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The Volunteer Review

AND MILITARY AND NAVAL GAZETTE.

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No. 24.

NEWS OF THE WEEK.

The Governor General and family have gone to Quebec, where, it is said, they will remain for a month, and shortly thereafter leave on a trip across the Continent visiting Manitoba and British Columbia.

The yacht *Countess of Dufferin*, after a successful cruise on Lake Ontario, is gone to Quebec. On her way down she called at Kingston, where she had new top sails and rigging put on. At Quebec she will have a new main mast put into her, the present one being too small for such a large main sail. She will from thence proceed to New York. She has about two tons of provisions aboard of her. Her crew consist of Major Gifford, V. C., R. C. Y. C., captain; Alex. Cutbber, sailing master; Captain J. Brotherton, navigator; W. Stocker, mate; Charles Boswell, steward; Captain J. Bryant, George Clancy, Charles Patterson, John Grant, Henry Boyd, Thos. Roberts, seamen. May she have prosperous breezes and come off the winner of the great prize.

Seventy-five head of cattle and twenty-five sheep, valued at 2,000 guineas, came on board the *Countess of Dufferin*, consigned to the Hon. Geo. Brown. There were also on board two bulls and a splendid cow, worth respectively 2,500, 1,500 and 2,700 guineas, for the same gentleman.

The officers of B Battery have arranged for two days' racing, to come off this week during the visit of Lord Dufferin.

The *Almonte Gazette* says—"On Saturday afternoon, 10th inst., a rifle shooting tournament took place at the range on Wylie's farm, between Captain W. R. Bell, of Brockville, and Lieut. J. K. Cole, of Almonte. The day was all that could be desired for such a contest, and quite a number of on-lookers and interested parties were present to witness the proceedings. We were unable to procure the score of the shots made during the course of the trial, but are in a position to say that after the allotted number of rounds had been fired at 200, 300, 400, 500, and 600 yards, Mr. Bell was declared the winner by nine points, he having made an aggregate score of 92 points, while Mr. Cole's total score was 83 points. The stakes shot for were \$25 a side."

The *Winnipeg Standard* says that Mr. Chambliss, the Manitoba representative on the Wimbledon team, left there on the steamer *Manicota* on the 3rd, to join his comrades who will sail for England on the 24th.

Farmers about Ottawa report the crop prospects as most favorable. Everything promises well except hay, which is injured somewhat by the frost, but is coming on pretty rapidly now. Crops are advanced fully a week further than at this time last year.

The Ontario Society of Artists' exhibition is now open to private view at their new building, on the north side of King street, Toronto. Lord Dufferin has sent two sketches. The exhibition as a whole is far ahead of the preceding ones, and includes some two hundred pictures.

The Postmaster General has decided to recommend establishing a post-office at Lake Tullon, Nipissing district. The office is situated near the line of the proposed Canada Pacific Railway, and will accommodate the lumber trade, and a large and rapidly increasing settlement which has hitherto been subject to great inconvenience from want of postal communication.

The *Quebec Canadian* states upon authority that there are fifteen hundred men now employed upon the North Shore Railway. At Portneuf, Lorette, St. Augustin, Deschambault, St. Anne, Batiscan, Yamachiche, Champlain, Pointe du Lac, and on the Piles Branch, work is being actively pushed forward. The station at the Palais in Quebec will be commenced in a few days.

Le Canada also says: "We are authorized to state that the De Boucherville Government has applied to the Federal Cabinet for the cricket field, and hopes to obtain it. It would be a magnificent site for the Parliamentary Buildings, if the cricket field be chosen for the purpose. We believe that the Jesuit Barracks will be demolished and their site converted into a public square. If between this and a few days the Government does not obtain the cricket field, tenders will be immediately called for the demolition of the barracks, and the erection of the new Parliamentary Buildings.

Large quantities of ice are still floating at the north side of Prince Edward Island, causing delay in the prosecution of the fisheries.

The *Chicago Inter-Ocean* says of the Canadian Fishery System:—"A great improvement has taken place within the past few years in Canadian Fisheries. The trout streams have been kept free from impurities, and unlawful fishing has diminished. The Commissioner of Fisheries has recently suggested that the salmon in different rivers are too numerous, and that means should be taken to lessen them. Since 1868 the salmon fishing in the Province of Quebec has yielded an increase of nearly 300 per cent. The vast increase throughout the entire Dominion is simply due to wise inspection and discriminate fishing. Canada possesses a great source of wealth in rivers and lakes, and every year their value is increasing."

The Captain of the American ship "Cromwell" has been sentenced by one of the Calcutta magistrates to a month's rigorous

imprisonment and a fine of 100 rupees for "tricing up" one of the ship's crew by the thumbs.

A despatch from New York, says the *Herald's* London special, states that the fortress of Gibraltar is being victualled to support a garrison of 2,000 for six weeks, and that the Admiralty have issued circulars to all large shipowners, requesting them to make a complete return of all their ships and steamers, and that certain vessels have been chartered for Government service.

The spring meeting of the 6th division, N. Y. S. N. G. Rifle Association opened on the 13th inst. at the East Syracuse range. Three matches were contested, Capt John A. Nichols, of Syracuse, winning the Directors match, the 49th Regt. team of Auburn the National Guard match, J. S. Barton, of the 18th Regt. of Oswego, the short range shoot. The attendance was small.

The first stage of the competition for the selection of an Irish rifle team for the international contest in America terminated at Dundalk on the 10th inst. The following are the names of those who have so far qualified in their order of merit:—J. J. O'Connell, Gell, Rigby, Clarke, Lyons, Dyan, Greenhill, Smyth, Creed, Thynne. The three best shots have gone to Scotland to compete with the best marksmen of that country.

A company of the Six Nations Indians are going to the Centennial Exhibition this month. Their liabilities are assumed by a number of gentlemen from Hamilton. It is to be the team known as the "Beaver Lacrosse Club of Canada," the champions of the world. They will challenge any club visiting the Centennial. The tribes represented are Mohawks, Cayugas, Senecas, Oneidas, Onondagas and Tuscororas. They will play the traditional game of lacrosse on the place which they held as their camp-ground one century ago. Arrangements for the conveyance of this party over the Erie and Leigh Valley Railroad were this morning perfected with Mr. W. Gould, and it is understood that a team of whites will also be on the Centennial grounds to contest the game with the Indians.

Le Nord, the Russian organ, says editorially, "The language of the British ministers and the tone of the British press show that England desires the pacification of the East by a real improvement in the lot of its people. Russia will especially approve of the adoption of such a course by the English Cabinet, as she is indifferent as to what power effects the improvement in the present unbearable position of the Eastern Christians. If England desires to take the initiative she may count beforehand on the sympathy and approval of Russia and all the other European Powers."

A VERY interesting lecture on "Ancient Naval Tactics," has been delivered by the Rev. EDWARD WARRE, M.A., of Eton College, before the Royal United Service Institution, the reprint of which, copied from *Broad Arrow* of 8th April, will be found below.

The Rev. lecturer gives merely the introduction to his subject, confining himself to what has been a mechanical puzzle hitherto, namely—the construction of Ancient Ships, which he has illustrated in the clearest and most comprehensive manner.

Not only clearly showing the mode of construction, rigging, steering and manœuvring, but also what has been a great problem the mode of propulsion. We shall await the remainder of his lecture on Tactics, which must be very interesting.

"On the 7th April the Reverend Edmund Warre, M. A., of Eton College, read an interesting paper on the subject of "Ancient Naval Tactics." Admiral T. A. B. Spratt, C. B., F.R.S., was in the chair. After a few prefatory remarks, the lecturer said:—The subject before us is that of Ancient Naval Tactics; but, having regard to its vastness and complexity, it would be as well at once to introduce some limitations, so that we may not attempt an impossible task in sixty minutes. By ancient, therefore, we will understand Greek and Roman—dismissing altogether those interesting questions concerning the Assyrian, Phœnician, Egyptian, and Carthaginian navies, which might well form the subject of a separate discourse. Of the Greeks and Romans we shall find ourselves compelled to give most attention; to the former, not only as presenting us with the best information, but as being in virtue of their seafaring habits, their constructive skill, and their tactical intelligence, *facile principes* in the naval art. With these limitations, the consideration of ancient naval tactics will, in the first place, involve an inquiry into the character of the principal tactical units of which an ancient fleet was composed, their gradual development, their construction, and propulsion. Secondly, we shall find ourselves called to notice the weapons of offence with which these tactical units were armed, and especially the ram, which has, owing to recent developments, a peculiar claim upon our attention. Thirdly, we shall come to tactics proper, minor tactics, as exhibited in the handling of a single vessel, and grand tactics, as illustrated by such instances as we have of the disposition and manœuvring of fleets. Lastly, we may draw a comparison between the fleets of ancient and modern times, their tonnage, their power of propulsion, and the number of men employed. Of these "visions of the subject, the first will more than occupy our time to day; but I trust, through the kindness of the Council, that I may have an opportunity of dealing with the remainder at no very distant date. The subject of ancient galleys is one which, as is well known, has a literature of its own. A mere enumeration of the names of the authors who have expended their toil and their acumen upon it would cost us too long. The honor of having solved many, if not most of the difficulties which have perplexed so many eminent men, must be given to the illustrious German scholar Boeckh, and his pupil Dr. Graser, who in an exhaustive treatise 'de re Navali' has elucidated satisfactorily the most knotty points of this ancient problem. The discovery at Athens in the year 1834 of a number of inscriptions

which proved to be the inventories of galleys and their gear, belonging to the dockyard in the Piræus, dating from a period not long subsequent to the close of the Peloponnesian war, was an event of the utmost importance in the history of our subject. These authentic documents of the Athenian admiralty, when elucidated by the vast erudition and great critical ability of the author of the 'Public Economy of Athens,' and by the practical sagacity and genuine enthusiasm of his learned pupil Graser, have shed a flood of light upon the whole question of the construction of ancient ships of war. It is important to observe that the ancient ship of war was an improvement on the pirate vessel, just as the piratical craft itself was an improvement on the original merchant galley, and made with a view to superior speed and handiness. The trader, built to carry goods, was broad of beam and slow of speed, and gradually, as heavier weights were to be transported, ceased to depend upon oars, and trusted to sails for locomotion. The predatory instincts of mankind were not slow to equip themselves with craft fitted so as to be speedy enough to overtake the sluggish trader, and at the same time roomy enough to stow away their ill-gotten gains. Not that in early times such gains were looked upon as ill gotten. The Robin Hoods of the sea, whom we should deem cut throat villains, were merry gentlemen in their own estimation, and in that of their neighbours, bold buccaniers, who were not ashamed of their profession. But the fact that they were enemies of civilisation was also patent, and the necessity of putting them down became more manifest as the advantages of commerce and free maritime intercourse were more generally appreciated. The mythological elevation to the judicial bench in the infernal regions of Minos, King of Crete, had, if we may venture a conjecture on such a subject, its origin in the stern justice with which that monarch repressed piracy, and the sense of the benefit that resulted to mankind from his efforts. He is mentioned by Thucydides as the first possessor of a fleet in Greek waters, and to have used it in establishing his maritime monarchy, or maritime dominion, by putting down the pirates. To this end, and thus early was the Greek ship of war elaborated. It is easy to see that the point in which it would be made to excel its pirate foes would be swiftness, and that this swiftness would be attained by construction, with a view to carrying nothing but the crew and the necessary provisions and armament. Hence the ship of war was known as the 'long ship' *par excellence*. Centuries, however, were necessary to perfect its construction. In the simpler early vessel an increase in the number of oars necessitated an increase in the length of the ship, till at last a limit was reached, when a loss of handiness in turning outweighed the possible advantage of increased speed. Hence the invention of banks of oars; an invention by which the necessary distance of the 'interscalmum,' or space between the rowers' benches could be subdivided and utilised in such a manner that the oars might be doubled or trebled in numbers within the same horizontal pace, and yet not clash together when worked in time. In order to comprehend better the principle upon which this improvement was effected it must be understood from the first that, so far as we know, the ancients, at any rate, until late Roman times, never double banked their oars. We find first among ancient ships single banked galleys of 20, 30, 50, and up to 100 oars each, in which the usual interscalmum of two cubits gives us a con-

