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The Military System of the Romans

By

Albert Harkness, LL. D.



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THE
M. Kellogg
MILITARY SYSTEM
OF THE ROMANS

BY
ALBERT HARKNESS, LL. D.

FROM HIS REVISED EDITION OF CAESAR'S COMMENTARIES
ON THE GALLIC WAR

ILLUSTRATED



NEW YORK
D. APPLETON AND COMPANY

1887

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NOTE.

THIS pamphlet contains the new matter added to the recently revised edition of Harkness's CAESAR'S COMMENTARIES, and consists of the interesting chapter on the Military System of the Romans, with diagrams and plans of military operations in the time of Caesar, a series of valuable maps, descriptive of the Gallic Wars, and colored plates, illustrating various implements of war used by the Romans.

It is published separately, in order that those having the former editions of Caesar may procure this new material in an inexpensive form. Classes will be supplied at special rates on application.

D. APPLETON & Co.

NEW YORK, *January 12, 1887.*



THE

MILITARY SYSTEM OF THE ROMANS.

1. THE Roman legion, *legio*, was an organized body of Roman soldiers. It contained originally 3,000 infantry and 300 cavalry; but its numerical strength was subsequently increased. In the time of Caesar it consisted entirely of heavy-armed infantry, and probably numbered from 3,500 to 5,000 men.¹

CAESAR'S ARMY IN GAUL.

2. Caesar's army in Gaul consisted of two distinct parts, the Roman legions and the auxiliaries.

1. The Roman legions consisted of heavy-armed soldiers.²

2. The auxiliaries,³ consisting of foreign soldiers of various nationalities, served either as cavalry⁴ or as light-armed infantry.⁵

3. The entire force at the command of Caesar during his Gallic campaigns seldom, if ever, exceeded 70,000 men. Beginning his work with a single legion, the tenth, afterwards so famous in the Gallic wars, he proceeded at once to raise re-enforcements, and soon found himself at the head of

¹ A legion whose numbers were fully up to the normal standard was called *legio plenissima* and probably contained about 5,000 men. Veteran legions weakened by losses in battle were considerably below this standard.

² In general, the legions were composed of Roman citizens.

³ Some of these were armed, equipped, and disciplined according to the Roman method, while others retained their native arms.

⁴ Caesar's cavalry was composed chiefly of Gauls; but it contained a few Germans and Spaniards.

⁵ Of the auxiliary infantry, the Balearian archers and the Cretan slingers were the most noted.

an army consisting of six legions and a force of auxiliaries nearly 20,000 strong.

4. The numerical strength of Caesar's army varied somewhat from year to year; but he generally had in his service about 5,000 auxiliary cavalry and from 15,000 to 20,000 auxiliary infantry. The following is a general estimate of the forces at his command during the seven successive campaigns described in the Commentaries.

1. In campaign I., 58 B. C., six legions, and about 20,000 auxiliaries, — cavalry and infantry; in all, from 40,000 to 50,000 men.¹

2. In campaigns II., III., and IV., 57, 56, and 55 B. C., eight legions, with the usual force of auxiliaries; in all, from 50,000 to 60,000 men.²

3. In campaign V., 54 B. C., eight and a half legions (subsequently reduced by losses to seven), with the usual force of auxiliaries; in all, from 50,000 to 60,000 men.³

4. In campaign VI., 53 B. C., ten legions, with the usual force of auxiliaries; in all, from 60,000 to 70,000 men.⁴

5. In campaign VII., 52 B. C., eleven legions, with about 25,000 or 30,000 auxiliaries; in all, not far from 70,000 men.⁵

¹ Caesar found the 10th legion in Gaul, brought the 7th, 8th, and 9th from their winter-quarters, and enrolled two new legions—the 11th and 12th—in Cisalpine Gaul. His auxiliaries consisted of 4,000 cavalry and a large force of light-armed infantry. The number of the latter, not definitely given in the Commentaries, has been variously estimated from 15,000 to 30,000. The estimate of Rheinhard is 15,000, that of General von Göler, 30,000.

² For the second campaign Caesar enrolled two new legions—the 13th and the 14th. These were added to the six already in his service.

³ Napoleon III. accounts for the half legion by assuming that Caesar procured several separate cohorts to serve in his fleet in his second expedition into Britain. The five cohorts and almost the whole of the 14th legion were lost under Sabinus and Cotta, among the Eburones. See Book V., 37.

⁴ In preparation for the sixth campaign, Caesar levied two new legions—the 14th and the 15th—and obtained another—the 1st—from Pompey. The 14th took the place of the 14th that was lost.

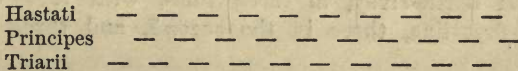
⁵ Caesar entered upon the seventh campaign with ten legions; but another—the 6th—was added to the number in the course of the summer. These eleven legions were the 1st, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, and 15th. During this campaign, Caesar probably had a larger force of auxiliaries than at any previous time, as he besought the Aedui to send him all their cavalry and 10,000 infantry, and demanded cavalry and light-armed infantry from subject states in Germany. Moreover, he speaks of 22 cohorts of auxiliaries, collected from the province by Lucius Caesar. See Book VII., 34 and 65.

HISTORY OF THE ROMAN LEGION.

5. The history of the Roman legion naturally divides itself into three periods.

I. During the first period, the infantry of the legion in battle-array stood in the form of a solid phalanx, probably from six to eight ranks deep.¹ The division of cavalry, 300 in number, belonging to the legion, was generally stationed in front of the phalanx.

II. During the second period, the infantry of the legion was divided into thirty maniples,² or companies, which, in battle-array, were arranged in three lines, with intervals between them,³ as follows: —



1. The soldiers in the first line were called *Hastati*; those in the second, *Principes*; and those in the third, *Triarii*.⁴ The *Hastati* were comparatively young men, who had seen less service than the soldiers in either of the other lines; the *Principes* were in the full strength of mature manhood; while the *Triarii* were veterans in the service.

2. Each maniple in the legion consisted of two divisions, or companies, called centuries,⁵ each nominally under the

¹ The unbroken front of this phalanx was probably about 1,500 feet long. Its original depth is not known, but Marquardt and Mommsen conjecture that it contained at first six ranks, Rüstow and Köchly that in its later form it contained eight ranks. Livy, I. 43, compares it to the famous Macedonian phalanx.

² The change from the phalanx to the legion of maniples is supposed to have been made in the early part of the fourth century before Christ. It is generally ascribed to Camillus, but see Fröhlich, *Kriegführung und Kriegskunst der Römer*. — Berlin: 1886.

³ The interval was probably equal to the length of a maniple. The legion of maniples was, doubtless, somewhat slowly developed. The form here given is that described by Polybius. A legion, arranged in three lines, of 15 maniples each, is mentioned by Livy.

⁴ The origin of these terms is doubtful; but it has been suggested that *Principes*, in its original application, probably designated the soldiers who were best armed and equipped; that *Hastati* was a general name for all the heavy-armed soldiers, though finally retained only by those in the first line, i. e., by the inexperienced soldiers; while the others had more specific and honorable titles; and finally, that the *Triarii*, derived from *tres*, were so called from their place in the third line, which was then the post of honor.

⁵ The century (*centuria*), originally a hundred men, probably contained at this time from 60 to 80.

command of an officer, called centurion; though the centurion of the right century generally led the whole manipule.¹ In active service, the two centuries stood side by side.

3. The quota of cavalry, 300 in number, due to each legion was stationed on the wings. It was divided into ten companies, called *turmae*, which were each sub-divided into three sections, called *decuriae*. Each *decuria* was under the command of a decurion.

III. During the third period, including the time of Caesar, the thirty maniples of the legion were combined into ten groups, of three maniples each.² To this new military body, formed by uniting three maniples, the name cohort was given. The legion thus changed ordinarily stood, when in battle-array, in three lines, with four cohorts in the first line, three in the second, and three in the third.³

PHALANX, MANIPLES, AND COHORTS.

6. The phalanx, though it could present a front like a wall to an advancing foe, was yet too unwieldy for the exigencies of the battle-field. To an attempt to remedy this defect the legion of maniples owed its origin; but experience soon showed that the division had been carried too far, and that the manipule was too small a body to stand alone in the line of battle. Accordingly Marius, in reorganizing the army, proceeded at once to reunite every three maniples into a single company, called a cohort. The value of the change was soon apparent. The legion of cohorts, as organized by Marius, and perfected by later generals, while it avoided the special evils of the phalanx and of the legion of maniples, was found, in actual practice, to unite in a large measure the advantages of both.

7. The post of honor in the phalanx was awarded to wealth and station; in the other forms of the legion, to military achievement and experience. In the legion of mani-

¹ He was called the first centurion (*centurio prior*): in his absence, the second centurion commanded.

² This change was made by Marius, about one hundred years before Christ.

³ For a full account of this order of battle, see 23. In the time of Caesar the cavalry had ceased to form a part of the legion.

ples, however, the tried veterans were stationed in the third line as a reserve, to be summoned into action only in cases of special emergency; but in the legion of cohorts, they occupied the forefront, and received the first shock of battle.¹ The Romans had at length learned how much depended upon the first onset.

ARMS OF LEGIONARY SOLDIERS.

8. All legionary soldiers were armed with swords and with spears (*hastae*)² or javelins (*pila*). The defensive armor, both in the phalanx³ and in the legion of maniples, consisted of a coat of mail, a helmet, greaves, and a shield.

9. In the time of Caesar, the essential articles in a soldier's equipment were as follows:—

1. A plain woollen tunic (*tunica*), with very short sleeves, which scarcely covered half of the upper arm. This was the main article of dress; it extended to the knee, and was girded about the loins.

2. A coat of mail (*lorica*). This was sometimes a simple coat of leather,⁴ as represented on the light-armed soldiers in plate I.; and sometimes it was covered with metal, as seen in the figures of the legionaries in the same plate. Observe that flexible bands of steel or bronze encircle the waist; that similar bands extend over the shoulders; and that the upper part of the chest is protected by metallic plates.

3. A thick woollen cloak, or shawl, the *sagum*, sometimes worn by soldiers when not in action. It was thrown over the shoulders in such a manner as to leave the arms comparatively free. It was generally secured by a clasp.

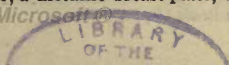
The corresponding garment for the general and the

¹ In the legion of cohorts, the post of honor was the post of danger, while in the legion of maniples it was a place of comparative security.

² In the legion of maniples, the light-armed soldiers (*velites*), carried a very light spear (*hasta velitaris*).

³ In the phalanx, only the front ranks appeared in full armor. The others, being exposed to less danger, dispensed with the coat of mail.

⁴ This seems to have been made, originally, of strips of sole-leather put together in the most substantial manner. Moreover, a metallic breast-plate, 9 or 10 inches square, was sometimes worn under it.



higher officers was the *paludamentum*, which differed from the *sagum* in the fact that it was of larger size, of finer texture, and of more brilliant color. The *paludamentum* of the commander-in-chief was of purple. For the manner in which the *sagum* and the *paludamentum* were worn, see plates I. and II.

4. Sandals, or shoes. Of these, there were two or three varieties. The *solea* merely protected the sole of the foot; the *calceus* was an ordinary shoe; the *caliga* was a military shoe, or boot, which covered the whole foot and a part of the ankle. See plates.

5. A helmet, either of bronze (*cassis*), or of leather bound with bronze (*galea*). For the general form and style, see plates I., II., and III. The helmets of the higher officers were generally adorned with plumes of feathers or of horse-hair.¹

6. Greaves of bronze (*ocreae*). Usually, however, only one was worn, as the left leg was sufficiently protected by the shield.²

7. A large rectangular shield, the *scutum*, four feet long and two and one-half wide, slightly curved, as seen in plate I., on the arm of one of the legionary soldiers. It was made of wood; but it was covered with leather, and was bound around the edges with iron. It was furnished with a metallic boss (*umbo*), a knob or projection, which not only imparted strength and beauty to the shield, but often caused missiles to glance off from it.³

Shields were ornamented with various devices, as winged thunderbolts, eagles, and laurel wreaths. The name of the soldier and the number of his cohort were sometimes inscribed on the inside.⁴

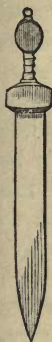
¹ Even soldiers of the rank and file are occasionally represented with plumes.

² Soldiers sometimes protected their legs, in cold weather, by wearing strips of cloth, *fasciae*, wound about them. In plate I., they are represented with tight-fitting breeches, *braccae*, reaching a little below their knees. Whether these were in use in the time of Caesar is very doubtful.

³ For a general view of the arms of the cavalry and of the light-armed infantry, see plate I.

⁴ Upon the march, the shield was protected from rain and dust by a leathern case drawn over it for the purpose. This was removed before going into battle. See Book II., 21. *Univ Calif - Digitized by Microsoft* ®

8. The so-called Spanish sword (*gladius Hispanus*), the only sword used by the legions of Caesar. It had a two-edged pointed blade, about two feet long and almost four inches wide, well adapted both for thrusting and for striking, though ordinarily used for thrusting. It was generally worn on the right side, suspended from a belt (*balteus*) passing over the left shoulder, as seen in plate I.; but the higher officers wore it on the left side, suspended from a girdle (*cingulum*.) The sheath and hilt were sometimes richly ornamented.



Sword,
gladius.



Sword
in
sheath.

9. A heavy javelin (*pilum*). This weapon, intended for hurling, not for thrusting, was about six feet and a half long.¹ It consisted of a wooden shaft, upwards of an inch thick and about four feet long, from which projected an iron, from two to three feet long, terminating in a steel head. The *pilum* and the sword were the weapons with which the Roman legions conquered the world.²

¹ The *pilum* as described by Polybius was 6 feet and 9 inches long, but, from researches recently made, it seems probable that the *pilum* in the time of Caesar was about 6 feet long. The shaft was either round or square. The momentum of the weapon, when hurled by the strong hand of a legionary soldier, was very great. It crushed through the shields of the enemy, and, bending under the weight of the blow, could be drawn out only with the greatest difficulty. In no event could it be hurled back upon the legions. It has been estimated that a *pilum* hurled with ordinary force would cut through an oak board half an inch thick, lined with sheet iron, and that it would undoubtedly penetrate both the shield and the coat of mail. For the effect of the *pilum*, see Book I., 25. For a full account of this weapon, see Marquardt, *Römische Staatsverwaltung*, vol. ii. pages 328 to 332; Jähns, *Geschichte des Kriegswesens*, pages 199 to 201; Guhl und Koner, *Das Leben der Griechen und Römer*, page 710; and Lindenschmit, *Tract und Bewaffnung des Römischen Heeres*.

² The corresponding weapons of the Gauls were the *gaesum* and the sword. The former was a heavy javelin or spear, used mostly as a missile. See Book III., 4.

The Gallic swords were very long, but without points; well adapted for striking but not for thrusting. Livy, XXII. 46, characterizes them as *gladii perlongi ac sine mucronibus*.

The Gallic helmet, with its large bushy plume, was intended to give the wearer the appearance of superhuman size. Sometimes, according to Diodorus, horns or frightful figures of beasts or birds projected above it.

The Gauls wore breastplates or coats of mail, and carried shields, which are described as very large (*vasta scuta*) though not very wide (*ad amplitudinem corporum parum lata*).

For the arms and the general appearance of Gallic soldiers, infantry and cavalry, see plate IV.

MILITARY SERVICE. — PAY OF SOLDIERS.

10. Originally the Roman army was simply the state temporarily in arms. Each citizen armed and supported himself as he was merely doing his own work. Campaigns in those days were of short duration; and the citizen, after having discharged the duties of the soldier for a few weeks, returned to his home. Afterwards, military service was regarded as a tax which every citizen might occasionally be called upon to pay to the state, for the protection of life and property. But about 400 B. C., when Rome began to be involved in more protracted wars, a small allowance was made from the public treasury to furnish the army with supplies. In the time of Caesar, however, service in the army, which had previously been an occasional duty required of all citizens, had become a permanent profession. Young men of vigor and enterprise entered the army either to become professional soldiers or to qualify themselves for the high offices of state, for which only those were eligible who had served a definite number of campaigns. The soldiers received regular pay,¹ fully equal to that of laborers in Rome; while their perquisites, in the form of booty and presents, were by no means unimportant.

