



The Volunteer Review

AND MILITARY AND NAVAL GAZETTE.

A Journal Devoted to the Interests of the Military and Naval Forces of the Dominion of Canada

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NEWS OF THE WEEK.

The *Winnipeg Standard* (formerly the *Manitoban*) of Nov. 28th says:—"Inspection of Winnipeg Field Battery by the Deputy Adjutant General, Lieut.-Col. W Osborne Smith, C.M.G., who, after the men had been put through several movements both as Infantry and Artillery, expressed his great satisfaction at the proficiency which they had attained in the use of both the rifle and the field gun. The D.A.G. was accompanied by Major Tascheran and Lieut. Cotton, D.A., who examined the guns and reported most favorably on their condition. The D.A.G., on entering the armory, was received with the usual salute."

Lt. Col A. G. Irvine, lately Commandant of Troops at Fort Garry, arrived in Ottawa on the 9th looking well.

The Ottawa Customs House was destroyed by fire on the morning of the 9th. It is thought that most of the property destroyed can be duplicated.

It is expected the Canadian Pacific Telegraph line will be completed to Fort Pelly, 300 miles, by August next.

Application has been made on behalf of persons in Canada and the United States holding bonds of the Northern Pacific Railway Company, for an injunction to restrain the trustees of Jay Cook & Co. from paying dividends out of the estate until their claims are recognized.

A despatch from Montevideo, dated Wednesday, December 8th, says the insurrection in Uruguay continues. The Government troops have refused to attack the insurgents. The resignation of the present Cabinet is demanded.

Gen. Loma is preparing a proclamation, summoning the Carlist insurgents to surrender within eight days and threatening to devastate the country occupied by them in case of further resistance.

A general order has been promulgated ordering the resumption of enlistments for the United States army under restrictions.

A gale of great violence prevailed on the English coast on the 9th. A number of marine disasters have been reported. A large vessel supposed to be the John Cook, from Quebec for Shields, has been totally wrecked and fifteen of the crew drowned. Nine vessels are ashore at Hartlepool and several at Seatram. The gale has done much damage to houses and other property on the shore.

This afternoon (Dec. 8) as a train on the Kansas Pacific Railroad reached Muncie, a few miles west of Kansas City five masked men flagged and stopped it, cutting off the passenger coaches. They moved the engine and express car some distance ahead and then robbed the safe of Wells, Fargo & Co., of about \$27,000. One case containing gold dust valued at \$5,000, consigned to Kountze Bros., N.Y., was also carried off. The robbers were all large men, heavily armed. The express company offers a reward of \$10,000; the Railway Company \$5,000, and the Government Osborne \$25,000, for the recovery of the property and arrest of the robbers.

G.V. Ricksecker, Judge of Probate of Reno county, Kansas, entered the Sun office last evening to make an appeal for the sufferers in Kansas. He says that over 20,000 persons must depend for subsistence during the winter upon the charity of their fellow men. Of this number over three-quarters are soldiers, who have taken Government land, spent all their means in building, and depended entirely upon their crops for a living during the winter months. In July and August the grasshoppers fell upon their lands and swept away every trace of vegetation. The Kansas Central Relief Committee, which Judge Ricksecker represents, estimate the cost of feeding this great army of the afflicted at not less than \$1 a month per man. At this rate \$480,000 will be required for the next six months. The principal things required are money, cloths, especially for women and children, and boots and shoes. Judge Ricksecker can be found at 245 Broadway, room 16.

From the City of Mexico, Dec. 5 we learn that the articles of amendments to the Constitution making changes in the Congress and creating a Senate, having passed Congress, were solemnly promulgated as the law of the land, with the firing of cannon, ringing of bells, and a grand military review by the President.

Debate is now progressing in Congress on a bill restricting the powers of the Roman Catholic Church. One clause provides for the complete separation of Church and State, and another for the expulsion of the Sisters of Charity from the Republic.

Col. Farney announces that he has official information to the effect that the British Government assents to recognize the Centennial celebration a Philadelphia, and has resolved to appoint a commissioner to the exhibition there.

Telegrams were received at Greenwich Observatory this evening Dec. 9th, from India, announcing that the observation of the transit of Venus had been successful. Over 100 photographs were taken.

On the 21th ult. a Spanish gunboat captured the British schooner, *Eclipse*, off Santiago de Cuba. The vessel had been chartered by a Spanish passenger, who is held a prisoner. The schooner and crew were liberated.

Vladivostok, Russia, 9th, via London, 10th.—The American astronomical party, under Prof. Hall, were successful in observing the transit of Venus. Thirteen good photographs were taken.

A despatch to the *Herald* from Nagaonki says thorough measurements and about sixty photographs of the transit during various periods of its occurrence were taken.

Information has been received from sources entitled to credit that President MacMahon has decided to form a new Ministry at the end of January one which will give hearty support to the Constitutional bills. It is intimated that the Duke de Broglie will become a member of the new Cabinet, and Gen. de Cissey, Minister of War, will resign when the bill on the military cadres is passed.

The idea of the partial renewal of the Assembly by periodical elections is gaining ground among all parties, and a motion to that effect will probably be soon introduced in the Chamber.

The committee appointed to inquire into the operations of the army in the east of France during the late war reported to the Assembly to-day. They condemn Garibaldi for quitting his command toward the close of the war without leave, and say if he was a French General he should be tried by court martial.

In conformity with the resolution adopted by the American Congress on the 22nd of June last, Mr. Washbourne, the U.S. Minister, to-day handed to M. Oscar de Lafayette, deputy in the National Assembly from the Seine et Marne, and grandson of the Marquis de Lafayette, the watch Washington presented to the latter as a souvenir of the capitulation of Lord Cornwallis. The watch was stolen from the Marquis de Lafayette while he was travelling in the U. S. in 1825, but was recovered in later years.

A *Daily News* special from Hendaye says the object of General Loma's attack on the Carlist lines was to force his way to Tolosa. As a result of his first attempt he was driven from Henrietta to Ernani, after three hours' fighting with his troops in a thoroughly disorganized condition. He renewed the attack on Tuesday with his whole force of 8,000 men, and four guns. The Carlists, meanwhile, had been reinforced and, after an engagement lasting all day, Loma was compelled to retreat. The Carlists admit their loss is 600. It is believed the Republican loss is much greater.

THE EFFECTS OF ICE AND SNOW ON ARTILLERY AND RIFLE FIRE.

We are indebted to the Austrian *Millhe- ilungen über gegenstände der Artillerie und Genie-Wesens* for the annexed details of experiments, which were carried out by the Austrian troops during the past two winters, for the purpose of ascertaining the effect of ice and snow on the fire of infantry and field-artillery.

The first series of experiments was made at the Polygon of Thalerhof, in the neighbourhood of Gratz, and commenced in February, 1873. The object of experiments was to determine the value of snow defence, and also to ascertain the effects of surfaces of ice and snow on the fire of the Werndl rifle, and of the Austrian 4 pounder and 3 pounder field guns.

A parapet of rammed snow was thrown up, thirty six feet in height. The minimum thickness of the parapet was thirty six feet at one extremity, tapering off to twelve feet at the other. It was formed with an exterior slope of one sixth of the height. The outer coating of snow was partially thawed by day and frozen hard each night, so that it acquired a considerable degree of consistency and hardness.

Shells, with percussion fuzes, were thrown against this parapet from the 4 pounder and 8 pounder field guns at 600 paces range, and penetrated to a mean depth of twelve feet before bursting. The 8 pounder shells, more especially, produce a remarkable effect; some of them, which lodged four feet below the superior slope of the parapet, produced a crater six feet in external diameter. The snow crumbled away very quickly round the holes thus formed. Only five per cent. of miss fires occurred. The conclusion arrived at was that snow defences could not withstand the continued fire of rifled field guns.

To test the effects of Werndl rifle fire, a parapet of the same dimensions as the above was thrown up, but the snow was not rammed so hard. The mean penetration of the bullets was found to be as follows:—At 100 paces, 3ft.; 300 paces, 3½ft.; 600 paces, 2½ feet.

The conclusion here arrived at was that a snow parapet, six feet high and of the requisite thickness, affords very efficient shelter against infantry fire, even at short ranges; but that, owing to the superior penetration of the projectiles in snow, the protection is not equal to that of an earthen parapet of lesser dimensions. Experiments, made in 1870, proved that at ranges between 100 and 300 paces, a Werndl bullet will penetrate to a mean depth of 5in. only in earth of average consistency freshly dug, and 7in. only in the same earth well rammed. In snow, the mean penetration is 42in. at a like range.

Other experiments were then made to ascertain the effect of snow and ice surfaces on the bursting of shells. For this purpose three plank screens, each 10 feet in width and 6 feet in height, were placed, one behind the other, at distances of 25ft. apart. In front of the foremost a bed of hardened snow was formed, extending 50 paces in the direction of the line of fire by 10 paces in width. In the first set of experiments there was no snow in front of the targets; in the second the snow was 1ft. in depth; in the last it was 2ft. deep.

Fire was opened on the targets with 4 pounder and 8 pounder field guns, at 600 paces. The proportion of hits on the targets was as follows:—4 pounder shells—Bursting on the bare ground, 23; on snow 1ft. deep, 40; on snow 2ft. deep, 13, 8 pounder

shells—Bursting on the bare ground, 107; on snow 1ft. deep, 60; on snow 2ft. deep, 12.

Although the 4 pounder shells gave results discordant with the rest of the experiments, the obvious conclusion was that troops with a surface of snow before them would be less exposed to injury from shell fire than if the ground were bare, and that the presence of snow might thus be turned into useful account. All the shells burst, the percussion fuzes acting admirably.

The experiments were resumed in January, 1874, at similar targets set up on the frozen surface of the Lake of Leopoldstadt, near Eisenerts. These experiments were of two kinds. In the first portion 8 pdr. shells were fired horizontally at 800 pace ranges; in the second a plunging fire was kept up with the same shells at 1500 pace ranges. Five trial shots were fired, and after each the thickness of the ice was measured at the point of impact. Two of the shells passed through the ice, which was 5½ in. and 6½ in. at the points of impact respectively; the other three struck where the ice was 6 inches thick and covered with 1½ in. to 2in. of snow, and ricocheted, leaving furrows 2in. deep in its surface. It was concluded that this was the maximum penetration, and the experiments proper then commenced.