jectural ground for estimating their length. These are all embraced under the term of 'moneres,' or 'monocrotia,' as striking the water with one beat. The first improvement upon this was the construction of the bireme which if we are to believe Pliny, is due to the Erythreans, Ionian colonists of Asia Minor, from which probably if anything is to be inferred, it is that the first step in the improvement of the construction of galleys came from the eastern and not the western side of the Ægean, and in all probability was of Pæonician origin. At this point we may proceed, taking Graser as our authority, to describe the principles of construction and propulsion in the case of the bireme and quinquireme, so that we may have some definite idea of the character of the vessels employed when we proceed to consider the naval tactics of the Greeks and Romans. Two classes of vessels appear to have been employed, distinguished by the name of 'aphract' or 'cataphract,' according as the towers of the upper tier were protected or exposed. Both classes were decked and floored, but the 'aphract' class carried their decks and flooring lower than the 'cataphract,' so that in them the rowers of the upper tier were visible above the side of the vessel; this is distinctly seen in the bireme and trireme, given by Montfaucon from the Column of Trajan. The rowers of the upper tier were called, from the elevated bench on which they sat, *thranitæ*, those of the middle tiers *zygæta*, from the *zyga* or benches, which in the aphract class of vessels, traversed the whole breadth of the ship and bore the deck; those of the lower tier *thalamitæ*, from the *thalamus* or chamber in which (below the *zyga* in the aphract class) they plied their oar. These names remained the same for the upper, middle, and lower tiers, even when the invention of cataphract ships with high decks and more banks of oars than three had altered the conditions of construction. The aphract ships had their flooring one foot below the water line and the deck five feet above it. After the battle of Actium, which was won by the use of the light Liburnian biremes, which were aphract, the Romans seem to have built most of their vessels after what was then considered the new, but was in reality the old fashion. Previous to that date; from the time of their invention by the Thasians, all the larger vessels of war used by both Greeks and Romans were cataphract. In the cataphract trireme, the space allowed for each oarsman was, according to Graser, eight square feet per man, and this proportion was observed in the larger vessels up to the octireme. In vessels with ten or more banks of oars the proportion allowed seems to have been reduced to seven square feet per man. We know from a passage in Cicero that the space was so completely filled and so densely crowded, that there was not room for an additional man. The rowers in all classes of banked vessels sat in the same vertical plane, the seats ascending obliquely inclined towards the stern of the vessel. Thus in the trireme, the *thranite* was nearest to the stern of the set of three to which he belonged. Next behind and somewhat below him sat his *zygite*, and behind and below the *zygite* the *thalamite*. The vertical distance between the seats belonging to the same set was 2 feet, the horizontal distance 1 foot. The seat itself was from 9 to 12 inches broad. The lowest rank used the shortest oars, and the difference of the length of the oar in board was provided for by the outward curvature of the ship's side. The oar ports were vertically 1 foot 3 inches below the handle of the oar when the blade was just touching the water. The lowest of thalamite oar ports were 3 feet above the water. Each oar port

was protected by the ascoma or leather bag which fitted close over the oar, closing the aperture without impeding the action of the oar. The zygite oar ports were $4\frac{1}{2}$ feet above the water. The vertical distance between the oar ports was about 15 inches, the distance obliquely measured on the ship's side 21 inches. The seats of the rowers were supported on benches, three feet long, or thereabouts, which ran from the ship's side to beams which rose from the floor, and reached up to the under surface of the deck. These beams were inclined at an angle of 64° towards the stern, and were at a distance of four feet apart. They were technically called the *Diaphragma*. This Diaphragma, viewed from inside the vessel, presented the appearance of a succession of staircases, the steps of which were the benches between it and the ship's side. The space between the diaphragmata on either side constituted that part of the vessel in which stood the masts, and in which stowage was possible. It was in the Attic trireme seven feet wide. The length of the oars used in the trireme has been calculated as follows:—We know from the Attic table the length of the oars used by the seamen or supernumerary oarsmen when there was need. These were the longest in the trireme, and they varied from 13 feet 6 inches to 14 feet 3 inches in length. The thranite oars must have been nearly of the same length, but could not have exceeded 14 feet under any circumstances. The zygite oars were $10\frac{1}{2}$ feet. The thalamite $7\frac{1}{2}$ feet. The rowers, where the space of eight square feet was allowed per man, had a vertical space of 1 foot 3 inches allowed for the rise and depression of the handle in rowing, and a space horizontally of 2 feet 6 inches for its forward and backward motion. It is, however, probable that there was hardly any motion forward of the body, the work being done carefully backwards from the perpendicular. In all cases the oars used by the regular rowers preserved nearly the same proportion of one third inboard to two thirds outboard. In the case of the gigantic oars of the *Tesseraconteres* of Ptolemy, a vessel of the size of the *Agincourt*, we are expressly informed that the handles were weighted with lead, so as to bring the oar inboard and outboard nearly to an equilibrium. The oars of the upper ranks projected at the point where they reached the water 2 feet 6 inches beyond those of the next lowest tier. Let us now proceed to consider the construction of the vessel itself. In the cataphract class, the floor was one foot above the water line. Below this was the hold, which contained a certain amount of ballast. Through the floor into the hold, past the pumps, which were pretty constantly worked in ancient vessels, as the use of the word both by the poets and orators in metaphor expressing labour and sorrow, amply attests. The keel (*tropis*), of the early ancient ship appears to have had considerable "camber." Under this was a strong false keel (*chelusma*), which was very necessary in vessels that had frequently to be drawn up on shore. Above the keel was the kelson (*drucolion*; *columba*), into which the ends of the ribs were fastened. Above the kelson lay the (*deutera tropia*) upper false keel, in which the mast was stepped. The stem (*teira*) rose from the keel at an angle of 69° to the water. Within was an apron (*phalkta*) giving solidity to the bows, which had to stand the weight of the beak and its concussion. The stem was carried upwards and curved generally backwards above the fore-castle, terminating in an ornament which was called the *akrostolion*. The stern post rose at the same angle as the stern, and was

carried high over the poop, curving inwards, and finishing in the *aplustra*, an ornament which may be likened to the feathers on the head of an angry cockatoo; and behind this curved backwards the *cheniscus* or goose-head, symbolising the floating powers of the vessel. Round the hull of the vessel horizontally at about the level of the feet of each bank of rowers, stretched waling pieces called *nomies*, and in the case of the Attic triremes, these were again strengthened by *hypozemata*, long cables, which were bound round the ship from stem to stern, and tightened and shrinking when wet, which gave additional security to the vessel, which from her length and narrowness was apt to strain much in bad weather. From the side of the vessel below the level of the thranitic bench projecting the gangway (*parodus*, *fori*), for a space of 1 foot 6 inches, giving a passage of 3 feet in all. This was supported by (*biacha*) brackets fitted below and springing from the ribs of the vessel. The gangway was fenced in by an upright bulwark extending the whole length of the space occupied in the ship by the rowers. Here, in the "Parodus," the *perineo* (seamen) had their station in action as light armed troops; who also, when needed upon special occasions, rowed as supernumerary oarsmen with the long oars already mentioned. The ribs of the vessel from the point where the bracket fitted to them curved upwards and inwards to a height which was 10 inches above the heads of the thranitic oarsmen. Upon them at this height were placed the cross beams called *stroteris*, which supported the *katastroma*, *constratum* or deck, was thus a clear 3 feet above the gangway, allowing the marines, or *epibatai*, in action, free play for their javelins over the heads of the seamen in the *Parodus*. Beyond the space occupied by the rowers, there was the *Parexeiresia*, a space of eleven feet in the bows and fourteen feet at the stern, which included the (*ikria*) fighting deck already noticed in the Homeric vessels. (On either side and of the main deck rose the *cancelli*, an open lattice work, and seen as such in the *Apract* ships, but in the *Cataphracts* usually covered with hides or with the (*cilicium*) goats' hair curtains of that manufacture, at which St. Paul and Aquila and Priscilla used to labour, working with their hands. This served both as a protection against the waves and to a certain extent against the darts of the enemy. At the bow and stern, towers, especially in the Roman vessels, were often erected which gave a vantage height from which to shower missiles on the enemy's deck. In very early times we find the elevated fore-castle, of which the very name is significant, and which, in some cases, strikingly reminds us of the structure erected at the bows of the *Devastation*, serving to protect the fore deck from the waves, and the crew and the marines from a raking fire as they approached the enemy. On either side the fore-castle was figured the eye of the vessel, the centre of which was formed by an aperture which served as a hawse hole. At the stern was a raised quarterdeck, on which was a kind of cabin or deck house forming a shelter for the chief officer and the helmsman. This quarterdeck was the sacred part of the ship. Here was the image of the patron god, not to be confused with the *parason*, or badge of the vessel figured near the bows. Behind the deckhouse rose the flagstaff, on which was hoisted the pennant (*ania*) and probably in the case of the admiral's ship, the red flag that was the signal for going into action, and such other signals as were from time to time required. On either side the bow catheads (*epotides*) projected, which in the case of the earlier Athe-

