

IT NEVER PAYS.

It never pays to fret and growl
When fortune seems our foe;
The better bred will look ahead,
And strike the better blow,
For luck is work,
And those who shrink
Should not lament their doom,
But yield the play,
And clear the way,
That better men have room.

It never pays to wreck the health
In drudging after gain;
And he is sold who thinks that gold
Is cheapest bought with pain;
A humble lot,
A cosy cot,
Have tempted even kings,
For stations high,
That wealth will buy,
Not oft contentment brings.

It never pays a blunt refrain,
Well worthy of a song,
For age and youth must learn the truth,
That nothing pays that's wrong;
The good and pure
Alone are sure
To share prolonged success,
While what is right
In Heaven's sight
Is always sure to bless.

Field Artillery Experiments.

Since the breaking up of the Camp at Okehampton to the Committee have doubtless been engaged in the preparation of the inevitable Blue-book which is the natural offspring of such gatherings. We have every reason to believe that this official report will be most valuable, and we have no desire to anticipate the verdict of the Committee; but, as some time may yet elapse before the Blue-book is issued, and as the experiments were very fully detailed by our own Correspondent on the spot, we can form some judgment on the broad questions at issue, while at the same time we can easily read the lessons to be learnt from the various trials.

We may commence by saying that the Okehampton experiments have been a great success. In stating this fact we believe that we express the views both of soldiers best qualified to judge and of civilians who take a deep interest in military matters. The idea was particularly happy, the ground was most judiciously chosen, and the results have been eminently satisfactory.

As we stated in an article of the 3rd of August last, the experiments were instituted for the purpose of determining various points connected with the efficient service of our rifled field artillery under conditions as similar as possible to those which might occur on service, namely:—

1. The relative effects produced by the fire of a field battery when the distance is judged by eye and when the range is determined by a rangefinder.
2. The results of artillery fire against the most recent formation in which troops will attack, and the nature of projectile which, under different conditions of ground and distance, may be expected to produce the maximum effect.
3. The effect of artillery fire against artillery matériel both in the open and when protected by gunpits; and—
4. The value of shelter trenches for Infantry.

The Committee have supplemented this programme by various collateral trials, which naturally suggested themselves during the course of the experiments, and which have materially aided the general investigation.

The value of a range-finder may, indeed, be said to have been a foregone conclusion, and the present trial has, on this point,

merely corroborated the results of former trials, and proved the great advantages, particularly at long ranges, which Captain Nolan's excellent instrument enables us to secure. Still we appear to have derived some valuable lessons in range finding from the Okehampton experiments. It seems that the instruments can be used very effectively when mounted on tripods, and that it is unnecessary to mount them, as hitherto, on the guns themselves. This is, in our opinion, a decided advantage. In the first place, the rangefinders may now be used as surveying instruments without the necessity of bringing of bringing two guns into action. The latter operation was decidedly cumbersome, and under many circumstances could not have been resorted to without the premature exposure of guns. The officer in command of a battery may now keep his guns under cover until the last moment, while his range-finding party can make a rapid survey of the country from the position on which the guns will ultimately come into action.

Modern battles have proved that, once in action in a good position, artillery should be moved as seldom as possible. The range-finding party can either survey the country in the immediate front before the battery comes forward, or it can take up a position to the right or left or rear of the battery, and find the ranges of all remarkable points in the landscape. It may be possible to take moving objects when the party are particularly well instructed, but in general we think range-finders will be dispensed with on these occasions. One of the great advantages which will follow their introduction is the aid they will afford to "judging-distance drill." The chief difficulty of the latter lies in the impossibility of knowing at the time whether the "guess" is right or wrong. The range-finder will enable us to overcome this difficulty, and will thus tend in a great measure to produce a high standard of proficiency in judging-distance drill.

It is of no use to ride a hobby to death, and to hope fondly for that Utopian period in which the fire of field guns will be preceded by the use of a range-finding instrument. There are many occasions during a rapid advance or pursuit in which Horse Artillery batteries will come quickly into action for a few minutes against rapidly moving bodies of the enemy. In these exciting moments range finders will undoubtedly be forgotten, although the lessons they have taught may bear good fruit. The Okehampton experiments showed that, even with a very short instruction, batteries can pick up the range in a few rounds with percussion shells at all distances within 2,000 yards, and that once the range is obtained it is never lost. But at longer ranges, such as 3,000 and 4,000 yards, the range finder is an absolute necessity, and at all times, when firing deliberately, guns should never open fire without making use of it. Several startling instances of its value occurred at Okehampton. For example, the Committee decided to fire, at 4,000 yards, at an object consisting of eight rows of 9-foot targets, representing a regiment of Cavalry in quarter distance column of squadrons. The guns were posted on the summit of one hill, while the target rested on that of another at almost exactly the same level. But the undulations of the intervening ground were such that the target was completely hidden from view when the guns were retired a few yards to the rear. The range finder pronounced the distance to be 3,930 yards, or $2\frac{1}{4}$ miles to the head of the column; the battery fired a salvo with

the elevation due to this range, and four out of the six shells dropped right into the middle of the regiment and burst there. It would have been impossible to do this without a range-finder. The ground was of such a character that numerous trial shots must have been expended before the range was hit off, and the body of Cavalry, finding itself an object for fire, would have speedily moved out of sight.

A subsequent trial showed that good practice could be made even at a distance of 5,200 yards, or nearly three miles, but this fact, although interesting as proof of the power of the gun, must not be made too much of. Field Artillery should not be encouraged to come into action against troops at distances over 4,000 yards. Doubtless on exceptional occasions, and when ammunition is plentiful, an enemy's position or a village or town may be bombarded at a very long range, but the comparatively steep angle of descent of the trajectory under these circumstances renders such a fire very uncertain and of little effect when directed against *personnel*. At these long ranges a range finder is indispensable; but we have said sufficient to show that this instrument, when judiciously used, is invaluable, and we are glad to hear that there is a prospect of its becoming part of the equipment of every field battery.

The practice against troops in different formations embraced trials against Infantry, represented by dummies, when in the normal formation of attack, when skirmishing, when in column, and when charging with a view to capture the battery, the ranges varying from 100 yards to 3,000 yards; also against Cavalry in column at 4,000, 3,500, and 2,000 yards. The normal formation for the attack of Infantry now generally adopted by European Powers is that known as the battalion or half-battalion system, and may be briefly described as follows:—The battalion is supposed to move, when outside the zone of artillery fire, in company quarter columns—that is, in close formation. When an attack has been decided upon a general advance will be made, and each, say, half-battalion will push forward a company as a "shooting line." This shooting line of, say, 100 men will spread itself out in rank entire, with about a pace interval between the men, and will be supported in rear at about 250 paces by a second company of 100 men in double rank, the order being as open as the ground will admit of. The remaining two companies of the half-battalion will form a reserve in company quarter column at about 350 paces from the supports, the order being also open as the ground will admit of. Thus the attacking line is one deep, the supporting line two deep, and the reserve four deep. This exact order, however, will vary according to ground, for the supporting and reserve bodies will naturally break into sections or deploy into line when the ground admits of it or the enemy's fire renders it necessary. In fact, there is no formation in which troops on this system may not move so long as they preserve an order which will enable them to fulfil the great object—namely, the gradual "feeding" of the attacking or "shooting" line.

As the advance continues, casualties in the "shooting line" are replaced from the supporting line, which in its turn is "fed" from the reserve, until at length all three bodies become merged at about 300 yards from the position to be carried; then follows the final rush.

The experiments at Okehampton showed that at 1,500 and 2,000 yards a fire of artill-