The sights were aligned for 700 paces, giving a mean range of 784 paces. The four shells fired—two of which passed clean through 5½ in. and 6in. ice—burst at a mean distance of 11ft. beyond the first screen, making 14 holes and 7 indentions on the first screen, and 18 holes and 14 indentions on the two others. This showed that 35 to 50 per cent. of the total number of fragments into which the shell burst struck one or other of the screens, a result to be attributed to the low angle (about 3deg.) at which the shells rose after striking the ice. The fifth shell struck 30 paces in front of the foremost target, penetrated 5½ inches of ice, overlaid by 1½ in. of snow, ricocheted, passed through the first and second target, and burst ten paces in front of the third, which showed 24 holes and 6 grazes. The angle of ricochet after the first graze was so low that the shell passed through the first screen at 18in. above the ground, the same height at which it had been hit by the four preceding shots, which had struck only 10ft. in front of it.

To get hits on all the screens, half a dozen rounds were fired with the sights adjusted for 625 paces, which gave a mean range of 793 paces. The first shell passed through 5½ in. of ice at 815 paces distance. The other five, striking on snow covered ice 5½ in. or 6in. thick, merely left furrows 2in. deep. The first three shells burst at a mean distance of 24 paces from the point of impact; the others, the fifth, which never burst at all, excepted, at a mean distance of 67 paces.

Other experiments on thinner ice could not be carried out, as ice of the requisite dimensions could not be found.

The principal conclusions arrived at were that projectiles striking a surface of ice rise at a very low angle, which differs but little from the angle of incidence; that the shorter the range, the lower the angle of ricochet, and the less the penetration; that when the projectiles ricochet at very low angles, the bursting point of impact, and that it is, therefore, not of much use to fire shells at troops on the ice at ranges under 800 paces; that the results of the practice, as far as they could be ascertained from a like limited number of rounds, were superior to those on ordinary ground, the shells ricocheting

from the polished surface of the ice, and bursting with far greater uniformity; that, as a rule, ice of a less thickness than 6in., cannot be depended upon to withstand the shock of a horizontal fire of shell; that the striking shell imparts to the ice a strong oscillatory movement in the direction of the line of fire, producing numerous cracks, which, however, do not appear to compromise its stability; and that the mean effective penetration of a shell thus fired in ice does not appear to exceed 3in.

The second portion of the experiments was executed with a plunging fire of 8 pounder shells, at 1500 paces range.

Ice of superior thickness was sought, but could not be found, and all attempts to increase its dimensions by pouring water on it having failed, the experiments were carried out against screens similar to those used in the preceding experiments, and on ice of like thickness.

All the projectiles struck at angles of 15°, broke through the ice, mostly 7in. to 7½ in. thick, and much of it covered with a couple of inches of frozen snow, ricocheting, and bursting very regularly at 5 to 10 paces beyond the point of impact. The bursting effect were not satisfactory. The terminal velocity being much reduced, the bursting effects were disproportionately great, and the fragments were consequently spread over a large area.

The general conclusions arrived at after the second of the experiments were, that 8 pounder shells, striking down at an angle of 15°, will break through ice 7½ in. thick, laid with 2in. of frozen snow; that with ice 6in. thick they will penetrate to the surface of the water, after ricocheting and striking the ice a second time; also that, on account of the feeble impact and irregular dispersion of the shell fragments in a plunging fire, the latter should only be used when obstacles prevent the employment of horizontal fire, or when the enemy's troops present a sufficient depth to enable greater effect to be produced by firing into their midst.

THE GREAT FUTURE.

It is reported of the First Napoleon that after his defeat at Waterloo, while contemplating the results to England of her great victory, he was heard to exclaim that England's future greatness would depend upon her ships, her colonies and her commerce. Many since that day have repeated the words of the fallen emperor, and in our own Province one of the ablest and most eloquent speeches ever delivered by the present Judge Wilmont on the floors of the House of Assembly, was upon this very theme, the ships, the colonies, and the commerce of the Mother Country. During the range and scope of his address, he pictured to his hearers the mighty power of Britain, the central sun of a glorious colonial system, which in its vastness and influence should outshine all others, and compared to which the Empire of Charlemagne or the might of Rome in her palmy days should be but a petty principality or utterly insignificant.

For years England held to the doctrine of ships and commerce, but never seemed to realize in regard to her colonies, especially these North American possessions, the full significance of the words of the conquered Emperor or the New Brunswick statesman. We find this illustrated so frequently during the past decade in the dealings of the British government towards Canada.—"Friends, your love is but a burden, loose the bonds and go!"—and when they withdrew their

CORRESPONDENCE.

The Editor does not hold himself responsible for individual expressions of opinion in communications addressed to the VOLUNTEER REVIEW

To the Editor of the VOLUNTEER REVIEW.

DEAR SIR.—You cannot take up a newspaper now a days without finding allusion to drunkenness. Some, advocating temperance in all things; others, teetotalism, and many for prohibition. I think that these last are putting the cart before the horse, by prohibiting the sale of liquors you do not stop the demand, and as long as there is a demand there will be a supply, which is a well-known commercial axiom. The way I would stop the demand would be by making drunkenness a misdemeanor and punishing by flogging any one found drunk in the public streets or if complaint be made that the party is an habitual drunkard. I am strengthened in these remarks by having read in the Paris correspondent of the *Moniteur* of the 28th ult., who writing about drunkenness in the French Army says.—“It was formerly the custom, when a soldier was intoxicated to treat him tenderly, as if he was an invalid. Now the rule is to punish him severely and since the adoption of this new treatment drunkenness has rapidly declined. The Cantons are also prohibited from selling absinthe and in each soldiers *liveret* is conspicuously printed that in case of dereliction of duty, intoxication will never be accepted as a mitigating circumstance.” This is coming down to first principles as can be verified by referring to Deut. xxi. 18 to 21 ver. without going the length of the sentence of the Divine Lawgiver, I would advocate the use of the cat and that not sparingly; please observe in the above reference that the sinner is not sentimentally called a patient, a term that has been used in recent times very injudiciously. Flogging for drunkenness was formerly reported to in the British Army, but Pseudo Humanitarians got it abolished as too degrading (as if it was possible to degrade an habitual drunkard) and afterward substituted a system of fines, and recently the Commissioners appointed to receive these fines report that they have amounted to so large a sum that they do not know what to do with it, evidently this system has not proved a success. We have seen how efficacious flogging proved to be in arresting garrotting when every other punishment failed. There is also another treatment for drunkenness adopted in the Austrian Army, and Medical reports state that out of 139 cases 128 cures of confirmed drunkenness have been effected. The plan is as follows: The soldier taken in a state of intoxication or purposely inebriated is confined to his room where his diet is carefully and amply supplied to him according to his choice, for drink he is allowed brandy and water in the proportion of one

third brandy to two thirds water. All his food is prepared in a weak solution of brandy and water. Coffee with a small quantity of brandy is also allowed him. At first the treatment throws the patient into a constant state of intoxication and he sleeps much. At the end of three or four days he takes a dislike to his food and drink and asks for a change, which request were it acceded to, would entirely prevent the completion of the cure. On the contrary it must now be persevered in, until the patient can no longer swallow food or drink, and even the small revolts and nauasates the stomach, when the cure may be considered as effectual. The shortest time for the continuance of the treatment is seven days—the longest nine. In order to prevent the constipation which might ensue, the patient must now be given gentle emetics that is one grain of emetic to one bottle of water—a wine glass full to be taken every quarter of an hour in the morning fasting. This is followed by forty grains of magnesia daily, given in broth or gruel, placing the patient at first on a low diet and then gradually increasing to his original rations. If during the first part of the treatment spitting of blood or convulsions should result it must not be persevered in, therefore this mode of remedy cannot on any pretence whatever, be adopted but by a medical man.” If you will refer to the charges given by the Judges to the several grand Juries throughout the Dominion you will find that they impute three-fourths of the criminal matter to Drunkenness. Now to every Gaol there is attached a Physician and what is there to prevent the Government from selecting one of the Gaols in one of the largest cities of Ontario or Quebec, as an experiment for carrying out the above treatment for six or twelve months, and if successful, it could be applied to all the Gaols—thus making them inebriate asylums accessible to all. I would also charge every inebriate \$1 per day while under treatment; and I have no doubt if such a system was properly carried out it would help considerably to diminish the expenses of the Administration of Justice. Many of our inebriates are sent to the water cures in the States to have the taste for the Ardent washed out of them, and there it is called Canadian Rheumatism—this treatment is however only temporary—for as soon as they return to their old haunts and associates they fall away shortly. To attain even this short cure they have to spend eight or ten months.

I have put these few ideas forward, hoping some one more competent than myself will take them in hand.

Z.

LONDON, Dec. 9.—Telegrams were received at Greenwich Observatory this afternoon from India, announcing that the observation of the transit of Venus had been successful. Over one hundred photographs were taken.

troops from the greater part of British America, carried away out of sight the flag which for more than a century had waved over and protected us, we felt indeed that the bonds were loosening, and that at no distant day we should stand an independent nationality, or form alliances under another flag, and with another people.

To work out this destiny was engrossing the most earnest consideration and careful thought of the statesmen and Press of the Dominion, when suddenly a new Premier assumes the reins of the British government, and we are told not to go, that the bonds are not unloosed, that our love is not a burden. More than this we are encouraged to believe that the day dream of the Emperor is about to be realized, that England has in view not the disintegration but the consolidation of the Empire, and that her dependencies scattered over all the earth are to be amalgamated into one mighty federation, having a voice and representation in the government of the nation. Contemplating as allied British subjects such a commercial and political future as now rises up before our mental vision the power of language fails. All ideas of separate and distinct nationalities, become merged in the thought that welded together as one mighty whole the colonies east, west, north and south, Canada on the one hand with Australia and India on the other, gathering fresh strength as they onward roll, shall hasten to unite with and participate in the glories of a nation, the greatest upon which the sun has ever shone.

To carry out this grand idea successfully there should be no subordinate parts in the combination; the word dependency, should be blotted from the national dictionary, and we should be joined together upon terms at once free and equal.

