

other conditions remaining the same, does not mean any change in muzzle velocity, but changes in the remaining velocity, times of flight, energy, etc., which can be shown by an easy calculation, using only the difference in barometric pressure.

Thus—the co-efficient

$$\frac{d^2}{w}$$

of the M-H when the barometer stands at 30 inches, is 2.932. Assuming a trial of a lot of ammunition to be made when the barometer stands at 29.70 inches, then the co-efficient will be reduced and become

$$2.9532 \times \frac{29.70}{30.00} =$$

$2.9532 \times 0.99 = 2.9237$. Again—assuming the barometer to stand at 30.30 inches, the co-efficient will be increased, and become

$$2.9532 \times \frac{30.30}{30.00} = 2.9827$$

(Continued in our next issue.)

THE CRIMEA IN 1854 & 1894

LITTELL'S LIVING AGE of February 16th, gives the 4th part of Sir Evelyn Wood's articles on the Crimea.

The placing of the guns in the 3rd parallel on the night of the 11th and 12th of April is described and the opening fire of the advanced batteries :

Captain Oldershaw, Royal Artillery, who had received orders to fight his guns at all risks, marched next day into the battery with two officers and sixty-five of all other ranks, and so thoroughly executed his orders that he silenced the guns in the Crow's Nest of the Garden batteries, after two hours' work. He was, however, overwhelmed later by the fire of thirty guns, many of heavy calibre, which concentrated on his four 32-pounders, struck down half the company, dismounted three of the guns, and in the words of the officer in command, "literally swept away the battery." Eventually the fourth gun was disabled, but neither Captain Oldershaw, nor the men still untouched, offered to leave the position, in which they remained until, having sustained this unequal conflict for nearly five hours, an order was received to withdraw the men. Three of the dismounted guns were lying upset, but with their muzzles in the air, and as the survivors marched out a salvo was fired from these disabled pieces. Of the sixty-five non-commissioned officers and men who marched into battery, eighteen had been sent away with wounded men, leaving forty-seven in action. Their casualties were forty-four killed and wounded.

Next morning an order was given (in error) for Captain Oldershaw to fight the battery again with fresh detachments. He was on parade when the eighteen men employed as stretcher bearers, and the three survivors of the previous day's fighting, sent a message through the senior surviving effective non-commissioned officer, a corporal, begging to be allowed to accompany him. Another officer had, however, already been detailed, but although he and his men behaved remarkably well, and their efforts in the rebuilt battery were supported by six guns in No. 8 battery, which had been armed during the night, yet by sunset on the 14th the two batteries were crushed, the gun detachments were withdrawn, and were not replaced.

The British soldier does not often

require speeches to raise his courage on going into action, but every one of us is the better from the contemplation of heroic deeds ; and were I a Royal Artilleryman, I should try to so record this achievement that young gunners might learn the names of those three survivors of the five hours' artillery duel on the 13th of April, who, having seen ninety-three per cent. of their comrades fall, begged for permission to recommence, with their captain, the same deadly work the following day.

Before nightfall on the 9th April the batteries on one face of the Redan had been silenced, and when darkness closed in, and we could no longer see to lay our guns, a shower of mortar-shells was directed on the Russians, who nevertheless worked so unremittently throughout the night, that early next morning they reopened fire on us with no perceptible loss of power. The French had, however, breached the Central bastion and inflicted terrible loss on the Flagstaff bastion, and by the evening of the 10th had practically destroyed the so-called White Works, which had been erected by the Russians on the lower spur of the Inkerman Ridge at the end of February.

Early on the 11th April I was sent by Captain Peel from the 21-gun battery with a note for Captain Lushington, the commander of the Naval Brigade, and by him was ordered to take it on to Lord Raglan. Scribbled on a scrap of paper were these words : "If the allies intend to assault, a better opportunity than this will not offer. The fire of the Russian batteries of the Malakoff is completely crushed." When galloping to headquarters my pony put his foot into a hole, and turning right over, rolled on me, covering my face and clothes with mud. I thus appeared before Lord Raglan, who was in the farmyard at headquarters, casting troop horses, apparently belonging to his escort. He astonished his staff by warmly shaking hands with the very dirty midshipman as he offered me breakfast. He then read the note, but merely remarked, "impossible, I fear."