11. The soldiers received their pay once in four months, from which a small deduction² was made, for supplies furnished them by the state.³

12. The recruit was required to bring to the service a sound and vigorous body; but no definite stature seems to have been prescribed. He entered at once upon a long and severe course of professional training. The success of the Roman arms was due largely to discipline and military drill.

¹ The legionary soldier probably received, per annum, about 240 *denarii*, a little less than 50 dollars. The pay of the centurion was twice as much as that of the common soldier.

² The deduction in the time of Polybius was only one-thirtieth part of the pay, and though, in consequence of the higher price of grain, it was somewhat larger in the time of Caesar, it was still very inconsiderable. Thus the pay of a Roman soldier was much higher, relatively to the cost of living, than that of a soldier in a modern European army. The auxiliaries received army-rations, but their pay came from their own people.

³ The regular allowance of wheat, per month, for each man in the rank and file was a bushel, 4 *modii*; for a centurion, two bushels. Supplies were furnished twice a month, half the monthly allowance at a time. For a discussion of the general subject of supplies for the army, and the pay of soldiers, see Sonklar, *Abhandlung über die Heeresverwaltung der alten Römer*.

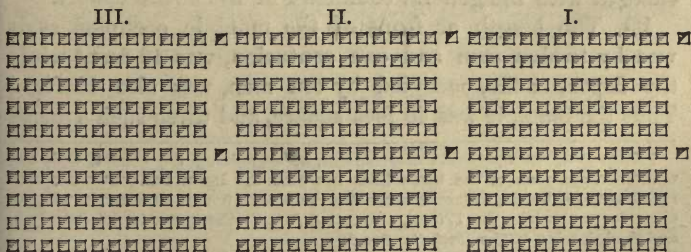
THE LEGION IN THE TIME OF CAESAR.

13. In the time of Caesar, the regular or normal strength of a Roman legion when mustered into service was probably about 5,000 men.¹ The actual numerical strength of Caesar's legions in Gaul, after years of hard service, was, of course, far below this standard. Indeed, it is doubtful whether the muster-roll of some of the veteran legions in the later Gallic campaigns would much exceed 2,000. Rüstow estimates the average numerical strength of the legions in Gaul at 3,600.²

14. The legion consisted of ten cohorts. To understand, therefore, the organization and action of the legion as a whole, we must first get a clear idea of the size, form, and movements of the cohort, which is the tactical unit on which everything depends.

15. It seems safe to assume that the standard numerical strength of the cohort was about 500; but that the actual strength of Caesar's cohorts in Gaul did not upon the average much exceed 360.

16. It will be remembered that the cohort was formed by uniting three maniples, and that each maniple consisted of two centuries, each under the command of a centurion. When the cohort was in battle-array, the men probably stood in rank and file as follows:—



Cohort in Line of Battle. Front 120 feet, depth 40 feet.

¹ This is the estimate of Lange and of General von Göler. Mommsen estimates a full legion in the time of Marius at 6,000. Napoleon III. gives the same estimate for the legions engaged in the battle near Bibracte. For Caesar's account of this battle, see Book I., 24-26.

² Kraner's estimate is a little lower, from 3,000 to 3,600, and Mommsen's considerably higher, from 3,500 to 5,000.

17. Here I., II., and III. represent the three maniples united to form the cohort. Number I., on the right wing, is the veteran maniple of the cohort, and holds the post of honor; maniple II., in the centre, consists of soldiers who, though in mature manhood, have not yet attained the rank of veterans; while maniple III. contains those who have seen the least service of all. Originally, maniple I. was designated by the name *Triarii*, or *Pilani*; II., by the name *Principes*; and III., by the name *Hastati*¹; but as these names do not occur in the Commentaries on the Gallic War, and as they have all lost their original signification,² the simple numerals, first, second, and third, seem to be the most appropriate designations of the maniples, especially as they indicate their true rank and order.

18. Each maniple contained 120 men, arranged in ten ranks of twelve men each.³ The space allowed to a soldier was three feet wide and four feet deep.⁴ The first five ranks formed the first century,⁵ the last five the second century. The two centurions occupied positions at the right of the centuries which they commanded. For their use the space of four feet was left at the right of each maniple, as indicated in the figure under 16. The centurion at the extreme right in front was the chief centurion of the cohort. He not only led his own century, but was also charged with the general command of the entire cohort.

19. The length or front of the maniple, occupied as it was by twelve men and one centurion, was 40 feet,⁶ while the depth, or file, occupied by ten men, was also 40 feet.⁶ Thus the maniple was 40 feet square, and three such squares

¹ Thus it appears probable that Marius, in organizing the cohort, took one maniple from each of the three lines in which the legion had previously been marshalled for battle, naturally awarding the post of honor, on the right wing, to the veteran maniple, the *Triarii*, also called *Pilani*; the centre to the *Principes*, and the left wing to the *Hastati*. See 6.

² These ancient names could not fail to be misleading to the learner, if applied to the maniples in the cohort; as *Hastati*, for instance, means armed with the *hasta*, while the third maniple, to which it was applied, was armed not with the *hasta*, but with the *pilum*; again, *Principes* means holding the first place or rank, and yet the second maniple did not hold either the first place or the first rank.

³ In other words, each rank contained 12 men, and each file 10.

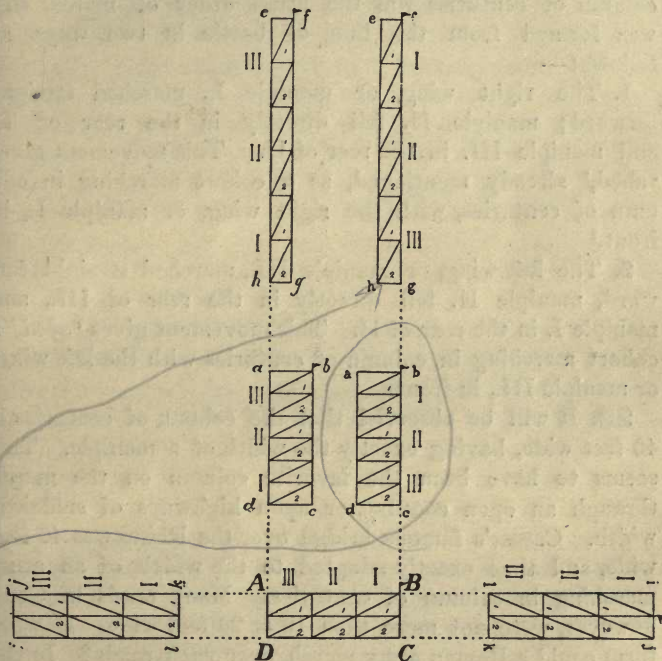
⁴ That is, each file occupied 3 feet, and each rank 4 feet.

⁵ The century, originally called *centuria*, is called *ordo* in the Commentaries.

⁶ That is $12 \times 3 + 4 = 40$, and $10 \times 4 = 40$.

placed side by side formed the cohort, which was accordingly 120 feet long and 40 deep.¹

20. The following figure represents a cohort in various positions,² as in line of battle and on the march:—



1. ABCD represents a cohort 360 strong in line of battle.
2. abcd, the same cohort marching in column of centuries, with the first maniple in front.
3. abcd, the same column with the third maniple in front.
4. efgh, the cohort in column of centuries of half the usual width and twice the usual length, with the first maniple in front.
5. efgh, the same column with the third maniple in front.
6. ijkl, cohort in column of maniples, with the first maniple in front.
7. ijkl, the same column with the third maniple in front.

¹ The arrangement here given, in which the three maniples stand side by side in the cohort, while the second century stands directly behind the first in each maniple, has been quite generally accepted, but General von Göler places the two centuries, two ranks deep, side by side in the maniple, and stations the first maniple at the head of the cohort, the second directly behind the first, and the third directly behind the second. *Digitized by Microsoft®*

² A rectangle with a diagonal across it may represent any company or body of

21. In 'abcd' and 'abcd,' the column is called a column of centuries, because it consists of the six centuries of the cohort, placed one directly behind another. The column thus formed was 40 feet wide and 120 feet long. The column of centuries was the usual order of march, and was formed from the line of battle in two ways, as follows:—

1. The right wing, or maniple I., marched straight forward; maniple II. fell directly in the rear of I., and maniple III. in the rear of II. This movement gives 'abcd,' already mentioned, as a cohort marching in column of centuries, with the right wing, or maniple I., in front.¹

2. The left wing, or maniple III., marched straight forward, maniple II. fell directly in the rear of III., and maniple I. in the rear of II. This movement gives 'abcd,' a cohort marching in column of centuries with the left wing, or maniple III., in front.

22. It will be observed that the column of centuries is 40 feet wide, having exactly the width of a maniple. This seems to have been the favorite column on the march through an open country, or upon highways of sufficient width. Caesar's famous bridge over the Rhine was 40 feet wide, and thus exactly adapted to the width of an army marching in column of centuries. Many roads in Gaul, however, were not more than 15 or 20 feet wide. In what form could a Roman army march over such roads? In the regular column of centuries, the 60 men belonging to a century were arranged in 5 ranks of 12 men each; but the century was sometimes arranged in 10 ranks of 6 men each. Such an arrangement is represented in 'efgh.' Here each century, each maniple, and the entire cohort have only half the usual width, but twice the usual length. The column has only 6 men abreast, and is only 18 feet wide, or, including the centurion, 22 feet. By adopting a close order, the

soldiers, as a century, maniple, or cohort. In this figure it represents a century. The diagonal is drawn from the right of the front to the left of the rear.

¹ That is, the maniple which in battle-array formed the right wing of the cohort, became the head of the column.

width could be reduced in case of need to 18, or even 15 feet.¹

23. In 'ijkl' and 'ijkl' the column is called a column of maniples, because it consists of the three maniples of the cohort placed one directly behind another. Here the two centuries of each maniple stand abreast. In 'ijkl' the cohort is said to be marching by the right flank, because in forming this column from the line of battle, each man turns, or faces to the right, and thus the file which formed the right flank in battle-array becomes the front rank of the column. In 'ijkl,' the cohort is said to be marching by the left flank, because in forming this column, each man turns or faces to the left.²

24. It will be observed that the column of maniples will be considerably longer than the column of centuries, as it contains more ranks.³ In this column, each maniple, as it has 12 ranks, will be 48 feet long, or, if we allow 4 feet for the centurion, who probably kept his place at the head of his century, it will be 52 feet long. This gives 156 feet as the length of the cohort marching in a column of maniples. As this column was formed from the line of battle by simply facing to the right or left, the depth of the cohort, 40 feet, naturally became the width of the column, but in marching, as there were only 10 men abreast, the width was often reduced to 30 feet. Upon narrow roads the column of maniples, like the column of centuries, was sometimes reduced to one-half its usual width by doubling its length. Such a column had only 5 men abreast, and could without difficulty march over a road 15, or even 12, feet wide. In forming this column from the regular column of maniples, one of the two centuries in each maniple marched straight on while the other fell in its rear.

¹ The regular or normal width of Roman roads was 18 feet. See Jähns, *Geschichte des Kriegswesens*, page 304.

² When the cohort marches by the right flank, the right wing, or maniple I., becomes the head of the column; when it marches by the left flank, the left wing, or maniple III., becomes the head.

³ The learner should carefully distinguish between a column of centuries, as seen in 'abcd' and 'abcd,' and a column of maniples, as seen in 'ijkl' and 'ijkl.' In the former, the column is an unbroken series of centuries, arranged one behind another; while in the latter, the two centuries of each maniple stand abreast.

25. The following summary gives the length and width of the cohort in different positions:—

	FRONT.	DEPTH.
1. Cohort in line of battle	120 feet.	40 feet.
2. Cohort in column of centuries	40 "	120 "
3. Cohort in column of centuries, with 6 files ¹	18 to 22 "	240 "
4. Cohort in column of maniples ²	30 to 40 "	144 to 156 "
5. Cohort in column of maniples, with 5 files	15 to 20 "	288 to 300 "

26. As an army on the march was liable to attack, it was often necessary to form the line of battle from the line of march. If the enemy appeared on the flank, this was most easily effected from the column of maniples marching in loose order, i.e., with 40 feet front. The simple command, "Halt, front," was all that was needful.³ If, however, the enemy appeared in front, the line of battle was most readily formed from the column of centuries.⁴

LEGION IN LINE OF BATTLE.

27. As a legion is only an aggregate of ten cohorts properly arranged, we may now apply to the legion what we have already learned in regard to the cohort. A legion in line of battle consists simply of ten cohorts, each in its proper position and in battle-array; a legion on the march, of ten cohorts marching in due order, and with the proper intervals between them.

28. But we have already learned⁵ that in a legion in battle-array, the ten cohorts were arranged in three lines,

¹ The full allowance would be 22 feet, 18 for the 6 files, and 4 for the centurion, reduced in case of need to 18 or less.

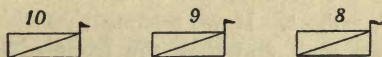
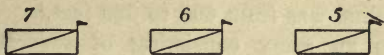
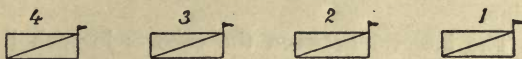
² In loose order, 40 feet; but this gives each man 4 feet; if we reduce the allowance to 3 feet, the front of the column becomes 30 feet.

³ Thus if an enemy appeared on the right flank of a column of maniples, as represented by 'ijkl,' it was only necessary for each man to face to the right to place the cohort in line of battle; but if the enemy appeared on the left flank, it was of course necessary for the men to face to the left.

⁴ Thus if the enemy appeared in front of the column of centuries represented by 'abcd,' maniple I. halted, maniple II. placed itself at the left of I., and maniple III. at the left of II.

⁵ See 5, III.

with four cohorts in the first or front line, three in the second, and three in the third, as follows¹:—

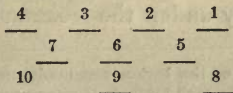


Legion in Line of Battle.

29. Observe that the cohorts are arranged with intervals between them, that the cohorts in the second line are directly behind the intervals in the first, and that the cohorts in the third line are directly behind the intervals in the second.² The cohorts are numbered from 1 to 10, according to the rank and military experience of the centurions and soldiers.³ A position in the front line is more honorable than in either of the others, while in either line a position on the right wing is more honorable than on the left. The first cohort, holding the post of honor, is on the

¹ This order of battle is generally supposed to be the *acies triplex*, so often mentioned by Caesar, but General von Göler claims that the *acies triplex* refers, not to the three lines of cohorts, but to the three great divisions of an army, viz., the main body or the central division, and the two wings.

² As the third line was held as a reserve, and was not often called into action, the exact position of the cohorts seems not to have been as definitely determined as in the other lines. The order here given has been adopted from Rüstow. Göler arranges the cohorts as follows:—



³ Thus promotions both of centurions and of men were from the tenth cohort to the ninth, from the ninth to the eighth, from the eighth to the seventh, and so on through all the cohorts to the first.

extreme right of the front line, while the tenth, holding the lowest rank in the legion, is on the extreme left of the third line.

30. The interval between the cohorts in each line was 120 feet; the length of a cohort, but the interval between the lines was probably 240 or 250 feet. Thus the front or length of a legion in battle-array was 840 feet,¹ while its depth from the front of the first line of cohorts to the rear of the third line was from 600 to 620 feet.¹

31. When an army consisting of several legions was marshalled in order of battle, each legion was arranged in three lines, as already described, and the several legions were separated by intervals, probably varying in length with the nature of the ground, but seldom less than 120 feet, the length of a cohort. If we assume that this interval was 120 feet, we shall find that the front of Caesar's line of battle on the Axona, with six legions, was 5,640² feet and its depth, 600 feet. Thus the line of battle of an army of six legions, numbering in all about 25,000 men, was considerably more than a mile long and almost an eighth of a mile deep, and occupied upwards of 75 acres of ground.

OFFICERS IN A ROMAN ARMY.

32. In a Roman army engaged in an important work like the conquest of Gaul, the regular officers were the commander-in-chief, the lieutenant-generals, the quaestor, the military tribunes, the centurions, the praefects, and the decurions.

33. The commander-in-chief, called *dux belli* or *imperator*, had in his own province almost unlimited military power. He was clothed with the full measure of authority which belongs to a commander-in-chief in modern warfare.