This of course would abolished hereditary and titled aristocracy, it would bring down to the level of their own merits the men whose principal boast has been a dead ancestry, it would abolish the last vestige of state churchism, conserving at the same time the fundamental truth that true greatness is the inheritance of virtue rather than wealth. Thus would be built up a power the mightiest among the nations of the earth, when the Anglo-Saxon family would become the great arbiters of the destinies of the world.

Should this prospect become realized, of which there is now every probability, instead of Canada being absorbed in the great mass of the American Republic, we may find the United States knocking at our doors for admission. This of course would involve a struggle between monarchism and republicanism, but it matters little under what name we are governed, seeing that we are united upon the fundamental principle that all power is vested in the people, *Vox Populi est vox Dei.*

The recent utterances of the British Premier have therefore given a new direction to Canadian thoughts on independence or annexation. We trust a greater future is before us, in which the Dominion of Canada will assume a proud and conspicuous part to the glory of the nation and the lasting benefit of the world.—*N. B. Reporter.*

The Times states that England, in reply to Russia's invitation to attend the International Law Conference, to be re-opened at St. Petersburg, has declared her willingness to do so, but regrets that she is unable to anticipate any practical result of its deliberations.

OFFENSIVE TORPEDOES,

The following article, for which we are indebted to a writer in the *Times*, will be read with much interest. Commencing with the observation that however important the torpedo may be as a defensive agent there can be little doubt that it will prove a most formidable naval arm when science, ingenuity, and mechanical skill shall have perfected its employment as a weapon for attack, he proceeds historically.—

"As an engine especially applied to naval warfare, we first meet the torpedo under the form of an explosion ship. The first recorded instance of this method of employing locomotive mines was in 1585, when the inhabitants of Antwerp destroyed a boom which had been thrown across the Scheldt by the Duke of Parma while he was besieging the town. A number of vessels filled with gun powder and combustibles of various kinds were arranged so as to explode either by clock work or slow match, and were then allowed to drift with the tide against the boom. The result was most successful—the explosion vessels blew up with terrific violence, destroyed a great part of the boom, and killed 800 of the enemy.

"During the wars of the 17th century we frequently used explosion vessels, and in 1809 a boom in Basque Roads was successfully destroyed by this means by Admiral Cochrane. But as the science of torpedoing advanced, this method came to be looked upon as a very crude and wasteful way of expending gunpowder, and for many years it was quite given up. The tremendous effect, however, of the explosion of the gun powder magazine at Erith, in October, 1864, appears to have led Admiral Porter, of the United States Navy, in the following December, to attempt the destruction of Fort Fisher by an explosion vessel. The powder vessel was towed in and anchored at about 400 yards from the fort; the party in charge then applied the match and took to their boats. In due time the vessel exploded, but beyond creating a temporary panic among the sleeping garrison, no injury resulted. This is the last recorded instance of the use of an explosion vessel. The method could only be successfully applied under special conditions, and as the explosion ship was always abandoned by her crew and left to the mercy of the wind and waves for a considerable distance, the chances were against her ever reaching her destination, unless drifted to it by a direct current. With a view of obviating this difficulty, an artillery officer in 1862 proposed to the Ordnance Select Committee that explosion ships should be steered by electricity. He suggested that by a system of electro-magnetic leverage it would be possible so to govern machinery in connection with the steam engines of the vessel, but the whole operations of going ahead, reversing, and steering would be completely under the command of an operator at a distance, and that an explosion ship paying out a cable astern could thus, without crew, be put in motion and steered in any direction. This novel proposal was, however, at that time in advance of the age, and it was not until about ten years afterwards that any trials were made in this direction.

"The matter appears to have been brought to the notice of the Russian Government in 1871 by Lieutenant Colonel Von Schellin. The propelling power was a screw worked by compressed air, and the torpedo was steered from the shore by means of electricity. The idea was subsequently taken up in this country and in Germany, and several

successful experiments have been made on a small scale; indeed, it is reported that the German Admiralty have determined to adopt a locomotive torpedo of this kind. It is difficult, however, to understand the rôle of such a machine on a small scale. To be able to govern the movements from a distance of a gigantic explosion vessel containing several hundred tons of gun cotton or dynamite might, under certain circumstances, lead to the successful accomplishment of some great *coup d'essai*, but to adapt all the necessary paraphernalia to a mere torpedo boat appears unnecessary—*le jeu vaut pas la chandelle*.

"During the 17th and 18th centuries many attempts were made from time to time to destroy vessels by means of drifting torpedoes; and in 1800 an American, Robert Fulton, endeavoured, to introduce into the English service a torpedo boat of novel construction. Since that time the art of approaching an enemy's vessel unobserved and exploding a mine beneath it has gradually developed, and it may confidently be affirmed that specially constructed boats by means of which torpedoes may, with considerable secrecy and safety, be brought into contact with an enemy's vessel and exploded on impact, will hereafter form an essential feature in torpedo tactics. The most promising mode of employing this method is that known as the 'outrigger system,' in which the torpedo is at the end of a long spar which is thrust out from the bows of the boat. This system was much used by both parties during the late American war, and it has since then been largely developed, both in this country and in America. For a ship of war's launch the spar would be about thirty feet long and six inches diameter at the but, tapering to four inches at the top. The torpedo, a 100lb. case of gunpowder or gun cotton, would be fastened to an iron rod hooped on to the top of the spar raised so as not to enter the water, would stealthily approach the enemy's vessel under cover of darkness or fog. When close up the extremity of the spar would be lowered so as to place the torpedo about 10ft. under water, and in this position the torpedo boat would drive full tilt against her adversary.

"Assuming the attack to be successful, and that a torpedo containing 100lbs. of gun cotton was detonated under and in contact with the ship's bottom, the probability is that the biggest ironclad afloat, unless specially built in water tight compartments, would sink in a few minutes. Moreover, recent experiments have demonstrated that when a ship is at anchor it is most difficult by any system of improvised defence to guard thoroughly against an attack by well manned and active torpedo boats. In spite of a crinoline framework of spars and booms projecting round the ship, supplemented by numerous guard boats rowing round and round, one or more torpedo boats, driven at full speed on a dark night, may succeed in leaping the obstacles and driving their infernal machines against the vessel. In fact, the only defence which seems to offer any prospect of success is some means by which a bright light can be constantly brought to bear on the surface of the water to a considerable distance round the ship. The experiments last spring with the Wilde magneto-induction machine, by which vivid flashes of electric light were thrown on the water, may possibly lead to most important results in this direction. It is said that no boat could approach the light within a mile without being discovered, and that on a very dark night the *Times* could be read at a distance of 2000 yards from the induction-

machine when the beam of light was brought to bear. An attack by outrigger torpedo boats during the daytime would probably end in failure, and if night can be turned into day the defence will gain a great advantage.

"There are, however, two systems of locomotive torpedo warfare that do not depend for success on stealthy tactics. The well known Harvey torpedo consist of a peculiarly shaped case capable of containing about 100lb. of gun cotton, and intended to be towed in such a manner that it will take up a position more or less on the quarter of the vessel to which the tow line is attached. The advantages of this system are that the torpedo can be towed by any vessel, and that a vessel with torpedoes in tow is to some extent secure against being rammed, the ram keeping off through fear of being torpedoed. Whether this system can successfully compete with the ram is, however, a question that mainly depends on speed and seamanship, and it can only be finally decided by actual contest.

"Lastly, we have the motive torpedo, or 'sea devil,' as it may aptly be termed. Doubtless this is one of the most infernal machines that has ever yet been devised by man for the destruction of his fellow man. The 'Whitehead' or fish torpedo is an example. In appearance the Whitehead torpedo somewhat resembles a large shark. It is a long steel cylinder somewhat thicker than a man's body, with a venomous pointed snout at one end and rather graceful looking tail at the other end. The rear half of its body contains those mysterious intonities by which it receives its motive power, the front half is packed with gun cotton, and the snout holds the detonating fuse. This marine monster is moved through the water by a screw at the tail driven by small engines, which are worked by a reservoir of compressed air. The torpedo can maintain a speed of about nine knots for about 300 yards, but it will run a mile at a less speed, and it can be so adjusted as to maintain its direction at any depth under water desired by the operator.

"The 'fish' is generally launched from a tube immersed about 4ft. below the water; it immediately dives under water to the depth to which it has been 'set,' and then continues to move on at that depth in a direct course until the reservoir is exhausted. It can be launched either from a boat or from an ironclad by night or by day. The officers who have been engaged bringing the Whitehead system to perfection in this country have carried out numerous experiments and have made many important improvements; but its effect on future naval tactics cannot be accurately judged until some experience has been gained in real war. It may turn out to be difficult of employment in actions on the high seas, and its use may have to be confined to calm waters and adjacent ports; but the system will undoubtedly be largely tried in the next naval war."

TORPEDO WARFARE.

(From Broad Arrow.)

At various periods, commencing some three years ago, the *Broad Arrow* has called attention to the importance of the torpedo experiments in progress in this and other countries. With much pleasure, therefore, we have seen the question warmly taken up by the Press, and notably by the *Times*, since we last adverted to the subject. If our contemporary is to be believed, Whitehead's "Fish Torpedo," which affords us

some amusement when it broke from all control, and made an ugly rush into the midst of a group of officials at Woolwich, is now perfected. It is positively stated that this "sea-devil" is so tractable that it will maintain any direction impressed upon it, and, in obedience to its masters, swim for a mile towards any adversary against whom it may be directed. We sincerely hope so, and that it will not again turn round upon its friends. We are just now a little sensitive on the subject of explosives, however, and in accepting this statement it must be understood that we are placing a good deal of confidence in the officers who have been employed in conducting the experiments and improving the invention—and we do not say they do not fully deserve it, but this is almost a new field of enterprise, and our confidence remains to be justified by the results.

In principle there is no doubt that the torpedo-system of warfare is perfect both for offence and defence. For, as Mr. Merrifield remarked in his lecture before the Institution of Naval Architects in March, 1872:—"The work of destroying the floating capacity of a ship is out of all proportion small as compared with the work which it is possible to store in a submarine explosive of large size; and, provided always that this stored work can be applied with certainty and efficiency, there is no alternative to the destruction of the vessel."