nian triremes seem to have been merely sufficient to hold the anchor. The Corinthians however, who, as we have seen, were enterprising and clever shipwrights, by strengthening greatly these catheads, were able to receive a blow from the enemy's ram in such a way as to inflict the damage they were intended to receive, an invention which cost the Athenians dear, both in the Corinthian Gulf and in the great harbour of Syracuse. Between the catheads, and in front of the stem projected two beams, one above the other, at some distance apart, headed generally with metal fashioned as a ram's head, or the head of some other animal which were called respectively *proembolion* and *proembolis*. The purpose of these seems to have been to give a racking blow to any vessel pierced by the beak, which projected much further below, and thus to cause her to heel over and shake off, making it easier for the impinging vessel to disentangle herself by backing water. Underneath was the rostrum or beak, answering to that which we now call the ram, which was a long spur, and in the latter periods, usually divided into three teeth. Of this we shall speak more fully hereafter. The trireme was steered by two rudders, one on either side of the stern of the vessel, to the tillers of which, under the deck, was attached a rope, which, passing through a block on either side and over two wheels on the quarter-deck, enabled the helmsman to turn the two rudders which way he pleased by a single effort. In the mid space of 7 feet, which we have already mentioned, as lying between the diaphragmata, stood the main, or great mast, which was square rigged, and before and behind in the two *acati*; foremast and *mizenmast*, which carried lateen sails. The ancients, however, did not use sails in action, trusting then entirely to their oars, so that I will not enter further into the question of the rigging. The total length (exclusive of the beak, for which we must add nearly 10 feet), was 140 feet, of which 25 feet belong to the *parexeiresia* (11 to the bows and 14 to the stern) and 124 feet to the space occupied by the rowers. The greatest breadth (which has been calculated in an ingenious manner from the thickness of the hawsers employed for anchoring the vessel, (a detail preserved to us in the Attic Tables) at the water line was 14 feet above, at the broadest part of the beam 18 feet, and with the gangways added 21 feet. The space between the diaphragmata was 7 feet. The height of the deck in cataphract ships above water was 11 feet. The draught $3\frac{1}{2}$ feet. Total height, $19\frac{1}{2}$ feet. Thus leaving $10\frac{1}{2}$ feet for the hold. The height of the *Apract* trireme from water to the top of the gunwale is calculated at 8 feet. The capacity of the cataphract trireme, calculated according to the modern formula of measurement gives, 232 $\frac{1}{2}$ tons. As all the Attic triremes appear to have been built on one and the same model, their gear was intrenchable. It is obvious that such an arrangement in a fleet of from 300 to 400 vessels would offer great facilities in refitting. The regular crew of an Attic trireme consisted probably of 225 persons in all. Of these 174 were employed in rowing, disposed as follows:—54 thalamites, 58 zygites, 62 thranites, the upper oars being the most numerous, as the construction of the vessel near the bow and stern towards afforded less space for the lower tiers. Besides the rowers, there was a force of 10 marines, heavy armed soldiers, and 20 seamen. The number of marines seem to have varied greatly, and depended much on the style of fighting preferred. Where, as in the case of the Athenians, speed and dexterity in the use of the

ram were the chief tactical features, fewer marines were employed. Xerxes' great fleet carried 30 men to each trireme. We hear of 40 picked men on board each Chian vessel at Lado. The Corinthians and Coreyrens had their decks crowded at the battle of Sybota; and the unfortunate Athenians in the great harbour of Syracuse, where there was no space for their usual methods of manoeuvring, found themselves obliged to imitate their enemy's tactics in this respect, with disastrous results. Of the officers the chief was the Triaroh or captain, and next to him the kubernetes or master, who was responsible for the steering and sailing of the vessel. Each tier of rowers on either side had its captain (stoicnarchos). There was also the proreus, or boatswain, the keleustes, who gave the time to the rowers, a steward, a purser, and their subordinates, and last, not least, the ship's piper (trieraulos), who might not be omitted. We have thus completed our sketch of the trireme, as from it we may also form, without any difficulty, an idea of the larger vessels, quadriremes, quinqueremes, &c. The principles of construction in these were exactly the same, the additional tiers of rowers being added by carrying on the diaphragmata upwards, and at the same regular intervals inserting the thwarts on which the rowers' seats rested. The increase in the size of the whole vessel was not as large as one might at first expect. The increase in the size of Greek vessels began after the Peloponnesian war, and seems to have culminated in the time of Demetrius Poliorketes, who manœuvred with vessels of sixteen banks of oars, and we hear of nearly every number of banks of oars up to that figure. The Romans, who copied a quinquereme which fell into their hands in the first Punic war, appears to have used vessels chiefly of that description. They did, however, build much larger vessels up to time of Actium, when the defeat of Antony and Cleopatra's great ships by the light Liburnians, altered the whole fashion and prepared the way for the disappearance of the great banked galleys, and the almost complete loss of the knowledge of the principle on which they were constructed. An interesting question arises at this point, and one not easily solved, as to the pace at which these galleys could be moved. Taking, however, one horse power to be equivalent to between 7 and 8 man power, we may say that the trireme was propelled by a force equal in amount to about 24 horse power, the quadrireme by about 32 horse power, the quinquereme about 42, and so on, increasing a little more than 10 horse power for each tier of oars added. There is a passage in Xenophon (Ælab. vi. 42,) in which it is stated that from Byzantium to Heraclea, in Bithynia, a distance of about 150 nautical miles, could be rowed in a day by a trireme, and was a very long day's work. Now, allowing sixteen hours' daylight for the work, which is probably above the mark, a speed would have to be maintained of over nine knots. This, considering the shape of the vessel and the man power employed, does not seem excessive, and if such a speed could be maintained on an average for a whole day's voyage, it is obvious that in action or when any special effort was required, a much greater pace, probably equal to 13 or 14 knots, could be attained. Such speed we may believe was attained, if at any time in those famous encounters, in which the vessel itself was the missile hurled at the enemy, when, as in the prime of her Thalassocracy, the rapidity and agility of the trireme of Athens was the terror alike of her Greek and her Phœnician foes. Long and careful training had perfected the system of rowing and

steering. The vessel itself was shaped for speed by the cunning master builders of a people whose eye for form has never been surpassed. To the attainment of the highest possible speed everything was sacrificed, till at last the thin sharp bows were incapable of standing a concussion with the heavy mass presented to them by Corinthian and Syracusan constructors, and suffered themselves the damage they were intended to inflict upon others. Time will not allow me here to follow out in detail the second part of my subject, the development of the ram in its successive types, from the sharp Assyrian spur, the old Phœnician fish like snout, the early Greek boat's head, which we can trace down to the third century on coins, to the three toothed rostrum of the early Macedonian and later Roman epoch. I should have liked to have touched upon some of the instances of single encounters, such as those at Salamis, of Artemisia, and of the Samothracian vessel, and of Phormion's Captain off Naupaktus, and further, to have pointed out the causes why the (probole) direct attack stem on, that which in the eyes of the Athenian was the unskillful and unseamanlike manœuvre, prevailed over the skilful attack on the enemy's quarter or side (eubole), success in which was the glory of the Attic sailor; to have shown how, as Thucydides aptly calls it, 'land fighting at sea,' became the rule, how grappling irons and boarding bridges and ponderous missiles ultimately superseded ramming tactics to such an extent that Brutus, off Marseilles, exposed the sides of his great vessel on purpose to the enemy, trusting to the thickness of his timbers, and making sure of destroying his smaller antagonists with the ponderous weight swinging from his yardarm."

The lecturer concluded with an eloquent spirited description of the sight presented in the Piræus when the Athenians were preparing for their fatal expedition to Sicily, B.C. 415. A vote of thanks concluded the proceedings.

The Inflexible.

That the launch of such a skilfully designed and powerful ship as the *Inflexible* is looked upon as an event of the highest importance to the Royal Navy by the authorities at the Admiralty, is shown by the extensive preparations which are being made in order that the ceremony shall be performed with the desirable éclat. Her Royal Highness the Princess Louise of Lorne has consented to name the vessel, and every effort is put forth at Portsmouth Dockyard to provide the requisite accommodation for the members of both Houses of the Legislature and the other distinguished visitors who have been invited to witness the ceremony.

A description of this remarkable vessel will doubtless prove of interest to our readers. The *Inflexible* was laid down late in the year 1873, so that up to the present time she has been rather more than two years in building. She is a development of the idea first put into shape in the case of the *Devastation*, and since improved upon to a slight extent in the *Thunderer*, and to a greater extent in the *Dreadnought*. In designing the *Inflexible*, the Construction Department departed from the "all round belt" system and resorted to the "central citadel with unprotected ends," mode of construction. In so far as they did that, they returned to original idea of armour protection, as exemplified in the case of the *Warrior*. But instead of sacrificing the buoyancy of the extremities, should they be damaged, as in the *Warrior* design, a deck formed of 3 in. iron plating is laid at a depth of 6 ft. below

the water line, extending from the ends of the citadel to right forward and aft. This iron deck is at the level of the under side of the armour plated sides and ends of the citadel; thus prolonging, by means of horizontal armour, the protection which in the citadel is afforded by vertical armour plating. In addition to this, the whole of the citadel is protected by iron deck plating 3 in. thick, so that it will be seen that a shot or shell cannot enter any part of the ship without penetrating vertical or horizontal armour; it being manifestly impossible for a projectile to pass through the six feet of water above the armoured decks and pierce the thin bottom plating beneath it. It is, perhaps, unnecessary to say that the *Warrior* is not provided with these armoured decks, and is therefore entirely dependent upon the transverse watertight bulkheads for whatever buoyancy she may possess after her ends are riddled with shot.

This system of horizontal armour protection has been rapidly getting into favour during late years, as will be seen by the following tabular statement:—

| Ships. | Displacement. | Weight of Vertical Armour and Backing. | Weight of Horizontal Armour. | Total Weight of Armour. |
|-------------------------|---------------|--|------------------------------|-------------------------|
| | Tons. | Tons. | Tons. | Tons. |
| <i>Minotaur</i> | 10,627 | 2100 | Nil. | 2100 |
| <i>Hercules</i> | 8,677 | 1819 | 100 | 1919 |
| <i>Ajax</i> | 8,493 | 2000 | 720 | 2720 |
| <i>Inflexible</i> | 11,105 | 2555 | 967 | 3522 |

A scientific contemporary recently stated that horizontal armour is a compromise between vertical and inclined armour; but seeing that inclined armour has not yet been fitted in Her Majesty's ships, and that an inclined plane is one between the vertical and the horizontal, it seems to us that the compromise would be found in the inclined mode of protection. At all events, the highest naval authorities have given in their adherence to the horizontal system, and, in our opinion, the war ship of the future will be one in which that system and cellular sub division are consistently and intelligently applied.

But to return to the *Inflexible*. The principal dimensions of the ship are 320 feet long by 75 feet wide; and she will have a draught of water of 23½ feet forward and 24½ feet aft; thus giving a mean draught of 24 feet. She will then displace about 11,200 tons. Engines of 8000 indicated horse power are being manufactured for the ship by Messrs. John Elder and Company, of Glasgow; and if this power is developed on the trial trip, a speed of 14 knots is expected to be attained. The complement of coal is 1200 tons, which will allow of a continuous steaming at full speed for six days; but stowage space is provided for 2000 tons of coal, which may be carried at an increased draught of rather more than 18 inches. This coal stowage is probably sufficient to allow the vessel to steam across the Atlantic.

The armour protection of the *Inflexible* is the most invulnerable that has yet been attained in a ship of war. At the water line the armour plating is 2 feet thick, in 2 plates, each a foot thick; but above the water line belt the

armour is 18 inches thick, in two thicknesses, the outer being 12 inches and the inner 6 inches thick. The plating behind the armour, and to which the latter is attached, is in two thicknesses, each 3 inches, and this is supported by frames 12 inches deep and 2 feet apart. Horizontal angle iron girders are secured to the outside of this plating, between which teak backing, varying in thickness from 9 to 15 inches, is fitted. Upon this the first layer of armour plating is placed; the thickness being variable, from 12 inches at the water line to 6 inches above it. Vertical angle iron girders 2 feet apart are secured to this armour, and teak backing 8 inches thick fastened between them. Upon this the outer layer of armour, which is 12 inches thick throughout, is fastened; the armour bolts passing right through and secured with nuts on the inside of the skin plating. These bolts are turned down to a reduced diameter at the middle of their length, to induce stretching when the plates are struck by projectiles, and so reduce the probability of the bolts being broken.

