defense. All examinations were finished on Saturday afternoon.

Only two and one half days remained for the 13th week. An entire day was reserved for demonstrations of tank traps, mine fields, booby traps, battalion aid stations, and the field kitchen and rations. The course ended with an overnight battalion problem with students acting as enlisted men and officers of the battalion. About 40 rounds of 105-mm ammunition were alloted for the morning's firing.

Below is a table which illustrates the similarity between the Basic Course for newly commissioned regulars and the OCS course.

Department	Officer Candidate	Officer Basic	Difference
Tactics	124 hours	91 hours	+30 hours
Communication	36	28	+ 8
Gunnery	244	150	+94
Materiel	36	46	-10
Motor transport	72	48	+24
Animal transport		112	-112

The major difference lay in giving the new Regulars instruction in equitatio The instruction was not on a different level; it was that applicable to junior officers of field artillery.

Students and Their Treatment

General Allin, the Commandant, believed that of the men in the first OCS class, many were deficient in educational background, others, in artillery experience, but he was of no mind to relieve them. General Danford's reaction was that he most certainly did not want men in the course who were not officer material and that he wanted them worked as hard as possible to weed out those who could not stand the pressure. He noted too that the course was very similar to the battery officers' work, with gunnery substantially the same. He felt that the course should be more basic with some work on mathematics, mess management, and duties of the executive, for he expected them to come back for the Battery Officers Course. General Allin wrote in turn that the gunnery course had been made the same as that given the battery officers, for it was not expected that these men would ever return for a battery officers class.

Candidates who had been ill could be turned back to a later class by the Commandant of OCS on recommendation of a board of officers. This would not affect quotas of incoming candidates. Where candidates demonstrated their ability by practical tests, they were graduated even though their academic work did not indicate proficiency. This ability was judged partly on the basis of ratings given them by their instructors and by their classmates. These ratings were made by section mates twice during the course at the end of the 5th and 10th weeks. The actual process involved rating the members of one section, less oneself, in order of preference, giving the number "1" to the top man and so on down. For the most part, student ratings and those of tactical officers were in close agreement. Obvious discrepancies were investigated immediately. The records kept on the student, his previous achievments in the army, his intelligence score, the grades given by departments, also of course entered into the decision to graduate a man.

The number of graduates from the first two OCS classes did not please General Marshall, who called it a meager return on the effort exp ided. He directed an investigation of why only 60.5% and 54% respe ively of the two classes had graduated. This investigation revealed that in addition to the deficiencies commented on before--such as lack of educational background--that in one class a

candidate had had as little as one day's recruit training and that three men had had only a week or less. It was also the belief of General Allin that men not fit to be officers should be weeded out before commissioning, rather than after. The table at the end of this chapter shows that the percentage of graduates varied sharply from class to class, depending on the level of the class itself.

Discussion of the graduation assignments of the first OCS graduates began in July, when the plan was to allot most of them to corps areas and none to the schools, as General Allin desired. The arguments that General Allin advanced for keeping some of these men for the School were for a few days at least regarded as even better arguments for putting them on troop duty, but by July 29 General Danford wrote that Allin could have about all the OCS graduates he wanted. The compromise finally reached was to give 25 graduates to the School, releasing the reserve officers thus made surplus. The balance of the men were to go to troops rather than replacement centers, as Allin had suggested, because of the shortage of combat officers. And the corps areas were said to be counting on their allotments. Of Class No. 4, 50% were assigned to the Replacement Training Center at Fort Bragg, 30% to the Center at Fort Sill, and 20% to Camp Roberts, Calif., excepting those kept for the School. Since Danford and Allin were taking officers from the replacement centers to fill the Battery Officer Courses, that offered another reason for sending OCS men to the centers as quickly as possible.

In planning the graduation ceremonies for the officer candidates, it had been hoped they might listen to a radio address by General George C. Marshall, but this was not possible. Fortunately, General Robert M. Danford, the Chief of Field Artillery, was able to be present, and the graduates received their commissions from him. With these commissions they also received the same rights, privileges, and benefits as members of the Officers Reserve Corps of the same grade and length of service on active duty, as provided by an Act of Congress signed by the President, September 22, 1941. A paternal government also permitted them to retain all serviceable articles of clothing issued them.

Enlisted Specialists Courses

In the summer of 1941, the School was offering instruction to enlisted specialists in communications, motors, materiel, saddle-making, horseshoeing, and horsemanship. The first three were lumped together in a so-called "enlisted specialists class" which entered monthly, for a 12-week course, although the men of

the course pursued three different lines of study. The capacity for this course, or three courses, as you prefer, was about 300. The other courses were conducted quarterly, with a capacity of 110 men. Students were obtained for these classes by letters to the Adjutant General telling how many students were wanted, when the courses began, and what they were. That office in turn set quotas for the various organizations and commands.

A considerable expansion of the motors courses both for officers and enlisted men was being considered that summer. It was pointed out that between 1928 and 1941, 155 officers had successfully completed the Advanced Motors Course, of whom 105 were Regulars. Few of them were now motor officers, thanks to the expansion of the Army, and the output of the class was thought small by comparison with the total number of Field Artillery battalions. Before these classes were put on a weekly basis, to attain the desired output, instructors habitually remained with their section of the class all through the course. Later instructors remained with their particular subject, rather than with the group, and the group passed from instructor to instructor. Entrance standards, which had existed for some time for enlisted students, were kept, but improved by the addition of the Army General Classification Test and the mechanical aptitude test. If a student who failed the course also did not meet these requirements, the fact was noted in a letter to his organization commander which went back through channels, accumulating unfavorable indorsements as it went.