As our readers will admit that Mr. Merrifield is no mean authority on a scientific subject, this reduces the problem to one of mere mechanics and seamanship, and there are few mechanical problems, that being intelligibly proposed, would not ultimately be solved by the inventive genius of Englishmen. As for seamanship, in the instance of the "Fish Torpedo," it almost resolves itself into a question of weather. Given a still sea, and a ship at anchor, there is no doubt as it seems, that the mechanical Fish will find its mark. The doubt arises, when we contemplate the possibility of its services being required against a ship in motion, and with a high sea running. In answer to this, it may be said that the Fish will swim at any depth, and at a given depth the water may be comparatively calm. It were more to the purpose, perhaps, to regard the Fish as an efficient weapon for harbor service, or for an attack on ships in position, like the Italian fleet at the action off Lissa. For offensive action in a heavy sea, and more especially to repel the attack of a ram, the palm must still be awarded to the Harvey torpedo, until actual experiments demonstrate that its good qualities are bettered by one or other of its rivals.

What we more particularly wish to observe, is that the experiments against the *Oberon* only touch at one point the mighty problem which grows out of these inventions taken in all their forms, some for one sort of service, some for another. The power of resistance to the shock of a torpedo is an important matter relative to construction; but the ultimate question is one for the tactician rather than the constructor. We can picture to ourselves the possibility of a whole fleet of ironclads being "brought up all standing," in nautical phrase, by submerged torpedoes acting in concert, by being spanned together, for example, somewhat in the fashion of the old chain shot. Skillful and daring men, trained to the work, will not be wanting for any enterprise, however hazardous; and, to meet such attacks, it may be necessary for a fleet to bear down upon its adversary like a convoy of the old times, with its shoal of "devil fish" in attendance,

like the Nereids sporting around their son god Neptune. Even an unarmed ship, being pursued, may be able to drop one or more torpedoes in her wake. Conversely, indeed, the tactical question touches on the problem of construction, as it is obvious that one form of vessel may be better adapted than another to avoid torpedoes, as well as to make use of them. The range of artillery is another element in the whole problem of naval warfare of the future raised by these inventions. If a 25 ton gun will pierce armour a foot thick at the distance of a mile, and the 35 ton gun at more than double that distance, to say nothing of the 38 ton gun now being constructed, what chance would the Fish torpedo have of being discharged successfully against such antagonists? and would it not appear that naval warfare may assume the character of military operations on land, which open with a cannonade from a safe distance before the infantry come into action.

These are only hints of the manifoldness of the important problems which naval officers, no less than engineers and artillerymen, have opened before them. On one point only we will venture an additional remark. The *Broad Arrow* has always insisted emphatically that the naval power of England, and, *a fortiori*, our national security, lies in our power of attack. We are inclined, therefore, to look with less favour than some of our contemporaries on the use of these inventions for exclusively defensive warfare. Our torpedoes should be as active as wasps or hornets, and should be prepared to swim against the enemy under cover of our heavy guns, with the same deadly effect as the charge of our thin red line when the army engages. We do not yet despair of success in the employment of submarine boats for the purpose, each manned with a forlorn hope of gallant fellows, with efficient steering as well as motive power at their command. But the perfection of the offensive torpedo system is the first necessity, and with those of the two natures, invented respectively, by Mr. Whitehead and Mr. Harvey, if the recent accounts be not exaggerated, perfection has been nearly attained. We wait, however, for further and demonstrative proofs that the facts are as stated—unless, indeed, some of the foreign officers who have been taken into the confidence of the authorities will kindly enlighten us on the subject.

NEW GOVERNMENT CAISSONS.

Last Monday a launch took place at Messrs. Westwood, Baillie, and Company's yard at Millwall, of the fifth of six huge caissons which have been ordered by the Government from that firm for use in the Portsmouth Dockyard Extension Works. Several people, chiefly, however, consisting of the workmen and their friends, assembled to witness the launch of the unwieldy hull, and at a quarter to three, the dogshore having been knocked away, the caisson slowly glided broadside towards the river, and sending a huge wave before it, floated, and was subsequently taken in tow by two tugs for conveyance to a place of safety. It will be taken into dry dock to have its cradle removed, and, after receiving fifty additional tons of ballast, will be towed round to Portsmouth by one of the company's tugs, and there received by the Government authorities.

The advantages of these caissons over the more primitive method of a double pair of g-gates and a swinging bridge lies chiefly in obtaining level road and railways across the

basin or dock entrance, being less water-tight, and in being easy of access for repairs. As no description has yet appeared in our columns of the wonderful structures, we will add a few details for the benefit of our readers. The dimensions of the caissons, which are the largest of the kind yet constructed in this country, are—length of roadway deck, 84 feet, breadth of roadway deck, 17 feet; breadth of the caisson, at the widest part 4 feet, and depth of the caisson, 40 feet. They are of the ship form of construction, both longitudinally and amidships, and terminate at both ends, and at the bottom, in an oak keel and stem, which are designed to fit into a groove made in the masonry at the entrance to the basin or dock. The form of these are constructed from lines obtained in the dockyard, and remain perfectly watertight. The pig iron ballast is placed most naturally in the lower division, above which is a water tank. The interior of the caisson is fitted with five decks, two of which are plated and made watertight, one of which is at the water line when the caisson is floating, and the sides ten feet three inches below it, and enclose an air tight chamber. Above and below this compartment are water chambers, which can be opened for the ingress or egress of water. These communicate with one another by wrought iron trunks, and are used for the purpose of conveying water from the upper to the lower tank, and so into the river or basin as the caisson rises on being floated. Above the upper reservoir, immediately under the roadway deck, is another tank, which, when filled with water from the main water supply, sinks the caisson and causes the water to enter through the lower reservoir, and the trunks into the upper reservoir, thus rapidly brings the structure into its bed.

Additional speed in performing the work is available by a sluice gate to fill also the air chamber with water, but this can only be done at an increase of labour, as the water placed in the division can only be taken out by pumping, which must be done before the caisson can be again floated. It will thus be seen that to sink the caisson, the upper tank has only to be filled with water from the dockyard hose, and that to raise it for removal a sluice has only to be opened from the top tank, manoeuvres which are more admirable on account of their simplicity. The floating capacity of the air chamber is equal to nearly 500 tons, and the weight of the caisson when launched, with ballast and its other fittings, was 530 tons. Five caissons of the same description, and nearly of the same size, have already been made for Chatham Dockyard, and for other Government and private establishments. Her Majesty's ships *Valiant*, *Resistance*, and the gunboat *Rocket*, were built for the Government, and a large number of celebrated engineering works—especially gigantic railway bridges, which are referred to elsewhere—also have been, and are being executed in the same yard.—*Broad Arrow*.

Suicides and murders have of late become frequent among the British troops stationed in India. At Ajmere, the other day, a private named Tighe shot a comrade through the head, killing him instantaneously. The two, together with a corporal, were in the barrack room at the time, and after shooting the private, who was a recruit and had just joined, Tighe attempted to murder the corporal. He levelled his piece at him and fired, but missed the man. He was at once secured by his comrades, and is now in confinement awaiting trial.

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The Volunteer Review,

AND

MILITARY AND NAVAL GAZETTE

"Unbribed, unbought, our swords we draw,
To guard the Monarch, fence the Law."

OTTAWA, TUESDAY, DEC. 15, 1874.

TO CORRESPONDENTS.—Letters addressed to either the Editor or Publisher, as well as communications intended for publication, must, invariably, be *pre-paid*. Correspondents will also bear in mind that one end of the envelope should be left open, and at the corner the words "Printer's copy" written and a two or five-cent stamp (according to the weight of the communication) placed thereon will pay the postage.

LEUT. J. B. VINTAR, of Victoria, is our authorised Agent for Vancouver Island, British Columbia. As is also Captain H. V. EDMONDS for New Westminster and adjacent country.

Broad Arrow of 31st October, has an article (which will be found in another column of this issue) on "The Effects of Ice and Snow on Artillery and Rifle Fire," which is of considerable interest in this country where a winter campaign, if it could be undertaken at all, must be carried out under conditions which would make it a matter of first importance to know what precise effect artillery and rifle fire would produce on ice and snow built batteries or gun pits. The experiments carried out in Austria will not materially help us to a correct idea of what effect would be produced on ice 32

inches thick, which is frequently its depth in our rivers and there is nothing to prevent its production by the simple operation of pouring water on snow to a depth of five or ten feet if necessary, and we very much doubt the effect of shell fire on a mass of say five feet of solid ice backed by well rammed snow to penetrate beyond six inches or to produce any material effect on a battery faced with that material.

Taking the angle of the greatest elevation of Field Artillery for useful effect as fifteen degrees and the angle of incidence as equal thereto, the slope of a battery wall need not be at a greater angle to cause every shot to ricochet, for it must be remembered that the impact instead of disintegrating the particles of ice merely compresses them and therefore increases resistance; this fact accounts for the small effect produced by shell fire on ice during the Austrian experiments detailed by *Broad Arrow*. A flatter trajectory than that produced by an angle of fifteen degrees would produce even less effect and there would be no way of rendering a properly constructed ice battery untenable except by vertical fire—the question of the effect produced by ordinary rifle fire need not be gone into, the experiments are conclusive on that point. If our Canadian Artillery were properly organized there were open to them a series of most interesting as well as profitable experiments, and they are in a position, owing to peculiarities of climate, to carry them out better than any other people. It is recorded that at the battle of Austerlitz, fought 2nd December, 1808, NAPOLEON LE GRAND directed a heavy artillery fire on a lake over which a division of Russian troops were retreating on the ice, with the effect of breaking up the latter and drowning some 4,000 men; the ice to answer the conditions must have been only six inches or less in thickness, as at eight inches it will carry the heaviest field artillery, while the effect of the fire must be aided considerably by the vibration caused by the hurried passage of such a large body of men. The experiments as far as tried are most interesting and could be turned to good account.

The following article from the *Mitrailleuse* is taken from the United States *Army and Navy Journal* of 21st November, although by no means believers in the value of the weapon as a field gun, we are well aware that it has its own proper place in *defensive warfare* and therefore our readers are treated to all knowledge within reach on the subject, on the same principle with which the *torpedo* question is dealt with.

"There are many good writers who do not possess the faculty of analysis and comparison of inventions, machines and mechanical processes, and of defining the exact scope and limit of inventions. All such authors in writing about the Gatling gun are liable to classify it with other machine guns when, in truth, it differs in all its distinctive features

—in mechanical construction and operation—from all other firearms. In other words, the Gatling gun is an original invention, and forms a system of its own differing radically from all other arms as does the Colt pistol from a flint lock musket.

