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LECTURES.

Tuesday, March 1st.

Major-General STANHOPE, Vice-President, in the Chair.

NATIONAL DEFENCE, OR NEW STRATEGIES IN WARFARE.

By J. MACKINTOSH, Esq.

THE important question of rendering our navy more efficient as an arm of *attack* against Sea-face Fortifications is of such vital importance to the country, that I trust the following observations relative to the employment of combustible compounds in naval and military warfare may be considered worthy of attention.

In order more clearly to explain the nature of my remarks, I have classed them under five different heads—

1. Facilitating attack, by ships of war, against sea-face fortifications.
2. Facilitating attack upon earthworks.
3. The inefficiency of the ordinary shell and fuse as used during the last Russian war.
4. The destructive powers of incendiary shells when used against shipping, &c.
5. A method of preventing troops, &c. from crossing rivers by the aid of boats, pontoons, or other temporary bridges.

1. I must premise, before explaining my method of facilitating attacks by ships of war against *sea-face defences*, that the weakness of our navy was sufficiently demonstrated when the Allied Fleets openly went in and attacked the sea-face batteries of Sebastopol, and very soon withdrew out of range, only to renew partial attacks, either under the favouring cloud of a Black Sea fog or the darkness of a starless night.

This is *convincing proof* of the *inadequate power* of our navy in attacking such strongholds; it is *not*, therefore, by *increasing* the number of our steam-ships that foreign States can feel our supremacy on the seas, but by holding in hand an efficient "*incendiary steam naval brigade*," which would enable us during war effectually to destroy all their ships and colossal fortifications.

My method consists in attaching to our navy, as an auxiliary power of attack, an incendiary naval steam brigade, consisting of small and inexpensive steamers, having suitable iron compartments filled with my combustible compound, composed of prepared coal tar naphtha, which can be easily obtained in any quantities, and at a trifling cost.

When sea-face batteries are to be attacked, the admiral commanding a fleet (choosing wind and weather), when nearly within range of the enemy's guns, starts one of the small brigade steamers, containing my inflammable material, having previously ignited a time fuse leading to a bursting charge; the steamer is then permitted to proceed towards the enemy's batteries, with her helm suitably adjusted. On exploding the bursting charge, the inflammable fluid is scattered on the surface of the water, causing its immediate ignition, and producing a *dense black suffocating smoke or vapour*, which, driven by the wind against the sea-faces, enters the embrasures, and either suffocates or drives away the enemy's gunners, leaving the forts in our possession.

By another mode of application, the admiral commanding the fleet could (choosing wind and weather) discharge a sufficient quantity of this fluid upon the surface of the water, allowing it to be propelled by the tide or wind up to the sea-faces of an enemy's batteries, and then cause its ignition by the projection of a shell or rocket containing naphtha and potassium; by the great affinity of the latter for oxygen, the floating liquid (which cannot mix with the water) will be immediately inflamed, producing a *dense black suffocating fog or vapour*, which envelopes the fort or battery, rushing into the casemates or embrasures, and which, driving away the gunners, would enable the attacking vessels (under cover of the black suffocating smoke) to approach the enemy's works and take up positions necessary for pouring in their broadsides, and thus to destroy the forts, unmolested by any hostile fire.

2. In facilitating attack upon earthworks, I have diaphragm shells filled with compositions which will burn as well in mud as in water, and, when a shell containing them bursts in mud or earthworks, the bursting of the charge ignites the inflammable material, and, the earth being porous and incombustible, prevents the combustion from spreading rapidly, but allows the *black vapour* to ooze out gradually, causing most serious annoyance to the enemy, who are utterly unable to extinguish the suffocating smoke, and are thus hindered from carrying on their operations.

3. With respect to the inefficiency of the ordinary shell and fuse as used during the last Russian war, it is well known that a heavy percentage of our shells, either burst in the air, falling short of the mark, or did not burst at all, owing to the shortness of the fuses, and often from their composition *not* being impervious to damp.

With respect to their destructive properties, it appears that in one week's bombardment, during the siege of Sebastopol, about 6,000 tons of shot and shell and from 1,500 to 1,600 tons of powder were used—yet no sensible impression was made on the Russian earthworks, for the damage done to them by the allied batteries during the day was generally repaired during the night by our energetic and gallant enemy, so that the Allies expended nearly all their shot and shell with comparatively trifling results.

It will be seen from the description I have already given at No. 2 that had diaphragm shells, filled with my compositions, been used during the siege against the enemy's earthworks, their destruction would have been certain, owing to the composition contained in those shells being ignited and absorbed by the porous and moist ground, out of which a black suffocating smoke would issue, thus preventing the enemy from extinguishing the same by any amount of water thrown over it, besides hindering them from repairing their works during the darkness of night.

4. The destructive powers of incendiary shells, when used against shipping, are fearful, as the inflammable material with which they are filled, being scattered in all directions (on explosion), would cause the destruction of any ships of the line on account of the impossibility of extinguishing it.

5. By my method of preventing troops, &c. from crossing rivers by the aid of boats, pontoons, or other temporary bridges, I allow the enemy to construct or place their bridge, or pontoons, and then permit any desired number to cross over, and, being thus divided, I cause a quantity of the material before described to flow into or upon the river, and among the pontoons.

The material or composition being ignited, the pontoons with the advancing troops are instantly surrounded with a devouring flame and a *black suffocating vapour*. Should there be a current in the river the material may be discharged accordingly, above or below the pontoon bridge, and allowed to float or drift thereto, and, when required, it can be inflamed by a shell, projectile, or other means best suitable.

The enemy thus become divided beyond all hope of reuniting, and the advanced portion being cut off from assistance or retreat, consequently falls into the hands of their opponents.

In the present "*reconstruction of the Navy*," no doubt the *number* of our *steam line-of-battle* and other ships of war will be increased, but augmenting their number merely adds to their power of *defence* and *attack* in *open sea*, as no increased efficiency in their powers of attack against "*Sea-face Defences*" is obtained.

We may have a splendid and costly steam fleet roaming up and down the English Channel. They may watch the opposite coast, and have an

eye on "*Cherbourg*"—that impregnable stronghold and safe anchoring-ground of the French Fleet; but should, unfortunately, at any time a war ensue, *dare they* even attempt to force an entrance within *that* harbour, when the garrison, unaided by their ships of war, can at any time concentrate a fire of *about two hundred guns* upon either entrance—sufficient, indeed, if well-directed, to sink the finest ships in the world?

I have already recalled to your recollection the fruitless endeavours of the *magnificent* allied steam fleets, when they *openly* attacked the *sea-face* defences of Sebastopol, and in thus bringing the subject to your notice I do not wish it to be supposed that I am in the slightest degree anxious to throw any blame on either commanders or men; but what I *most distinctly* desire to do is, to expose the *true weak side* of our navy, and to *propose* and *explain* an efficient remedy. By so doing, I conscientiously believe that more ultimate benefit will accrue to the national interests than by withholding information which I conceive is of such paramount importance.