The classes were divided into groups on the basis of the roster, but after the class had been under observation for some time, there might have been an informal grouping by class performance. However the class was split, the policy of the Department of Motor Transport called for about four men to a group. Class work also was broken down into phases, with enough time allowed for each phase for the majority of students to master the subject. At that time, written examinations were still of the essay type (fall, 1941), objective tests being introduced later when classes grew so large that it was hard to grade a multitude of essay examinations.

Two courses were added in the fall of 1941, a Diesel course for officers and enlisted men, and a course in repair of signal equipment. The Diesel course was four weeks long, was of course conducted by the Department of Motor Transport, and was for officers and enlisted men successfully completing the motors course. On December 30 the name was changed to Enlisted Specialists Tractor Course. The course in repair of signal equipment was also four weeks long and was for graduates of enlisted communications.

Organizational Matters, Fall 1941

In August 1941 there were 220 commissioned officers on the staff and faculty plus 24 commissioned officers and staff for OCS. The enlisted instructors and staff numbered 1,233. The School troops were the 18th Field Artillery Regiment, and the 70th, 71st and 83d Field Artillery Battalions, horse-drawn, and armed with 75-mm guns. These three latter units were not designated School troops but were attached to the School and used exactly as School troops. The enlisted instructors were for the most part former students of the School who had been sent here from Replacement Centers. They were not members of any unit. It was considered poor policy to keep an enlisted student from some organization as an instructor, for it made unit commanders reluctant to send good men.

A shortage of medical officers was plaguing the Post until well into 1942. In September there were only 55 medical officers on the Post, while no less than 55 were authorized for the Cantonment Hospital alone. These men had to operate the 1000-bed Cantonment Hospital, the Post Hospital, the Venereal Clinic, and eight infirmaries. To this, the Chief could only reply that there was a scarcity of medical officers throughout the Army, since the Surgeon General was finding it hard to get them. In January of 1942 the problem was a little worse, for of 72 medical officers then authorized, only 42 were available.

A table gives the capacity and output of the School as of August-September.

Class	Size	Enter	Length (weeks)	Annual Total	Cap
Officer					
Battery officers	56	Week	12	2,856	672
Advanced course	30	Qtr	12	120	30
Field officers	30	Bi-mon	8	180	30
Communication	30	Qtr	12	120	30
Motors	20	Qtr	12	80	20
Horsemanship	10	Qtr	12	40	10
Officer candidates	125	Semi-qtr	12	1,000	250

Class	Size	Enter	Length (weeks)	Annual Total	Cap
Enlisted					
Communications	146	Mon	12	1,752	438
Motors	100	Mon	12	1,200	300
Battery mechanics	67	Mon	12	804	201
Saddlers	30	Qtr	12	120	30
Horseshoers	30	Qtr	12	120	30
Horsemanship	50	Qtr	12	200	50

It will be noted that the capacity of the Battery Officers Course had doubled by the fall of 1941 and that its annual output was then two and one-half times that of OCS. In October of 1941 the Field Officers Course was increased to 60, and the Advance Course cut to 20, for the recent maneuvers had shown the need of better training for battalion commanders.

A major organisational change was the removal of the Communications Section of the Department of Tactics and Communications from that Department and its establishment as a separate department, November 15, 1941. Before its separation there were three subsections, radio, wire, and command post (irreverently known as "odds and ends"). Enlisted instructors came from a pool under Master Sergeant Clarence Burleson. The radio and telephone subsections were split in 1940. Instruction in meteorology had to be dropped because the students did not have the background to benefit by the instruction.

The Department of Gunnery in December was formed into a department headquarters, four instructor groups, a research group, and an OCS group equal in size to three of the instructor groups. Three of the instructor groups took care of the Battery Officers Courses, and the fourth group had the Field Officers Course, the Advanced Course, and Officers Communication. For all these activities, the director, Maj George Keyser, wanted 76 instructors.

A new source of instructors opened up in November when the assignment of National Guard officers was permitted. This was a reversal of long continuing policy which had previously kept National Guard organisations intact. No doubt by coincidence, some 180 extra officers were assigned to OCS in January. Since the previous summer, the Field Artillery School had added a course for field officers, enlisted tractor mechanics, enlisted radio mechanics, and had made room for 100 more students in the officer specialist courses, with no increase in instructor strength, which was then 247. In December a request was made for about 160 more, to give a total of 400. This request

"crossed" a letter from the Chief's office informing the School that it was to get 180 more officers to take care of a great increase in OCS capacity.

These new instructors who were assigned to OCS gunnery received a short course to prepare them for their new duties. Six hours were given to discussions of the organization of the OCS, the instructor and the student, methods of instruction, lesson planning, grading, conduct of service practice, etc. They also found that there was still a bad housing shortage in Lawton, even though over 650 houses had been built in the past year. To alleviate this, in February 1942, the Defense Housing Corporation recommended the building of 1,000 homes.

A statistical comparison of the School at the time, the fall of 1941, with the peak effort of 1918, will show that 1918 had already been passed. The student enrollment of fall 1941 was 2,092, as against the 1918 peak of 1,554. The School troops had 4,064 men as against the 1918 3,870. The enlisted detachments were 1,343 men as against 850. In only one respect was the 1941 Field Artillery School smaller than the 1918 School of Fire, there were 27 fewer commissioned officers on duty. The Field Artillery School of 1941 included an officer candidate school, which was then on a modest scale; had the officer candidate school of 1918, the Central Officers Training School, been added to the School of Fire of 1918, the difference would be apparent.