"Captain T. F. Owen, R.A., of the British army, has recently published a treatise entitled "Mitrailleurs, or Machine Guns," in which the history and peculiarity of all kinds of machine guns are treated at length. The author very justly holds that the Gatling gun possesses in the highest degree the various *desiderata* required by a machine gun; but, he has unwittingly fallen into the error of describing all machine guns as belonging to one and the same class of firearms. It is clearly a great mistake to class the Gatling gun—which loads automatically and fires continuously 400 shots per minute, and which uses metallic cartridges that are of modern origin—with ancient machine guns (*orgues, orgels, etc.*) formed of many barrels, and which were loaded by hand with loose powder and balls, and fired in a volley by means of trains of powder set off by a match similar to the way gun barrels are now proved in armories.

"In regard to the inventions which preceded the Gatling gun, Captain Owen says:—

"On the introduction of rifled field guns, it appeared that the rotary motion imparted to the projectile somewhat decreased the effect of case shot; while shell fire (until fuzes are much improved) must always be more or less uncertain. Mitrailleurs were therefore made, with a view to their affording a fire like that of case (mitraille), or a hail of bullets, for ranges up to 1,000 or 1,200 yards. This term, of French origin, has been found inconvenient to the Anglo-Saxon tongue and consequently has not been adopted by the Americans or ourselves for the machine guns which we use. We designate them by the name of the inventor, and call them "guns." We must not imagine that guns with many barrels were not used before the Franco-German war of 1870-1.

"Firearms having many barrels, intended either to be fired together or in rapid succession, are by no means a modern conception; although the introduction of rifling and metallic cartridges has of course revolutionized their nature and manufacture. In the earliest days of artillery, we find machines used under the names of ribaudquins, orgues, orgels, organ or tube guns, etc., in which several barrels of small calibre were united in a single mass, or on a rigid frame-work. For the protection of fortresses, such guns were employed in Flanders in 1347; four breech-loading tubes of small calibre being placed on a two-wheeled cart, with their muzzles protruding through a wooden screen, protected by a *chevaux-de-trise*. Andrea Cattaro mentions a machine used in Italy in the 14th century (against the people of Carrara), which consisted of a carriage having 144 small bombardments (*bombardelles*) ranged in rows of twelve, three of which rows could be fired at once, and so thirty-six balls (about one size of an egg) discharged at a time. The carriage was drawn by four horses, and three men were sufficient for loading and firing the 144 bombardelles. At the battle of Tongres, again, in the year 1408; a number of ribaudquins, or tube guns, were used, but apparently with little effect; and three years later we find that the Duke of Burgundy's army of 40,000 men and 2,000 organ guns, besides cannon.

These weapons were originally of clumsy construction, and could not be discharged

with rapidity. Towards the end of the 15th century, however, more efficient organ guns were taken into the field, but wheeled orriages, strong enough to resist the recoil of a field piece, and yet fairly mobile, were constructed about this period; so that Francis I., when invading Italy in 1515, though he carried organ guns with him, also took a number of field pieces. As the latter improved in mobility, the use of tube guns was gradually given up, and after the 16th century their employment in war seems to have been exceptional. Ufano, indeed, writing in 1621, gives a drawing of a four tubed gun mounted on a field carriage as a weapon then in use, and we find similar machine guns employed by the Scotch in 1644, during our civil war. At the battle of Copredy Bridge, fought in that year, the cavaliers captured "two barricades of wood which were drawn upon wheels, and in each seven small brass and leather cannon charged with case." For some two centuries from that date we hear little more of many-barrelled guns, until the Crimean war woke up the spirit of destructive invention. The science of mechanism had made gigantic strides since the 17th century, and although metallic cartridges were not yet used, rifling had come into vogue. In 1853, Mr. S. A. Goddard invented a rifle battery of thirty six barrels, combined together and mounted on wheels. Later on, Sir J. Scott Lillie and others brought to the notice of government several varieties of compound guns, on frames or wheels. None of these inventions were considered applicable for general service, was it until the great secession war in America of 1860, that machine guns were again used in the field.

"The conception which led to the invention of the Gatling gun, embraces something more than that included in the invention of the old crude machine guns, which are to be met with in most of the museums of old arms in Europe, and which consisted simply of grouping together a number of barrels to be loaded by hand, and to be fired "at once." Machines that produce different results, must necessarily be different in mechanical construction. The results attained in the Gatling gun are, as heretofore stated, loading the cartridges automatically into the rear ends of the barrels, and firing them continually. In order to produce these ends, it became necessary to devise, shape, and arrange certain parts of material, which when combined and put in operation should produce certain mechanical movements necessary to accomplish the results desired. It should be remembered that the component parts and mechanical movements, used and employed in the Gatling gun, are not duplicated in any other firearm, or in any other known piece of mechanism.

"There is a beautiful mechanical principle developed in the construction of the gun, viz: That while the gun itself is under uniform constant rotary motion, the locks rotate with the barrels and inner breech, and at the same time have a longitudinal reciprocating motion, performing the consecutive operations of loading, cocking, and firing without any pause whatever in the several and continuous operations.

"The gun cannot be loaded and fired when either the barrels, inner breech, or locks are at rest. Each lock rotates once, and moves forward and back once, at each and every revolution of the barrels. To say that such a gun belongs to the old crude class of machine guns invented in past ages before metallic cartridges were known is, so to speak, a confusion of mechanical ideas and a perversion of history."

MITRAILLEUR.

The following relative to the *Eighty Ton Gun* is copied from the *London Standard*. It seems to settle the question of "Armour versus Artillery" decidedly in favour of the latter as we have always held would be the case—the description of the terrific *Peter the Great* is enough to create a smile when we think of the miserable failure of all such constructions as sea-going ships.

Broad Arrow gives us the following concerning the *Devastation*, the last except the "*Peter the Great*" of Mr. Rezd's abortions, and it will not tend to add to our respect for the intelligence of the Statesmen of England to allow such monstrous humbugs to be palmed off on the world as the greatest effort of British naval control.

"A correspondent of the *Broad Arrow* takes a gloomy view of sea service on the *Devastation*. He says: 'The *Devastation*, after having been eighteen months in commission, is now at Portsmouth refitting and otherwise preparing, as is generally understood, for a cruise to Gibraltar, etc., with the Channel fleet. Can this possibly be correct? Is it not preposterous that such a ship should be sent to cross the most stormy of all our European seas, viz. the Bay of Biscay, at the worst season of the year? Surely such information must be exaggerated, but should it be true, I can only hope, in common with many others, that their lordships will hesitate before exposing so many gallant men to so much danger. The question of her safety in heavy Atlantic weather is still a very vexed one; but supposing the Constructor's Department at the Admiralty to be correct in their scientific calculations, still it must be admitted that such a ship, with such a system of ventilation, is barely habitable in harbor when every hatchway is open. How much worse then must it be at sea when they are all screwed down (this is always the case in even moderate weather)? Under such circumstances air for breathing can only be obtained below by means of the ventilating engines, the foulness of which will readily be understood when I say that the bad atmosphere has to escape the best way it can, no means whatever being specially provided for its exit. The *Devastation* is said to be very uncomfortable in every respect, and her present crew are very dissatisfied at being kept so long in her; if then it is really necessary to keep this costly ship in commission, I would propose that she should be manned with a new crew of officers and men, who should receive some extra pay or emoluments for the discomforts endured."

The *Standard's* article says:—

"For a long time the battle of artillery versus armor-plates has been carried on in England with unceasing industry. Ships have been fitted with 9inch armor, only to be pierced by 18-ton guns; and then with 10inch plates, only to find a 25-ton weapon ready to conquer them; finally, with 12 and 14inch shields, again to be disappointed in the reach for pre-eminence by the appearance of guns weighing 25 tons, and throwing 700lb. shots. In Russia, however, naval architects appear to have struck out a bolder course; for in laying down their great turret ship *Peter the Great* nearly twelve months ago, they decided to make a great stride in the use of armor-plating, and designed a shield of twenty inches in thickness. So tremendous a protective covering surprised, if indeed, it did not alarm our

artillerists. Two years would elapse, it was true, before *Peter the Great* with its impentable turrets and sides, would take the sea, but at the expiration of that period Russia would be possessed of a vessel which could sweep the seas of everything afloat. In vain would it be to place our trust in the *Devastation* or *Fury*—their armament would be thin when compared with such a coat of mail. Nor would the *Inflexible*, just designed, be in much better case, for she would have no gun wherewith to pierce the sides of her terrible rival. Worse than this, all the efforts of our Government in building fortifications, at Portsmouth, on the Thames, and elsewhere, would be thrown away, for the marine monster, with its impervious skin, would simply pass scatheless through the heaviest storms of missiles our batteries might fire, while she could prey upon our shipping with impunity. The thirty-eight ton gun, an admirable weapon, nearly a foot longer than the Woolwich infant, would be as useless in such a struggle as the 64-pdr. Our experiments at Woolwich and Shoeburyness were quite sufficient to show this, and it was clear that a gun must be devised which should be able to conquer the armor of *Peter the Great*. Now, the production of great guns is by no means the easy task that is popularly imagined. True, that some great constructors of ordnance have from time to time stated their willingness to make weapons which should be able to throw a ton of metal twelve and even twenty miles. But, beyond a series of calculations on paper—excellent in their way, but utterly impracticable—no guns of that power have ever been turned out. Taking all under the able superintendence of Col. Campbell is far ahead of all other ateliers, and some time since actually lent to one of the largest gunmakers a heavy weapon, in order that he might be able to exhibit his new gun-carriage at the Vienna Exhibition. If, therefore, any more powerful piece of artillery than those already made were to be produced, it could only be at Woolwich Arsenal.