As I was re-entering the battery I met four men carrying away the body of my friend and messmate, Lieutenant Douglas, the top of whose head had been knocked off by a round shot. He could not have suffered, as on the handsome face there was a smile such as I had often seen. He was a great favorite with all, but I, living in the same tent for six months, had become especially attached to him. Singularly unselfish, he had by his undaunted courage attracted the notice of Captain Peel, who admired his demeanor, calm under the hottest fire, and he was one of the four officers whom Captain Peel invited in the first bombardment to affect, even if they could not feel, a perfect disregard of fire. This Douglas never failed to do, but not in a spirit of bravado, and gave us the best example of conduct when under fire.

During the ten days of this bombardment the Russians were, as we heard later, short of powder, but their practice was much better than in October. One shell dropping into the magazine of the 8-gun battery in our front killed one man and wounded nine, and although the guns were uninjured they were buried so deeply in rubbish as to be unworkable until they were cleared next day. I saw a shell burst on striking the parapet, which killed two men, literally buried three others. We went for picks and shovels, which took time, and the men were insensible when we dug them out ; but they all recovered.

Close to a magazine which supplied the gun I was working, we had some

tools for filling fuses. A man was sawing a fuse clamped in a vice, when a shell bursting on the parapet scattered bits all around. One fragment struck the fuse and exploded it, but the man escaped with merely a scorched wrist, burnt by the composition in the fuse. On the other hand, a shell bursting over one of our 68-pounder guns killed or wounded thirteen men.

Lieutenant Graves, Royal Engineers, who was killed close to me at the abatis of the Redan on the 18th June, had a remarkable escape on the 10th April. He was standing in an embrasure which required repairs, when a round shot struck the sole (*i. e.*, ground surface) immediately under his feet, but although he was much bruised yet he was soon again at duty. The Engineer officers set a fine example to the men, which was now growing daily more necessary, as the recruits were very different in fighting value from those we had lost in the winter, and these boy soldiers are not spared in the Engineer journal. On the 14th April the officer on duty writes eulogizing the conduct of Privates Samuel Evans, and James Callaghan, 9th (Norfolk) Regiment for gallant conduct, adding : "In the midst of such conduct *quæ* re the reverse, perhaps it might be useful, and certainly it would be just, not to let the conduct of those men remain unnoticed."

Two days previously there is a complaint in the Engineer journal that our sharpshooters fire when it is not necessary, and do not fire when it is essential. The writer adds : "Very few regimental officers on duty in the trenches exert themselves or take any interest in the duty they are employed upon, leaving the men to extend themselves along the trenches in any manner they like, and to fire as much or as little as they please." It must, however, be borne in mind that there is no record available of the replies made by the regimental officers. No doubt in a long siege officers and men get slack, but I believe the apparent want of interest arose from ignorance of what was required, and that if the Engineer officers had pointed out daily the principal objects on which fire was to be directed, there would have been very few such complaints. It was not till late in the siege that the senior officers on duty learnt they were responsible that every one under them did his duty, and on the 17th April a memorandum was issued for the instruction of the general on duty in the trenches.

In an adverse report by the Royal Engineers there is a quaint indication of our still regarding men as machines : "There is a good deal of irregularity in regard to the men sent down to the trenches, many complaining they had been two consecutive nights on the working party." A month later, in another Engineer report, we get an interesting clue to causes of the line soldier's slackness : "The working parties appear to have exerted themselves and performed their tasks to the satisfaction of the Engineers. This favorable change may be attributed to fine weather *and the better condition of the men to undergo fatigue.*"

During this, the second bombardment, it was computed the allies threw one hundred and thirty thousand projectiles into Sevastopol, the Russians answering with about three to our four shots. The losses were, however, out of all proportion, and the reason for this difference will be understood from a glance at the map. The Russian shells unless actually impinging on our parapets, guns, or bodies, exploded harmlessly behind the batteries. Many of their works were to some extent enfiladed by our guns, and thus a shot or shell missing its object