Increasing and Improving OCS

One of the first steps taken to improve OCS was the decision to conduct preparatory schools in the replacement centers, which was made in the late fall of 1941. The requirement that OCS students have six months experience had kept a great many of them out of the first classes, and many of those who entered were not too well qualified. In one class alone there were seven who had had practically no recruit instruction, all of which had to be given here. These preparatory schools were to help such situations. Replacement centers were also considered as a means of giving a ten weeks course to ROTC graduates to replace the old six weeks summer course. This is of interest, for it is the first step along the path that ultimately led to sending all ROTC graduates to the OCS.

An increase to a capacity of 500 students was proposed by the Chief in August in a letter asking what the OCS would need in the way of extra buildings and personnel. These needs were set at 10 63-man barracks, 2 recreational buildings, 6 administration

buildings, a 1000-man mess hall, 12 motor repair shops, etc., of which the barracks and 2 motor repair shops had already been approved. Thirty-one more officers and 88 enlisted men would be needed, too. Approval of this construction was delayed until October 14, the recreation buildings being objected to, but when approved, completion by January 1 was required. The capacity of 500 men was to be reached by classes of 42 a week beginning January 1 and rising to a peak of 500 capacity March 19, according to the Chief's plan of November 18. This is reflected in the table at the end of the chapter.

Liaison Pilot Training

The fall of 1941 also saw the Field Artillery move a good deal closer to the long sought goal of organic air observation for the arm. General Robert M. Danford started the chain of events with a letter to the War Department in the fall of 1940 in which he suggested that the time was ripe to provide organic air observation for the field artillery. The reply was not too encouraging. But, even as these letters were being exchanged, small slow, light aircraft were being very successfully flown in the Southern maneuvers then proceeding. Prospects of a favorable decision seemed far brighter in the fall of 1941 when the Assistant Secretary of War, John J. McCloy, wrote to General Allin that he had taken the matter up and that some action would be taken on it.

The action came by an authorization by the Adjutant General of a test of organic air observation for the field artillery at Post Field, Fort Sill, early in 1942. The approval was dated December 10, 1941. Twenty-eight light planes, with would-be pilots and mechanics, were accordingly assembled for a six weeks course. Each of the prospective pilots was required to hold a civil pilot's license, so the six week course was adequate. Of the 33 who began the pilot training, 20 completed. These with the planes were then formed into two units, which were sent into the field for tests under service conditions. Those tests were most successful and contributed directly to the decision to equip the Field Artillery with organic observation.

FAS Publications

Between December 7 and January 1 the old publication system practically came to an end, and that event was of no little importance. Because of the pressure of the School in the fall of 1941, it was not possible to have a revised edition of Field Artillery Book 161, on gunnery, ready in time for the opening of the ROTC fall term.

The instruction memorr nda were distributed gratis in its stead to all ROTC units that had ordered copies. A little later, an urgent request came from General Danford that the School collect samples of all current training literature, field manuals, technical manuals, Field Artillery Books, special texts, anything and everything that might be of value, and rush it to Brig Gen Edward King in the Philippines. The request was dated November 12, so the books must never have reached Bataan.

Use of the Field Artillery Books was practically restricted to ROTC instruction that fall. Six of them were approved for that purpose by the War Department, since the field manuals were not detailed enough. Only two were provided for the extension courses, and one of them was the Abbreviated Firing Tables. One of these Field Artillery Books did survive for general use in a rather curious way. Field Artillery Book 161, which was rewritten in field manual style as a new edition of FM 6-40, Firing. However, in rewriting it, the editors were cautioned not to make it too terse, for it was to be used for OCS students. As it was finally submitted, there was but one technical change, and that was made in the commands for site and corrector. GHQ added the provision that data sheets might be made by either battery or battalion, and that each battery construct and maintain its own firing chart to permit rapid decentralisation of fire direction. The text was printed at the Field Artillery School's own press, because of the pressure on the Government Printing Office.

The extension course revision program for 1942-1943 was submitted in June 1941 despite the increasing likelihood that all Reserve officers would be called to active duty. On December 10, a wire from General Danford said the extension course was apt to be of small importance because of that probability, and in 1942 the extension courses ended for the duration.

Officer Candidate Classes

CLASS	Date Enrolled	No Enrolled	Date Graduated	No Graduated
1	7-10-41	126	10-1-41	79
2	8-21-41	127	11-12-41	69
3	10-2-41	130	12-20-41	87
4	11-13-41	122	2-11-42	99
5	1-1-42	58	3-25-42	49
6	1-8-42	56	4-1-42	46
7	1-15-42	63	4-8-42	51
8	1-22-42	62	4-15-42	57
9	1-29-42	60	4-22-42	43
10	2-5-42	60	4-29-42	58
11	2-12-42	60	5-6-42	61
12	2-19-42	60	5-13-42	44
13	2-26-42	121	5-19-42	98
14	3-5-42	123	5-26-42	107
15	3-12-42	125	6-2-42	118
16	3-19-42	122	6-9-42	110
17	3-26-42	123	6-16-42	115
18	4-2-42	243	6-23-42	180
19	4-9-42	256	6-30-42	230
20	4-16-42	245	7-7-42	210
21	4-23-42	239	7-14-42	228
22	4-30-42	242	7-21-42	225
23	5-7-42	499	7-28-42	415
24	5-14-42	503	8-4-42	420
25	5-21-42	515	8-11-42	437
26	5-28-42	474	8-18-42	383
27	6-4-42	503	8-27-42	447
28	6-11-42	506	9-3-42	424
29	6-18-42	501	9-10-42	399
30	6-25-42	502	9-17-42	426

Bibliography

Files of the Office of the Chief of Field Artillery, op. cit. supra.
Files of the Field Artillery School, op. cit. supra.
File on Water, Post Headquarters, Ft Sill, Okla.
Records of the City Engineer, Lawton, Okla.
201 File, Col Augustine McIntyre, Post Headquarters, Ft Sill, Okla.
201 File, Brig Gen George R. Allin, Field Artillery School.
201 File, Brig Gen Donald C. Cubbison, Post Headquarters, Ft Sill, Okla.