As we have already mentioned, this armour protection is confined to the citadel, which is 110 feet long, and the whole breadth of the ship. The citadel extends to a height of 10 feet above water line, which is thus the freeboard of the ship. The protection is continued to the distance of 6 feet below water. We have thus an armour plated citadel 110 feet long, 75 feet wide, and 16 feet deep, which is sufficiently large to afford protection to the engine and boiler spaces and all the openings in the deck for access thereto and for ventilation. It is also large enough to contain the two turrets and all the machinery for turning the turrets, loading the guns, and steering the ship. Each of the turrets will contain two 81 ton guns, and their sides are 3 feet thick. This 3 feet consists of 18 inches of iron and 18 inches of teak, fitted in layers—sandwich fashion—like the sides and ends of the citadel. Enormous glass plates are fitted around the turret, in addition to the 3 inches of iron plates with which the citadel deck is covered. The machinery for loading the guns is placed on the under side of the citadel deck between the beams, the latter being laid in a direction parallel to the rammers, in order not to interfere with them. The guns are depressed by hydraulic machinery, in order to bring the muzzles in front of the rammers, and the whole of the loading machinery is worked by hydraulic power. The machinery for this purpose is being fitted by Sir V. Armstrong and Co., of Elswick, and under the superintendence of Mr. Rendell, of that firm, to whose ingenuity the greater part of the work is due.

The turrets are not placed at the middle line of the ship, as in the *Devastation*, but *en echelon*, and in this way the whole of the guns may be fired right forward or aft or on either broadside.

One of the greatest difficulties which has attended the preparation of this design has been to secure sufficient stability and buoyancy for the ship to be safe when either or both of the extremities are riddled with shot and filled with water. This has been done by fitting a belt of cork four feet thick, extending from the armour deck below water to about six feet above the water line, and extending about fifty feet in length at either end. The greater part of the coals stowed upon the armoured deck between the cork bolts, the coal being conveyed into the stoke holds by means of iron trunks closed by watertight doors. In this way, and by an extensive subdivision of the spaces above the armoured decks, as well as by an arrangement of coffer dams accessible from

the deck above, it is impossible for sufficient water to flow into the ship through shot-holes to render her buoyancy and stability insufficient. It is by the shortness of the citadel and the want of such ingenious arrangements that her Italian rival, the *Re d'Italia*, has failed to satisfy such a competent critic as Mr. E. J. Reed of her efficiency in regard to stability.

The principle of cellular construction has been carried out to a very extensive degree in the *Inflexible*. The boilers are placed in four watertight compartments, while she has two sets of compound engines, each in a separate watertight compartment. Indeed, she is divided throughout nearly the whole of her length by a longitudinal watertight bulkhead at the middle line; while the compartments in the double bottom, wings, bunkers, hold, &c., are no less than one hundred and eighty in number. With her comparatively high freeboard of ten feet, slight sail power, elaborate subdivision, enormous coal supply, almost invulnerable sides, and irresistible guns; fitted as she is with the latest improvements in steam and hydraulic machinery, with her steering arrangements beyond reach of injury, and wings wide enough to face a ram with comparative indifference, we have the *Inflexible* the best value for half a million sterling which the combined skill of the naval architect and marine engineer has ever produced. In closing this hasty notice of a most remarkable engine of war we cannot abstain from asking the naval authorities to take as much care in ensuring that those into whose hands this marvel of human ingenuity will be entrusted are competent for the safe custody and proper use of such an onerous trust, as they already have in ensuring that she has been wisely designed and faithfully built.—*Broad Arrow*.

News from Turkey.

ASSASSINATION EXTRAORDINAIRE

A despatch to the Reuter Telegram Company, dated Constantinople, 9 o'clock this morning says that the Ministers were assembled in Council last night at the residence of Midhat Pasha, President of the Council, when an officer who had been recently dismissed from the service entered the Council Chamber armed with a revolver and shot and instantly killed Hussien Arni Pasha, Minister of War, and Rached Pasha, Minister of Foreign Affairs, and seriously wounded Kaiserli Pasha, Minister of Marine. He also killed an aide de camp of the Grand Vizier and a servant of Midhat Pasha. The assassin was arrested. The motive for this terrible crime is supposed to be revenge for his dismissal.

A *Times* Berlin despatch says the Servian army remains stationed on the frontier, and is receiving reinforcements.

The Russian General Schernay Eff, hitherto commanding a division only, will probably be raised to the chief command of the Servian forces.

The Montenegrins and Herzegovinians are assembled in two camps, the former near Rodgoritzna and the latter near Niesic. Col. Bollen, a Russian, is regarded as the probable chief of the Montenegrin staff. About 30,000 Bulgarian insurgents are occupying North Western Bulgaria. It is evident that the Slavonic army will remain under arms during the final diplomatic negotiations. A telegram to the Russian Telegraphic Agency authoritatively denies that Russian troops are concentrating in Bessabia.

The London *Standard*, July 26, announced the investiture of the Sultan Murad had been postponed the same day.

CONSTANTINOPLE, June 16. —The following is the official account of the assassinations here this morning. A Circassian named Hassan, left the military school four years ago with the rank of lieutenant, and was appointed to a captaincy in the army of Bagdad. For certain reasons he was retained at Constantinople, where he was variously employed. When Hassan recently received the appointment of adjutant major and assignment to duty with an army of Bagdad, he alleged various pretences for remaining at Constantinople, and was consequently arrested and imprisoned. He was released yesterday on condition of his proceeding to Bagdad to day. Yesterday he called upon the War Minister, when he was informed the Minister was attending the Council at the Prime Minister's residence. He proceeded thither and the guards believing him an aide de camp permitted him to enter. Hassan fired point blank at Hussin Avma Pasha, Minister of War, with a revolver which he had in his pocket and while other persons present were pressing forward to seize him, Roher Pasha, Minister of Foreign Affairs, a servant of Midhat Pasha, named Ahedni, and a soldier were killed, Roiserli Pasha, Minister of Marine, and a soldier were wounded.

PARIS, June 16.—A special despatch from Belgrade says the Servian Government's decision in favour of peace is opposed to the wishes of the whole people. The position of affairs is becoming dangerous for Prince Milan.

CONSTANTINOPLE, June 16.—The Porte has decided to complain of Austria for continuing to allow insurgent volunteers to cross her frontier into Turkey.

The sentence of the court martial at Salonica has been set aside as insufficient, on the representations of France and Germany. The parties will be tried again at Constantinople for lack of energy and foresight.

VIENNA, June 16.—Reliable intelligence has been received that Hassan, when about to depart, apparently meaning that he desired to avenge the deposition of Abdul Aziz. Rached Pasha was not shot, but stabbed while he was endeavouring to disarm the assassin. It is reported he was a devoted follower of the late Sultan.

62nd Battalion Mess.

The officers of the 62nd Battalion held their usual monthly mess, at the Victoria hotel last evening.

Judging from the attendance, the interest in the mess does not abate in the slightest degree, the officers appearing to enjoy their monthly meeting, and the opportunity to meet each other for social intercourse.

The chair, last night, was occupied by Assistant Surgeon Earle, and the vice chair by Captain Devlin. After the excellent bill of fare had been discussed, the officers, meanwhile, listening to the music of their band, a few toasts were drunk, commencing, of course, with "The Queen." Then followed "Our Guests," and "The Ladies." To the latter of course, there were many ready to respond, including a doctor of artillery, a subaltern of the Engineers, the Quartermaster, and some of the battalion officers.

Some songs also were sung by those musically inclined when the Doctor of artillery favoured his hearers with one or two capital selections.

After "God Save the Queen" had been played, the officers left the table not to meet again as a Mess for three months, as during the summer the battalion will be occupied putting in their annual drill.—*St. John Telegraph, June 9th.*

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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, JUNE 20, 1876.

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 placed thereon will pay the postage. No communication, however, will be inserted unless the writer's name is given, not necessarily for publication, but that we may know from whom it is sent.

We have for the past nine years endeavored to furnish the Volunteer Force of Canada with a paper worthy of their support, but, we regret to say, have not met with that tangible encouragement which we confidently expected when we undertook the publication of a paper wholly devoted to their interests. We now appeal to their chivalry and ask each of our subscribers to procure another, or to a person sending us the names of four or five new subscribers and the money will be entitled to receive one copy for the year *pro*. A little exertion on the part of our friends would materially assist us, besides extending the usefulness of the paper among the Force—keeping them thoroughly posted in all the changes and improvements in the art of war so essential for a military man to know. Our ambition is to improve the *Volunteer Review* in every respect, so as to make it second to none. Will our friends help us to do it? Premiums will be given to those getting up the largest lists. The *Review* being the only military paper published in Canada, it ought to be liberally supported by the officers, non-commissioned officers, and men of each Battalion.

The following article is condensed from the *Spectateur Militaire* of the 15th April, and gives a fine idea of the difference between the "Krupp and Woolwich Guns"—the former taking a charge of 297 lbs. of powder to throw a shot weighing 1144 lbs., the latter 229 lbs. to throw a shot of 1256 lbs. The *Spectateur Militaire* forgets that while the heavier gun (the Woolwich) has to sustain a pressure of twenty one tons to the

square inch, the lighter (Krupp's) will have to sustain a pressure of twenty eight tons—a difference not warranted by the ratio of tenacity of the respective metals on which the life of the guns depend, nor by the supposed advantage in propelling a lighter shot at an increased velocity—so far, the comparisons are not in favor of Krupp's system, more extended trials would likely disclose greater defects.

"It cannot be denied that Krupp's grand steel foundry at Essen has sustained with advantage, and almost with glory, a contest with the greatest arsenals and foundries of the world—whether public or private. China and Japan, desiring to secure their coasts against the aggressions of European Powers, have employed Krupp guns for the most part. In Spain, the triumph of Constitutionals over the Carlists has been mainly due to the employment of the former in the recent battles of Krupp field-guns of 57 mill. (2 inches) and siege-guns of 15 cent. (6 in.). Austria, in hopes of being able to dispense with the Krupp steel, strongly encouraged the attempts of General Uchatius to discover a mixed metal which would produce equally good results, but experience has shown that his compressed bronze does not possess the necessary homogeneity or tenacity, and that at least twice as many of these guns have to be rejected for fissures and erosions after long firing with high charges as are able to support the test. In Italy, the Government, in pursuance of the somewhat pompous eulogies of the press, instituted experiments with the compressed bronze at the Turin foundry, under the direction of the distinguished General Rosset; the results were so decisively unfavorable to this metal that the Government have definitely abandoned it, and have just ordered 400 field-pieces from Krupp.