34. The lieutenant-generals, *legati*, were the highest officers in the army under the commander-in-chief. They

¹ The front, or length, of the legion was made up of the length of four cohorts and of three intervals, each 120 feet. It was therefore $7 \times 120 = 840$ feet. The depth was made up of the depth of the three lines of cohorts, each 40 feet, and two intervals, each 240 or 250 feet, i.e., it was $120 + 480$ or $500 = 600$ or 620 feet.

² That is $6 \times 840 + 5 \times 120 = 5,040 + 600 = 5,640$ feet.

were all of senatorial rank and received their appointment from the senate. In the absence of the commander-in-chief, they assumed his duties. They were sometimes placed in command of important detachments detailed for special service. In the battle with Ariovistus, Caesar placed one of his legions under the command of his quaestor and each of the other five under the command of one of his lieutenants.

35. The quaestor had charge of the military chest, and was the quartermaster of the army. He had the rank of a lieutenant-general, *legatus*, and was sometimes entrusted with a command in battle.

36. The special officers of the separate legions were the military tribunes and the centurions.

37. Each legion had six military tribunes, *tribuni militum*, who formerly commanded in rotation, two at a time for a period of two months.¹ In the army in Gaul, however, the tribunes were mostly young men of wealth and social position whom Caesar, from personal friendship or political considerations, had selected from the equestrian order and placed upon his staff. They had little military experience or knowledge, and were accordingly incompetent to take the general command of a legion in battle,² though they were sometimes entrusted with the command of small detachments detailed for special service. In general, they administered the internal affairs of the legion. They served as staff-officers to the commander-in-chief and as adjutants to the lieutenant-generals and the quaestor.

38. Each legion had also 60 centurions.³ These officers were in general men of large military experience, who had been promoted from the ranks, as a reward of good service. They were the real commanders, not only of centuries, but also of maniples and cohorts, and, in a certain sense, under the *legatus*, of the legion as a whole. The two centurions in each maniple differed from each other in rank; the first,

¹ The two tribunes commanded by turns, each for one day. See Marquardt, *Römische Staatsverwaltung*, Vol. II., p. 352; also Jähns, *Geschichte des Kriegswesens*, p. 225.

² See Book I., 39.

³ According to Göller, there were 120 centurions in each legion, but he includes in this number the 60 assistant centurions, called *optiones*.

called *centurio prior*, commanded the maniple, while the second, called *centurio posterior*, served as his adjutant. The first centurion of the first maniple commanded the cohort, and the first centurion of the first maniple of the first cohort, called *primi pili centurio*, or *primipilus*,¹ was the chief centurion of the legion, and had much to do with the general command.

39. The Romans in their military system seem to have aimed to stimulate ambition and reward fidelity. An enterprising recruit who on entering the service took his place at the very foot of the legion, in the second century of the third maniple of the tenth cohort, had before him a long career of advancement in the rank and file of the army, and if, by bravery and fidelity, he succeeded in attaining the coveted office of centurion, the prospect of promotion was still before him. He might hope to rise from maniple to maniple, and from cohort to cohort, until, in the end, having passed through all the grades of honor, he should become the chief centurion, the *primipilus* of the legion. This was the height of his ambition, the goal of his aspirations.

40. The exact order of promotion is still a disputed question. According to Rüstow, the six centurions of each cohort formed a separate class, the centurions of the first cohort forming the first class, those of the tenth cohort the tenth class. Thus there were ten classes, and each class contained six centurions.² This is probably the prevailing view among scholars.³

¹ See Book II., 25, and Book III., 5.

² To determine the rank of a centurion, we must know to which cohort he belonged, to which maniple in the cohort, and to which century in the maniple. Thus the full designation of his rank required the use of three separate titles: (1), an ordinal numeral, as *primus*, if he belonged to the first cohort, *secundus*, if he belonged to the second; (2), the word *pilus*, if he belonged to the first maniple in his cohort, *princeps*, if he belonged to the second, and *hastatus*, if he belonged to the third; and (3) *prior*, if he belonged to the first century in his maniple, and *posterior*, if he belonged to the second. Thus *primus pilus prior*, applied to a centurion, denotes that he commanded the first century of the first maniple of the first cohort, — in other words, that he was the chief centurion of the legion; *decimus hastatus posterior* denotes that he commanded the second century of the third maniple of the tenth cohort, i.e., that he was the lowest centurion in the legion, while *quintus princeps prior* denotes that he commanded the first century of the second maniple of the fifth cohort.

³ According to Göler, however, the first centurion of each cohort belonged to the first class, the second to the second class, the third to the third class, and so

41. The centurions of the first class, called sometimes *primorum ordinum centuriones*, and sometimes simply *primi ordines*,¹ enjoyed certain honors and privileges not often accorded to the other centurions. As a general rule, they alone of the centurions were invited by the commander to seats in all councils of war² in company with the lieutenants and the military tribunes.

42. The praefects, *praefecti*, commanded divisions of auxiliaries, either infantry or cavalry. The praefects in the army of Caesar in Gaul were mostly young men who had seen little military service.³

43. The decurions commanded small companies of cavalry. Each company, or troop, called *turma*, numbering thirty horse, was divided into three sections, called *decuriae*, each under the command of a decurion; but the first, or senior, decurion commanded not only his own *decuria*, but also the entire *turma*.

ORDER OF MARCH.

44. The usual order of march was either the simple column, *agmen pilatum*, or the line of battle, *acies instructa*. The square, *agmen quadratum*, was resorted to only in extreme cases.

LEGIONS MARCHING IN COLUMN — *Agmen Pilatum*.

45. A cohort in column of centuries, as we have already seen (25), has a front of 40 feet, with a depth of 120 feet. If the column was formed from the right, the first cohort led, and was followed by the others in the order of their numbers, but if the column was formed from the left, the tenth cohort led and was followed by the others in the inverse order of their numbers, i. e., the ninth, eighth, etc.

on until all the centurions were classified. Thus each class consisted of ten centurions, one from each cohort, and there were as many classes as there were centurions in a cohort, i. e., there were six classes of the regular centurions, While, therefore, Rüstow divides the 60 regular centurions of a legion into ten classes, of six centurions each, Göler divides them into six classes, of ten each. In the same manner, Göler divides the 60 assistants or sub-centurions, *optiones*, into six classes, of ten each, making in all twelve classes.

¹ See Book V., 28 and 30; Book VI., 7.

² See Book I., 41, and Book V., 28.

³ See Book I., 39.

46. On the march, the cohorts are supposed to have been separated from each other by an interval of 20 or 30 feet. Assuming an interval of 20 feet, we find that a legion, marching in column of centuries, with a front of 40 feet, was 1,400 feet long, and with a front of 20 feet, 2,600 feet long.¹

47. In general, every Roman soldier carried his own personal baggage. The different articles, consisting of clothing, cooking utensils, and rations for one, two, or more weeks, weighing, probably, in the aggregate, from 30 to 50 pounds, were carefully put up in packages, *sarcinae*, and firmly secured to a rod, as represented in plate I. On the march, the rod was carried on the shoulder.²

48. The general baggage of the army, called *impedimenta*, comprising tents, tools, and supplies of various kinds, was carried by beasts of burden, *jumenta*. According to Rüstow's estimate,³ the length of the baggage-train of a legion marching in a column of centuries of full width, was 650 feet, and that of a legion marching in a column of centuries of half the usual width, 1,300 feet.

49. We have just seen (46) that a legion without baggage-train, in a column of centuries of full width, was 1,400 feet long, and in a column of half the usual width, 2,600 feet long. Including the baggage-train, therefore, the entire length of the column of full width must have been about 2,050 feet, or two-fifths of a mile, and the entire length of the column of half the usual width, about 3,900 feet, or almost four-fifths of a mile.⁴

50. Before the battle of the Sabis, Caesar had eight legions on the march.⁵ The length of a column of centuries, containing such a force, would be 16,400 feet, upwards

¹ The length of a column of full width was 10×120 feet + 10×20 feet = 1,400 feet, and the length of a column of half the usual width was 10×240 feet + 10×20 feet = 2600 feet. This estimate includes the interval of 20 feet between the last cohort of the legion and the first cohort of the next.

² This arrangement for the convenience of the soldier, introduced by Marius, was called from him *mulus Marianus*, the "mule of Marius." It was simply a primitive knapsack.

³ This estimate allows to each legion 520 beasts of burden, arranged in 65 full ranks, with 8 animals in a rank, and gives 10 feet to each rank.

⁴ The column of maniples of any given force would be about one-fifth longer than the column of centuries. - Digitized by Microsoft®

⁵ See Book II., 19 to 27.

of three miles, if the column was of full width; and 31,200 feet, upwards of six miles, if the column was of half the usual width.

MARCHING IN LINE OF BATTLE — *Acies Instructa*.

51. A legion marching in line of battle was usually arranged in three parallel lines of cohorts; but these lines might be formed in two different ways, as follows:—

1. The three lines of cohorts which constituted the usual order of battle, the *triplex acies*, formed the three parallel columns. Thus cohorts 1, 2, 3, and 4 formed the first column, 5, 6, and 7 the second, and 8, 9, and 10 the third, as seen in figure 2, below.

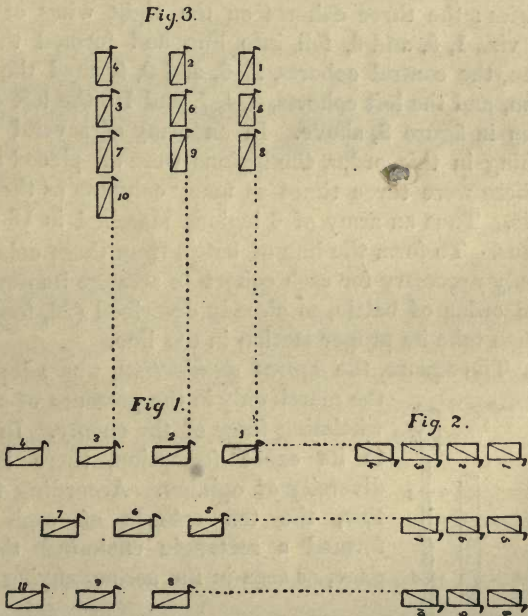


Figure 1 represents a legion in order of battle.

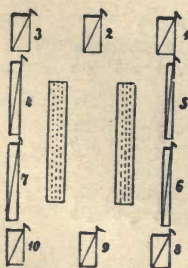
Figure 2, a legion marching in order of battle, with its cohorts in column of maniples.

Figure 3, a legion marching in order of battle, with its cohorts in column of centuries.

In forming these columns, each man faced to the right or left, and marched by the right or left flank. Each cohort marched in column of maniples. In an army of several legions, marching in this order, the second legion was placed directly in the rear of the first, the third directly in the rear of the second, and so on to the end of the column. Thus the whole army marched in three parallel columns of maniples. If the enemy appeared on either flank, the columns halted, each man faced to the right or left, as the case required, the cohorts separated, and the whole army was in battle-array. This order of march was usually adopted when the enemy was expected on the flank.

2. When the enemy was expected in front, the legion marched straight forward with its cohorts in column of centuries: the three cohorts on the right wing of the legion, viz., 1, 5, and 8, fell into line and formed the right column, the central cohorts, 2, 6, and 9, formed the middle column, and the left cohorts, 3, 4, 7, and 10, the left column, as seen in figure 3, above. In an army of several legions, marching in this order, the legions were all placed abreast, and there were three times as many columns as there were legions. Thus an army of 6 legions marched in 18 parallel columns. To form the line of battle from these columns, it was only necessary for each cohort to arrange its own maniples in order of battle, as already described (26, foot-note), and then take its proper station in the line.

52. The square, the *agmen quadratum*, was adopted on



the march only in the presence of an overwhelming force of the enemy. In regard to its exact formation, there is some diversity of opinion. According to Rüstow, the ten cohorts of each legion formed a rectangle enclosing the baggage, as seen in the accompanying figure.

Cohorts 1, 2, and 3, in column of centuries, formed the vanguard; cohorts 8, 9, and 10, also in column of centuries, formed the rear-guard; while 5 and 6, in columns of maniples

Agmen Quadratum.

of 5 files, formed the right wing, and 4 and 7, also in column of maniples with 5 files, formed the left wing.

53. In an army on the march, we recognize three parts, more or less distinct:—

1. The vanguard, the head of the column, *primum agmen*.¹

2. The main body of the army, *exercitus, omnes copiae*.¹

3. The rear-guard, the rear, *novissimum agmen*.¹

54. The special organization of the different parts of the column, and indeed the entire order of march, depended largely upon the direction of the movement in relation to the enemy.

ORDER OF MARCH IN ADVANCING.

55. In advance movements in the Gallic campaigns, the vanguard of Caesar's army ordinarily consisted of cavalry and light-armed infantry, together with the tribunes, centurions, and legionaries entrusted with the duty of selecting and measuring off the ground for the camp. It was its special duty to reconnoitre the country, to take note of all hostile preparations, to gain tidings of the enemy,² and in due time to select a suitable place for the camp.

56. The main body of the army followed the van at a convenient distance. It marched in column of centuries, each legion with its baggage directly behind it; but the last legion probably detailed a few cohorts to protect its baggage, and in that event the cohorts thus detailed formed the rear-guard of the army. In this order of march, the legions, thus separated by their baggage, were exposed in case of an attack to great peril; they were accordingly said to be *impeditae*,³ entangled or impeded by baggage, *impedimentum*.

57. In advancing in the presence of the enemy the legions marched either in column of centuries, with collected baggage, or in order of battle. With the first arrangement, the main body, consisting of three-fourths of all the legions, followed close upon the advance-guard, and was itself imme-

¹ For the use of these terms, see Book I., 15 and 23; Book II., 19 and 26.

² From the van, detachments of cavalry were sent out in various directions, sometimes to great distances. It was by means of such reconnoitring parties that Caesar obtained tidings of the movements of Ariovistus, while he was yet twenty-four miles distant. See Book I., 41.

³ See Book III., 24.

diately followed by the collected baggage-train of the army. The few remaining legions formed the rear-guard of the column. In this order of march, the legions were comparatively ready for action, and were said to be *expeditae*, disentangled, or free from encumbrance;¹ but the individual soldiers were still *impediti*, and in case of an attack, they required time to dispose of their personal baggage,² to remove the coverings from their shields, to put on their helmets, to adjust their field-badges,³ and, in a word, to prepare for action.⁴ In such an emergency, it was the special duty of the advance-guard to secure for them the needful time by engaging the enemy, and thus retarding his movements.

58. Sometimes in advancing in the immediate presence of the enemy, if the ground permitted, the several legions marched abreast, each in three parallel columns in order of battle.⁵ For the special formation and arrangement of the columns, see 51. In this order of march, every soldier, free from his baggage, and fully armed and equipped, was *expeditus*, ready for immediate action.

ORDER OF MARCH IN RETREAT.

59. The order of march in retreat was usually the simple column of centuries with collected baggage. The vanguard, consisting of a legion or more, started in advance, with the entire baggage-train of the army; at a suitable distance behind marched the other legions, followed by the rear-guard; consisting of cavalry, archers, and slingers.

60. In cases of extreme peril, the *agmen quadratum*, already explained (52), was adopted in retreat. In such an emergency, all the legions of the army were sometimes massed around their baggage in a single square or rectangle, and sometimes each legion enclosed its own baggage, as explained in 52. The cavalry, archers, and slingers, remaining outside of the squares, served as skirmishers.

¹ See Book II., 19; Book V., 2; Book VII., 40.

² See Book I., 24, *sarcinas in unum locum conferri*.

³ See Book II., 21, *ad galeas induendas scutisque tegimenta detrudenda*; also *ad insignia accommodanda*.

⁴ See Book VII., 18, *sarcinas conferri, arma expediri, jussit*.

⁵ See Book IV., 14.

ORDER OF MARCH IN FLANK-MOVEMENTS.

61. Flank marches¹ were always made in order of battle. The legions generally marched in three columns of maniples. For the formation of these columns, see 51, 1. In an open country, the cavalry, archers, and slingers, marched on the flank toward the enemy, while the baggage-train was stationed on the other flank. In special cases, each legion was followed by its own baggage.