CHAPTER TWELVE

FOUR HUNDRED OFFICERS A WEEK (JAN-JUN, 1942)

Growth of the OCS

The Advanced Course was among the first victims of the war, and its demise was directly caused by the New Division Officers Courses. These were first mentioned in a letter of December 29. This letter described a plan to have 35 artillery officers from each of the new divisions then being planned for activation come to the Field Artillery School. These 35 would include the division artillery commander, the executive, S-1, S-2, S-3, S-4, the four battalion commanders with their executives, and the battery commanders. The battery commanders would be taught all angles of battery administration, some materiel, a little gunnery, and methods of instruction. The field officers and the division artillery commander would have a course like the Field Officers Course only cut to four weeks. By working, eating, and living together the officers would go to their battalions welded into a team. However, for some reason, the division artillery executive never took the course as finally established.

For a while it was feared that the Field Officers Course would have to be suspended while the new division groups were at Fort Sill, even though suspension of the Advanced Course had been agreed on in January. Fortunately, it was not necessary to do this and only the Advanced Course ended. Advanced Course No. 5 was merged with the New Division Officers Course for one special course, and with that, the course terminated.

The 180 extra instructors granted OCS were part of a December plan to increase the School to a capacity of 2,000. No more school troops would be provided and no more housing. Instead of barracks, the students would be placed in tents, and the 63-man barracks would be converted into class and administration buildings. In war, today's giant increase is tomorrow's inadequacy, so in early January 1942 a capacity of 4,500 was being discussed, and by the 14th of January the figure was up to 6,000 with weekly classes of 500 entering April 1. A telegram from the Chief of Field Artillery, January 20, 1942 so advised the Field Artillery School and was followed by another asking what facilities would be needed. Allin set this at 444 more officers, 608 more enlisted men, and 100 buses to take the students back and forth on the range. Everything else was promised by the Chief, but the buses were not to be

had. Quartermaster truck companies were furnished instead. On the question of physical facilities, General Allin was most insistent that adequate mess halls, housing better than tents, and sufficient school troops be furnished, saying that otherwise it would not be possible to maintain the standards of instruction.

Brig Gen George R. Allin, who could stand so firmly for what he felt were the needs of the Field Artillery School had been Commandant since January 20, 1941. He was a West Point graduate of the class of '04. After four years of troop duty, he returned to the Academy as an instructor in mathematics and gunnery. This was followed by four years of troop duty, after which he went to the Phillipines. During the last war, he served in the United States, became a brigadier general in 1919, and spent the following two years on General Staff duty in France. After that, Allin served with G-1, the Inspector General's department, and in Hawaii. His tour of duty at Fort Sill ended June 30, 1942.

The requirement for housing sturdier than tents was met by approval of tarpaper and frame hutments February 24. The construction program as a whole, however, had not been approved, although six weeks had passed since the need of expansion and the scale of it had been decided upon. It would take 30 days to assemble materials for construction, 30 days more to complete the simplest buildings, and another 30 days to complete the more elaborate structures such as mess halls. Expansion of the OCS would accordingly be delayed by the date of approval plus 90 days. Knowledge of this made Allin most insistent in urging the need of haste. Finally, he suggested that the Chief's office simply tell him how many artillery officers would be needed, and he would expand proportionately if he had to hold classes under the trees. Approval for the construction requested finally came March 12, which explains why the 500-man classes did not begin to arrive April 1 but May 7 instead. Apparently Allin drove the carpenters to cut the building lag from 90 to 60 days.

Having obtained the buildings in which to put his 500-man classes, Allin had now to fill them with good men and find good instructors to teach them. For instructors, Allin proposed to use OCS graduates, for these men had turned in a better performance than the reserve officers. As for filling the classes, on December 24, 1941, Allin suggested permitting older men of ability to attend OCS, with a view to their eventually becoming battery and battalion commanders. General Danford liked the idea, and brought it to the attention of G-1, who, as of the first of the year, was considering it. Another suggestion of Allin's was that likely men be segregated at the replacement centers and given special training. He thought,

too, that a clothing allowance, like that given the Air Corps, should be provided, so that no financial burden, might deter a promising candidate. He suggested again that the age limit for officers be made 44. Allin felt that if a 44-year old private could do troop duty, so could a 44-year old officer, and, as he put it, it was only democratic that every enlisted man should have the chance to aspire to the highest command. To these suggestions, General Danford was able to reply that the age limits had been lifted, and that the Congress had passed a bill providing the clothing allowance.

Volunteer officer candidates (VOC) from the ranks of those deferred for family reasons were admitted by a War Department teletype of March 2, 1942. These men would be allowed to volunteer for induction into selective service. They would be sent to replacement centers for training, and if found qualified at the end of basic training, would be sent on to OCS. Those found unqualified would be discharged.

An experiment which apparently did not succeed was an attempt by the Army Air Forces to train administrative officers by sending prospects to the field artillery OCS. The candidates did poorly because of their lack of background, were discontented because of their poor performance, and many requested relief from the School. General Allin interceded on their behalf, and they were sent back to Randolph Field.

The increase in capacity resulting from these efforts was spectacular. Until January 1, it was 250. On January 1, it was 720. It was 1,440 February 26; 2,880, April 2; 6,000, May 7. Class sizes soared from 120 to 240, from 240 to 500, and in July, weekly classes of 550 were planned.

