external support—in combination with offensive and defensive torpedoes; and the best mode of providing against attacks made by bodies of men, landed for the purpose of turning them, will be to maintain local troops capable of meeting the enemy in the field.

Floating *versus* fixed defences.

It has been suggested that floating defences might with advantage be adopted in preference, or as auxiliaries, to batteries on shore; but, in my opinion, there would be no gain in substituting the floating for the fixed element of defence, for the following reasons:—Floating defences, whether armoured or unarmoured, are very much more expensive in first cost and in maintenance, and they require periodical renewal. If armoured, they are liable to be destroyed by offensive torpedoes, and to be disabled from accidents to their screws. Unarmoured vessels, such as gunboats, can in addition be destroyed by artillery fire or by ramming, and their steering gear, boilers, and engines, are much exposed to damage.

The fire from floating structures cannot be as accurate as that from artillery mounted on fixed platforms on land; and, moreover, the cost of maintaining land works in repair is very small, if ordinary care be exercised. They can be added to in order to increase their defensive power, and can be rendered practically impregnable. I consider, therefore, that land batteries will suffice for all requirements.

Introduction of torpedoes has altered conditions under which schemes of defence have to be considered.

Prior to the introduction of torpedoes as reliable weapons for offensive and defensive warfare, the conditions, under which schemes of defence for harbors in general had to be considered, were very different from those which exist at the present time. It is generally acknowledged that, where the channel is perfectly clear, a vessel steaming at full speed may run past batteries with comparatively little risk and that, unless obstructions are placed across the entrance to a port—to delay and arrest the advance of hostile ships—a determined enemy will not be prevented from forcing his way in. These obstructions, however, must be thoroughly efficient, not readily removed, and well and sufficiently protected by artillery fire.

These conditions are fulfilled by submarine mines, placed in the water so that their exact position cannot be discovered by the enemy and thereby avoided; they have now been generally adopted, and it is considered that, in most cases, their employment renders it unnecessary to provide second lines of defence.

Sir W. Jervois' recommendations for the Australian harbors.

For the harbors of the Australian Colonies, Sir W. Jervois has recommended batteries, armed with heavy rifled ordnance, together with submarine mines in the channels, and torpedo boats for attacking the enemy's vessels. For the protection of the principal cities near the seaboard, from attacks by bodies of men landed from the enemy's ships, he has proposed the maintenance of local forces capable of operating in the field.