62. The day's march of a Roman army in the field began at four or five o'clock in the morning and continued till about mid-day. Most of the afternoon was occupied in fortifying the camp and in attending to various duties connected with camp-life. The distance usually accomplished in a day does not seem to have differed much from an ordinary day's march of modern armies. The average distance was probably about fifteen or sixteen miles. Forced marches (*magna itinera*) were, of course, much longer. In one instance,² Caesar marched about fifty miles in a little more than twenty-four hours; but this was an exceptional achievement, accomplished under the pressure of a military necessity.

ROMAN CAMP.

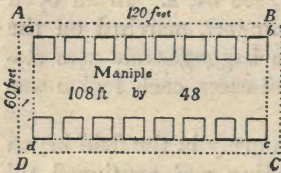
63. In the military history of Rome the camp has a degree of importance without a parallel in modern warfare. It was the soldier's home, a place of rest and security after the labors and dangers of the day; in it was the altar at which he worshipped. It was always fortified, even when intended for a single night. Indeed, it was like a fortified city, encompassed and protected by ramparts and a moat. A Roman general seldom went into battle without a fortified camp directly in the rear. In modern warfare, those who are defeated in battle are exposed to all the perils of a disorderly retreat; a Roman army, on the contrary, after a defeat, retired in comparative safety to a well fortified camp.

64. In the Roman camp, each legion, cohort, and maniple, had a definite space assigned to it; and this space was bounded on all sides by a street of greater or less width.

¹ An army is said to make a flank movement when it passes near the flank of the enemy or marches in a direction parallel to his line of march.

² See Book VII., 40 and 41.

Each maniple occupied a rectangle 108 feet long and 48 feet wide, surrounded by a street 12 feet wide. Accordingly, the entire space assigned to a maniple, including half the width of the streets which separated it from the adjacent maniples, was 120 feet long and 60 feet wide, as seen in the accompanying figure.



ABCD, the entire space assigned to a maniple, including half the street.

abcd, the smaller rectangle, 108 feet long and 48 wide, actually occupied by the maniple. Along the side 'ab,' in this last rectangle, were placed eight tents for the first century; and along the side 'cd' eight tents for the second century. The tents were 10 feet square, and were separated from each other by intervals of 4 feet.¹ They were all placed with the front to the street; accordingly, the two rows faced in opposite directions. The beasts of burden were placed in the rear of the tents.

65. As a cohort contained three maniples, it would require for its accommodation three such rectangles as we have now described. Accordingly, the space occupied by a cohort in camp was 180 feet long and 120 wide, as seen in the accompanying figure.



Cohort in Camp.

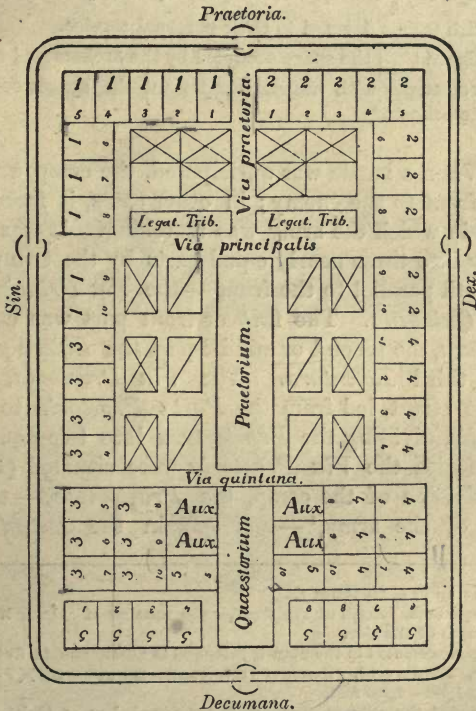
ABCD, the space occupied by one cohort, including one half the width of the streets which separate it from the other cohorts.

abcd, the space occupied by each maniple for tents, arms, and beasts of burden.

In the arrangement of the three maniples of the cohort, the first was placed nearest to the wall of the camp.

¹ The tents were covered with the skins of animals or with leather; hence the expression *sub pellibus*, in tents, in camp. See Book III., 29.

66. Ten rectangles, 180 feet long and 120 feet wide, would furnish quarters for a legion; fifty such rectangles for five legions; but a camp for a Roman army must provide quarters not only for the legions, but also for the auxiliaries. The following plan, taken, with slight modifications, from Rüstow, shows the general arrangement of a Roman camp for an army consisting of five legions, with the usual force of auxiliaries:—



Plan of a Roman Camp. Length, 2,100 feet. Width, 1,400 feet.¹

¹ The Roman camp was either a square, or a rectangle whose width was two-thirds of its length. The plan represents the latter form. The ancient authorities on the camp are Polybius, who lived in the second century, B. C., and a certain Hyginus, who, in the opinion of Marquardt, lived about the beginning of the third century, A. D.

The size of the camp must, of course, be adapted to the size of the army to be quartered in it. Rüstow gives the following formula to determine in feet the length and breadth of a camp for an army of any given size:—

1. There were four gates, one in each side: (1) the *Porta Praetoria*, in front, marked *Praetoria* in the plan; (2) the *Porta Decumana*, on the opposite side, marked *Decumana*; (3) the *Porta Principalis Dextra*, on the right side, marked *Dex.*; and (4) the *Porta Principalis Sinistra*, on the left side, marked *Sin.*¹

2. *Legat. Trib.* = Legati et Tribuni.

3. *Aux.* = Auxilia.

4. The figure \boxed{X} represents the space occupied by cavalry.

5. The figure $\boxed{\diagup}$ the space occupied by the general and staff,² together with troops devoted to their personal service.

6. The figure $\boxed{}$ the space occupied by the archers and slingers.

7. The rectangles with numerals represent the spaces occupied by the separate cohorts.³

67. When a battle was anticipated, the camp was placed with its front to the enemy; in other cases, it faced in the direction in which the army was marching. It was divided internally into three nearly equal parts by the two principal streets, both parallel to the front — the *Via Principalis* and the *Via Quintana*. The first or front part was called the *Praetentura*, the second or middle part the *Latera praetorii*, and the third *Retentura*. The *Via Praetoria*, another important street, led from the *Porta Praetoria* to the *Via Principalis*, dividing the *Praetentura* into two equal parts. On a line with the *Via Praetoria* were situated (1), in the middle division of the camp, the *Praetorium*, — the headquarters of the army,⁴ — and (2), in the *Retentura*, the

$$f = 200\sqrt{c} \quad \text{and} \quad s = 1\frac{1}{2} \text{ times } f.$$

In which f equals the length of the *front*, c the number of *cohorts* in the army, and s the length of the *side*.

The camp represented in the plan is intended to accommodate five legions, or fifty cohorts. Here $c = 50$. Hence f (the front) = $206\sqrt{50} = 200 \times 7 = 1,400$ feet. $s = 1\frac{1}{2}$ times $1,400 = 2,100$ feet.

¹ Observe that the corners of the wall are rounded so as to be more easily defended.

² Except the lieutenants and tribunes.

³ The upper numeral is the number of the legion; the lower numeral the number of the cohort. Thus $\boxed{\begin{smallmatrix} 2 \\ 5 \end{smallmatrix}}$ represents the space occupied by the fifth cohort of the second legion.

⁴ The *Praetorium* extended in length from the *Via Principalis* to the *Via Quintana*, and was from two hundred to three hundred feet wide. In it were the quarters of the general, the altars of the gods, and the tribunal, or judgment-seat, of the army.

Quaestorium,—the quarters of the quaestor and his staff.¹

68. In the plan of the camp, observe (1) that between the wall and the tents was left an open space, probably from one hundred to two hundred feet wide, extending entirely around the camp, and (2) that the forces were distributed as follows:—

1. In the *Praetentura* were stationed (1), sixteen of the fifty cohorts; (2), the lieutenants and tribunes; (3), one-half of all the cavalry; and (4), all the archers and slingers.

2. In the *Middle Division* of the camp, called *Latera praetorii*, were stationed, besides the commander-in-chief, who occupied the *Praetorium* (1), twelve of the fifty cohorts; (2), one-half of all the cavalry; and (3), the entire staff of the commander-in-chief, except the lieutenants and the tribunes, together with the troops devoted to their personal service.

3. In the *Retentura* were stationed, in addition to the quaestor and his staff, (1) twenty-two of the fifty cohorts, and (2) the auxiliaries, except the cavalry, archers, and slingers.²

69. In a camp intended for winter-quarters, wooden huts, thatched with straw, took the place of ordinary tents, and sheds were erected to protect the beasts of burden from wind and weather. Moreover, the space allowed to the different parts of the army was doubtless somewhat more ample than in a summer camp.

70. The fortifications of the camp consisted of a wall, *vallum*, and a ditch, or fosse, *fossa*. The wall seems to have been ordinarily about 6 feet high, and 6 or 8 feet broad at the top, the ditch about 9 feet wide at the top, and 7 feet deep.³ Doubtless, in fortifying a permanent camp, *castra stativa*, in a hostile country, the ditch was

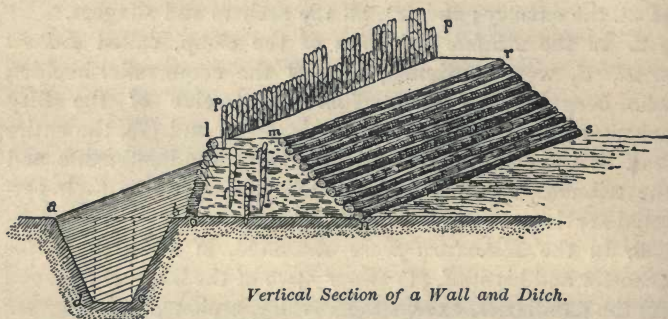
¹ The *Quaestorium* furnished quarters, not only for the quaestor and his staff, but, also, for foreign ambassadors, and for hostages and prisoners. In it were also stored the supplies and the booty.

² Observe in the internal arrangements of the camp that the auxiliaries, both cavalry and infantry, are stationed near the general and his staff, and that they are completely surrounded by the legionary soldiers.

³ Vegetius, Book I., 24, says that the ordinary ditch was either 9 feet wide and 7 feet deep, or 12 feet wide and 9 feet deep. In these dimensions, it has been observed that the width, as 9 or 12, is divisible by 3, and that the depth is obtained by adding one to $\frac{2}{3}$ of the width, as width 9, depth $\frac{2}{3}$ of $9 + 1 = 7$, or

made wider and deeper, and the wall higher and broader.¹ It was sometimes surmounted with a breastwork of palisades, *lorica*,² and in special cases wooden towers were erected on it at convenient intervals. Each gate was probably 40 feet wide, and was defended within and without either by a transverse or by a tambour, as seen in the above plan.³

71. The following figure represents a vertical section of a wall and ditch, the former surmounted with a breastwork of palisades:—



Vertical Section of a Wall and Ditch.

abcd represents a ditch, *fossa fastigata*, 9 feet wide and 7 feet deep. lmno, a wall or rampart, *vallum*, 6 feet high, and 6 feet wide at the top, furnished with steps on the inside, i.e., on the side 'mrsn.'

pp, palisades.

ff, fascines imbedded in the work, to strengthen it.

width 12, depth $\frac{2}{3}$ of $12 + 1 = 9$. Rüstow infers that these instances are illustrations of a law, and that having the width of any ditch, we can thus at once obtain the depth. As a matter of fact, Caesar generally gives only the width.

In opposition to the view of Rüstow, Göler thinks that the normal depth of a ditch, whatever its width, was 9 feet, and that Caesar specifies the depth only when it does not conform to the ordinary standard.

¹ It has been observed that when Caesar gives the height of a wall with the width of the accompanying ditch, as ditch 9 feet wide, wall 6 feet high; ditch 15 feet wide, wall 10 feet high; ditch 18 feet wide, wall 12 feet high, the height of the wall is $\frac{2}{3}$ of the width of the ditch. This Rüstow believes to be the regular law. Indeed, some such relation as this between the dimensions of the ditch and the wall seems natural, as the earth thrown out of the former was used in constructing the latter.

² The breastwork was usually made by driving green stakes into the ground, and by binding them firmly together by intertwining their branches. The general height of the breastwork was four or five feet, but in some instances pinnacles, *pinnae*, projected above it two or three feet, as seen in the figure in 71.

³ The Gauls and the Germans fortified their camps, not by permanent works like the Romans, but by arranging their chariots and wagons in a circle, and using them as a rampart. After a defeat, they often retreated to these temporary defences. See Book I., 26.

72. The side of the ditch nearest to the wall is called the *scarp*, and the opposite side, the *counterscarp*. A ditch with sloping sides, as in the figure, was called *fossa fastigata*; with vertical sides, *fossa directis lateribus*, and with sloping scarp but vertical counterscarp, *fossa punica*.¹

73. The wall was constructed largely from the earth and stone taken from the ditch, but to give the structure greater firmness and strength, branches of trees, bushes, stakes, and fascines were imbedded in it. When the sides of the wall were quite steep, they were usually covered with sods or with brush in the form of fascines. Sometimes logs were used for the same purpose. Moreover, these logs and fascines could be arranged in steps, so that from within the bank or wall could be easily ascended. See figure in 71. The selection of the place for the camp was a duty which required skill, judgment, and experience.² Accordingly, this important trust was generally committed to a tribune, or to some other officer of the staff, at the head of a detachment of centurions and legionaries. They marched in advance of the main body of the army, under the protection of the vanguard, and were expected to have the outlines of the camp well defined on the arrival of the legions.

74. For Roman soldiers, marching through a hostile country, no small part of each day's work was the fortification of the camp, but they shrunk from no labor, and were scarcely less expert with the pick and the spade than with the spear and the sword. With such laborers, three or four hours, in the judgment of Rüstow, would be ample for the complete fortification of the camp.

75. But Roman camps in a hostile country were not only strongly fortified, but also carefully guarded. In cases requiring only ordinary vigilance, the duty of keeping guard during the night-watches was entrusted to five cohorts detailed for the purpose from different legions.

¹ The first form was generally used by Caesar, though the second also occurs. See Book VII., 72.

² It was of vital importance that the camp should be pitched, if possible, on a gently sloping hillside of sufficient extent, within easy reach of a good supply of wood and water. It was also important that it should not be near any hill from which an enemy could reconnoitre it, or near any dense forest in which he could be concealed.

The tattoo, the signal for setting the night-watches, was sounded at nightfall. A cohort was stationed at each gate, and sentinels were posted on every part of the wall. A fifth cohort was detailed for guard duty in the quarters of the general and quaestor, while every cohort had its own sentry. In cases of unusual peril, the guard was greatly strengthened; sometimes two or three cohorts guarded each gate.

As the night was divided into four equal watches, the guard was divided into four reliefs, each one of which was on duty during one-fourth of the night. The three reliefs not on duty slept upon their arms, as a sort of picket-guard.

76. The reveille was sounded at daybreak. If the march was to be resumed, three successive signals were sounded. At the first signal, the tents were struck; at the second, the beasts of burden received their loads; and at the third, the column moved. If, however, a battle was imminent, the march was not resumed; the tents were left standing, and the camp was committed to the care of a strong guard.¹ Then the soldiers, disencumbered of their knapsacks, and armed and equipped for action, truly *expediti*, marched out of the camp, and were at once marshalled in line of battle.

77. Roman generals made it an unfailing rule to take every possible advantage of position. For them an open plain was not a good battle-field. The Roman mode of attack required an elevated position, from which the heavy javelins could be hurled into the ranks of the enemy with the greatest effect.²

MILITARY STANDARDS AND MARTIAL MUSIC.

78. The general standard of the army was the banner, *vexillum* , of the commander-in-chief. When displayed from the general's tent in the Praetorium, it was a signal to

¹ This guard sometimes consisted of four or five cohorts, detailed from separate legions, and sometimes of one or more legions recently enrolled. See Book III., 26; Book II., 8.

² For Caesar's own description of his favorite position for marshalling his army for battle, see Book II., 8. From this description, we see how very important it was that the camp should be pitched upon a hillside of sufficient extent to enable the general to marshal his army for battle near his camp, if not in front of it.

prepare for immediate action, and when waved before the legions advancing in order of battle, it was the signal for the charge, *incursus*. It contained the name of the general and of the army, inscribed in large red letters on a white ground.