With the tremendous expansion of the OCS, it acquired some interesting organizational features. The organization of classes into battalions proved inadequate to handle the mass of students, and the battalions were formed into a regiment, the Student Regiment. The classes orginally had been administered from one building, CC-1 (CC for concurrent camp), but now each battalion needed a headquarters building of its own, with an officer acting as battalion commander. This change was effected about April-May, 1942. The class tactical officers were responsible to the battalion commander, and he in turn to the Commandant of Cadets.

Tactical officers were key men in the OCS organization and were closer to the students than were the instructors. Their duties could be divided into two categories; administration, and the tactical

education of the candidates. Administration involved observation of the students based on an intimate knowledge of him, which obliged the tactical officer to attend many classes and service practices. The tactical officers also prepared and put into effect the schedules which synchronized the movement of 6,000 students through a small area at the peak traffic periods of the day. Movement into and out of the mess halls presented the worst problems. Supply and laundry formations, issuance and return of supplies, pay formations, and the myriad personnel problems were all under the jurisdiction of the "tac" officer. Twice during each class, the tactical officer would become a Class A agent officer drawing 50 to 60 thousand dollars, and paying it out to the 500 men of his class. At night time, the tactical officer brought his class records up to date.

Tactical education embraced formal instruction in military courtesy, close order drill and ceremonies, close combat, customs of the service, discipline, and education by inspection and example. The formal instruction was given after duty hours in a carefully integrated system which culminated in a battalion review. Neatness, precision, and leadership were stressed. The phase designated as education by inspection, included the round of daily inspection of quarters, daily inspection in ranks, and the weekly uniform inspection. All deliquencies drew demerits. Hair cuts, daily showers, shaves, shined shoes, clean brass, were musts. Quarters were kept on the West Point system with a place for everything, and quarters were required to be ready for inspection any time after the student left for class.

The ratings by the tactical officer, which with the ratings by his fellow students, meant so much to the candidate, were based on the intimate knowledge of the man gained by the tactical officer as he performed these duties.

The regulations under which the candidates lived were very like those of enlisted men everywhere, with one or two small privileges. Call to quarters sounded daily except Saturdays and holidays, and when it had sounded, the candidates were restricted to their area for study and instruction. During week days, the men were restircted to the Post, but could get a week end pass if there was nothing special scheduled for Sunday. As between candidates there was no difference in rank. Noncommissioned officers kept the rank they had had in their organizations, and those who had had no rank became corporals, but no insignia of rank was worn. The uniform off duty was the prescribed Class A uniform, and fatigues with leggings were worn during duty hours. Each candidate took care of his own section of the hutment and took his turn as hut orderly. When his turn came, he spent two days as section marcher and a week as squad leader.

The demerit and deliquency system was similar to that at West Point. Demerits were given for misconduct, were carefully recorded, and were punished with restrictions only, never with extra duty. There was very little free time, the students being always on the move. Saturday afternoons were usually given to formations, and if by some chance one were free, the student could, if his record were good, have a pass until 2 A. M. Sunday morning. Because the student's week was so full, speed was imperative. Sluggishness of mind or body was not permitted.

Contrary to what one might have expected, there was no supervised recreation or compulsory study. The amount of study was controlled by the candidate, but study in the classrooms was encouraged. After the call to quarters, silence was strictly enforced.

Delinquent students could be handled by being turned back, by being sent to the salvage school, or by being relieved. One of the duties of the tactical officer was to become thoroughly acquainted with each of the men under him. If one of them did not meet the standards set, his instructors and the student himself were interviewed and a solution attempted. A student whose deficiency was academic only, and who seemed to be good material, could be transferred to another class to repeat the work. This authority to turn back was requested by General Allin January 4 and granted January 8 by the Chief's office. No candidate who showed reasonable prospect of becoming a satisfactory officer was to be dismissed but could instead be turned back to a later class. A report was to be given on each case, including the reason for the action.

The salvage school was begun by Lt Col Craigie Krayenbuhl, then Commandant of Candidates, September 1942, to give basic instruction in gunnery, tactics, and mathematics to those officer candidates who had not attended a preparatory school and were finding it hard to stay abreast of their classmates. Also, it was directed at helping those students who lacked the necessary military background, perhaps because they came from another arm or service. The course lasted four weeks, covering basic mathematics, duties of the firing battery and of the executive, fire control instruments, applying the K-correction, and other bugaboos of the inexperienced. Upon reporting for duty, students were interviewed, and those whose background was clearly insufficient were sent to the salvage school. On completing the salvage school, candidates were either put in a new OCS class, or in class doing the work they were having at the time of transfer to the school. This system had the advantage

of removing men who would have slowed down the pace of their classmates and also enabled the OCS to "digest" several hundred students during the critical period when so many men were being sent to Fort Sill without the benefit of an adequate background.

Relief was, of course, the final resort. Cases of disciplinary nature were given to the Examining Board at Headquarters for final interview and consultation of the pertinent records. The Board was composed of the Executive of the Student Regiment, the class tactical officer, the battalion commander, and a disinterested field officer. Non-graduates were transferred immediately upon relief. Those desired for school service commands were so transferred; others went to the division or army or corps whence they came; those from units overseas went to any convienient combat command.

In an effort to remedy deficiencies before they arose and to meet the difficulty then being experienced in getting candidates, Army Ground Force headquarters moved to set up preparatory schools at all Field Artillery Replacement Training Centers, with a four weeks course organized by the Field Artillery School. The course as devised in September covered orientation, gunnery mathematics, service of the piece, fire control instruments, maps and aerial photographs, communication, survey, observed and unobserved fire, preparation of firing data, firing battery, and close order drill and physical training. Experiments had been conducted in which prospective candidates were coached in elementary mathematics and practical gunnery, given a few weeks of preparatory work, and then sent to OCS, where they had done well. It was hoped such a method, if applied at all replacement centers, would supply a steady flow of qualified candidates.