It is known to our readers that the principle upon which our heavy guns are now made is that discovered by Colonel Fraser. Briefly it consists of a series of coils, welded together in such a way that the grain of the iron is best opposed to the explosive force of the powder, and encircling a steel tube, the interior of which is rifled. A long bar of iron—say of eight inches square—previously prepared, is slowly drawn from a furnace, to a length of about 300 feet, and wound into a double coil in the form of a cylinder. This is again heated, and placed beneath a steam hammer, where it is welded together by tremendous blows, which so effectually do their work that a cylinder capable of bearing the greatest possible strain is formed at a comparatively trifling expense. Several of these coils being made, they are placed in order upon a long steel tube which has been made in Sheffield, and the weapon is finally turned out at an average cost of about £60 a ton, as against nearly £150 at Krupp's factory in Essen. Upon this principle, then, it was resolved to construct an eighty-ton gun, which should be able to pierce twenty inches of iron at a distance of a thousand yards, with a shot 1,600 lbs. in weight, and by the aid of 300lbs. of powder. The length of this magnificent piece of artillery was fixed at twenty seven feet, its diameter at the trunnion six feet, and at the muzzle sixteen inches, inside measurement. It was calculated that such a gun would be able to deliver its mischief-working missile at a distance of nearly ten miles, and that it would,

at the same time, be easily placed in the turret of a war ship or embrasure of a battery, and worked quickly and without difficulty. Of course there were many difficulties in the way of the construction of such a weapon. No steam-hammer such as that which Krupp possesses at Essen was to be found in England; no forges were built large enough for such a tremendous "heat;" no cranes were in position to hoist such a weight. But all these difficulties were speedily overcome by the skillful officials at Woolwich. The forges were built, a large steam-hammer of forty tons weight, with double-action arrangement, and a striking power of nearly a thousand tons, made, and very soon all was in readiness to begin the construction of the great gun. Curious enough His Majesty the Emperor of Russia was the first to see one of its coils welded, and since that time the work has been gradually going on, till now the steel tube, the breech piece, one coil, and the trunnion are finished; so that it is certain that by June next the gun will be ready for trial. It will then consist of the following parts: A tough steel tube inside, weighing nearly sixteen tons, and measuring about twenty four feet in length; a breech piece coil twenty feet in length; one central coil, another coil near the muzzle, and the trunnion coil. The discharge through which the fire from the friction tube is communicated to the cartridge inside the gun is of steel, and immensely strong.

"Such is the weapon upon which hopes of a victory over twenty inch armor-plates are built. If it should succeed three more will be made immediately, and the four pieces placed on board the *Inflexible*, which will then be the most powerful armed vessel in the world. Possibly, at the same time, some addition may be made to her armor so that she may be as invulnerable as she is terrible. Meanwhile, it is satisfactory to note that the manufacture of thirty eight ton guns is being pushed forward with great alacrity in the factory, and that very soon a large number of these weapons will be ready for use. They are better in every respect than the Woolwich Infants, of which about only a dozen were made, and are much more effective than any pieces yet constructed on the Continent. Now that the pattern has been decided upon, and the lathes and turning machines adapted to the requirements of such immense weights of wrought iron, these big cannon can be manufactured with the greatest ease, and as one stands by and watches the rapidity with which breech-pieces, trunnions, and coils, are lifted hither and thither, now hoisted into position on a lathe, now lowered into a tank to be shrunk, the fear of artillery being outstripped by armour dies away. The revolution effected by the adoption of the Fraser principle of construction is so immense that it is impossible to say how large a gun may eventually be made, or what weight of shot may in the end be thrown. On the other hand, it is almost certain that a limit to the power of vessels to carry armor will eventually assert itself, and that while larger and more powerful artillery is being produced, improvement in the resistance of turrets and broadsides cannot be made to keep pace with those giant strides in the art of destruction. For the protection of forts there will, of course, be the backing of granite and earthworks, which will resist the impact of the shot or shell, and should the present experiments in the manufacture of steel in Germany be carried out and succeed, guns may have yet more work to do than artillerymen or engine-

ers at present anticipate. For the moment, however, there is no reason to believe that any metal can be contrived which will resist the tremendous blows that the guns of the future will be able to inflict upon it.

We are glad to see by the Journal of the Senate of South Carolina, that our old friend Mr. ROBERT A. Sisson has by a unanimous vote been re-elected reading Clerk of that body for the ensuing two years.

REVIEWS.

We have received the December number of the *Dominion Monthly* which has for its frontispiece the portrait of Prof. Daniel Wilson, LL.D., of Toronto. The leading articles are: Christmas in the Wood; A Mistake in Life (continued); Elgar Hunter's Promise; Life in the East Indies, A New Love a True Love (continued) &c.

ADDRESS TO MAJOR IRVINE.

(From the Winnipeg Standard)

The following Address was presented to Major Irvine last Tuesday afternoon, by a Committee acting in behalf of the Mayor and Corporation of the City:—

To Lieut.-Col. A. G. Irvine, late commanding the Canadian Light Infantry.

Sir—It is with feelings of the deepest regret that we hear of your intended departure from amongst us.

Since your advent in this country with the glorious first expedition led by Wolseley, whose name is enshrined in the hearts of all true subjects of Her Majesty, your conduct has at all times been such, that it has merited our warmest approval and admiration, and endeared you, and the officers and men under you, to our inmost hearts, and we desire you, sir, to communicate to them our assurances that wherever they be cast by the waves of fate, there our best wishes for their welfare will follow.

During the years which have elapsed since you first arrived here, you have ever been found one of the first to advance to the utmost of your power, the kind feeling which ought to exist between the Military and inhabitants of this Province; and if such kind feeling was ever interrupted, we know, dear sir, that not to you was it attributable.

At the time when our little Province was threatened with invasion by hordes of Fenian bandits, the alacrity with which you, sir, and the gallant band under your command, advanced to the front to protect our hearths and homes, will never be forgotten by us.

Had occasion required, we know that you would have rendered a good account of yourselves to your country and your Queen.

In the earnest hope that you may return to us, and in a position equal to your merits as a man and a soldier, and again asking you, sir, to accept for yourself, and to communicate to the gallant officers and men, who with you are leaving our prairie province, our appreciation of their conduct in the past and our best wishes for the future, we leave you with the words of the poet:

"Put up your weapon till the time shall serve,
This is no scene for blood. Valor that needs
The tongue's loud flourish, and a lady's eye,
May well be doubted, though we doubt not yours,
Your courage, sir, will keep. So let us part,
How we again shall meet—how part when not,
Let time and fate determine."

We, sir, the Mayor and Council of the City of Winnipeg, representing the united voice of the people, now bid you a kind adieu.

[SEAL]

Signed by the Mayor and Members of the City Council.

The Address is beautifully engrossed upon parchment, and has the City seal attached. The following was the gallant Major's

REPLY:

Mr. Mayor and Gentlemen—No words can express to you my feelings of gratitude for your very kind address.

If there is anything that can in any way help to lighten our now depressed feelings at the thoughts of leaving the Province, it is the fact of feeling and knowing that we leave with your warmest and best wishes and that we do not leave unregretted.

To myself, as I suppose to others, the orders came that we were to be decreased very suddenly. At first I could scarcely realize that the news could be true; that after five years spent among you I was to go. As you know a soldier takes his orders as they come—no matter what—he doesn't question them; that is not his duty and that is how I am trying to school myself to take these orders. In the five years that have passed since I arrived in the Province I have had many under me, I have seen many changes but in the whole five years, of in my whole life, I never was so gratified as I am at this moment to feel that my course and the conduct of those under me is approved by the people of Winnipeg. My future as the futures of many of my comrades is uncertain, but I need not tell you how pleased I should be if I could think that I was to settle down on my homestead and become one of your citizens.

Mr. Mayor and Gentlemen—I crave your pardon for thus so imperfectly thanking you for your kind wishes to us; but the fact is the tongue is unable to express to you the depth of my feelings. Hoping to meet you again, and to always continue to merit your good opinion and wishing all prosperity to your city, I must say, *au revoir*.

One of the religious societies of the metropolis, describing London, says that the police boundaries cover 576 square miles and a population of 4,000,000 of inhabitants, that there are here gathered more Jews than there are in Palestine, more Scotch than there are in Edinburgh, more Irish than there are in Dublin, more Roman Catholics than there are in Rome, and that there is a great variety in the languages spoken. There is a birth in London every five minutes, and a death every eight minutes.

Thomas Smith, a private of the 20th Hussars was tried at the Central Criminal Court for the murder of Captain J. D. Bird, of the same regiment, by shooting him at Alder shot. The main ground of defence was that the prisoner had shot the officer by accident but it was shown that he had a revengeful motive, and he was found guilty and sentenced to death.

REMITTANCES Received on Subscription to THE VOLUNTEER REVIEW up to Saturday the 12th Inst.

Griersville, Ont.—Ensign John Ferratt, to September 16th, 1874..... \$2.00
Quebec, Q.—Major W. H. Forrest, to Aug. 7th, 2.00

DOMINION OF CANADA.



MILITIA GENERAL ORDERS.

HEAD QUARTERS.

Ottawa, 11th December, 1874.

GENERAL ORDERS (33).

ACTIVE MILITIA.

No. 1.

Provisional Force on Service in Manitoba.

It having been considered advisable to reduce the Active Militia Force on Service in Manitoba, the following Officers have been relieved from further service in that Force, from 17th November last:—

Major Acheson G. Irvine; Captains Thomas Scott, John Price Fletcher and Samuel Bruce Harman; Lieutenants Charles Constantine and John Allan, of the Provisional Battalion; and 2nd Lieutenant John Weir Anderson, of the Detachment of Artillery.

Lieutenant Charles Constantine, M. S., Provisional Battalion, is placed on retired list retaining rank; and adverting to General Order (29) 6 November, 1874, Captain John Allan, M. S., 3rd Battalion, "Victoria Rifles," Montreal, is also placed on the retired list retaining rank.

PROVINCE OF QUEBEC.

1st Montreal Company of Engineers.

No. 1 of General Orders (27) 24th November, 1871, is hereby amended by permitting Captain William Rutherford to retire retaining rank.

CONFIRMATION OF RANK.

Captain Edouard Laberge, V. B., No. 1 Coy., 76th Battalion, from 10th November, 1874.

Lieutenant Jean Baptiste Damour, V. B., No. 1 Coy., 76th Battalion, from 10th November, 1874.

No. 2.

CERTIFICATES GRANTED.

SCHOOLS OF GUNNERY.

PROVINCE OF ONTARIO.

FIRST CLASS "SHORT COURSE" CERTIFICATES.

