

word "Halt" will be pronounced when the left foot is foremost, and at the word all will halt in an instant, together, when the instructor dresses the ranks which will most probably be disordered at first,

To quicken the step, the instructor commands, *Quick—MARCH!* This pace will be one hundred and twenty steps a minute, and of twenty-eight inches in length. The squad will then halt, and facing about, repeat in the opposite direction, halting very frequently, and practising both steps and halts till they march together and halt together without any disorder or crowding, keeping their alignment by the touch of the elbows and an occasional glance at the centre, and halting bodily, so as to need but little dressing. The squad will then face to the right and left in succession, and march in file in the same steps preserving intervals with care and keeping, accurate time, watching the shoulders of their file leaders and not their feet, and keeping exactly behind them, so that the march is made as easy as in ranks.

The first three days will be occupied in dressing, facing, and marching, in rank and file; and the men will be kept at it till they all execute these motions as one man, and obey the sound of the bugle.

The men marching in common time, the instructor next commands, *Squad to the right—MARCH!* At the word "March" all the men wheel on the left heel suddenly, and, setting down the right foot by the left, step off with the left in the new direction, in files. If there is any crowding, the instructor halts the squads, fronts them again, marches forward, and repeats the movements, showing the men by example the way to effect it. The squad thus marching in file, the instructor to get them in rank commands, *Squad to the left—MARCH!* At the word "March," all wheel on the left heel, drop the right by it and step off with the left in the new direction in line. (N. B. The word "March" will be uttered in cases when the left foot is foremost, and all marches will commence with the left foot.)

These two changes will be sung all round the compass, at common time and then in quick time, and the instructor will then command, *Squad about—MARCH!* At the word "march" the left foot being foremost, set it down and wheel about suddenly on the left foot stepping off with the left again, which will be found to be in the rear by the change of face. The about march will first be executed in line, and afterward in file, first in common time, and then at quick time, till the men do it without crowding and as one man. The bugle signals for change of direction are the same as right, left and about face.

**OBlique MARCH.**—The squad being in line, the instructor commands, *Right oblique—MARCH!*—The men will turn to the right at an angle of 45 degrees and step off, each man having his right shoulder behind his file-leaders left, resuming the first direction at the command "forward." *Left oblique—MARCH!* is executed in the same way by inverse means.

The men now being formed in line, the instructor next commands, *Squad double quick—MARCH!* At the word "double quick" all place hands, closed under the breast, the elbows bent, the forearm level; lean the weight on the right leg, and lean slightly forward, bending the left knee and raising the heel. At the word "March" all move off at a slow trot, the time one hundred and eighty steps a minute, length of step thirty-three inches.

The double quick will be used at first

sparingly, but after the men can do it well the former lessons should be executed at this pace, namely right and left march, and about and oblique march.

The instructor next commands, *Mark time—MARCH!* when the men move their feet at the previous pace, but without gaining ground at all. This movement is used during temporary stoppages, when marching.

## A FEW THOUGHTS ON THE ARTILLERY

### ITS CONDITIONS AND REQUIREMENTS.

BY AN ARTILLERY OFFICER.

(From the Army and Navy Journal.)

Every intelligent person is aware that the science of artillery has been vastly magnified within the last ten years, but its full growth and progress can be realized only by those whose business or pleasure it has been to investigate the subject.

Although the changes and improvements have been due to many years of study and experiment, their rapid development has been brought about by the wars of the last dozen years. Within this period we may place the introduction of rifled cannon, smooth-bored hollow-cast guns of extraordinary calibre, mammoth powder, torpedoes, iron-clads, and many other inventions.

An officer well versed in the science of artillery, as taught a few years since, would be ignorant of his profession now had he learned nothing new. Then the light battery was looked upon as the "basis of all instruction in artillery," and to be an accomplished drillmaster was the gauge of success. The command of a mounted battery was the highest honor offered to the artilleryman, and the foot batteries were little more than stepping-stones to this position. The subject of heavy artillery was thought to be very well mastered by a knowledge of the manual of the piece, mechanical manoeuvres with guns, the largest of which weighed only about 15,000 pounds, and a few general facts relating to ranges and ammunition.