To create a close link between the staff of OCS and the student body, so-called honor committees were organized in March 1943 by Lt Col Krayenbuhl on his return from a trip to the Infantry OCS at Fort Benning, Ga. His hope was that many problems could be solved by the students themselves without the necessity of consulting the tactical officers and that the committees could present the viewpoint of their class on the administration of the School as it affected them. About the fourth week of each class's existence, one student was elected by the members of each section to represent them. Among questions considered proper for discussion by the committees were: misconduct by any member of the section; the aid to be offered a candidate who was falling behind; suggestions on schedules or mess formations. The honor committee was in no sense a secret service; it was the voice of the student body.

It will be recalled that classes had been organized on a squad, section, and battalion basis. Col Krayenbuhl's successor as Commandant of Candidates, Col J. J. Turner, altered this arrangement without, however, abolishing the squads and sections, which were a great convenience to the instructional departments. The students were formed so far as possible into batteries which simulated the Table of Organization of a battery of light artillery. Each battery had a cadet captain as battery commander, three battery officers with appropriate cadet rank, a cadet first sergeant, and a cadet platoon sergeant for each platoon. The platoons were three squads of ten men each, each with their squad leader. The battery commander was responsible to the tactical officer for all platoons within his battery. Each of the junior officers commanded a platoon. The cadet first sergeant was charged with taking attendance reports from the platoon sergeant, formations of the battery, and police of the battery area.

These cadet posts were rotated by roster, and an attempt was made to give each man a day's experience in each rank. Weekly parades and ceremonies were held to give the cadet officers a change to develop poise and presence. The senior class of the student battalion chose its own staff officers, published the order of march, and used the junior classes to make up the batteries in the battalion. As far as possible, students were left to their own devices in solving their command and administrative problems, the tactical officers correcting mistakes and assisting with technical details. The purpose of the system was not to observe the student under pressure but to allow him to apply his schooling and correct his own errors.

Some features of the instruction given these candidates are of interest. The targets used in service practice were old materiel, piles of junk, or small structures put up by the range detail. At the beginning of service practice, the instructor identified several prominent terrain features and told students who could not identify them to stand up. Difficult targets would be avoided early in the course and ridgeline targets were not chosen. The telephone operator was trained to watch the instructor, so that is signalled, he would not send the command given by the student. The latter was not allowed to fire a round that would obviously be wasted. Instead the instructor would tell the student where the round would have gone and charge him with a wasted round. Lost rounds were found by the instructor and charged to the student, and missensings were handled by telling the student to take another look and charging him for the help. If a second were missensed, the student might be told to sit down or charged another 25 of his hundred points and told to go ahead.

In all bracket problems, the student had to have his initial data ready the moment he was called on. In firing such problems, the student opened fire with one gun, changed to salvo fire when making a 200-yard range change, and used volleys in fire for effect. In precision fire, the instructor allowed the student to fire one round for effect, then gave him five constructive rounds, and asked him to give the adjusted elevation. In grading the problem, the student was assessed a penalty on time or ammunition wasted, or on lack of effect, or on any help given. The economical use of ammunition reflected the slash in the School's allowance after the war began.

The Saturday demonstrations were often spectacular, since dozens of field pieces pounded a small area, gradually covering it with dust and black smoke and manifesting the power of massed artillery. In one such demonstration, given in June 1942, the first concentration was fired on a target selected by the director, which he announced by a loud speaker. The fire direction center, below the spectators, spotted it on a fire direction chart and gave the orders to the battalions. An area of about 400 square yards around the target was promptly covered with shell. The second concentration was assumed to be an area with a counterattack organising in it and was passed to the battalions to engage at once. Concentration No. 4 was an infantry target on which one battalion adjusted, the rest of the division artillery then being brought in. The fifth concentration was spotted on two oblique photographs, and then plotted on a vertical photograph which was used as a firing chart. In the last, two concentrations of time fire were placed on a knoll, riddling it with splinters.

The mechanics of graduation, and the requirements for it, were altered somewhat as time went on. In July, the final type physical examination was waived if the graduate had had such an examination within six months of graduation and there was no record of intervening illness. In March the Field Artillery School was permitted to prepare the letters of appointment and commission for graduates rather than requesting them of the Adjutant General some two weeks in advance of graduation, as the practice had been. It was feared that with the growth of the OCS, the Adjutant General's Office would be placed under a very great burden. A full report, of course, was to be made of all commissions furnished. The Field Artillery School was later given power to commission officers physically unfit for combat, certifying them as limited service, without first securing the approval of the War Department.

Using their clothing allowance of $150.00, which was later increased to $250.00, graduates could buy their uniforms from the Army Exchange Service, with its branches in the Fort Sill Post Exchanges. It was also possible to visit the Quartermaster Warehouse at certain hours to buy issue clothing and equipment. The students could of course buy their uniforms from the Lawton merchants and were allowed to spend the money as they thought best. The tactical officers arranged visits for the purpose of buying uniform equipment and published lists of desirable items. Early in 1943, as an experiment, one of the graduating classes was allowed to wear officer's uniform to graduation, sans insignia. This so improved the appearance of the class that the practice was continued, and candidates were required to have blouse, cap, shoes, and two pair of slacks at the time of graduation.

Shortly before graduations class parties were held, following a suggestion of Lt Col Craigie Krayenbuhl made early in 1943. The scene for these would be one of the mess halls, with entertainment by the students and food prepared by the mess personnel and served by volunteers from the Service Detachment. The parties were financed by the dividends from the Post Exchange. This was only fair, since the students spent many thousands of dollars in the Post Exchanges but were otherwise unable to share in the profits as were the organizations stationed permanently on the Post. Before the party, the class chose its outstanding students, usually one from each section, and at the celebration they were awarded some practical gift as a prize at the party. The Commandant of the Field Artillery School, members of his staff and of the OCS staff, were invited as guests.