79. Each legion had its own standard, which was entrusted to the special care of the chief centurion, the *primipilus* of the legion.¹ It was an eagle of the size of a dove, generally of silver, though under the empire sometimes of gold. The eagle was represented with uplifted wings, as seen in plate I., 9. Sometimes a small banner, *vexillum*, on which was embroidered the number of the legion, was placed directly below the eagle.

80. The ten cohorts² of the legion had their special standards, *signa*,³ which were of various forms, sometimes very simple⁴ and sometimes more elaborate. For specimens of the latter, see plate I., 5.

81. The standards carried by the cavalry, by the light-armed infantry, and by detachments detailed for special service, were simple banners, *vexilla*.⁵ For the general appearance, form, and size of the *vexilla*, see plate I., 5, and plate II., 8.⁶

82. The chief musical instrument in a Roman army, and indeed the only one mentioned in the Commentaries on the Gallic war, was the trumpet, *tuba*.⁷ This was a wind instrument of brass in the form of a modern trumpet. The only musicians mentioned by Caesar, in either of his works,⁸

¹ The loss of a standard was a calamity and a disgrace, both to the standard-bearer and to the legion.

² Göler thinks that the maniples had standards, and that the standard of the first maniple was also the standard of the entire cohort, but Rüstow rejects this view as utterly untenable.

³ The general name for a standard was *signum*, and for a standard-bearer *signifer*, but the more specific names *aquila* and *aquilifer* were generally used to designate the standard and the standard-bearer of the legion. The bravest and strongest soldiers were selected as standard-bearers. See Book IV., 25; also *signiferi* in plate II., 5.

⁴ A standard was sometimes simply the figure of an open hand upon a staff, and sometimes the figure of an animal, as a wolf or an ox.

⁵ See Book VI., 36.

⁶ Observe in plate II., 5, that one of the elaborate standards has a *vexillum* at the top.

⁷ Göler thinks that every century had at least one *tuba*.

⁸ See Book II., 20, Book VII., 47; and *Civil War*, Book II., 35.

are the *tubicines* and the *bucinatores*,¹ both of whom are represented with their instruments in plate II., 6 and 7; but the *lituus*, a modification of the trumpet, curved near the end was doubtless used in the cavalry.²

ROMAN MODE OF ATTACK.

83. When the Roman general had secured his favorite position on the gentle declivities of a range of hills with the enemy sufficiently near in the plain below, he ordered the signal to be sounded with the trumpet. The legions advanced slowly and steadily in order of battle until they were within five hundred or six hundred feet of the enemy, when the standard of the commander-in-chief was displayed, and the united blasts of the horn and the trumpet sounded the signal for the charge. From this point, the legions, with poised javelins in their front ranks, *pilis infestis*, advanced upon the run until the hostile lines were within forty or fifty feet of each other, when a salvo of javelins from the front of the legions carried consternation and death into the ranks of the opposing phalanx.³ Then, with drawn swords, the Roman soldiers charged the broken ranks of the foe.⁴

84. Thus all along the front line a deadly conflict was waged hand to hand, — a series of duels, as Rüstow expresses it.⁵ For the moment, it was of course impossible to

¹ It seems probable that the *bucinator* used not only the *bucina*, but also the *cornu*, the horn, a wind instrument made generally from the horn of a wild ox, and furnished with a silver mouth-piece, but sometimes made from brass. According to Göler, the various military evolutions were first signalled by the horn, and then proclaimed throughout the army by the trumpet. The *classicum*, which, on the field of battle, was the signal for the charge, was made by the united blasts of the horn and the trumpet.

² Lucan, *Pharsalia*, I., 237, characterizes the notes of the *lituus* and the *tuba* in these words: *stridor lituum clangorque tubarum*.

³ The *pila* which penetrated the hostile shields often stuck fast in them, thus rendering the men unfit for action. Sometimes three or more shields in the dense phalanx were pinned together by these weapons. See Book I., 25.

⁴ This onset of the Roman legions with *pilum* and sword has been compared to a volley of musketry, instantly followed by a bayonet-charge.

It is not probable that all the men in the front rank charged with the sword at the same time, as they stood too close together in rank and file to allow the free use of that weapon. Rüstow conjectures that the odd numbers in the front rank sprang forward, while the even numbers kept their places in the line, and that thus each man secured ample room for the charge.

⁵ In this account of the Roman mode of attack, we have followed Rüstow.

preserve unbroken ranks in the front of the cohorts thus engaged. Along the front line, the whole of the first century of each maniple participated, either directly or indirectly, in the terrible struggle. While the first two ranks bore the brunt of the battle, the other three, as opportunity offered, hurled their javelins over the heads of the combatants into the hostile ranks in the rear, and held themselves in readiness to rush to the relief of their companions in case of need. Meanwhile, the second century of each maniple, remaining firm and immovable, gave stability to the line.

85. Thus far the cohorts of the second line had taken no part in the battle; but soon they, too, were seen to be in motion, and, advancing quickly in battle-array through the intervals of the first line, they hurled their javelins into the ranks of the bewildered foe, and then with drawn swords rushed into the thickest of the fight. The exhausted cohorts, thus timely relieved, retired to reform their shattered line, and to recover breath and strength for a new onset. Thus the first and second lines continued the conflict, alternately relieving each other,¹ until the enemy, exhausted and demoralized, yielded to the repeated onsets of the Roman cohorts. The third line formed the reserve, and was summoned to the front only in cases of special need.²

ROMAN METHOD OF TAKING FORTIFIED PLACES.

86. The Romans recognized three different methods of taking fortified places:—

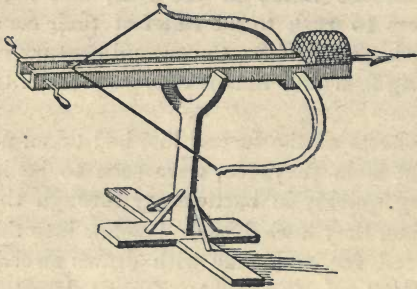
1. By Storm, Assault — *oppugnatio repentina*.
2. By Investment, Blockade — *obsidio*.
3. By Siege, with active operations — *oppugnatio operibus*.

¹ In the opinion of Rüstow, a line of Roman cohorts seldom remained in active conflict more than fifteen minutes at a time.

² The Gallic mode of conducting a battle was wholly unlike the Roman. The Gauls staked the issue largely on the first onset. Raising their fearful battle-cry, they advanced against the enemy in solid phalanx, and strove to overwhelm him by the mere momentum and weight of moving masses.

The unit in the German line of battle was the solid wedge, the *cuneus*, so celebrated in the early history of Germany. The different tribes were massed separately. The charge on the field of battle was an impetuous onset in masses. See Book I., 51.

87. In attacking fortified towns, the Romans often employed certain engines which corresponded to artillery in modern warfare. They were designated by the general name *tormenta*, from *torqueo*, to twist, as their motive power was derived from the torsion of firmly twisted ropes; but they were of several varieties.

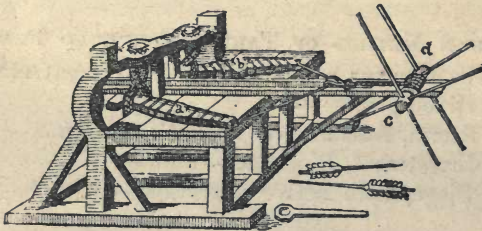


Scorpion.

1. The Scorpion—*scorpio*—was a large cross-bow, resting on a standard, as seen in the accompanying figure.

2. The Catapult—*catapulta*—was an engine for hurling heavy javelins or other missiles. This was also a modification of

the cross-bow; but the arms of the bow were straight sticks of timber, and its elasticity, or its power of recoil, was produced by the torsion of a large rope, or cable, made from hair or sinews twisted to the greatest possible tension.¹ The construction of the catapult, and the mode of working it, are seen in the following figure:—



Catapult.

¹ Only the very strongest hair was used for this purpose; and Jähns suggests that it was probably subjected to a special process to increase its strength. The sinews and tendons from the necks of bulls and from the legs of goats, were especially prized for this purpose.

Observe that the two sticks of timber, 'a' and 'b,' are inserted in two large ropes, or cables, and that their ends, like the ends of a bow, are connected together by a strong cord. In working the catapult, the middle of this cord was drawn back by means of a windlass, 'cd.' Practically, therefore, the catapult was a bow of immense power.

3. The *Ballista* was an engine for hurling balls, stones, and even heavy sticks of wood. In principle the motive power was the same as in the catapult, from which it differed mainly in the fact that it hurled missiles at an angle of 45 degrees. For the mode of working the *ballista*¹ see figure 5 in the foreground of plate V.

4. The *Onager* was a modification of the catapult. It had only one arm, and that arm worked vertically, while the arms of the catapult worked horizontally. See figure 4 in the foreground of plate V.²

88. The *Turris ambulatoria* was a movable tower, often used by the Romans in attacking fortified cities. It was, of course, of various sizes; but ordinarily it consisted of ten stories, and was about ninety feet high, twenty-five feet square at the base and twenty at the top.³ Each story had an outer gallery, extending entirely around it. See plate V., 1.

89. The tower, which was moved forward by means of rollers worked from within, was supplied with one or more drawbridges, which, on being let down upon the wall, furnished the attacking party a passage to the enemy's works. The lower story was usually supplied with a battering-ram; while the upper stories were occupied with the engines of war—the *tormenta*. The *turris ambulatoria*, armed with the battering-ram and the *tormenta*, and well supplied with archers and slingers, was a movable battery of great power.

90. The *Vinea*, used to protect soldiers and workmen during siege operations, was a movable shed or arbor, resting on rollers. According to Vegetius, it was usually 16

¹ According to Rüstow und Köchly, *Geschichte des griechischen Kriegswesens*, Book IV., 3, the *ballista* had such remarkable projectile force that it threw heavy missiles, on an average, a quarter of a mile, and that it sometimes reached twice that distance.

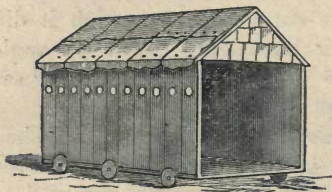
In the *Commentaries on the Civil War*, Book II., 2, Caesar tells us that beams, or poles, 12 feet long, pointed with iron, hurled from *ballistae*, passed through four rows of hurdles, probably in the form of *vineae* (90), or *plutei* (92), and planted themselves in the earth.

The *ballista* is sometimes compared to the modern mortar. It was capable of throwing missiles of great weight. Stones weighing from one hundred to one hundred and thirty pounds were at times hurled by it. See Rüstow und Köchly; also Schambach, *Geschutzverwendung bei den Römern*.—Altenburg: 1883.

² Observe that the arm is drawn down by means of a windlass, and that it flies back with great violence as soon as it is released.

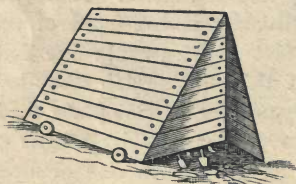
³ Athenaeus, the author of a work, *περί Μηχανημάτων*, written, probably, about 200 B. C., mentions a tower 180 feet high and 35 feet square at the base.

feet long, 7 wide, and 8 high. The roof was of timber, or thick plank, supported by upright posts; the sides were of strong wicker-work. It was sometimes entirely open at both ends, and sometimes partially closed. The roof and sides were covered with raw hides, as a protection against fire.



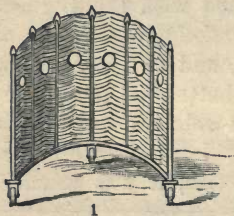
Vinea.

91. The *Musculus* was a variety of the *vinea*. It was of smaller size than the ordinary *vinea*, but of much greater strength, as it was intended to be used in the immediate vicinity of the enemy's works, especially to protect sappers and miners in undermining the wall.¹ See the accompanying figure.

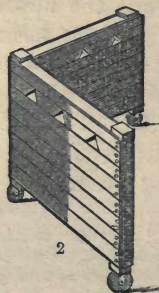


Musculus.

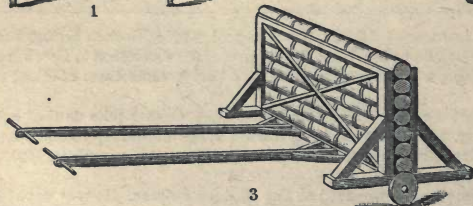
92. The *Pluteus* was a movable breastwork, or screen,



1



2



3

Plutei.

¹ Caesar, in his Commentaries on the Civil War, Book II., 10, has described the kind of *musculus* which he used in the siege of Massilia. It was so strong that blocks of stone hurled from the top of the wall fell harmless upon it. The roof was made of sticks of timber two feet thick, overlaid with brick and mortar, covered with raw hides.

resting on rollers. It was usually seven or eight feet in height, and was supplied with loop-holes, through which archers could discharge their arrows. It was of various forms, as seen in figures 1, 2, and 3.

93. The *Testudo arietaria*, also used in storming cities, consisted of a movable shed, like a *vinea*, in which was suspended a battering-ram (*aries*), in the form of a heavy stick of timber, from sixty to a hundred feet long, armed with a large head of bronze or iron. It was worked by men under the cover of the testudo, and was used to effect a breach in the wall. For the general appearance of this machine, and the mode of working it, see the *testudo arietaria* battering the tower in the background of plate V.¹

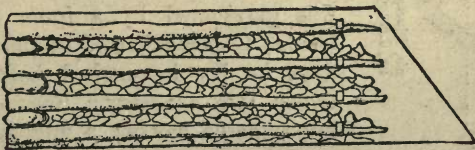
THE STORMING OF CITIES — *Oppugnatio repentina.*

94. This method of attack was usually adopted when there was a reasonable prospect of immediate success without great loss, especially in proceeding against cities which were well supplied with provisions, but were neither strongly garrisoned nor defended by formidable works.

95. Aided by his engines of war, a Roman general who could lead veteran legions to the attack sometimes found the capture of a walled town a comparatively easy task.

96. Archers and slingers, protected by *plutei*, and sharpshooters with *catapults* and *ballistae*, drove the enemy from his works. Some filled the moat, while others, under the cover of *musculi*, strove to undermine the wall, or to set fire to the gates; the tower was moved slowly forward, the battering-ram began its work; numerous storming columns,

¹ Caesar seems to have made little use of the battering-ram. The Gallic walls, according to his description, Book VII., 23, were so substantially constructed, of large beams, stones, and earth, that they could not be destroyed either by fire or by the battering-ram. The following figure is from Göler :—



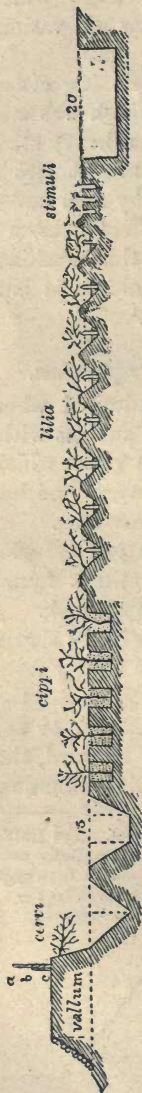
Vertical Section of Gallic Wall.

forming the *testudo*, with their shields close-locked over their heads, as seen in plate V., advanced to the attack; the ladders were quickly applied; the sharpshooters, archers, and slingers, redoubled their efforts; the walls were scaled; the gates were thrown open, and the legions entered.

INVESTMENT, BLOCKADE OF CITIES —
Obsidio.

97. The Romans sometimes compelled hostile cities to surrender, by enclosing them so completely within a continuous line of strong fortifications, that neither supplies nor succor could reach them. This plan was adopted when the place was too strongly fortified and too strongly garrisoned to be taken by storm, especially if the population was large, and the supply of provisions limited. To ensure success, it was sometimes necessary to construct a second line of works at a suitable distance from the first, and outside of the investing army, as a precaution against attack from without, in case any attempt should be made to relieve the city.

The most remarkable instance mentioned in the Commentaries of this method of taking fortified towns, was the investment of Alesia. The town was garrisoned by a force of 80,000 Gauls; Caesar invested it, and for forty days he lay intrenched before it between two concentric lines of almost impregnable works; a mighty array of confederate Gauls, 250,000 strong, arrived in the rear of his intrenchments;



ab, Pinnac.
bc, Lorica, consisting of plutei.
Section of Caesar's Contravallation at Alesia.

but Roman valor triumphed, and Alesia surrendered to the conqueror.

