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Royal United Services Institution. Journal

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rusi19>

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Published online: 25 Sep 2009.

To cite this article: Thomas Beasley Esq., M.P., &c., &c. (1880) On Torpedo-Boat Tactics, Royal United Services Institution. Journal, 24:107, 712-718, DOI: [10.1080/03071848009417165](https://doi.org/10.1080/03071848009417165)

To link to this article: <http://dx.doi.org/10.1080/03071848009417165>

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ON TORPEDO-BOAT TACTICS.

Translated from the *Mittheilungen aus dem Gebiete des See-wesens.*
(Vol. vii. No. 4.)

By THOMAS BRASSEY, Esq., M.P., &c., &c.

WE are informed that the Russian Navy was supplied with no less than 120 torpedo-boats in the course of last year.

To train the crews, and establish a definite system of torpedo tactics, 12 of these boats were kept in commission last summer; and thus the commanders who had completed the greater portion of the torpedo courses, as well as the crews, had an opportunity of making themselves familiar with the method of handling these boats, and with the system of torpedo manœuvres generally.

The experiences acquired in the course of the commission have been brought together by Lieutenant Witheft. They were discussed at a conference of Officers belonging to the Torpedo School and the Navy generally, and they are epitomised in the following paper.

Torpedoes were employed most extensively in the American War, and no less than 40 ships were destroyed. The greater number of these ships were blown up by defensive torpedoes, and only a small proportion by the offensive torpedo.

The conditions of torpedo warfare remained unchanged, until the successful results of offensive operations in the Russo-Turkish War encouraged the Russian Government to order the large flotilla of torpedo-boats already referred to. It was in that war that the aggressive torpedo, in the hands of adventurous and daring men, was shown to be a weapon capable of being used with the most deadly and decisive effect, and, after a certain amount of successful practice in the management of these small craft, it clearly appeared that they could be employed as aggressive weapons, with much less risk than might have been inferred from the results of the earlier attempts, which had been made in America.

To ensure success, you require a good *matériel*, and the boats must be managed by men trained to the peculiar and hazardous service which they will be called upon to undertake. Every division of torpedo-boats should be instructed how to conduct an attack with every prospect of success, without the support or co-operation of any other naval arm. In the recent Russo-Turkish War, nine attacks in all were made with torpedo-boats; viz.:—

1, by Dubasoff and Schestakoff, on the Danube; 2, in the roadstead of Batoum; 3, by Skridloff, on the Danube; 4, by Niloff, on the Danube; 5, by Puschtschni, Zatzarenni, and Roschdestrocuskyi, at

the Sulina mouth; 6, in the roadstead of Soukoum-Kalé by Zatzarennyi, Pisarewskyi, and Wischnewetskyi; 7, in the roadstead of Batoum, by Zatzarennyi and Schtschetinskyi. The remaining attack was conducted by submarine mines in the Sulina mouth of the Danube.

When we come to examine the incidents of each of these attempts, which were attended with a greater or less measure of success, without entering upon a general criticism of the campaign, it will be remarked that every attack was successful when undertaken according to a well-matured plan by a group of torpedo-boats; and that no attack succeeded which was made by a single boat. As an illustration, we may point to the attack made by Dubasoff and Schestakoff on the Turkish monitor, to the attack made by the boats of the "Constantine" in the roadstead of Soukoum, and to the attack on the guard-ship at Batoum, by the boats of the "Constantine," with the Whitehead torpedo. All the other attacks were unsuccessful, including the solitary attacks by Skridloff and Niloff, as well as the attacks, which were undertaken indeed by a group, but in which one of the boats—owing to undue precipitation—made an attack unsupported. Thus it happened in the first expedition against Batoum, and in the attacks at the Sulina mouth.

When we turn to the equipment of the torpedo-boat, the first and most essential point is, that the torpedo and the torpedo-boat should, so to speak, form one single weapon, so that the attention of the commander may never be divided between the conduct of the boat and the handling of the torpedo.

A second essential is, that the arrangements should be such as to secure the instantaneous explosion of the torpedo, without the chance of a miss-fire.

These two conditions apply more to the case of the torpedoes which are fired automatically, or by electricity. There must be a double set of conductors for the electric fluid, and the igniting apparatus must act upon receiving a slight blow. The equipment of the spar torpedo requires that all the gear should be exposed. This is not the case with the Whitehead.

To hit a target of the size of a ship with the spar torpedo demands no peculiar dexterity, although the attack often fails from the colliding of the boats engaged. On the other hand, the success of the attack is certain if the blow has been dealt home. The assailant knows precisely what is taking place, and the fate of his adversary is decided before his eyes.

There are not many advocates for the towing torpedo. As a means of attacking ships, which are protected by barricades or other obstructions (and we must expect hereafter to have to deal with obstructions of that nature), this torpedo must be reckoned as altogether ineffective. Again, there is great risk that the tow line will foul the propeller; as happened in the case of the boats of the "Constantine" on two occasions.