These attended experiments with heavy Krupp guns, calibre 30.5 cent. (11 9 inches), in 1872-73, excited the zeal of the English, and Woolwich Arsenal turned out guns of eighty tons for piercing armour-plates. These were tried in 1875, and gave good, but not decisive, results. Upon this, Sir W. Armstrong concluded a contract with the Italian Government for eight 100-ton guns for armament of plated vessels now in progress, at the price of over £16,000 each (400,000 francs) for the gun alone, without carriage; these, however, have not yet been made.

"Hereupon Krupp has constructed a gun of the calibre of 35 5 cent. (13.9 inches), weighing 57.5 metrical (fifty-eight English) tons—that is, nearly a third less than the Woolwich guns, and little more than half that of Armstrong's. This gun, tried on the 27th December, 1875, appears to us (*Spectateur Militaire*) to be the *ne plus ultra*, and to fulfill all required desiderata.

"This gun is of cast steel, and weighs, with Krupp's cylindrical breech closer, 57,500 kil. (56.5 tons); length, 8 metres, or 22 1/2 calibres, the calibre of the rifled part being 35.9 cent. (14 inches.) The grooves are eighty in number. The carriage, which has the modern elevating arcs and hydraulic check, weighs 34,000 kil. (33 tons), making the total weight of the gun and carriage 91,500 kil (90 tons); 10,000 kil. (9.8 tons) in Armstrong's new gun, even without

its carriage. These are shell of three kinds, "The projectile and ordinary cast iron steel, hard cast-iron, " is 2.8 calibres (39 inches) with a fuse. Their length of shell is 495 inches) the weight of the shell is 331 lbs.; 1089 lbs., bursting charge 15 kil.

of the ordinary cast iron shell is 80 kil. (836 lbs.), charge, 10 kil. (66 lbs.). The experiments were made at Essen with cylindrical flat-headed projectiles of an average weight of 520 kil. (1144 lbs.). The best results were obtained with a prismatic powder with single channel, of which 100 prisms weighed 3.80 kil. (8.3 lbs.) With the ordinary charge of 125 kil. (275 lbs.), the results surpassed even what had been expected; with 135 kil. (297 lbs.) the pressure of gas was not excessive. As compared with the Woolwich gun, the results of firing with maximum charges are as follows:—

| Nature of Gun. | Of gun. | Of shell. | Of charge. | Initial velocity. | Total vis viva in metric tons |
|----------------|----------------------------|----------------------|-----------------------|--------------------|-------------------------------|
| | | | | | |
| | 57,500 kil. (56 1/2 tons.) | 571 kil. (1256 lbs.) | 104.3 kil. (230 lbs.) | 470 m. (1615 f.) | 6450 |
| | 81,200 kil. (80 tons.) | 520 kil. (1144 lbs.) | 135 kil. (297 lbs.) | 407.1 m. (1709 f.) | 6550 6 |

"From this we see, 1st. That the Woolwich guns weigh 29 in 100 more than Krupp's yet uses much less powder. 2nd. That although the Krupp projectile is only nine-tenths the weight of the Woolwich one, it possesses a greatly higher initial velocity; an incontestable proof of the superiority of the Krupp metal. The Woolwich experiments were upon this renewed with a heavier shell and charge, but with no greater success; the charge of 113.5 kil. (250 lbs.), with a shell of 665.5 kil. (1466 lbs.), having given an initial velocity of only 466m. (1533 feet).

"As only a limited number of such immense guns as these can be used, it is only fair to give M. Krupp credit for the noble spirit of patriotism and emulation which caused him to construct them. We (*Spectateur Militaire*) have it from good sources that they are to be used for coast defence, especially those of the chief ports of the Baltic, Kiel, Wilhelmshaven, &c., and for the armour-plated or turreted ships which are every day being added to the Prussian Navy.

"The enormous price of such guns will, no doubt, limit their use. The price of Armstrong's 30-ton gun, above given, makes its cost about four francs a kilogramme. The Essen Foundry, considering their steel much better than the English (Birch's), have fixed its price at five and a half francs. Taking into account the difference of weight, the Krupp gun, with carriage and all appliances complete, actually costs less than Armstrong's gun, without anything else.

The price of the Woolwich gun is not known. Each shot, including powder and shell, will cost about 1000 frs. (£41 13s. 1)

"We (*Spectateur Militaire*) must now repeat what we have often said with regard to the Krupp steel. If our establishments of Creuzot, Ruelle, &c., cannot produce as good a metal as Krupp's we must procure Krupp's at any price, and by any means—honorable or otherwise. Prince Blomark has taught us that able politicians cannot be scrupulous! We must purchase the process of manufacture of Krupp's metal, or, if that be impossible, we must steal (*voler*) it. The end justifies the means, when brute force tends to supersede right and justice.

"It has been objected to Krupp's guns that during the war of 1870-71 a number of siege-guns of 24lb. and field guns of 4lb. became unserviceable in the German Army. The fact is, however, that not one of the unserviceable guns were of Krupp's system, but were Kreiner breechloaders, with double wedge and copper obturator. The Saxon artillery was the only one which had guns of Krupp's system of breechloading and not one of these became, even temporarily, useless. It was only after the war that Krupp's breechclosing system, with cylindro-prismatic wedge, was adopted by Germany, and afterwards by Italy, for field guns. The siege guns which became unserviceable had been made in 1864 for charges of two kilogrammes, but the exigencies of the siege of Paris necessitated their being used with four; to make room for this, the front circle, which should primarily determine the forcing of the projectile had to be removed, and the second wedge, consequently, in many cases was unable to resist the doubled charge.

"The Krupp factory is said to be now undertaking a gun of 40 cent. calibre (15 6 inches), 10 metres long, weighing 124,000 kil. (121 1/2 tons); price, 840,000 francs (£235,000); weight of projectile, 1030 Kil. (2269lbs.). This seems fabulous, but the improbable is not always the impossible. The rôle France should play in this battle of guns is to hold herself superior to all controversy, and to adopt what is found best."

We give the following account of the launch of the *Inflexible* from *Broad Arrow* of 29th April, and on another page an article from the same Journal of the date of 22nd April, on this formidable vessel. Our contemporary says:—

"A curious confusion of ideas appears to exist in the minds of many of the correspondents who have lately supplied to our daily contemporaries more or less detailed accounts of the ironclad launched at Portsmouth on Thursday. For instance, in the description of the *Inflexible* to which we refer, the armour of the new turret-ship is described as being composed of "laminated" plates. It is quite true that the iron with which the ship is clothed is not in one thickness, but it certainly is erroneous to speak of it as laminated, since, both in its technical meaning and ordinary acceptance, the term implies that a substance is composed of thin plates. The armour of the *Inflexible* is in fact, made up throughout of two plates. Where it is 24 inches thick, as at the water line belt, each of these plates is 12 inches thick; where it is 18 inches thick, as over the citadel, the one plate is 12 inches, the other 6 inches thick—the 12-inch plate being the outer one. Between the plates is placed 8 inches of teak, which serves as a backing for the outer layer of armour; while inside the inner plate another teak backing,

varying from 9 to 15 inches in thickness, is fitted. Within this inner backing, again, comes the skin of the ship composed of two 3/4 inch plates of iron, and to this skin alone, therefore, can the term "laminated" be considered in any way applicable. Laminated shields have, in fact, been experimented upon at various times, and have proved to possess comparatively little resisting power. On the other hand, it is held by English constructors, although other nations do not share in the belief, that a given thickness of armour built up on the plate upon plate system, offers many advantages over the same thickness of iron in one solid slab. Only the individual plates must not be too thin, they must have a thickness of at least five inches. It is admitted that the solid plate gives slightly better resistance as regards a single blow, but it is asserted, and, indeed, numerous carefully conducted experiments have proved, that repeated blows will break up the single plate much sooner than the combined structure. Moreover, the thicker the plates the more frequent must the joints be; for there is a limit in practice to the mass of an armour plate, and consequently the greater thickness the less must be the area. Hence in a solid plate wall, not only must the joints be through joints, but they must be frequent; whereas in a structure composed of several thicknesses of armour, the plates can be so arranged that no joint shall go all the way through the wall, and the plates being of greater area, the extent of joint will be less. The result of all this is that, as was shown during experiments carried out for the Admiralty at Shoeburyness, the effect of projectiles on the skin of a double plate target is unmistakably less than on a single-plate shield; and, therefore, we have every reason to believe that even the lighter armour on the citadel of the *Inflexible* will prove as efficient a protection as the 22-inch solid plates with which the new Italian ironclads are to be clothed."

The launch is thus described:—

"The *Inflexible* was successfully launched on Thursday, the 27th April. Great preparations had for some time been making at Portsmouth, under the personal superintendence of Rear Admiral Sir Leopold McClintock and the Chief Constructor, M. W. B. Robinson, and his assistants, that the launch should be a success, and they were well rewarded by the results. A number of substantially built stands had been erected, covered over, carpeted, and decorated sufficient to accommodate more than 8000 persons, and all were well filled. There were special compartments for the members of the Royal family, the members of the Houses of Lords and Commons, the Lords of the Admiralty, the officers of the Navy and Army, the Mayor and Corporation, the Clergy, and a large portion of space was allotted to the dockyard officials and general public; whilst agreeable accommodation had been provided for the Press. Between twelve and a quarter to one was the time fixed for the launch, but long before that time the seats were rapidly being filled, and the different officials were indefatigable in seeing to the completion of the arrangements. Her Royal Highness Princess Louise (Marchioness of Lorne) arrived about twelve o'clock, accompanied by the Marquis of Lorne, when the royal standard was hoisted, and royal salutes were fired from the *Duke of Wellington* and other ships in commission, as well as the garrison battery. The bands of the Royal Marine Artillery and 52nd Regiment played the National anthem, and, amid the enthusiastic cheers of the assembled thousand, her Royal High-

ness proceeded to the Dockyard, the route being lined by troops by order of Lieutenant General Sir Hastings Doyle.

"The Princess was received by Admiral George Elliot, commander in chief, R. A. Admiral Saperintendent Sir L. McClintock, Lieutenant General Sir Hastings Doyle, &c., and conducted to a raised dais on a platform especially set apart for her, on which was placed an elegant chair and table. Amongst the company were the First Lord of the Admiralty and other members, the Duke of Edinburgh, a large number of naval and military officers and ladies, the Mayor of Portsmouth, &c.

"The Princess having taken her position in the chair on the dais in front of the table, and all the preliminaries having been arranged, shortly after twelve o'clock the customary religious service used at the launching of ships was read by the Rev. J. Cawston, chaplain of the dockyard. On the centre of the table placed on the platform in front of the Princess was fixed a projecting knob, similar to those in use in houses having electric bells, and on the word being passed that all was ready, the knob was pressed by the Princess, and a galvanic current was set up from a battery placed under the table, by which a fine wire which held the ornamental crutch in which the bottle was suspended was fused, and the bottle fell, and at the same time the Princess named the ship the *Inflexible*. This having been accomplished, after a short space of time, during which the officials having ascertained that all was in readiness, the knob was again pressed and a connection made with a powerful battery, which had the effect of freeing the apparatus that had the control of the weights for knocking away the dogshores; and, this being done, at 12.40 the *Inflexible* glided gently and majestically into the water amidst the cheers of those assembled and the enlivening and appropriate music of the different bands. To assist the ship in launching several powerful hydraulic rams had been fitted to the bows. Too much praise cannot be given to the chief-constructor (Mr. W. B. Robinson) and his assistants for the excellent arrangements made, and by which this fine ship was so successfully launched.

