

On the whole, therefore, the experiment of employing prison-labour upon the defence-works may be said to be well justified by the results; and it has been thought advisable, having the sufficient experience of two years, and the power of comparison afforded by former knowledge of prison-labour elsewhere, to somewhat fully enter into the subject. The cordial co-operation of the Inspector of Prisons and of the gaolers in furthering and assisting the arrangements for the useful employment of the prisoners should be acknowledged.

From the point of view of economy, the more substantial arguments of figures are also in favour of prison-labour. Taken all the year over, the average number of convicts employed on the defence-works may be stated, in round numbers, as two hundred, distributed at the four ports of Auckland, Wellington, Lyttelton, and Dunedin. They are engaged upon difficult and, in some respects, complex works, requiring a much larger amount of material and labour than would ever be suspected or, perhaps, believed to be contained in them by any one not connected with their actual construction, inasmuch as they are mostly buried in the ground. Nevertheless, a vote of £10,000 has proved more than sufficient during the past year to keep these two hundred men working longer hours than free men, and all the year round without any holidays but three, fully employed in the production of a large amount of solid and substantial work. This, which to any one practically acquainted with works must seem rather striking, is due in large measure, of course, to the absence of pay-sheets; but it is also attributable in equally large measure to the general economy of the system strictly followed as regards material. That system is to obtain all the materials of construction as far as possible *in situ*, when the locality or vicinity of the works contain them in sufficiently good quality. The prisoners have to quarry, dress, and break their own stone, and collect their own sand, gravel, or scoria, for masonry and concrete; attend the hauling engines, and appliances; load and unload the steam-launches; and in every other way make the works, so to speak, as far as possible self-supporting. Purchases of material are therefore confined principally to bricks, cement, lime, iron, and general tradesmen's goods; these, of course, have to be obtained from merchants; but although they are necessarily required in somewhat large quantities to properly equip the works, the outlay is very much less than if the heavy bulk material had also to be paid for. The prison-list also, as a rule, provides sufficient skilled as well as general labour; and it is only rarely, and for short periods or for special exigencies, that any extra free artisan has to be employed. The paid staff consists of the Inspector of Works, two to three instructing tradesmen-warders, and one to two general hands to perform such functions as keeping stores, driving carts, &c., for which a prisoner is not admissible. Under this system, the careful management of the Inspectors and the central control of the head office, £12,780 was spent in 1888-89 and only £9,194 during the past year on the construction of the defence-works of the whole colony. In the three previous years the amount so spent ranged from £25,000 to £74,000, with a not very much greater amount of work in hand—but under a system of free labour and wages, and of payment for all bulk material as well as tradesmen's goods, and upon more costly though not more serviceable designs of work.

Designs of Works.

With regard to the designs for works undertaken during the year, which have chiefly been in connection with the emplacement of the guns and equipment of the batteries for the heavy B.L. ordnance, it may be stated that they have all been, as far as possible, examined, and generally approved by General Schaw, R.E., whose invaluable advice is still freely and kindly given to this department. The typical design of battery for the 8in. 13-ton guns, of which several were required, was by him, after his own approval, referred to the department of the Inspector-General of Fortifications, Imperial War Office, and returned without any alteration of moment. It appears advisable to mention this, seeing so much important work and outlay is being and requires to be devoted to such batteries, in order to show that due care is taken to establish the general designing upon competently approved lines. These may be said to be generally embodied in the following paragraph from last year's report: "While it is at once advisable and necessary that gun-pits and magazines, and such other bomb-proof accommodation as may be required for the protection of artillery-stores and the shelter of the garrison, should be solidly constructed in concrete, masonry, or brick, it is equally essential that as little as possible of this class of work should be in any way exposed or even visible, and that the retaining-walls and other massive outlines, and the enclosed and walled spaces, as well as the neatly-formed and trimmed counterslopes and merlons of recent systems, should be conspicuous by their absence. The realisation in actual execution of these principles, while maintaining convenient communications and providing a musketry-defence of the position, is more difficult than would at first sight appear; but every effort has been made to apply them as well as the nature of the sites would allow. The shores of our harbours are singularly devoid of the extended area of fairly even-lying ground required for a fort or battery of this modern type, and their impracticable nature has occasioned a very great amount of difficulty in laying out works. General Schaw has called frequent attention to this point; and it is one that it is only right should be made clear. A further result of the application of the above principles is this: that a completed battery is buried under a mound of superincumbent earth of rough and irregular outline, evenly-trimmed and dressed slopes having been by modern experience found to be as gratifying to the eyes of the gunners of hostile vessels by enabling them to lay their fire accurately on the sharp and defined lines and shadows as to those of the old school of military engineers eager for perfect neatness of outline. Hence to the casual visitor no proportionate indication is given of the work executed and thus concealed underground; nor is it possible, even when the subterranean galleries and magazines, &c., are entered, to comprehend in the artificial light their extent and solidity. Such is or will be the appearance of all of the more recently undertaken works, both those that are completed and those that are approaching completion or are in progress."