Gunner C. F. W. Browne, Kingston Field Battery.

do A. Needham, Toronto Garrison Battery.

SECOND CLASS "SHORT COURSE" CERTIFICATES.

Gunner H. Norris, Toronto Garrison Battery.

do Francis McCloud, Kingston Field Battery.

PROVINCE OF QUEBEC.

SECOND CLASS "SHORT COURSE" CERTIFICATES.

Acting Bombardier Richard M. Elvin "B" Battery of Artillery.

Gunner John Baker, "B" Battery of Artillery.

do Patrick Duffy, "B" Battery of Artillery.

do Alexander Fairley, "B" Battery of Artillery.

do Pierre Langlois, "B" Battery of Artillery.

do Richard Perry, "B" Battery of Artillery.

do John Watson, "B" Battery of Artillery.

BOARDS OF EXAMINERS.

PROVINCE OF QUEBEC.

FIRST CLASS CERTIFICATES.

Captain Edouard Laberge, No. 1 Co'y, 76th Battalion.

do Louis Arthur Prud'homme, No. 4 Co'y, 64th Battalion.

Lieutenant Pierre Boyer, No. 2 Co'y, 64th Battalion.

SECOND CLASS CERTIFICATES.

Captain Edouard Laberge, No. 1 Co'y, 76th Battalion.

Lieutenant Jean Baptiste Damour, No 1 Co'y, 76th Battalion.

Sergeant Joseph Faubert, 64th Battalion.

By Command of his Excellency the Governor General.

WALKER POWELL, Lieut. Col.

Deputy Adjutant General of Militia, Canada.

Lieut. Colonel W. H. Jackson, D.A.G., for Military District No. 4, inspected the Ottawa Brigade of Garrison Artillery, on Friday evening, at the Armoury, and expressed himself highly pleased with the proficiency they had made since the last inspection. He complimented Lieut. Colonel Egleson on the cleanliness and soldierly appearance of the Brigade, and said they stood a No. 1 in the Dominion in point of efficiency.

The *N. Y. Herald* of Dec 10th publishes letters from Governor Ames, Mississippi, and O. V. Sheerer, editor of the *Vicksburg Herald* giving accounts of Manly's disturbances from different political standpoints. Ames denounces the White League and Taxpayers League, and charges them with unwarrantably forcing themselves on the Grand Jury in hot moments and generally interfering with justice without legally constituted authorities. The Vicksburg taxpayers committee appointed a deputation who waited on Crosby, asking him to resign. A mob of 600 afterwards visited him and he resigned to save his life. The other officials escaped. The mob took forcible possession of the court house. Crosby returned to the city on Saturday. The city was full of armed men. On Monday rioting commenced at nine a. m., and continued with results already known. The attack on the negroes by the whites was a perfect slaughter. The negroes were under a flag of truce when the White Leagues assailed them. Sixty or eighty negroes were killed. None of their opponents were hurt. Unarmed negroes going to the town on cotton bales were killed. The first white man killed was a Presbyterian minister. Gen. Hacker told Ames that the leagues threatened to kill Crosby if United States troops arrived before his resignation was formally accepted. The letter of the editor of the *Vicksburg Herald* says there was no riot. It is an attack of three separate columns by negroes upon the city. Crosby had been picking juries and had not completed his bonds. He was asked by the best citizens to resign and did so. He went and consulted Ames and on returning issued a card calling on the Republicans to aid in sustaining him. Then followed the attack. The negroes were warned to disperse but said, "We have come for fight and are going to have it."

The Portuguese Government is about to make some very important additions to its naval power. Not many months ago the Cortes voted a sum of £370,000 for the construction of new ships of war, and Captain Pesta, a distinguished officer of the Portuguese navy, was instructed to proceed directly to England and obtain the fullest information on the various types of vessels now building for the English Admiralty. The Government has finally resolved to build two powerful corvettes, designed to carry six large guns a high rate of speed, to be constructed on the system known as composite.

THE VON ARNIM TRIAL, BERLIN, DEC. 12.—The prisoner here remarked that he had already stated the whereabouts of all the documents included in the third category except a few. He could not reproach the staff of the Embassy for carelessness, and accepted the entire responsibility.

Professor Lewis testified that Count Von Arnim consulted with him as to whether he should wait for the foreign office to commence proceedings or take the initiative himself to compel it to recognise his rights of ownership in the document.

A despatch reports the Spanish press as considerably excited over President Grant's message, portions of which only have reached them, provoking much wrathful comment.

*THE VOLUNTEER'S RETURN: SOLILO-
QUY OF A REPENTANT HUSBAND.*

I feel it, admit it, and solemnly vow
Each glance retrospective convinces me now
'Twas a cruel diversion. My angel to thee
With a penitent heart, I bend suppliant knee,
And implore thy forgiveness, thy pardon, and
yet,
Do not only forgive me, but also, forget
My folly and wanderings. Home,—happiness,—
bills,—

I forsook for the bright smile and amorous kiss
Of a full-grown girl, I plead it, possessing a form,—
A face, bust and ankles, each fit to adorn
An ideal Beauty, Italian or Greek,
Or, as beauty is legion-named happily to speak
As appealing to each, *he's ideal*. Well, true,
She was lovely as Venus; yea fairest, as you
If you like it; as Nature; as Art;
Or, as anything else, to be brief. But the heart
Where conjugal love for a time yielded place.
To a culpable craving for each pretty face,
Grows weary of that which can neither appease
The hungering for something more real, nor ease
The suffering inflicted; the vacuum fill;
Nor stay the remorse it is destined to feel.
Out, out, on such madness! the mind reasoning
Must pause and consider—examine the thing:—
Mad exchange! give a Pearl for a Batterfly's
wing!
And a fond loving heart, for a vain empty thing;

But "Richard's himself again!" sorrowing yet,
A lesson he's learned he will never forget;
And oh! the wise counsel, example and aid
Make no such impression as when one door fall
Then he sees for himself, as I do, with a sigh,
What a terrible stake he had cast on this die.
Like the Prodigal son, I'll arise and I'll own
To my fond little wife that the love she has
shown

I'm unworthy of, quite; and I only shall ask
Her forbearance and aid in the difficult task
Of forming myself with unflinching care,
By degrees to obtain even a moderate share
Of the love she once gave me; and oh! who can
tell

What the new state of things shall bring! all
may go well,

And I yet may rejoice in her love, as of yore,
When the memory of this is remembered no
more.

ARMAMENTS OF UNARMORED SHIP.

(From the Broad Arrow)

In the interests of the Services and national defence, it is perhaps somewhat to be regretted that discussions like the recent one in the *Times* on the armaments of the *Raleigh* and the *Inconstant* should be carried on in the daily papers, instead of in a more professional arena, inasmuch as it is to be feared that the manifestation of such differences of opinion tends to prejudice the public in general, and the House of Commons in particular, against spending money on war materiel, so long as conflicting views as to types and patterns are entertained by authorities on the subject.

With respect to the particular matter which has been lately argued between Mr. E. J. Reed on the one hand and "A Seaman Gunner," Sir William Palliser and Rear-Admiral Heath on the other, we may just say frankly at the outset that we are not prepared to range ourselves out and out on either side of the general question, because we think there has been a tendency to narrow unduly to single issues what is in reality a large and many-sided question; a proceeding which—however much it may facilitate arriving at just conclusions, where, as in a court of law, it is really applicable—has in ordinary discussions often the result of preventing a comprehensive view being taken

of all the circumstances of the case. What we, therefore, now propose to attempt is to unfold the subject a little more, and to indicate some of the circumstances as yet unnoted which appear worthy of being taken into consideration.

In the first place, however, it may be observed that the question being one concerning strictly naval professional, and not naval architectural matters, the views advocated by "A Seaman Gunner,"—which, we believe, are shared by naval officers generally—are *prima facie*, entitled to most respect. We cannot help thinking that Mr. E. J. Reed evinces a tendency to be too dictatorial, not to say somewhat uncourtous, considering that he is dealing with a matter which lies out of his own particular professional sphere as a naval architect. This appears in the unnecessarily strong language in which—by implication at least—he denounces "a large class of naval officers" as "mere theorists and sophists," to yield to whose "opinions" would be to "make ourselves the laughing stock of the world."

Unfortunately—or perhaps we should rather say fortunately—everybody is more or less of a theorist in discussing the circumstances of a naval conflict between vessels of the latest types; but naval officers are obviously more competent than naval architects to estimate the probable practical circumstances of the case. This country has certainly been greatly indebted to the skill of private engineers and naval architects for improvements in war materiel, but this has been attended with the unsatisfactory result that naval and military matters are nowadays too much discussed from what may be termed the workshop point of view. It is naturally difficult for those who look at matters in this light to realise the fact that more powerful guns and thicker armour are not always an unmixed advantage if, indeed, in particular cases, they are an advantage at all. For example, some mechanical engineers would be surprised to hear that from a purely military tactical point of view the comparative effect of rifled field guns is less than that of the old smooth bores. It is in virtue of this practical professional knowledge that "A Seaman Gunner," and the other naval officers who agree with him have so far—let it be noted we only say so far—the advantage of Mr. Reed, who is really the party, if any deserving to be in this matter regarded as a "mere theorist."

For the fact is that naval men know that ironclads are practically much stronger, that is to say, more impenetrable, vessels than Mr. E. J. Reed and those who like him base their arguments on mere target experiments, are thereby led to imagine, for "A Seaman Gunner" says, "every naval officer knows full well that in an action between two ships under steam direct fire must be the exception, and oblique fire the general condition under which the sides of the ship will be struck." Nevertheless, while fully admitting the very great importance of this point, we cannot help thinking, as already indicated, that Sir William Palliser and "A Seaman Gunner" are wrong in narrowing the question to the alternative, "ought a swift unarmored cruiser to accept or decline battle with an ironclad?"—as everything depends upon the strength of the ironclad her armament, her nationality as influencing the style in which she would be fought and handled, her speed the weather the place, and other detailed circumstances of the supposed conflict. While, therefore,

"see "Operations of War," by Colonel Hamley, page 130.

we are not prepared to endorse Mr. Reed's opinion that "the *Inconstant*, with her powerful broadsides of heavy guns, can destroy at least two thirds of the ironclads of the world"; we, nevertheless, incline to the opinion that there are at least some thinly armored vessels which she could successfully encounter, and which it is highly desirable that a vessel of her class, like the *Raleigh*, should be able to encounter. Our readers may be here reminded that the armament of the *Inconstant*, 15 guns, is ten 9 inch and six 7 inch rifled guns; while that of the *Raleigh*, 23, is two 9 inch, fourteen 7 inch, and six 64 pounders, the bursting charges in one broadside of command shell being 124lbs and 117lbs. respectively.