"After the launch the Princess visited the new tidal basin and the extension works, which were now declared to be formally open, and afterwards her royal highness returned to the Admiralty House in the admiral's carriage, and partook of luncheon with the Lords of the Admiralty, a small and distinguished party of guests having received invitations to meet her royal highness.

"The dockyard, especially the approaches to the *Inflexible* and the Admiralty House, were very gaily decorated with flags and arches of evergreen, as were also the ships in commission. It is computed that there could not be less than 30,000 persons in the dockyard and on board the ships alongside to witness the launch, and there does not appear to have been a single casualty or hitch in all the proceedings.

"The *Inflexible*, after the launch, was towed to alongside the north wall, ready to be taken into the tidal basin."

BELOW will be found an account from the *Chicago Tribune* of what it calls the "Hell-green Tornado," which must prove highly amusing to our readers. We remember when old British tars used to spin yarns about hurricanes in the West Indies—how 32 pounder guns used to be blown out of batteries, and "young niggers whirled through the air

like *inton peels*—but it was all small beer to what a Reporter in the latitude of Chicago can do in filling a column of air with a solid stone capital $8 \times 4 \times 3$ with the other chicken fins.

"It is now definitely ascertained that the whirlwind resulted from a collision between two sections of a cloud which had divided and come together again. The clouds joined, and a long cylindrical shaft shot down. The cylinder was about 120 feet in circumference and 70 feet in height. It struck the ground a mile south-west of Hazelgreen, and, plowing a furrow 600 feet long, four feet wide, and several feet deep, seemed to absorb the earth and rocks. As it moved along in a north-easterly direction, it looked like a clay coloured column whirling with incredible speed around a central vacuum. It was a solid mass of heavy rubbish. Occasionally a rock or stick would shoot off at a tangent and was driven into the ground, until the swelling stretch between the point of contact with the earth and the edge of the village is a diminutive grove composed of pieces of scantling, huge rocks, and the branches of trees. They are driven into the ground with their heads pointing in all directions, demonstrating that it was a whirlwind, and that the counterfeit grove resulted from offshoots from the outer circumference.

"As the cylinder came up the slope the rush, and yell, and whirr of the column—sounding like the rush and shrieks of the wind on the sea, and like the thunder of guns—attracted the attention of the people of Hazelgreen, and they flocked to their doors and windows. Steadily it came on, sometimes bounding 50 feet into the air, then rushing down again. In two minutes it descended on the little hazel grove just south west of the town. The trees were snatched up by the roots and whirled 90 feet into the air and supported there.

"The cap of the column was ~~about~~ *eight feet long, four feet wide, and three feet thick.* This stone was held in its position while the column covered a space of three-quarters of a mile. Just between the grove and the town, 250 feet from either, the column halted and spun around over a small space, and then recommenced its march. The air was filled with the yells and lamentations of the people. Never before has such a tornado reached so far north, yet so fearful and threatening was the coming column that the prophetic souls of the people seemed to warn them of their danger, and those who were not paralyzed dived into their cellars, and there, shivering, awaited the doom they felt must come.

"Tearing off a corner of a frame house, the column rose some 30 feet into the air, and there, hovering for an instant, fell perpendicularly upon the roof of the Masonic Hall, a stone building. The structure was mashed flat. This was at 4:30, and a meeting had been called for 5 o'clock, half an hour later. Seventy souls would have been assembled in the upper portion of the building. The next house was of frame, and occupied by Mrs. Richards and her family. A daughter-in-law and her two children were saved by the scantlings above them, while the rest of the family were killed outright.

"A frying-pan containing three cakes was on the stove, and the frying pan, still containing the cakes, was found a mile and a half north-east of the village. Twenty-six houses were carried beyond the ken of mortals. Where they went, no one can tell. The track of the column is filled with sawdust and bits of wood, as though a saw-mill had belched out a half-finished lumber-yard,

The trees for several miles are filled with chairs, bits of furniture, carpets, clothing, bits of window-shades and household materials. Mrs. Looney was sitting in her kitchen. The house disappeared as if touched by the magician's wand, and the crushed body of Mrs. Looney was found 400 feet off, stripped of clothing and with the skin peeled off her back from the neck down.

"Of the rest of those killed nothing can be said, beyond that the bodies were found not less than 200 feet from where they started. There were some miraculous escapes. A boy and girl were found out on the prairie, wandering about helplessly. They were in a house of which no account has been received. They remember being lifted into the air, and when found, were nearly a quarter of a mile from where the house used to be, badly bruised and unable to account for their condition. Probably the most remarkable spectacle was that of Dr. Kitto's horses. An hour before the storm arrived the Doctor had been sent for to attend a sick man some three miles off. He returned word that he would not risk his horses over the prevailing bad roads, and in sixty minutes those same horses, barn, buggy, and harness were lifted 60 feet into the air, and the horses dropped at least 100 rods from the former site of the barn. The column was then a huge mass of debris, and a spectator says that the horses went up through the centre of the column, whirling around so swiftly that they looked as if torn in pieces. They were found utterly unbruised but stone dead, and not more than 10 or 12 feet apart. The incidents of those fearful two minutes (for the whole affair did not last any longer) would fill two pages of the *Tribune*. From the south-west corner of the town to the cemetery, which is in the north-west, there is a track, say 80 feet in width, which looks as though a railroad had been laid out. Here and there is a hole, such as you will see where a man has started to build a house, has walled up his cellar, and then failed. Scattered about these holes are masses of splinters and sawdust. Just across the main street stood a wagon-shop. Every vestige of the building has disappeared, and in its place stands a pile of wagon hubs and ties. A furniture and coffin house a few hundred feet beyond was carried four miles and demolished, and the coffins distributed among the inhabitants of the township. A coffin handle was picked up seven miles and a half north-east from Hazelgreen. On either side of the road, and just on the line of the storm, stand some of the dismantled and unroofed houses. Some of them were moved from 20 to 100 feet from their foundations. In every instance the sides were stuck full of huge splinters, some two feet in circumference, and driven through the sides of the houses with apparently resistless force. The road for 600 or 800 yards is utterly impassable, and is covered with debris, some of which is spattered with blood."

At the recent Republican Convention held in Cincinnati, Governor HAYS, of Ohio, received the unanimous nomination of that body for the next President of the United States, and WM. A. WHEELER, of New York, for that of Vice President. The Democrats have not yet held their Convention and decided on their man, but it is thought that Governor TILDEN will be their man, in which case the contest will be a keen and spirited one, but that the Democrats would ultimately gain the victory.

Circular No. 11.

DOMINION ARTILLERY ASSOCIATION.

A meeting of the Council of the Dominion Artillery Association is requested at the Officers' Mess, Citadel, Quebec, on the 22nd June, at 3 P. M., by the President of the Council, to authorize the amendment of Rule 4, Circular 7, as follows:—

"That all subscriptions and donations for the current year, to be paid in by the 1st of May in each year. Corps not subscribing \$10 per field and \$5 per garrison batteries before 1st May, 1876, will be ineligible for prizes, and will be considered as not affiliated."

Rule 5 to be amended as follows:—"No corps will be entitled to compete for the prizes of the D. A. A., unless their subscriptions to the amount of \$10 per field and \$5 per garrison battery are paid into the Treasurer D. A. A., before the commencement of the annual gun practice."

T. BLAND SPRAGE, Lt.-Col.,
Inspector of Artillery
and President of Council.
Citadel, Quebec, June 15th, 1876.

CORRESPONDENCE.

The Editor does not hold himself responsible for individual expressions of opinion in communications addressed to the VOLUNTEER REVIEW. The real name of the writer must invariably accompany each communication to insure insertion, but not necessarily for publication.

To the Editor of the VOLUNTEER REVIEW.

DEAR SIR,—In your edition of 30th May last, your correspondent "X." from this city, says:—

"The Field-day and Parade was a success, although the absence from want of uniforms of the 5th Royals and 65th Rifles reduced the strength of the Brigade very considerably."

Now I would inform "X."—who ought to know by this time—that the Parade was only for Regiments of the 5th District and not of the 6th District—as he would lead one to suppose, lamenting—as he does—the absence of the 65th Rifles, which is in the 6th District or Eastern part of Montreal. I doubt very much even had they have had their uniforms if they would have paraded with us.

Our papers sometime before 24th May, kept harping on this same subject much to the disgust of the Corps in our District—THE 5TH.

Kindly set your Correspondent "X." mind easy on this score—for he being on the staff should know what corps are in his own District—and oblige

"AN OFFICER OF THE 5TH DISTRICT."

P.S.—The following "corps" in Montreal are in the 5th District (remember oh "X.")

Montreal Hussars.
Field Battery (Stevenson's).
Brigade Montreal-Garrison Artillery.
One Company (or Troop) Engineers.
1st "Prince of Wales" Rifles.
3rd "Victoria" Rifles.
5th "Royal" Fusiliers.
6th Fusiliers.

REVIEWS.

We have received the *New Dominion Monthly* for June. It has for its front-piece a portrait likeness of Judge Wilmet of New Brunswick. The first article—"Quebec since Confederation"—is an ably written paper. The other contents are—"Bearing Witness to the Truth"—"Tecumseh Hall continued"—"Bernadotte"—"Young Folk" &c. John Dougall & Son, Publishers, Montreal. Price \$1.50 per annum.

RIFLE COMPETITION.

On Saturday, 10th June, the second competition of the Ottawa Rifle Association for the silver badge, took place at Rideau rifle range. The following are the scores at 200, 500, and 600 yards; seven rounds at each range, and no sighting shots allowed.

| | 200 | 500 | 600 | Total. |
|---------------------------|-----|-----|-----|--------|
| Private Nowby..... | 28 | 22 | 22 | 72 |
| Corporal Reardon.... | 24 | 23 | 24 | 71 |
| Private Symes..... | 28 | 25 | 17 | 70 |
| Sergeant Clayton.... | 29 | 22 | 18 | 69 |
| Lieutenant Graburn... | 26 | 19 | 23 | 68 |
| Surgeon Malloch..... | 21 | 27 | 20 | 68 |
| Private Waldo..... | 28 | 24 | 16 | 68 |
| Corporal Throop..... | 30 | 22 | 16 | 68 |
| Sergeant Sutherland.. | 27 | 26 | 15 | 68 |
| Mr. Walters..... | 32 | 20 | 15 | 67 |
| Gunner Johnson..... | 30 | 16 | 21 | 67 |
| Private Cotton..... | 30 | 15 | 15 | 60 |
| Lance Corporal Gray.. | 26 | 14 | 19 | 59 |
| Mr. Connor..... | 22 | 21 | 15 | 58 |
| Private Webb..... | 28 | 19 | 11 | 58 |
| Captain Todd..... | 27 | 16 | 14 | 57 |
| Major Macpherson.... | 28 | 17 | 12 | 57 |
| Asst.-Surgeon Bell.... | 17 | 13 | 24 | 50 |
| Corporal Deslauriers.. | 27 | 12 | 11 | 50 |
| Private Morrison..... | 27 | 13 | 0 | 45 |
| Mr. Bute..... | 28 | 17 | 0 | 45 |
| Lt. Col. Brunel..... | 14 | 19 | 9 | 42 |
| Vot. Surgeon Harris... 24 | 2 | 7 | 33 | |

1883.