As far as possible, graduates were allowed to choose the post or organization of their assignment. Lists of possible assignments would be posted on the bulletin boards, and the students could list three choices in order of preference. Students ordered to ports of embarkation were volunteers as far as possible. Should the number of officers requested exceed the number of volunteers, the balance were chosen by lot from the rest of the class. In the latter case, exceptions were allowed only when family circumstances of extreme importance interfered or the officer was limited service or over-age in grade. Beginning with Class No. 40, 25 volunteers could take the liaison pilot training course. As the Army reached the limits of its size, the amount of choice allowed was limited to a selection between the three replacement centers at Fort Bragg, Camp Roberts, and Fort Sill, the officer listing them in order of preference, and attempts were made to match the preference as closely as possible.

Expressions of satisfaction with these new officers were forthcoming from their commanders. Brig Gen Louis J. Fortier wrote that the men received by his command had turned out exceptionally well, that 20 of them had received their first promotions, and six were already battery commanders.

Demise of the Office of the Chief of Field Artillery

A letter from General Danford to General Allin, dated February 28, 1942, told the Field Artillery School that the office of Chief of Field Artillery was to be abolished in the general reorganization of the army into the three major groupings of Army Ground Forces, Army Air Forces, and Army Supply Forces. Since a good many of the accomplishments of the five men who held the post from 1918 to 1942 have been noted in this History, and since these individuals deserve the respect of their colleagues and the gratitude of their countrymen, it is only fitting that their names be set out here. In the order of years of service to their country, they were: William J. Snow; Fred Austin; Harry G. Bishop; Upton Birnie, Jr.; and Robert M. Danford.

The School of 1942

The enlisted courses of the spring of 1942, and their size, were: motor mechanics, 100; horsemanship, 50; communications, 146; battery mechanics, 67; horseshoers, 30; saddlers, 30; radio mechanics, 20; tractor mechanics, 10. The horsemanship, horseshoer, and saddler classes entered every 12 weeks, the rest, every four. The class in enlisted horsemanship was discontinued in July 1942 following the elimination of the last horse-drawn artillery. In its place came enlisted specialists' classes for pack masters, for pack artillery was growing in importance with the increased fighting on difficult terrain. Classes for saddlers and horseshoers were of course continued.

In the sphere of organization, the School and the Post split again, April 11, 1942, Col Kenneth S. Perkins, one of the pioneers of the School of Fire, becoming Post Commander. The Table of Organization under which the School was then operating was based in general on two and one-half instructors for each 30-student section. OCS tactical officers were allowed at the rate of three per class of 500. The officer strength for a peak load of 8,693 students should be 806, it was considered. The policy of relieving officers after one year at the School went into effect in the spring of 1942. The number of civil service employees grew very rapidly in 1941 and 1942. From ten employees in January 1941, the number went to 127

in December 1941, and by March of 1942 there were 185 clerks, janitors, typists, librarians, etc. Before March 1942 all of them had permanent civil service ratings. From March to June 30, the School was permitted to hire people not on the civil service register. After July 1, hiring was done under the war service regulations, and appointments were temporary, not to exceed the duration plus six months. The civil service register was made up on the basis of weekly examinations in Lawton. By July 1942 there were about 380 civil service employees working for the School. Their hiring, it should be emphasized, was done by the School, never by the Post.

Troop requirements of departments were given to the Secretary's office not later than noon of the Wednesday 12 days before the start of the week in which instruction was to be given. The School troops' Plans and Training office, with one officer assisted by two noncommissioned officers, assembled the requests, estimated the requirements for each half day, and coordinated requests to fit them to the number of troops available. On the Thursday immediately following receipt of the requests, the operations officers of all School troops conferred with the School operations officers to settle all difficult points. Classroom assignment charts were made by the Assistant Secretary, requests for rooms being handed in on the Thursday ten days before the beginning of the week in which they were to be used.

The School troops which were allotted by the process we have described differed very much in their status. Although they are called School troops for simplicity's sake, reference to some of them as that in official correspondence might have been both tactless and erroneous. Some of them were definitely School troops, having been so designated by competent authority; some were GHQ units temporarily under School control; some were GHQ units attached to the Third Army and under School control for the time being. A total of 36 batteries were available for use in April 1942. The following units were present as of July and were used as School troops: the 18th, 349th, and 112th Field Artillery Regiments; and the 47th, 70th, 71st, and 83d Field Artillery Battalions. One can probably assume that it was from these troops that April's 36 batteries were drawn. Infantry for demonstrations and problems were obtained by periodic visits of battalions from the Third Army.

Although nothing like the old Brigade Firing Centers of the First World War existed at Fort Sill, units did come here for combined unit training, sometimes for only a few days. Thus, the division artillery of one division spent November 27-29, 1942, at the

Post on such a mission. An unnamed British observer writing in June 1942 stated that artillery of one division arrived every month for a months stay during which they provided artillery for the School and perfected their own training.

The last information needed to complete the picture of the School in the spring of 1942, when it had acquired the characteristics it kept throughout the war, concerns publications. Companies from 20th Century-Fox, Paramount, and Warner Bros. came to Fort Sill in March to make six training films on the 105-mm howitzer. Subjects included the gun itself, fire direction technique, and organization of position. The revision of seven Field Artillery Books for use by the ROTC in the school year 1942-1943 was ordered by the Replacement and School Command in April, and that was now a primary mission, although the books were still being sold to students at Fort Sill. That same British observer spoke of the reproduction plant as running night and day, turning out training literature for the School and the Army.