98. The works with which Caesar enclosed this stronghold of the Gauls were in some respects among the most remarkable mentioned in Roman history. The figure on the preceding page, from Napoleon and Göler, represents a vertical section of the inner line of works, called in modern phraseology, *contravallation*.¹

SIEGE OF FORTIFIED PLACES — *Oppugnatio Operibus*.

99. With the Romans, a formal siege involved, not only the use of all the ordinary engines of war, but also the long and tedious labor of constructing an *agger*. It was resorted to only in difficult cases, when a simple investment would be inadequate and when a direct assault without special preparation would promise little success. The *agger* was a mound, or rampart, beginning several hundred feet from the wall of the besieged city, and extending directly toward it, until it finally reached and overtopped it, and thus furnished a broad highway, on which a storming column could advance directly to the highest part of the enemy's works.²

100. An *agger* of the ordinary dimensions, 400 or 500 feet long, 50 or 60 feet wide, and from 50 to 80 feet high,³ required for its construction an enormous amount of timber, stones, earth, and brush. The trunks of trees from 20 to 40 feet in length, and from 1 to 2 feet in thickness, were of the first importance; indeed the words of Lucan must have been at times almost literally true⁴:—

“Procumbunt nemora et spoliantur robore silvae.”

¹ In modern phraseology, the inner line, or that which invests the city, is called *contravallation*, that outside of the investing army, *circumvallation*.

This line of works was 11 Roman miles in length, and 400 feet in width. Observe that on the side toward the city was a ditch 20 feet wide; that on the opposite side, 400 feet from this ditch, was a rampart 12 feet high, and that between these two points were arranged (1) two ditches, each 15 feet wide; (2) five rows of trunks of trees, with branches sharpened to a point, so planted in the earth that only the branches were in sight, called *cippi*; (3) eight rows of small pits 3 feet deep, each with a sharpened stake firmly set in its centre, called *lilia*, lilies, and (4) an indefinite number of short stakes entirely sunk in the earth, to which iron hooks were attached, called *stimuli*, spurs.

² In some cases the *agger* did not reach the top of the wall, but was surmounted by one or more towers, which, on being moved up to the enemy's works, secured the necessary height for the storming party.

³ The *agger* at Avaricum was 80 feet high. See Book VII., 24.

⁴ Lucan's *Pharsalia*, III., 395.

101. To aid the learner in understanding the more important steps in a formal siege, we add the following illustrations. Fig. 1, page lix, *Ground Plan of Siege Operations*:—

lxvii

1. ABCD represents the enemy's wall.
2. abcd, the space to be occupied by the agger.
3. mm, *musculi*, protecting laborers levelling the ground.
4. VV, the line of *vineae*, forming a covered way through which materials were brought for the agger.
5. PP, a line of *plutei*, protecting the men while building the first section of the agger.
6. TT, *turres ambulatores*, armed with *tormenta*, and supplied with archers and slingers.
7. pppp, a continuous line of *plutei*, nearly parallel to the enemy's wall, protecting archers and slingers.
8. vv, vv, two lines of *vineae*, parallel to the agger, forming each a covered way by which soldiers passed to the towers and to the lines of *plutei*.¹
9. cdef, a horizontal section of a part of the first story of the agger, showing how the logs were arranged, with intervals between them, and in layers at right angles with each other, showing also an open gallery or way through the middle.

102. An agger, 80 feet in height, usually consisted of eight or ten stories. On each floor was an open gallery, or hall, 10 or 12 feet wide and 8 or 10 feet high, extending the whole length of the agger. The work of construction began at a distance of 400 or 500 feet from the enemy's wall, from which most of its defenders had been driven by the archers and slingers behind the line of *plutei*, and by the artillery-men in the towers. The materials were brought through the covered way formed by the line of *vineae* 'VV,' while those who were engaged in the actual work of construction were protected by the *plutei*, 'PP.' First, large logs were placed firmly upon the ground parallel to each other and at suitable intervals; upon these was placed a second layer of logs at right angles with them, as seen in figure 1. The open spaces between the logs were then filled with earth, stones, sods, brush, etc. Through the middle was left a passage, or open gallery, 10 or 12 feet wide, as stated above. The work continued in this way

¹ The line of *plutei*, parallel to the enemy's works, and the lines of *vineae* leading to it, are sometimes compared to the parallels and approaches in modern warfare.

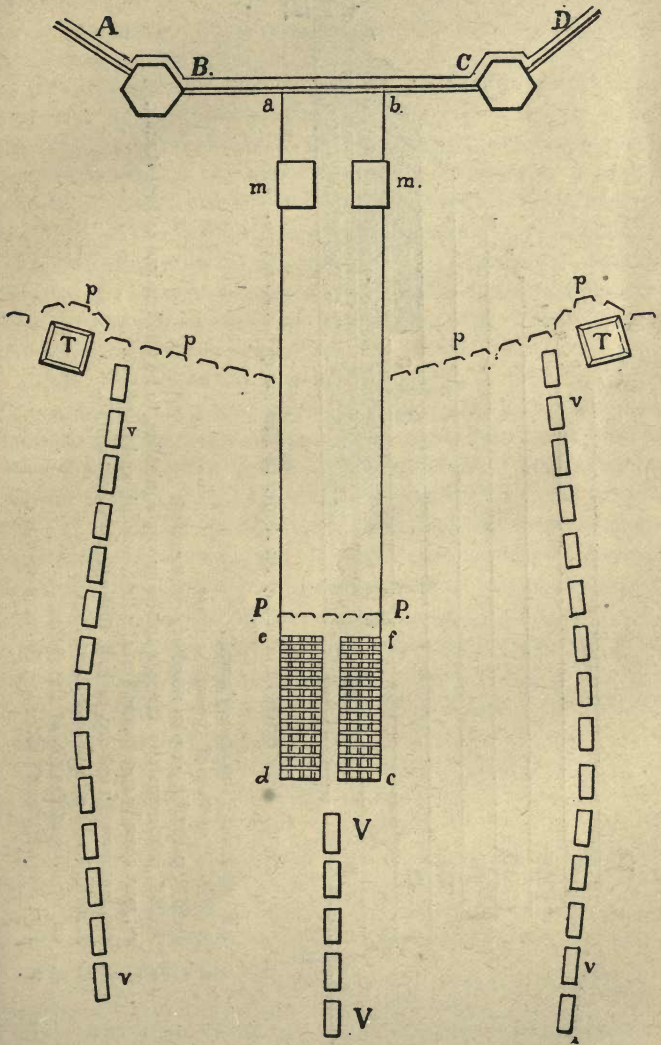


Figure 1. Ground Plan of Siege Operations.

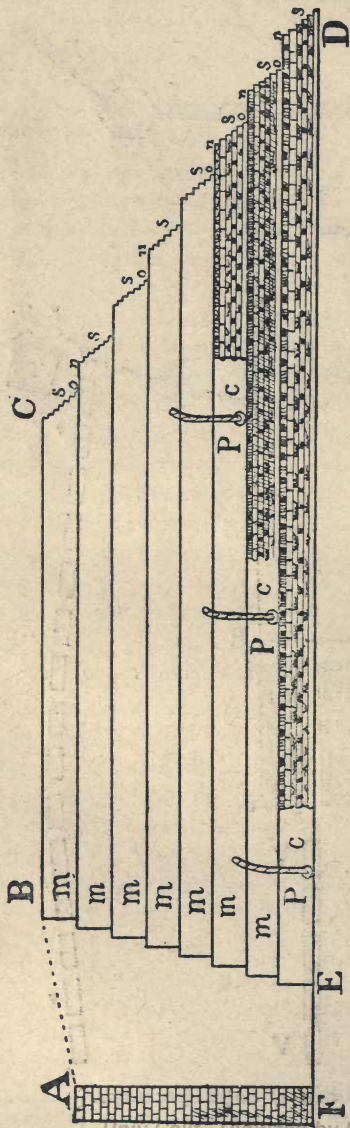


Figure 2. Vertical Section of an Agger in Process of Construction.

1. AF, represents the enemy's wall.
2. ABCDEF, section of the entire agger.
3. BCDE, part that may be regularly constructed.
4. ABEF, part especially exposed to the enemy's missiles, to be filled at last as best it may.
5. cs, part already constructed on the first, second, and third floors.
6. ms, a story with gallery, or hall, through its whole length.
7. s, stairs leading from one floor to another.
8. on, landing at the top of the stairs.
9. P, a line of *plutei* protecting the men at work.

until the sides reached the height of 8 or 10 feet, when the open passage was covered overhead with a layer of timbers placed across it. Thus was finished the first section of the first story of the agger.

103. The *plutei*, 'PP,' were next moved forward 30 or 40 feet, and under their protection the second section of the first story was constructed in the same style and manner as the first section.¹ A line of *plutei*, 'P,' as seen in figure 2, was then placed across the front of the second floor, and the building of the first section of the second story was begun. The materials were all brought through the *vineae* and up the stairs, 's,' to the landing, 'on,' which was a platform extending the whole width of the agger, thus affording easy access to the gallery, or hall, on the second floor.

104. As soon as the second section of the first story was finished, the *plutei* were again moved forward, and the third section was begun. At the same time, the *plutei* on the second floor, 'P,' in figure 2, were moved forward, and the second section of the second story was begun. *Plutei*, 'P,' were then placed on the third floor, and the first section of the third story was begun. This, like the second, was reached by stairs, leading to the landing, which furnished access to the hall, or passage, on this floor.

105. Thus the construction of the agger went on; one section after another was added, one story after another, until BCDE was finished.² The part nearest to the enemy, AB EF, still remained to be filled as best it might. Then through all the halls on the different floors were brought logs, stones, brush, fascines, sods, and the like, and were hurled into one confused mass, until the space was filled. The top of the heap was next hastily levelled off and made passable. The decisive moment, for which all this elaborate preparation had been made, had at length arrived. The archers and slingers redoubled their efforts, and the heavy

¹ The timber and other materials were brought first through the *vineae*, 'VV,' and then through the covered gallery in the first section.

² The enemy often attempted to prevent the completion of the agger, either by setting it on fire, or by undermining it (Book VII., 22 and 24); but, if he failed in this, he ordinarily lost courage, and surrendered before the completion of the works. Thus the Aduatuci surrendered when they saw the tower approaching the wall: see Book II., 31.

artillery swept the walls with its missiles, as the storming column advanced over the agger, and planted the Roman eagle upon the enemy's works.

SHIPS OF WAR—*Naves Longae*.

106. Caesar had no organized navy during his Gallic campaigns, but he built ships as occasion required, and manned them with his legionary soldiers.¹ His veteran legions could fight either on land or sea.

107. The Roman ships of war were seven or eight times as long as they were wide, and were accordingly called *naves longae*, in distinction from the transports, *naves onerariae*,² which were much shorter in proportion to their width. They were armed in front with a formidable beak (*rostrum*), with which they often pierced and sunk the enemy's ships. Though provided with sails, they were propelled chiefly by oars. They carried the usual engines of war, the *tormenta*, were furnished with grappling-irons, and sometimes had towers on their decks. The most important varieties were the *triremes*,³ with three banks of oars, and the *quinqueremes*, with five banks.⁴ See plate VI.

¹ Rowers and sailors could be readily obtained. See Book III., 9.

² The *naves onerariae* were transports, or ships of burden. They were four times as long as they were wide; they were propelled chiefly by means of sails, although supplied with oars to be used in case of need.

³ According to *Graser*, a trireme was 149 feet long, with a deck 18 feet wide, and carried 232 tons burden. Without the use of sails, it had 24 horse-power, and its rate of speed was 10 knots an hour. The oars were arranged in tiers or banks, those in the upper bank being 13½ feet long, those in the middle bank 10½, and those in the lower bank 7½.

The regular complement of men for a *trireme* seems to have been 225, of whom 31 were officers and soldiers, 20 sailors, and 174 rowers; for a *quinquereme*, 375, of whom 310 were rowers; but we learn on the authority of Polybius that the Romans increased the number of soldiers, and that the *quinqueremes* in the Punic wars generally had each 120 soldiers on board.

⁴ The *naves actuariæ* and the *naves speculatoriæ*, also called (Book IV. 26) *speculatoria navigia*, were small light vessels constructed for speed.



PLATE I.



1. Funditor. 2. Levis Armaturae Pedites. 3. Legionarii Milites.
4. Sarcinae. 5. Equites.



PLATE II.



1. Imperator 2. Legatus 3. Centurio 4. Lictor 5. Signiferi.
6. Bucinator 7. Tubicen 8. Vexillum 9. Aquila.



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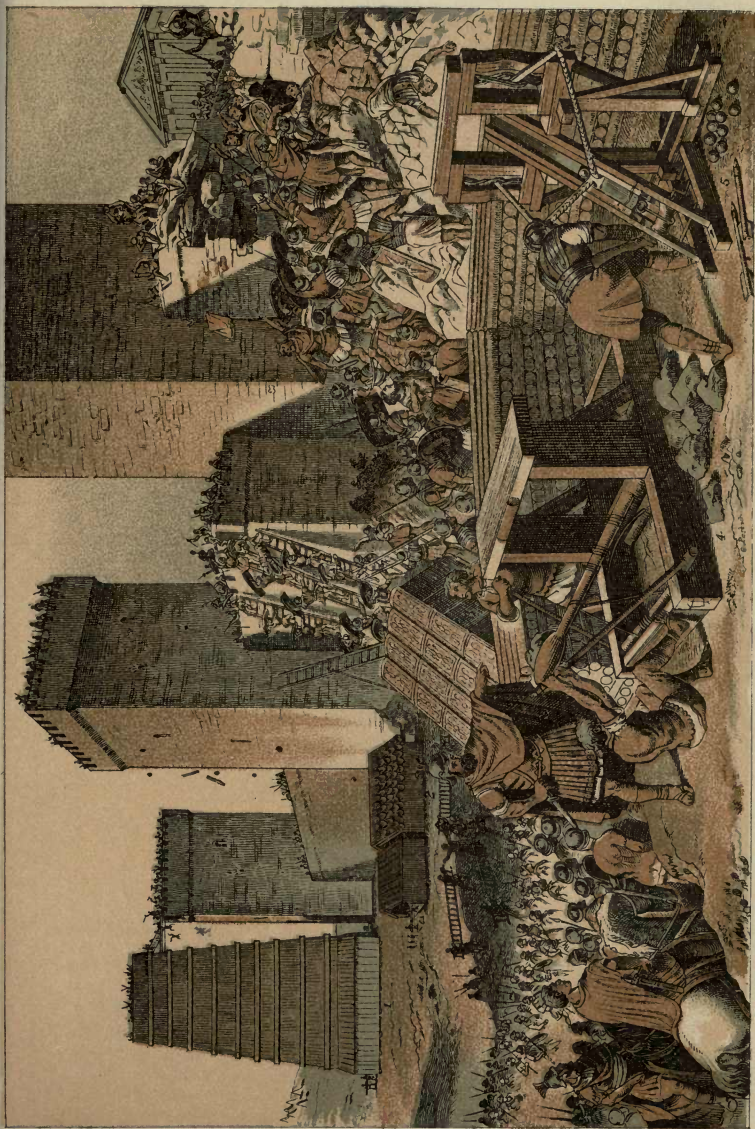


PLATE IV.