Opinions are generally in favour of fitting boats with spars carried on the side. Although this method has been definitively adopted, it

may not be superfluous to state the reasons why torpedoes so fitted have been found useless on certain occasions.

The advocates of the towing torpedo insist on the facility with which the enemy may be attacked on the broadside, without slackening speed on the part of the assailant. Such an attack is almost free from danger to the assailant; but it does no injury to an enemy protected by obstructions. The harmless explosions will only steel his courage, and accustom him to await calmly all future attacks.

The attack with the spar torpedo presents some points of difficulty. The boat may be too far from, or perhaps some feet too near the enemy's ship. In the former case, the automatic explosion inflicts little damage; while in the second case, that, namely, when the boat is too near, and the spars cannot be extended to their full length, it may happen that the explosion may cause damage to the boat itself.

These are the grounds on which the use of the spar torpedo on the broadside does not altogether commend itself.

It is usual to supply torpedo-boats with drifting torpedoes. In order to use them, it is necessary to place the torpedo-boat in the path of the enemy's ship, the impact of which causes the torpedo to explode. The chief defect of this description of torpedoes consists in this, that they explode not under the ship, but at the water line. Hence, if the ship be protected by nets or other obstructions, the torpedo can inflict no injury. The ship can only be struck when several torpedoes are fired in succession, and an opening is thus made in the obstructions. Even in this case, however, success is far from certain. In addition to this, where there is an ebb and flow of tide, the drifting torpedo is as dangerous to your own ships as to those of the enemy; and at night more particularly it is impossible to get out of its way. Drifting torpedoes are therefore to be used by the torpedo flotilla only in cases where the attack is being undertaken according to a plan laid down beforehand, with sufficient accuracy, and it can be known to every man taking part in the expedition where and when the torpedo is to be used. Having recognised these two important defects, it may be inferred that these torpedoes are chiefly valuable as a means of destroying the *mordle* of the enemy, and fettering his movements by the apprehension that he may possibly encounter one of these weapons every time his ship is brought to a standstill. As an engine of destruction, these torpedoes cannot yet be accepted as practically effective.

From this general view of the *matériel* of torpedo warfare we turn to the tactics to be employed in the use of these weapons.

It has already been observed that an isolated attack with torpedo-boats must only be attempted in exceptional circumstances.

It must be assumed that the vessel which it is proposed to attack is protected with nets or floating obstructions. If a division of torpedo-boats is available for the proposed attack, it will be desirable to break up the division into three groups, to each of which a special duty will be assigned. Further, each boat in the several groups must confine

itself to the special task which has been assigned to it. Assuming that the enemy is effectually protected by obstructions, nets, or other barriers, the first group is required to remove them.

The second group makes the attack.

The third group is held in reserve. Their task consists in rendering help and filling up any losses caused in the two leading groups by the defence of the enemy.

As soon as each group has been completed, and their precise duties have been assigned to them, the operations must be carried out according to a well-considered and well-defined plan.

The torpedo-boats of the first or pioneer group, and those of the second or attacking group, will proceed in double column. The reserve boats will follow in rear.

The pioneer group after their task has been completed will fall back into the reserve. The attack must be made simultaneously by the boats of the attacking group. The speed of all the boats must be regulated by the speed of the slowest boat.

The commandant of the division, who must take his place in one of the boats of the reserve division, gives the signal for the attack.

The highest speed of the slowest boat should be made the maximum speed as long as possible, so as to ensure that each boat shall come up to the attack at the right time. The farthest stations will be assigned to the slowest boats, so that all may come up with the enemy simultaneously. The engines should be slowed at some fathoms distance, and should be reduced to half-speed when about twelve fathoms from the object. By adopting these dispositions it is possible for the commandant of the boats to satisfy himself that his own spar, with the torpedo attached to it, remains uninjured up to the last moment before the blow is delivered, that it is clear of the spars rigged out from the other boats in the group, and that the electrical firing gear is in order. It is to be observed that the risk of injury to the electrical explosive apparatus is not so great as when submerged spars are used.

The electrical firing gear should only be used when the automatic gear fails, as may readily happen when the distance has been misjudged and the torpedo has been fired too far from the object.

The torpedo should be brought under the ship's bottom. If the Whitehead torpedo is used, care should be taken not to aim at a vessel amidships, for there the armour is carried down to a considerable depth under water. A spar torpedo will in case of necessity be used against a perpendicular broadside.

The effect of the explosion, owing to the torpedo striking at an acute angle, will in most cases be greater in proportion as the centre of the charge is brought closer to the ship's side.

From what has been said it will be obvious that, in order to ensure a successful result, the attack should be made from at least four points before or abaft the beam, whether on the port or the starboard side. For such an attack there will be required four pioneer boats, to clear away the obstructions round the ship, four boats to make the attack, two boats in reserve, and one for the commander of the division—in all eleven boats.