The Field Artillery School had come a long way in 31 years, from the handful of students and instructors in the Indian Trader's store to a most effective instrument of war. By its training of thousands of artillerymen in the two World Wars, and in the truce between, by the novel and effective techniques it devised, it did much to create that powerful artillery which any army needs to break the enemy's will. Its cost was small; its effect was great.

Bibliography

Files of the Office of the Chief of Field Artillery, op. cit. supra.

Files of the Field Artillery School, op. cit. supra.

Files of the Student Regiment, the Officer Candidate School, Ft Sill, Okla.

Files of the Department of Gunnery, Field Artillery School, Ft Sill, Okla.

APPENDIX I

PEACETIME TRAINING OF CIVILIAN COMPONENTS AT THE FIELD ARTILLERY SCHOOL

NATIONAL GUARD OFFICERS

	B.O.C.			F.O.			E.M.		
	Enr.	Fail.	Pass	Enr.	Fail.	Pass	Enr.	Fail.	Pass
1912	24	3	21						
1913	20	-	20						
1915	26	9	17						
1920	11	-	11						
1921	30	7	23						
1922	34	4	30				36	2	34
1923	42	7	35				14	-	14
1924	43	15	28	7	-	7			
1925	40	13	27				17	-	17
1926	51	16	35	6	-	6	23	-	23
1927	44	16	28	8	-	8	25	-	25
1928	47	9	38	10	1	9	27	6	21
1929	51	8	43	8	-	8	26	3	23
1930	48	7	41	8	-	8	21	8	13
1931	39	5	34	8	1	7	26	9	17
1932	39	4	35	7	-	7	20	-	20
1933	35	1	34	6	-	6	18	1	17
1934	9	-	9						
1935	38	1	37						
1936	71	1	70				16	-	16
1937	61	2	59				16	-	16
1938	64	3	61				16	-	16
1939	58	3	55				16	-	16
1940	61	5	56				16	1	15
Totals	986	139	847	68	2	66	333	30	303

RESERVE OFFICERS

	B.O.C.			F.O.		
	Enr.	Fail.	Pass	Enr.	Fail.	Pass
1922	14	2	12			
1923	22	1	21			
1924	23	10	13			
1925	39	4	35			
1926	21	6	15			
1927	21	8	13	1	-	1
1928	16	5	11			
1929	16	1	15	2	-	2
1930	35	7	28	1	-	1
1931	22	2	20			
1932	10	-	10			
1933	30	2	28	4	-	4
1934	18	1	17			
1935	36	1	35			
1936	35	6	29			
1937	35	1	34			
1938	17	-	17			
1939	50	5	45			
1940	69	4	65			
Totals	529	66	463	8	0	8

APPENDIX II

Year	Population of U.S.[1] (1,000)	Size of Army[2]	Percent	National Income (Billions)	Army Expense[3] (1,000)	Percent
1911	93,682	83,315	.088	31.2	197,199	0.632
1912	95,097	91,461	.096	33.0	184,122	.557
1913	96,512	92,035	.095	34.4	202,128	.587
1914	97,927	97,760	.099	33.2	208,349	.627
1915	99,342	105,993	.106	36.0	202,160	.561
1916	100,757	107,641	.106	45.4	183,176	.403
1917	102,172	250,357	.244	53.9	377,940	.701
1918	103,587	3,673,888	3.546	61.0	4,868,955	7.981
1919	105,003	836,882	.797	68.3	9,009,075	13.190
1920	106,543	200,367	.188	74.6	1,621,953	2.174
1921	108,207	227,374	.210	54.6	1,118,076	2.047
1922	109,872	146,069	.132	60.6	457,756	.755
1923	111,537	130,964	.117	71.5	397,050	.555
1924	113,202	140,644	.124	71.5	357,016	.499
1925	114,867	134,624	.117	79.2	370,980	.468
1926	116,531	133,033	.114	80.6	364,089	.451
1927	118,196	133,079	.112	79.3	369,114	.465
1928	119,861	134,331	.112	82.4	400,989	.486
1929	121,526	137,360	.113	85.2	425,947	.499
1930	123,191	137,472	.111	71.0[4]	464,853	.654
1931	124,070	138,648	.111	54.3[5]	478,418	.881
1932	124,822	133,042	.106	40.1	344,007	.857
1933	125,693	135,011	.107	42.3	301,613	.713
1934	126,425	136,970	.108	49.5	243,260	.491
1935	127,157	137,960	.108	55.7	273,421	.490
1936	128,429	166,114	.129	64.9	382,588	.589
1937	129,257	178,101	.137	71.5	378,167	.528
1938	130,215	183,447	.140	64.2	431,501	.672
1939	130,943	187,886	.143	70.8	489,545	.691
1940	131,669	264,035	.200	77.8	667,138	.857
1941	132,000	506,815	.383	95.6[5]	3,635,508	3.802

[1]Bureau of Census Figures for Continental U. S. -- Annual Midyear Estimates of U. S. Population.

[2]Includes Philippine Scouts. Figures 1919-1926 include World War I emergency personnel still in service. All emergency enlisted men still in service were discharged on July 2, 1921. All officers undergoing medical treatment were discharged by November 11, 1926.

[3]Civil expenditures are included for the years 1915-1931. Expenditures up to and through 1931 include expenditures of the War Department for rivers, harbors, flood control, and Panama Canal. Expenditures for 1932 to date represent expenditures by the War Department for the War Activities program only.

[4]National Bureau of Economic Research and National Industrial Conference Board, World Almanac 1933, p. 423. (Include business savings.)

[5]U. S. Department of Commerce, World Almanac 1944.