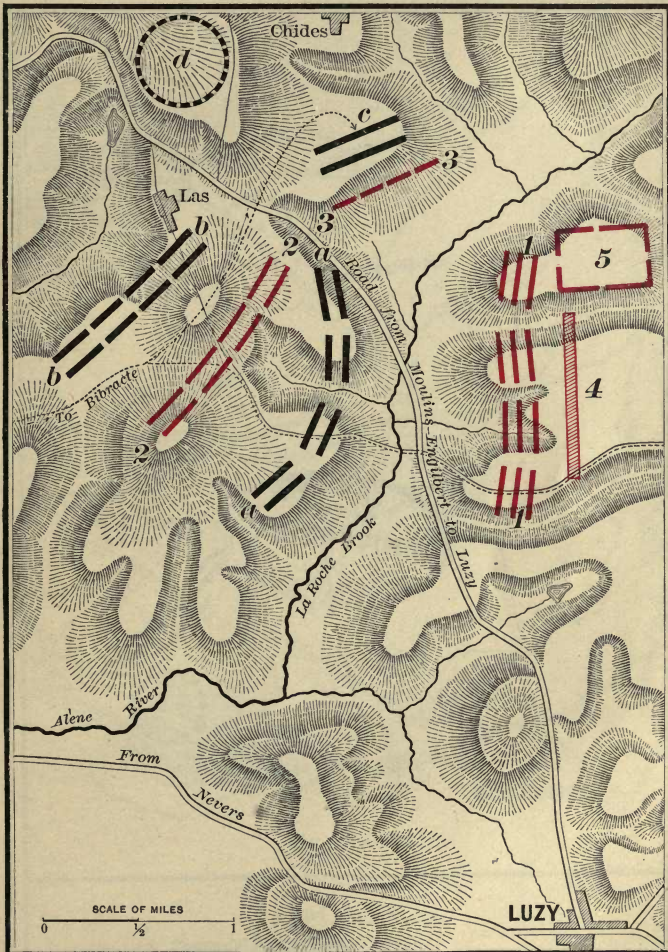
Galli, 1. Eques, 2. Pedes, 3. Signifer, 4. Dux.
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1. *Turris Ambulatoria* . 2. *Testudo Arietaria* . 3. *Testudo* . 4. *Onager* . 5. *Ballista* .





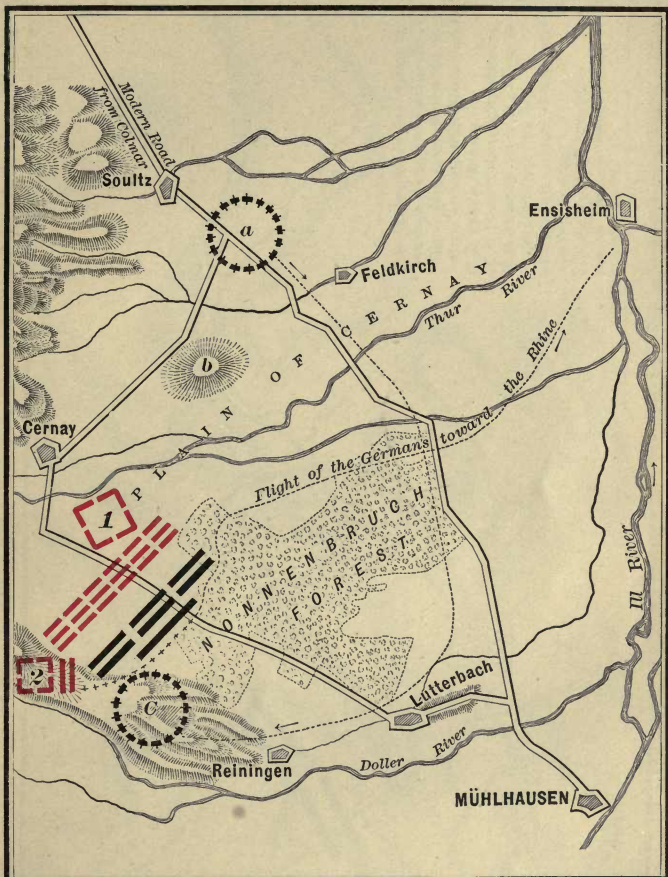
EXPLANATION.

1. Romans in line of battle with the *Helvetii* (a, a) in front of them.
 2. The first two of the Roman lines after they had driven back the *Helvetii* (b, b) to the neighboring hill.
 3. The third line with the *Boii* and *Tulingi* (c) in front of it.
 4. Two new legions with auxiliaries. 5. Roman camp.
 - a. *Helvetii*, first position. b. *Helvetii*, second position. c. *Boii* and *Tulingi*.
 - d. Helvetian camp defended by wagons, charlots and baggage.
- Romans. — *Helvetii*.

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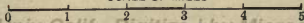


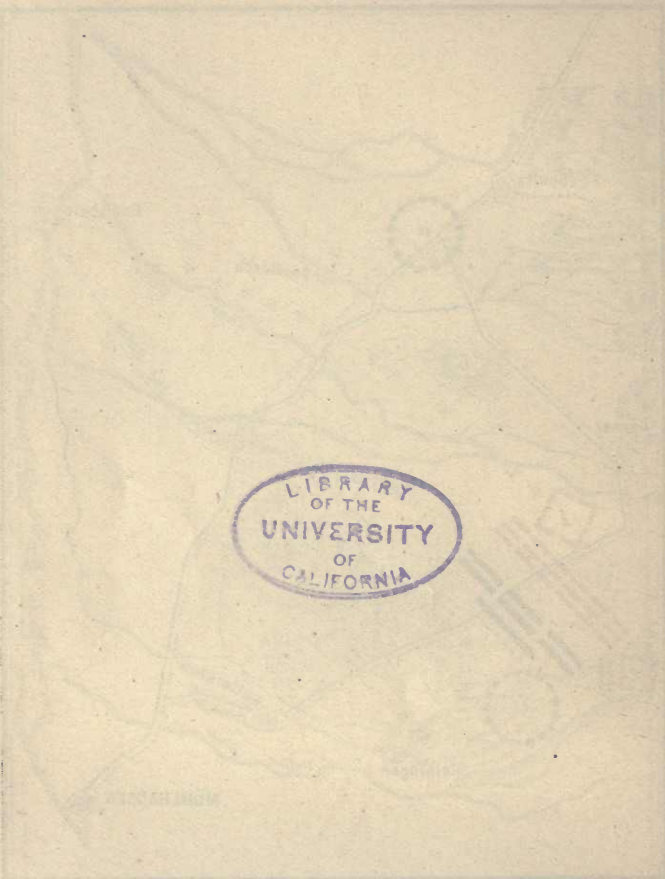
EXPLANATION.

- 1. Caesar's large camp.
- 2. Caesar's small camp.
- a. First camp of Ariovistus.
- b. Hill on which Caesar and Ariovistus met.
- c. Second camp of Ariovistus.

— Romans. — Germans.

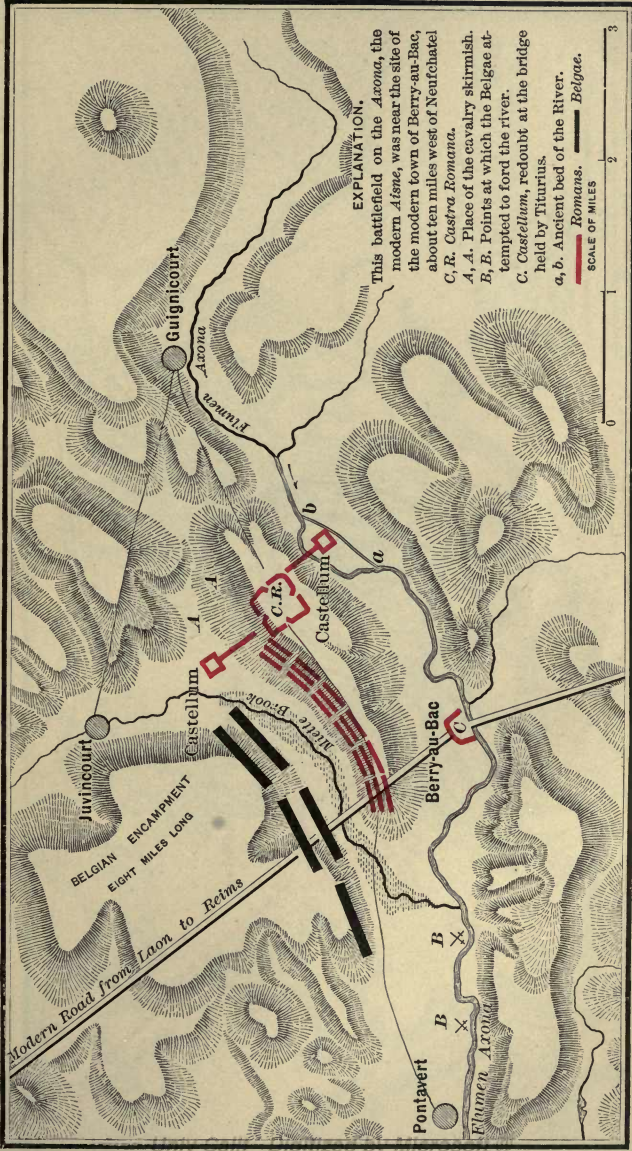
SCALE OF MILES





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EXPLANATION.

This battlefield on the Axona, the modern Aisne, was near the site of the modern town of Berry-au-Bac, about ten miles west of Neufchâtel.

C, R. *Castra Romana*.

A, A. Place of the cavalry skirmish.

B, B. Points at which the Belgae attempted to ford the river.

C. *Castellum*, redoubt at the bridge held by Titurius.

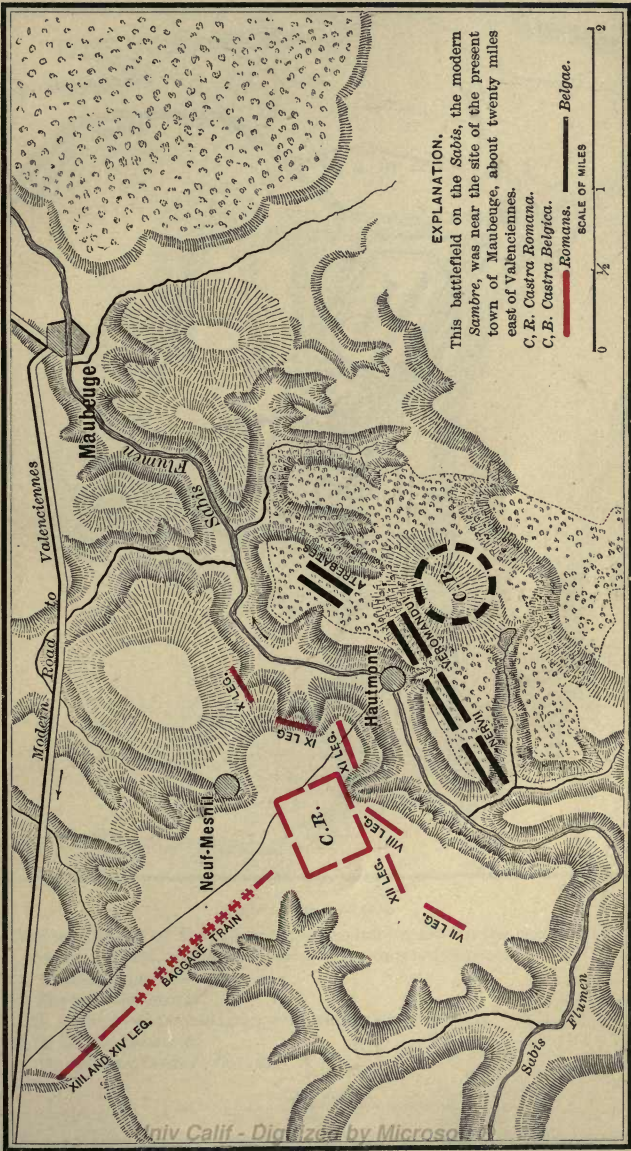
a, b. Ancient bed of the River.

— Roman. — Belgae.

SCALE OF MILES







EXPLANATION.

This battlefield on the Sabis, the modern Sambre, was near the site of the present town of Maubeuge, about twenty miles east of Valenciennes.

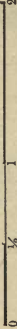
C, R. Castra Romana.

C, B. Castra Belgica.

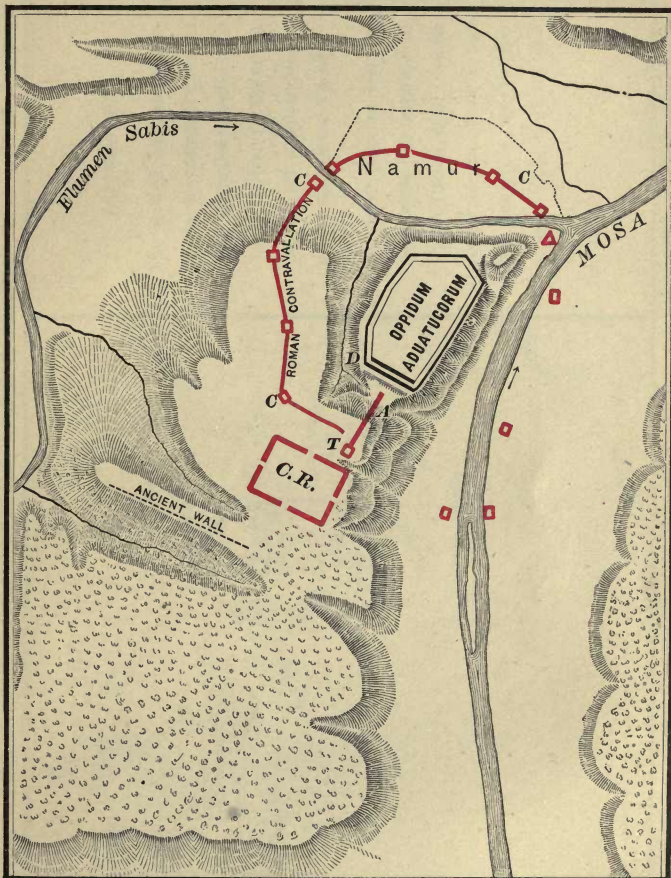
— Romans.

— Belgae.

SCALE OF MILES







EXPLANATION.

This stronghold of the Aduatuci occupied the hill, on the right bank of the Sambre, which now forms the citadel of Namur.

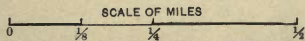
A. Roman Agger.

T. Turre ambulatoria.

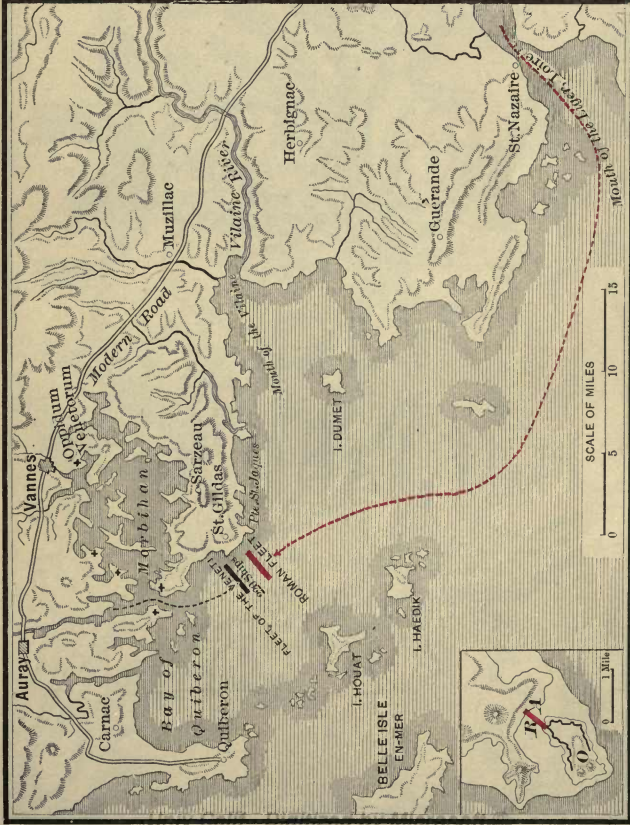
C, C. Roman contravallation with numerous redoubts.

C, R. Castra Romana.

