

efficient. I must also point out that there are no Garrison Artillery Volunteers at Wellington, where they are much required. Till now it has been impossible to raise such a corps, but now I am informed that a very enthusiastic Volunteer officer is prepared to offer one.

I have the honour to state that I believe the Volunteers of the colony have now acquired so much uniformity of discipline, dress, and drill, and their officers have made themselves so much more efficient than formerly, that I am confident the continuous training which would become indispensable if they were called out for active service would, in a very few weeks, make them reliable soldiers, while their improved average practice with the rifle will make them formidable in the field.

I have, &c.,

The Hon. the Minister for Defence.

G. S. WHITMORE.

REPORT ON THE CONSTRUCTION OF THE HARBOUR-DEFENCES.

The RESIDENT ENGINEER to the UNDER-SECRETARY for DEFENCE.

DURING the present year the construction of the defence works has been steadily carried on. The progress has been at a somewhat slower rate than hitherto, partly owing to the fact that ordinary labour has, in the interests of economy, been as far as possible dispensed with during the year, and replaced almost entirely by military labour, the comparatively small numbers of the permanent forces available in each port necessitating work being carried on on a less extended scale; and partly owing to the fact that Major-General Schaw, C.B., R.E., was, when the year was about half passed, asked to report on the defences generally, and it was considered inadvisable to press on any works the designs of which had not yet been so far carried into execution as to establish them beyond the reach of advantageous alteration if necessary: or to initiate new works: until that report had been received by the Government and fully considered. The work done during the latter half of the year has therefore been mainly in the direction of completing minor points in existing works: in establishing labour and time-saving appliances: and in making other arrangements in view of facilitating the construction of the further works required to complete the scheme of defence.

The report of General Schaw deals fully with every aspect of the defences, and gives in complete detail a description of their present condition. It is therefore not necessary to add thereto by appending the usual summary of the progress attained towards the establishment of the scheme. The report being confidential, it would be out of place to refer thereto; but it may perhaps be permissible to quote the following extract: "I regret that in some instances I have felt it necessary to recommend alterations in the designs for the works, both with the view of greater economy and of greater efficiency; but, upon the whole, I consider that the works and defensive arrangements which have been made are very good, and that they reflect great credit on all who have been engaged upon them. The science of war, like all other sciences, is unfortunately progressive, and it is inevitable that changes must be made from time to time to keep the power of the defence abreast of the improvements in the power of the attack."

The resignation by Lieut.-Colonel Boddam of the position of Engineer for Defences having taken place so recently as January last, reference may perhaps be allowed to the paragraph of General Schaw's report above quoted, as to the work carried out by him. Lieut.-Colonel Boddam has left in this office a large store of valuable information and designs accumulated during his active superintendence of the defence works. For the reasons above stated there is little to report since the charge of them was handed over by him.

Prior to the 1st April, 1887, the defence works at the four ports were carried out under the superintendence of the officers of the Public Works Department, guided by plans and specifications, &c., from the office of the Engineer for Defences at Wellington, and visits of inspection made by him. On the above date the Public Works Department ceased to have connection with the defence works, the sole control of which was vested in the Engineer for Defences, with Inspectors of Works at the four ports, and that *régime* has obtained during the year now past and still obtains.

The fortifications have been constructed from their commencement almost entirely by day-labour, the contract system having been employed in some small instances only. As a general rule hard-and-fast contracts are not advisable in this kind of work, but the exigencies of the case have practically debarred even a trial of them. In the war-scare of 1885 day-labour was of course a necessity, and the work done during the prevalence of the scare, both in the hastily-extemporised emplacements and in the disturbance of the original contour of the sites previously selected by the Royal Engineer officers whose advice had been successively sought by the colony (Major-General the late Sir P. Scratchley and His Excellency Lieut.-General Sir W. Jervois), rendered it probable that contract-work to complete the same would be considerably more costly than day-labour under direct superintendence. Then arose the "unemployed" cry, and large numbers of these were drafted on to the defence works in the latter part of 1885-86 and in 1886-87. In 1887-88, for reasons above stated, the labour has been principally military labour. Towards the end of 1887-88 it was decided by the present Minister of Defence to employ convict-labour on the works, and arrangements are now in progress or completed for employing prisoners at all four ports. At Wellington they have already been at work some time at date of this report (31st March).

Where direct contract or schedule-of-rates contract can be employed, these are probably cheapest in the end. Good day-labour, efficiently supervised, is probably the best, and insures better, more careful, and more solid work, a matter of considerable moment in fortifications; but it is more expensive than either of the contract systems. "Unemployed" labour is not much good: all sorts and conditions of men have to be taken on, and the wage paid will not extract a good day's work even from those who are capable of giving it. The concentrated and compact nature of batteries and other defence works does not lend itself to the economical employment of large numbers of