Although, then, we agree in a general way with "A Seaman Gunner's" view that "the right principle to adopt in the armament of unarmored vessels is that which will enable the greatest amount of destruction to be inflicted upon other unarmored vessels with the addition of a powerful armour piercing chase gun both forward and aft, to meet the case of chasing at long range or being chased by an armor plated ship," still we think that considering the number of weak ironclads still in existence, it would, on the whole, have been better to arm the *Raleigh* and the *Shah* on the same principle as the *Inconstant*. In other words, looking at the progressive construction of our Navy with reference to existing foreign fleets, it seems to us that, as regards frigates at least, we are not to put too fine a point upon it—introducing "A Seaman Gunner's" principle just a few ships too soon. It would have been better to have armed our new frigates of the *Inconstant* class in the same way as that ship, and waited to have seen if the change now actually exemplified in the *Raleigh* would ever be really required. For it must by no means be assumed that thinly armored vessels will assuredly soon become things of the past in foreign navies. On the contrary, it is quite possible that if, as we think probable, the next serious hostile encounter between ironclads shows that (in account of the necessary prevalence of oblique fire, as pointed out by "A Seaman Gunner") armour plating is practically a stopper defence than has been exposed from target experiments, certain foreign nations—especially second and third-rate Powers which have not the mechanical and dockyard appliances for producing powerful ironclads—may consider it to be worth their while to build thinly armored vessels, for the express purpose of advantageously encountering unarmored vessels. The importance of arming swift, powerful frigates on the *Inconstant* principle would, under these by no means unlikely circumstances, be obvious.

As regards the corvette and sloop classes, however, which under no circumstances can be contemplated as engaging ironclads, we are disposed to agree more unreservedly with "A Seaman Gunner," and accordingly to consider that the changes in the armaments of the *Vulgar* and the *Eclipse* have been decidedly for the better. The importance of a powerful broadside in these vessels is undeniable. For, as it is the proposition may perhaps appear, it must be remembered that, unless heavily armed with a broadside, there is great danger of our unarmored vessels, regarding them as specially constructed engines of war, being comparatively less effective than the old sailing frigates and corvettes; for this reason, that it is easier to extemporise an unarmored screw corvette carrying a few heavy guns (heavy, that is to say, compared

with the old smooth bore pop-guns) out of an ocean steamer, than it was formerly to make a thirty six gun frigate out of a merchantman, a feat which, in point of fact, we suppose was never attempted. It is true that a small crew with a few of the accurate shooting heavy guns of the present day, can do more execution than a large ship's company could in former times with a number of small smooth bores; but the very fact that such is the case, only makes the former organization, comparatively speaking, the easier to establish, and, therefore, tends to diminish its comparative importance as a warlike appliance.

This leads to observe, in conclusion, that the question of the armament of our unarmoured vessels cannot be properly dealt with until the Admiralty decide what steps they are going to take in the direction of taking up and arming merchant steamers in the event of war. Attention has already been directed in these columns to the great importance of this subject, and we hope that now that we are to have a separate department at the Admiralty for Naval Reserves, that some definite action may speedily be taken in the matter; so that in the event of war we may be able to obtain from the Mercantile Marine not merely a reserve of seamen, but also a reserve of swift unarmoured corvettes and sloops. Considering the large number of war vessels which could be extemporised in this way it, obviously depends to some extent on the armaments which could be put on board them, what are the best kinds of armaments for those unarmoured vessels which we permanently maintain in the Royal Navy.

ENGLAND AND THE CONTINENT.

(From Broad Brrow.)

By no circle of English society outside the diplomatic sphere, can the rapid succession of continental events be more anxiously watched than by that class of readers to which we specially address ourselves—by the members of those kindred professions on whom the burden of maintaining the national honour inevitably devolves whenever the keener arbitration of the sword is substituted for the circuitous diplomacy of the pen. None are more thoroughly convinced of the ultimate repudiation of the non-intervention doctrine than those the history of whose existence is a direct libel upon its efficacy, and who watch with a jealous eye any line of policy which tends to the derogation of that honour which they and their predecessors in arms have so nobly sustained. English history since the date of Lord Palmerston's death presents to such observers many passages from which they must eagerly avert their gaze, and the interval which has elapsed since that grand old man was placed in Westminster Abbey beside a generation of statesmen of which he was in many senses the last representative, is associated with reminiscences other than attractive to the martial mind. It is not, however, with retrospect that we propose to deal on the present occasion. Our business is solely with the present, and the future so far as it can be divined, and few will be found to assert that the theme is from a military aspect an unfruitful one. The manifest irreconcilableness of the non-intervention theory with our ascendancy in the comity of nations has received more than one forcible illustration within the last decade, and we would only observe in passing that as a man who lives upon his capi-

tal is apt to exhaust it, so a nation which depends solely for the maintenance of its influence and reputation upon the prestige it has acquired incurs risk of suffering by a mitigation of that prestige through the destructive influence of time upon the memory of mankind. People in short are apt to require practical demonstration of the truth of equivocal theories.

No observer who explores the future by the light of the present, can contemplate without serious concern the position which England may be called upon to assume, on the arrival of that continental crisis whose premonitory indications have already been frequently discussed. Perhaps, to speak more correctly, we should say that we are actually in the midst of a revolution, the first stage of which has been completed, whilst the second is yet before us. Whatever view may have been entertained regarding the title of Great Britain to exemption from participation in the late Franco-German war, we cannot but anticipate a vast preponderance of opinion in favour of her right to act, should a like struggle prove the issue of future complications, the result of which might produce consequences fatal to her higher interests. The obliteration of France from the map of Europe, would be productive of evils which England, despite her isolated position, would be the first to experience. It would mean nothing more or less than a deadly blow at the grand principle of Liberalism, of which France was the nursing mother, and of which the Germany of to-day is the bitterest enemy. In a pamphlet remarkable for much cogency of reasoning, and addressed by Professor Beesley four years ago to the working classes of England, it was urged, with as much truth as force, that the whole Liberal sympathies of England must eventually gravitate of necessity towards that nation, which is the representative of Liberalism on the Continent of Europe, and which presents the sole formidable bulwark against the absolutism which is symbolised in the German Empire. It is to be remembered that such an issue as the annihilation of either force was not involved in the struggle so recently concluded. Of the pretexts for hostilities, such as they were, the world was at liberty to form its own opinion, and abide with curiosity the result which could at the worst be but the temporary humiliation of either: but the first shot fired upon the Rhine in a new contest would be of portentous significance to Europe. It would have an interest for England in no way inferior to that which attended the campaigns of Wellington in the Peninsula, when Great Britain was at war with that terrible usurper who had no other scheme for consolidating his power than that of conquest and extermination. The outbreak of such a war as that to which the policy of Germany is so obviously tending, would be the severest test of the doctrine of non-intervention that the age could supply, and the triumph of the doctrine would, in the event of German success, have the effect of paralysing our influence in the council of nations. The effect upon our Liberal institutions would be similar to that wrought in a converse sense by the first French Revolution, with this wide difference, that the latter, notwithstanding the lamentations of Burke, was a permanent good, and the former would be a permanent evil, whilst the irreparable ruin of our reputation would not be without disastrous influence upon trade.

The large proportion of German sympathisers during the late war on this side of

the Channel was attributable to the dexterity of diplomacy which prevailed in France in the wrong, the plausibility of the plea of German unity, which, like the slavish cry of the American war, won many adherents; and above all those seductive military advantages of numbers, generalship, and organization which inspired a natural feeling of admiration in our own Army and Navy. We are not going to awaken controversy by touching further upon a subject which has passed into a chapter of history, though we might take the opportunity to test the integrity of German policy in the past by reflections upon German policy now; but in the same manner as the circumstances leading to a renewal of the struggle would be different, so English sympathy, unless we are greatly mistaken, would be widely different also. When the war of 1870 broke upon Europe, ordinary observers were totally unprepared for the storm, and having bestowed little or no attention upon the subtle current of diplomacy, the public accepted pretty readily the doctrines presented to them by the several disputants; but the appalling catastrophe of Sedan, and the unexpected humiliation of the first military Power of Europe, have clothed the relations of France and Germany with a general interest which formerly they had not possessed, and public opinion is better informed of the position of affairs between our two powerful neighbours. Hence the attempt of the German Chancellor to embroil France and Italy on the question of the restitution of Nice, the pragmatical course adopted by him in respect of the French Ultramontanes, and the eager recognition of the Spanish Government, presumably with the ulterior design of abetting its claims upon France, are all sufficiently demonstrative of the quarter from which aggression will come should the eruption of hostilities disturb the peace of Europe, and will tend, as subsidiary to the reasons already stated, to direct both sympathies and the interests of Great Britain from their former channel.

Those of our contemporaries who wilfully ignore, or endeavor to explain away, these facts in a spirit of subserviency to the strong, are the worst enemies of their country, even though their course is perfectly consistent with that adopted by them on the occasion of the Austro-Prussian raid upon Denmark. Prince Bismarck has certainly some reason to complain of his friends when, rather than justify his measures, they prefer to repudiate them and seek to impose upon the ingenuousness of the public by disavowing acts which are evident to the shallowest observer. It is quite possible that the astute German Chancellor, if he were to design an opinion on the subject, would prefer the vindication of proceedings which, in the eyes of the world, only suffer by an attempt at suppression.

The question which England will have to answer should war break out before France is on terms of equality with her neighbor, is whether she will or will not permanently abdicate her position amongst leading nations and assume a subordinate place with its concomitant train of practical evils; whether her cause is or not identified with the cause of feudalism and absolutism in Europe, with compulsory military service and the forfeiture of civil liberties; whether her interests on the continent are more faithfully reflected by French or German enterprise; and, above all, whether the absorption of either is favorable to that universal freedom, on behalf of which she has so often made her voice heard and her arm felt. These are momentous considerations