D. Double wall before the city.



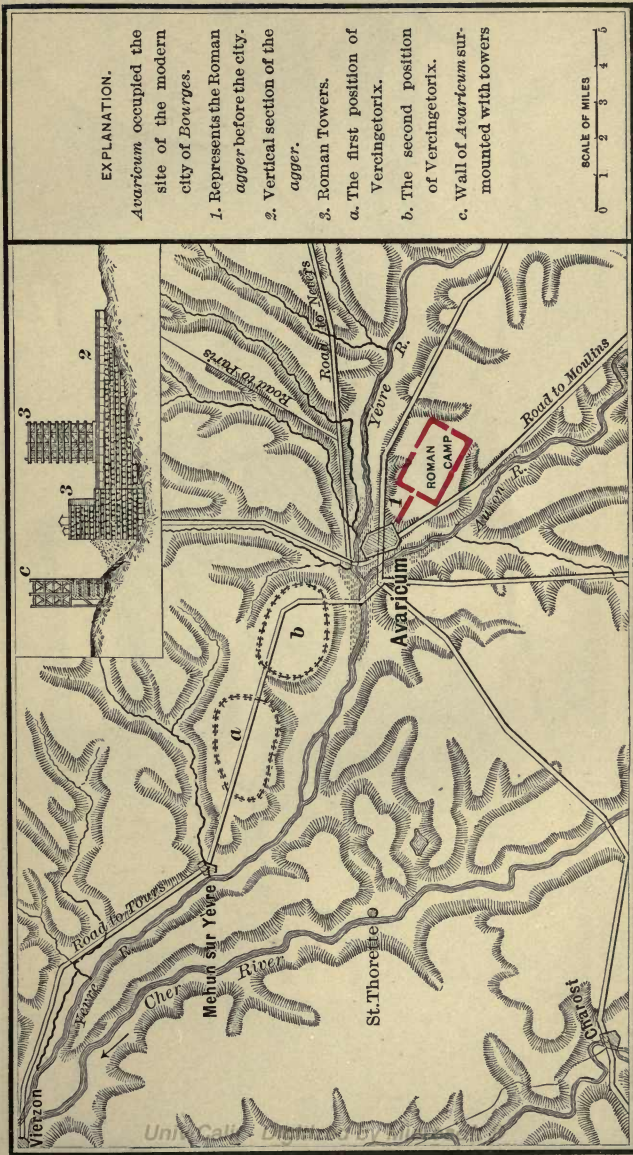




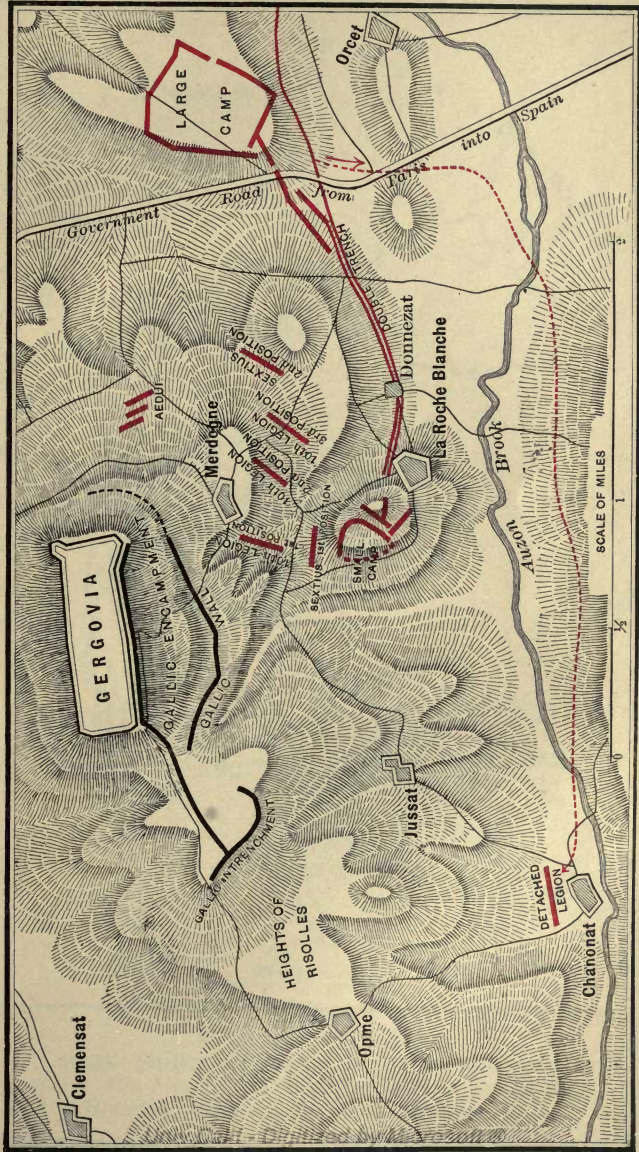
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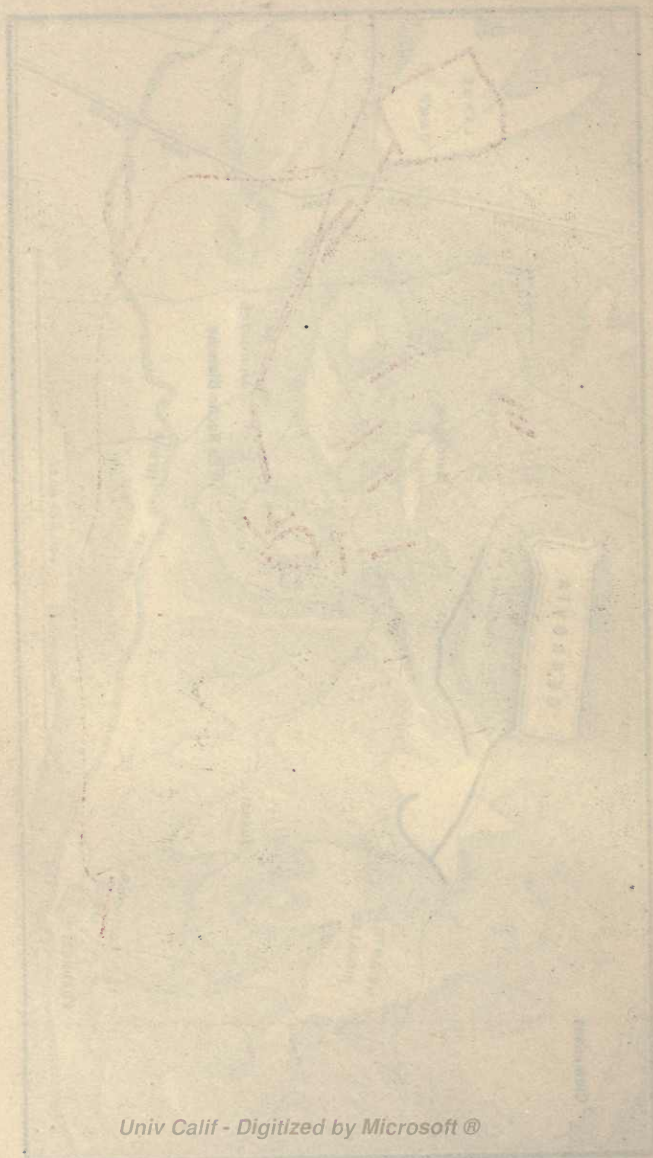
1. The dotted red line represents the course of Caesar's fleet from the mouth of the Loire, to Point St. Jacques, off which it defeated the fleet of the Veneti.
2. The small plan at the left represents the manner in which Caesar took several towns of the Veneti; the red line R, A, the Roman agger. O, a town of the Veneti.







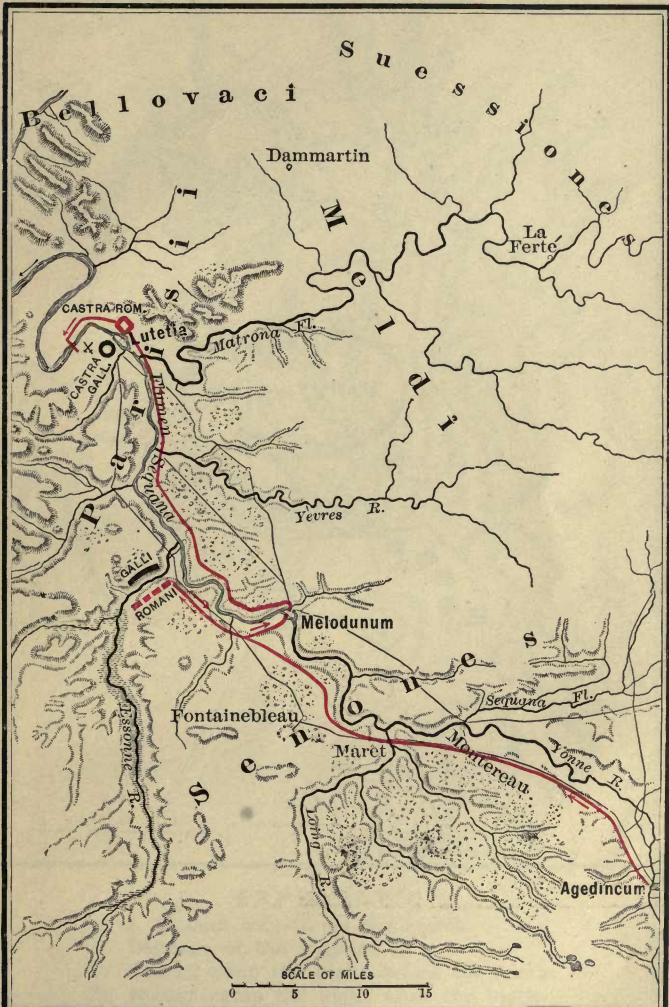




PL. IV

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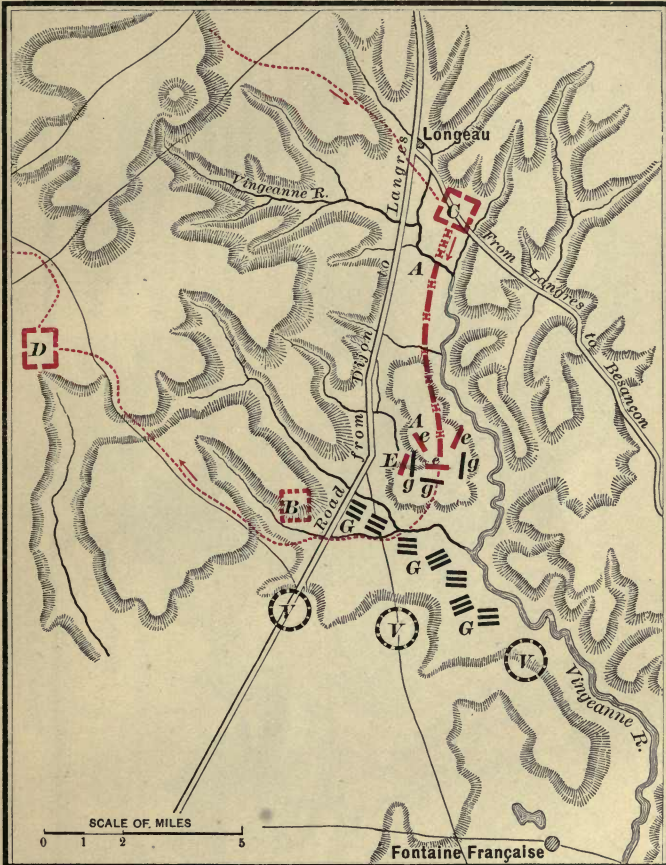
PL. IV



EXPLANATION.

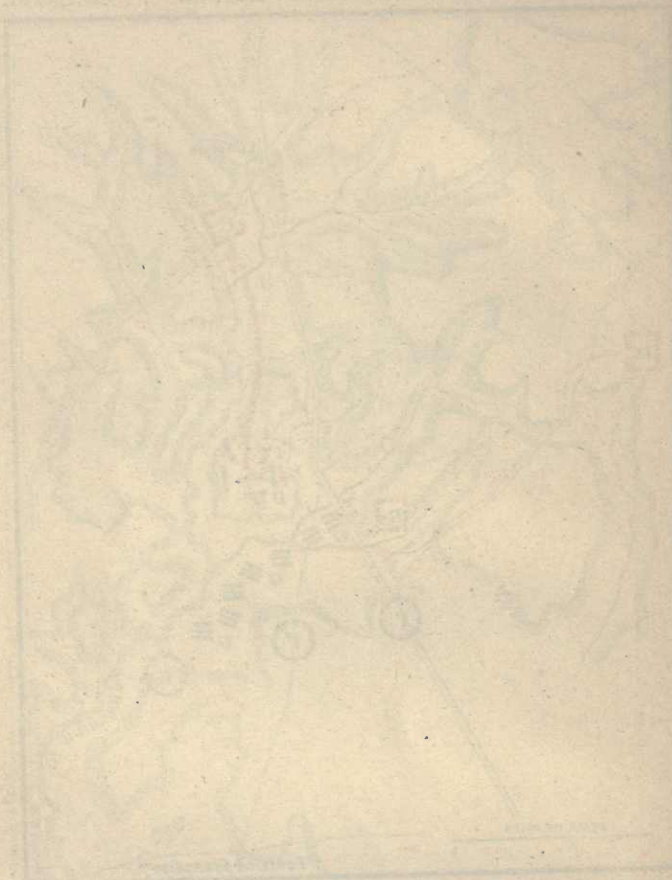
Lutetia, Paris; Melodunum, Melun; Agedincum, Sens; Sequana, The Seine; Matrona, The Marne; Castra Rom., Castra Romana; Castra Gall., Castra Gallica.

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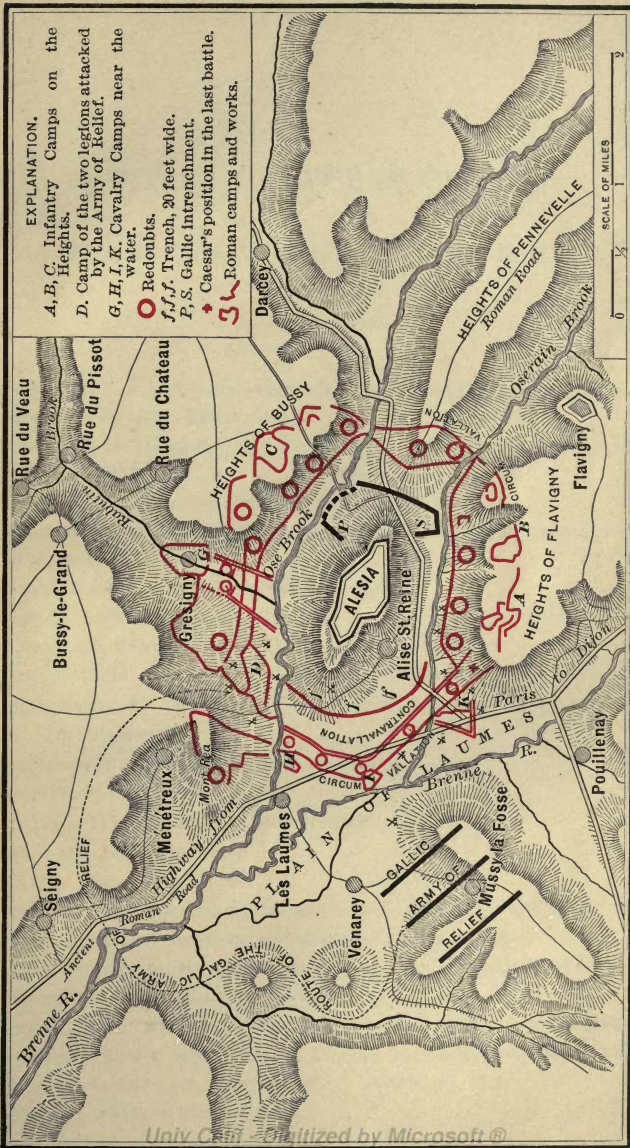
EXPLANATION.

- A, A. Roman column on the march.
- B. Baggage of the Romans.
- C. Roman camp the night before the battle.
- D. Roman camp the night after the battle.
- e. Caesar's cavalry in three divisions.
- E. German cavalry in Caesar's service.
- g. The enemy's cavalry.
- G. The enemy's infantry in line of battle.
- V. The three camps of Vercingetorix.



EXPLANATION

- 1. The boundary between the two main regions of the formation.
- 2. The boundary between the two main regions of the formation.
- 3. The boundary between the two main regions of the formation.
- 4. The boundary between the two main regions of the formation.
- 5. The boundary between the two main regions of the formation.
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- 9. The boundary between the two main regions of the formation.
- 10. The boundary between the two main regions of the formation.



EXPLANATION.

A, B, C. Infantry Camps on the Heights.

D. Camp of the two legions attacked by the Army of Kellef.

G, H, I, K. Cavalry Camps near the water.

○ Redoubts.

f, f, f. Trench, 20 feet wide.

P, S. Gallic Intrenchment.

+ Caesar's position in the last battle.

3 Roman camps and works.



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