At present though the command of a mounted battery is no less an honourable position, and one which requires some unusual personal characteristics to insure full success, its relative importance has greatly decreased.

Our field artillery embraces but two kinds of guns, using but one kind of powder; the ammunition is fixed at the arsenals, the charges are unvarying and independent of the range; the ranges are confined to a few degrees of elevation, and the habitual fire is the simplest known—the direct fire. Nor is there now the scope for the judgment, the dash, and enterprise which, in the days of short ranged and muzzle-loading small-arms, went so far in making up the character of the model battery commander. Batteries lean far more heavily on the infantry for support than of old.

In heavy artillery an officer is concerned at once with twenty different guns, with powder and charges specially adapted to each; the ammunition is prepared at the batteries; every species of fire brought into play; all the mechanical powers are applied in mounting and manoeuvring the guns; and, in short an extent and variety of information required second to that in no other branch of service.

If we dwell upon this point, it is because the heavy artillery in this country has not been given its due importance in the past. This results in a great measure undoubtedly from the nature of the recent wars in which we have been engaged, and where our field artillery played such a glorious part. The

Mexican war first brought renown upon this arm, and made the names of the battery commanders as widely known as those of brigade and division commanders.

During the Rebellion, the necessities of the situation led to the absorption of the whole *personnel* of the artillery by the mounted batteries. Not until we are involved in war with some foreign power possessing extensive naval resources, and the capabilities of our existing and contemplated seacoast defences are subjected to the *experimentum crucis*, will the full value and importance of heavy artillery be appreciated by the country at large. We ourselves, however, should appreciate rightly and thoroughly the nature and extent of the duties and responsibilities which would devolve upon us of necessity in such a contingency. No officer of average ability can put off preparation for these duties until the emergency is at hand without risking some dishonor to himself and to his arm of the service.

Great as have been the changes in our own service, we cannot form an adequate idea of its development without reference to other countries. It would be alien to our purpose to enter into any lengthened comparison between our own ordnance and that of foreign powers, and only such salient points are touched upon as may serve to show that the inactivity which characterizes our condition is not paralleled elsewhere. It is true that this inactivity, so far as relates to the construction of ordnance, is enforced by the unwise legislation of Congress forbidding the manufacture of cannon, thus compelling the cessation of all experiments in the direction in which improvement is absolutely essential. This legislation seems to be grounded upon the assumption that our experiments, thus far, have not been made in the direction which promises success. It is of vital importance, however, that it be definitely determined whether our system of smooth-bored guns of large calibre is what we require or not. It may with truth be said that we have hitherto uniformly led the world in the fabrication and general adoption of the heaviest, and, therefore, most decisive ordnance. Our naval successes during the war of 1812-'15 were principally, if not entirely, due to this fact. The possibility of constructing reliable cast-iron guns of more than 8 inch calibre is due solely to the genius of General Rodman, as is the invention of large-grained or mammoth powder, now largely used in foreign services with heavy guns.

It may be that in adhering to cast-iron guns we are wrong; but this is yet to be demonstrated, and if at all, by the means by which we have heretofore maintained our superiority. Anything is better than inaction. A speck of war would lead to the hasty construction of heavy guns without any opportunity for experiments, by which alone good results are to be had. We have on paper 10-inch and 12 inch guns, and 15-inch mortars, which in anticipation of war would be fabricated and sent to our seacoast works "with their imperfections, on their heads." Then disaster following disaster might demonstrate again, as often before, that such a policy is suicidal, and that it is well to prepare for war in time of peace.

#### WHAT HAS BEEN DONE ELSEWHERE.

By a system of experiments involving pounds where ours involve pence, England has apparently become satisfied with the steel-lined wrought-iron muzzle-loaders. The latest pattern of the maximum size is the new 35-ton rifle; calibre, 11.6 inches; charge 130 lbs; projectile, 600 lbs; I.V., 1,300 feet. The conversion of smooth-bored cast-iron