The Invasion of Scotland.

A pamphlet has just been published in Glasgow, which is giving rise to much comment. It purports to detail the invasion of Scotland in 1883 by a large army of Germans, and it is written in a lively and attractive style, somewhat similar to its famous prototype, "The battle of Dorking," which a few years ago created such a commotion in London and throughout England. The invasion happened in this wise: The "sick man" had fled across the Bosphorus, and the Czar of Russia reigned in Constantinople. The Turkish principalities had been seized by Austria, while the Germans for their share had quietly taken possession of Holland. Belgium was endangered by the machination of statesmen at Berlin, and the beginning of the year 1883 saw it overrun by the troops of the latter. Great Britain was then fairly aroused to a sense of her danger, and France was waiting with impatience for the old ally to begin the fight. It came at last. On the 10th of July, in that year, a large German fleet entered the Tay and anchored opposite Dundee. Soon an army of 70,000 Prussians were landed, and quickly surrounded Dundee, Perth, Crieff, and other places, preparatory to marching upon Edinburgh. Their fleet, however, was met by an English squadron and ruined. The Scots did not allow the invaders much time to continue their advance, for soon an army of 80,000 men lay waiting for them on the southern bank of Forth to bar their march southward; while large bodies of gallant Englishmen, both regulars and volunteers, were on their way

to the assistance of their Scottish comrades at Stirling."

Onward marched the enemy, harrassed, of course, by light infantry and cavalry attacks, until they came in sight of the Scottish forces encamped on every strategical point in and around Stirling. The battle soon began, the Germans leading off in their usual splendid style, while Scots maintained their ground as firmly as of old. The Forth again was tinged with blood, as it had been when Wallace defeated the English on the same spot. When night closed the position of the opposing armies remained the same. The Germans had suffered fearful losses, but were still undaunted. The next day the struggle was renewed with increased vigor on the part of the Scots. Every shot they fired told. The Germans could not stand the constant repulses they met with in their attempts to oust the Caledonians from their intrenchments, and at length they fled in hot haste from within the range of the opposing rifles and artillery. This was the end of the invasion, for three days afterwards the German commander, seeing the futility of renewing the struggle, capitulated. Through this victory a general peace was made; Belgium was made free, and Holland resumed its independence, while Alsace and Lorraine were again annexed to France. Scotland had once more shown herself to be a power in Europe.

Although, of course, the weakest of fictions, such productions are not without their use. They set people to thinking of the national defences. The possibility that an enemy's fleet could anchor opposite Dundee and land there a great army is not pleasant to contemplate, and may well stir up the "powers that be" to inquire into and remedy the unprotected state of the British coasts. We have enjoyed reading the pamphlet very much. We have followed its details with great interest, and could not help shouting "our side yet!" as we read the account of the fictitious campaign.—*Scottish American Journal*.

Naval and Military.

A vote "on account" for £100,000 is required for the expenses of the army purchase commission for the year 1876-77. The estimate for the year 1876-77 is £464,200.

A visit is likely to be paid to Davenport and Keyham yards by a distinguished Brazilian naval architect—Senor A. de Carvalho—who is on a visit to England. This gentleman, we believe, recently laid before Admiralty a new plan for building steam launches for naval service, which was thought sufficiently well of for order to be given for one to be constructed according to the proposed system.

Vice Admiral E. G. Fanshawe, C. B., President of the Royal Naval College at Greenwich, will be promoted to the rank of Admiral on the 17th of next month, but he will not resign his office, to which he was appointed last January, in succession to Vice Admiral Sir A. B. Key, K.C.B., appointed Commander-in-Chief on the North American station.

It has hitherto been a rule of the service for tattoo (last post) to be sounded at all home garrisons and stations—except where otherwise specially ordered—at nine p. m. for seven months of the year, viz., from October 1st to April 30th, and at ten p. m., for the remaining five months. A general order has just been issued, directing that 10 o'clock p. m. shall in future be the time for tattoo throughout the year, so that henceforth soldiers may remain out of barracks to that hour, irrespective of season,

The *Army and Navy Gazette* understand that in future regiments which are being brought forward for foreign service, will, as far as possible, be stationed in Great Britain, and will, where practicable, spend the last year or so of their service on or near the south coast of England. This decision, it says, will give the greatest satisfaction to all ranks.

The ships ordered home are the Callongor, surveying ship, Captain F. T. Thomson; Dart, 5, Commander D. A. Denny, from South East Coast of America; Diadem, 8, Captain W. C. Chapman, from Australia; Doris, 24, Capt. Hon. E. R. Fremantle, C.B., from Detached Squadron; Dwarf, 4, Commander Hon. E. S. Dawson, from China; Hornet, 4, Commander H. N. Hipperly, from China; Nimble, 5, Commander W. H. C. Selby, from the East Indies; Petrel, 3, Commander W. E. de C. Cookson, from the Pacific; Thalia, 6, Captain H. B. Woolcombe, from China; and Tenedos, 8, Captain E. J. Pollard, from the Pacific.

Some of the seamen who were ordered to take passage in the *Simoon* for service on the Pacific station were found to be physically unfit while on the voyage out, and were consequently brought home again. Such a failure to carry out the intentions of the Admiralty, accompanied as it has been by needless trouble and expense, and with inconvenience to the ships requiring the services of these men, has not been allowed to pass unnoticed by their lordships, who have, we hear, called for full reports of the circumstances under which the men were drafted, and also ordered the medical survey of those brought home as unfit.

Sir Henry Havelock put a question in the House of Commons the other day respecting the condition of the Indian army. It is now stated that considerable changes are likely to take place in the officering of that force. At present each regiment has only seven officers, as compared with the thirteen it had a few years ago. On an average two or three are away from their regiments on sick leave, furlough, or depot duty. If a war broke out in the East it is questionable if any native regiment would have more than five officers. Lord Napier thinks that this number would be sufficient, but there are many military men, Sir Henry Havelock among them, who fear that if English officers were killed on leading their men into action the native regiments would become demoralised.

A network for armour-plated ships, which the English journal *Iron* calls crinoline for ironclads, is about to be tested by the British naval authorities. It consists of iron wire, and it is to encircle the vessel, supported by booms at a distance of 22 feet from the hull, and extending below the surface to a depth equal to that of the keel. The object is to guard the ship against torpedoes. It is supposed that the fish torpedo can be unerringly propelled over a mile under water, and that the most powerful ironclads could not survive the explosion, if the torpedo struck the hull.

The hypothesis that the axis upon which the earth rotates has changed its position has lately come to be regarded with considerable favor by geologists, in spite of astronomical opinions against it. A change in the location of the earth's poles seems necessary to account for the occurrence of the plants which are now found as fossils in the Arctic regions. So, at least, thinks Mr. John Evans, the late president of the Geological Society of London, as we infer from an abstract from his address upon returning from that office. The botanical researches of the Arctic expedition, now in the vicinity of the North Pole, will probably contribute to our knowledge on this subject.

THE MORNING CLOUD AND EARLY DEW.

The blazing, burning sun
Shone hotly on my tender summer flowers,
Their little life was but begun,
They needed soft, refreshing showers
To nurse the germs of life so newly formed,
To waite the tiny leaf to stretch and spread,
To teach the thread-like roots within the ground
To cling more firmly to their lowly bed.

Sally I watched the much-tried leaves
Shrink from the scorching beams above,
And opening buds, that drooped, as one who
grieves
At hardness in the object of its love.

I rose up in the dawning grey,
And questioned of the coming day,
Oh! will your hours bring the bright showers
To bless my pretty suffering flowers?
And lo! a gathering cloud which drew
My eager longing gaze;
Larger and nearer still it grew
As though my hopes to raise.
Hail now, I said, my much-loved flowers
That pine for rain,
Soon shall the gentle showers
Raise your bright heads again,
But when again the warm sun's one,
The cloud of promise soon was gone,
It fled before the scorching ray,
And vanished from the sight away,
And many a lovely opening flower,
A priceless floral gem,
That would have smiled beneath the shower,
Hung withered on its stem.

And is it thus, my God, with me?
Do clouds of hope and promise rise,
Which in the hour of trial flee
As mists that melt in morning skies:
These thoughts which now the warm heart crowd,
These longings for the good and true;
Oh! are they fleeting as the cloud
As transient as the early dew?
My life might be as summer showers
That glad the parched and thirsty ground;
and gracious acts, Faith's fairest flowers,
Might strew my daily steps around.

Saviour! forbid, that in that day
When I shall meet Thee face to face,
When earthly treasures pass away,
I should have naught to take their place,
Naught but these dreams which mock me now,
Visions of what I might have done;
No living laurels on my brow,
But shades of what I might have won.
No golden harvests gathered here
To swell the triumphs of Thy cross;
Naught but the refuse of the year,
Earth empty fame or golden dross.

MARIE.

Another Warning Voice from 1805.

By MAJOR-GENERAL T. B. COLLINSON, R. E.
1793-1801.

(Continued from Page 276.)

Fortifications and Guns.

The fortifications of the south and east parts of England were in a wretched condition for a country to go to war with. The fortifications enclosing Portsmouth existed and those enclosing Portsea were completed or nearly so; and Blockhouse Fort, Southsea Castle, and some coast batteries in Stokes Bay. At Dover the Castle, the citadel on the western heights, and some sea batteries existed. At Chatham one or two of the small forts on the lines only existed. At Sheer's Garrison Point was fortified, and on the Thames, Tilbury Fort and two or three batteries below it were all the defences. On the coast between these places and up north to Yarmouth, there were batteries which had been constructed since 1793; but these and the whole of the other works had been partly dismantled during the short lived peace of 1802. As to the rest of the coast of Great Britain in 1803, there was not a general from the north of Scotland down to Land's End who did not write to represent the defenceless state of his district.

Mr. Pitt, in 1804 (when he returned to office) like Lord Palmerston, in 1859, gave a new start to the fortifications of the country. About that period were commenced at Portsmouth the Gosport Lines, the Hilsen

Lines, Fort Monckton and Fort Cumberland. At Dover the lines on the western heights were constructed as field works. At Chatham also the lines were made as field works, and one or two of the detached forts commenced. And the lines at Sheerness. Along the coast between Portsmouth and Yarmouth, those extensive series of Martello towers and coast batteries now existing were begun. At Plymouth, the lines round the dockyard were made as field works, and field redoubts constructed on the neighbouring sea heights; the citadel, and some of the sea batteries existed before.