Even supposing the newest type of torpedo-boat to possess contrivances for closing all apertures simultaneously, experience proves that Officers, as well as men, prefer to make the attack with open hatches, a circumstance which would probably be the cause of some loss of life. This can, however, scarcely be a point of serious importance, since a torpedo-boat with a speed of 10 knots would only require 4·8 minutes to pass over a distance of 1,500 metres exposed to the enemy's fire. The prospect of great loss of life would delay, or even entirely defer, an attack, although in former times many boat expeditions and boarding attacks, requiring much more determination, and involving the probable loss of many lives, have been carried out successfully. The attack by torpedo-boats is, in fact, a kind of boarding attack, under far more favourable conditions for the attacking party than in the old days, the cutlass, the boarding-pike, and the tomahawk having been supplanted by electric and automatic firing apparatus.

If only five of the eleven torpedo-boats sent forth on an expedition return uninjured, they will have succeeded in their task; the other six will only have performed their duty, and their loss will be fully repaid by the destruction of the enemy's ship.

The results of the attacks by torpedo-boats in the course of the late war, which latterly were carried on almost without any loss on the part of the assailants, cannot be regarded as very considerable. In the future we shall probably have to deal with enemies more determined and alert, and a more serious loss in men and *matériel* must be anticipated.

When a boat is destroyed, in the attack it does not necessarily follow that the crew should lose their lives. The attack must be made stealthily, so as not to attract the attention of the enemy. This will not be so easy in the future as in the last Russo-Turkish War, although it is true that in that war, boats of a speed of from six to eight knots were used, while the new boats will make their attack at a speed of thirteen knots.

It is difficult to give any positive opinion as to whether it is best to make an attack in broad daylight. In very dark, stormy nights, the enemy will generally be more watchful. A single ship can scarcely be defended effectually, even in the daytime, against a flotilla of torpedo-boats. Our present experience scarcely enables us to say whether the attacks in the day or those in the night have the best chance of success, even assuming that there may be greater loss of life in the former. It may happen that you find an enemy who, having observed a division of torpedo-boats coming down upon him, has made every preparation to repel their attack. But it does not follow that he may be able to make an effective defence. Here it would seem that the chances of success are greater in a daylight attack. A ship attacked in the night can make use of the electric light. The assailant should endeavour, so long as it is possible to keep out of sight; thus, for this purpose, the torpedo-boats should be painted of such a colour as may be least conspicuous under the electric light. The usual dark gray colours are conspicuous, inasmuch as they appear much lighter, and indeed become a pure white, when seen under the electric light. Experiments in the

Black Sea showed that a light brown or chocolate colour was the least conspicuous colour.

It is to be remarked that no special code of signals has yet been devised for torpedo-boats. In the absence of these, two boats belonging to the same fleet may possibly attack one another.

The equipment of torpedo-boats with machine guns deserves very careful consideration. It is still difficult to pronounce an opinion as to their suitability.

In making an attack it will be impossible to open fire with these weapons. They can only be employed with effect against boats, or to cover a retreat. The pyroxiline rockets may be found more useful. They have been supplied to torpedo-boats. They do not load them too deeply, take up little room, and can be used with equal advantage for signalling purposes both in advancing to the attack and in retreating. The explosion of these rockets on board the ship which is attacked would create no small confusion.

The general conclusions to which we have been led by the foregoing observations on attacks by torpedo-boats, may be summed up as follows :—

1. Attacks by single boats are only to be attempted as a last resource.
2. The attack must be made according to a carefully considered plan.
3. The torpedo-boats are to be equipped either with the Whitehead or the spar torpedo.
4. A squadron of torpedo-boats must be divided into groups, the "pioneer" group, the "assaulting" group, and the "reserve" group.
5. The torpedo should be fired automatically, and only when this plan fails, should the electrical firing apparatus be employed.
6. The spar should be sunk as soon as the boat is reduced to half-speed or stopped. At full speed the spar should be triced up clear of the water.
7. The attack should be made, at a signal from the commander, simultaneously from several points.
8. The speed of the torpedo-boats before the attack, until they reach the positions which have been assigned to them, should be regulated according to the speed of the slowest boat.
9. The commander of the division should remain in the rear, with the boats of the reserve group.
10. The torpedo must be brought into contact with the bottom or unarmoured ends of the ship.

In order to be able to apply all these rules effectually in war, it is necessary in time of peace to train every torpedo division to apply them, as far as possible, under the conditions which would arise in actual warfare. This would be easily effected if the manœuvres of an attack were put in practice, according to a predetermined plan, against a fleet at anchor and under way, intelligently, with dummy torpedoes. At the end of the course of instruction, an attack might be made as a test of the efficiency which had been attained with loaded torpedoes against a raft or pontoon towed.

It is only after considerable practice that success can be obtained in this new method of warfare. Trials with single boats can only be regarded as a preliminary to manœuvres with a complete division of boats. They in no way ensure success when a boat is for the first time attached to a division, without having been exercised in making attacks of a similar nature in time of peace.