But not many of these works were ready to resist the attack if it had been made in 1805; indeed, the towers on the east coast were not begun till 1808; and the deficiency of guns was loudly complained of. The inadequate ideas on this subject might be judged from the total number of guns on guns (from 42 to 6 pounders) in fortresses and batteries between Sheerness and Deal, including Dover, in 1803, being 3,000 and with only 30 rounds per gun of ammunition. Napoleon having 500 garrison guns at Boulogne alone. Also that the Commander-in-Chief in 1803 calculated on having 480 held guns available for the defence of the whole of Great Britain, with 150 rounds per gun; Napoleon having 400 ready to embark in his flotilla, besides some 2,000 pieces belonging to the vessels themselves. And the reserve of small arm ammunition in the fortresses and fixed camps was at that time of 60 rounds ahead for about 230,000 men. Lord Chatham (Master General of the Ordnance in 1803) ingeniously remarks that he could supply the guns, but the difficulty was to get gunners, officers, and horses, and seems to think it a satisfactory explanation to say that "goodwill and numbers will not supply the qualities necessary in artillery;" it would have been rather more so if that undisputed truth had been taken into account in 1790. And to the Commander-in-Chief's reiterated representations of the want of proper fortifications for the arsenals and dockyards, he returns the regular answer, which has been handed down among other parts of the old machine, "it has been referred to a committee." One can fancy the committee sitting steadily through the crisis, and making a most valuable report when it was all over. As to the intrenchments for strengthening the various positions between the coast and the capital, selected for making a stand at, except the two camps now existing at Colchester and Shorncliffe, and a position at Chulmsford, I cannot find that anything was done at all; except, indeed, a brisk correspondence as to whether it was the duty of the Commander-in-Chief or the Master-General of the Ordnance to make them.

We are now in a better condition regards the defence of our naval arsenals, thanks to Lord Palmerston; but the line, especially that "vulnerable line" and the mercantile harbours are not much better on the whole now than they were then: the batteries and guns for the most part are almost as obsolete as if they were of 1805 still remained. On the east coast particularly, that coast which was directly threatened by Napoleon's Texel expedition and opposite which a possibly new one has sprung up since his day, the tower batteries of 1805 are still the main defence, and as regards the guns of the present are almost as they were left in 1812. I remember the two morals on this subject from England and the other from France—"The period of the enemy's great weakness is that of his landing;" and

"les balimens Anglais furent contraints de tenir le large—par l'effet des pieces de fort calibre."

The Defence of London.

The project for defending London included Highgate on the north, and Spideham and Woolwich on the south, and had a circuit of 46 miles—a large scheme for that day. But when we learn that 170,000 men were considered as the necessary garrison, that the greater part of them were to be furnished by London itself and that the entrenchments were to be made in a few days, after the landing of the enemy, one begins to doubt whether it was seriously intended to carry out such a project, which would hardly have delayed the capture of the capital for a day. That was all however, the Commander-in-Chief could hope to do,—to put as much obstruction as possible in the direct way of the enemy—between him and the great prize he sought. And this must be the principal of all projects of defence of the Kingdom: so that on whatever point of the coast an enemy may land, it will be certain that he will have to fight his way through a succession of obstacles up to London, the last and greatest of all being close to the capital itself. Mr. Pitt saw that. In discussing the defence in Parliament at this time, he said: "It is in vain to say you should not fortify London because your ancestors did not. If, by the erection of works such as I am recommending, you can delay the progress of the enemy for three days, it may make the difference between the safety or the destruction of the capital. It will not make the difference between the conquest and the independence of this country; for that will not depend upon one nor upon ten battles: but it makes the difference between the loss of thousands of lives and millions of property, and of confounding the efforts and causing failure in the enterprise of the enemy." Napoleon saw it, for on the map I have mentioned before, there is an entrenched camp marked on the north side of London, from which he intended to defend his prize; and long after, at St. Helena, in discussing the general question of fortifying capitals, he said: "A great capital is the country of the flower of the nation; it is the centre of opinion, the general depot; it is the greatest of all contradictions to leave a point of such importance without means of immediate defence." And he enumerates the rapid conquests he made of Austria, Prussia, and Spain, owing mainly to the defenceless state of their capitals at the time; and the loss of his own kingdom, in 1814, from the same cause; to which we may now add, its protracted defence in 1870, in consequence of the deliberate adoption of his advice in time of profound peace.

Other Preparations.

Several other points of great importance in the defence of the country are discussed in the Commander-in-Chief's correspondence. The removal of the inhabitants from the coast, and the removal or destruction of live and dead stock, is a very serious question: though full regulations were laid down at the time about it, on the whole it was left to be carried out too much at the last moment. Some steps towards it ought to be taken always on declaration of war. Napoleon trusted much to capturing a large number of horses in England.

The accumulation of provisions at the central points of assembly of the forces, though much considered, was not sufficiently provided for, judging by the reports of some generals; too much dependence was apparently placed on local resources, especially

on village ovens for baking bread. As all property taken for the use of the troops, or destroyed on advance of the enemy, was to be paid for by the Government, at fair rates, it would have been better, on both counts, to have made depots of live and dead stock at central points on declaration of war, and to have fed the forces from them, replenishing them from the coast. We shall see further on Napoleon's opinion as to false economy on this head.

Depots of Military Stores, at the central points do not appear to have been sufficiently attended to; the arsenals and fortresses were depended on for these articles. But these places would have quite enough to do in issuing stores in bulk, without having to deal with troops in detail. And if the formation of such temporary depots is left to the time of imminent danger, there will be the confusion and waste such as has happened on more than one occasion since these days. The first thing Napoleon began with was the depots for artillery and military stores.

Corps of local Pioneers were established all round the coast; and the correspondence shows how much impressed the Commander-in-Chief and his generals were with the importance of such local bodies, for assisting in forming intrenchments, in making and destroying roads and bridges, inundating marshes, &c. The Railway Engineer Corps was intended partly to supply this want at the present day; but however valuable and indispensable such a corps would be for special works, it is to the local corps of Volunteer Engineers we must look for the chief assistance in this respect. But if these corps are to take the place of those pioneers, who were so much in demand in 1803, they should be practised in their own localities on the description of work they will have to do, and not treated as ordinary infantry volunteers.

Remarks.

The whole of this part of the story may be in effect summed up in these words: "Great Britain declared war first, and then began to think about preparing for it afterwards." Not the case — the last time she has done so; the old story was precisely repeated over again in 1854. There was plenty of energy in 1803 when they did begin to prepare, no lack of war enthusiasm everywhere, but the alarming feature of it all, the terrible tone that pervaded it throughout, was that it had to be done as it were under fire in the presence of the enemy. While Napoleon's single genius was rapidly arranging his forces for action, the British war authorities were still discussing what system of defence they should make, and the British Parliament was fighting about the general principles on which the forces should be recruited. It was not the want of warlike spirit; there were 7 or 800,000 men under arms, almost every man of whom had enlisted of his own free will; but not one quarter of them knew anything of drill or discipline. And nothing had been settled as to the positions they were to occupy or how they were to get there, or how to be provisioned when they got there; no defences had been prepared, no guns mounted. When Napoleon calculated on the disaffection of a large portion of the English people to their constitution he showed how little a foreigner, even of the highest intelligence, understands our national character; but when he prophesied the indecision and confusion of the British Government, he laid bare the weak point of the country, of which future enemies may all take advantage.

For the indecision as to our war policy exists still and therefore the confusion that will arise on a declaration of war may be confidently foretold. We have been told lately by a high political authority that the old maxim, *si vis pacem para bellum*, is now to be interpreted, "If you wish for peace, prepare for peace." If that means that you are to make no preparation for war whatever, then that was exactly what happened in 1793 and 1803, with a result each time not encouraging to that interpretation. But if it means that you are to make every requisite preparation to defend yourself when and wherever you are attacked, then that is exactly the interpretation I should wish the British Government to give to the old Latin proverb.

We are not so prepared at present. Our present condition, from a war point of view, as compared with 1803, may be generally stated thus: our external cares and liabilities have multiplied manifold; we have more dependencies to look after, more ocean wealth exposed to attack, very much greater dependency on foreign food and we are more liable to invasion. These are all against us. On the other hand, we have double the population, with probably double the wealth per head, and improved weapons to defend ourselves with. Upon the whole, it must be allowed that our general condition is less secure from vital injury by an enemy than in 1803; and an evidence of it appears in the successive panics that come over the country upon every threat of war. Well did the Duke of York demonstrate this when he said of the state of affairs in 1803: "A panic generally arises from a danger which has not been foreseen. A high spirited people never despond when they feel themselves possessed of the means of resistance." If this view our position is correct, as I think it could be shown to be by details, our preparations for securing our position ought to be so much the more carefully made beforehand.

Our Present Land Forces.

Now, in the first place, what land forces have we actually available? The whole of our peace establishment of all ranks and all kinds, and to defend all parts of our empire, is, according to the Statesman's Year Book of 1875, and about 500,000. This number, in proportion to population, is about one-third of the maximum number of all sorts raised to defend our then empire during the war of the French Revolution. Where are the other two thirds to come from in case of war? Recollect, we are in a worse general position as regards an enemy than at that time; we therefore cannot do with less than the same proportion of land forces in war. Indeed, when we consider the character of the change in our position, that a material part of it consists in more distant and extended responsibilities over the world, we must expect to require a greater proportion to population than was required in 1805. Then, again, consider the character of the forces. About 100,000 out of the 500,000 are regular troops, belonging to the Queen's permanent Army, better drilled, better disciplined, and better conditioned altogether than that were called Regulars in 1805. We have, therefore as regards the regular troops, an advantage in quality, and not so great a disproportion in quantity. But there is another standard for armies to be considered besides population, and that is the force the enemy is most likely to bring against you; and it will be found, on consideration of the present standing armies of Europe, as compared with those of the Great Napoleon's days,

that they have not only doubled in strength, and have also improved in drill and discipline, but that far more effective and sure means are now taken to increase those numbers of trained troops rapidly and largely in war.

What measures have we now for increasing rapidly and largely those 200,000 regulars? I don't think it is putting the case too strongly to say, that we have absolutely none worth mentioning. There is a so-called Army Reserve. I wish to speak with respect of the attempts by Lord Cardwell to improve our Army; there are two of his measures which bear upon this part of my subject—the Army Reserve and the Localisation. But when one hears of 30,000 as a high result anticipated from the first, one is reminded of a former Army Reserve in 1803, of which Mr. Windham said, in 1806, that it was "like a turnpike gate which men were paid to go through, and no more made an army than the lobby of the House of Commons made the members." It was like Harquin's horse, the only fault of which was that he was dead." The same epitaph, I fear would go for both reserves: "*Quiescit in pace et non in bello resurgit.*" Now, bearing in mind that it was "trained soldiers" that were in demand in 1803, not recruits, not militia, not volunteers; that the question as put to Parliament even in 1806, and by a Whig Minister, was: "How are we to ensure to this country what unquestionably it has never had, a never failing and adequate supply of regular soldiers?" I think we shall not be going beyond the mark, in 1876, in putting the requisite reserve of the regular army at nearer three hundred thousand than thirty. And at the back of these should be the militia and the volunteers; not a militia which has the distinction of regulars without the training; not Volunteers which, as was said of those of 1803, "were as much an army as a man's picture is himself;" but which shall both of them together form the old constitutional force, the armed people of England, prepared, as Pitt said of them "to fight on their own soil for everything dear to the individual and important to the State." These men would form the garrison of England, while the regulars formed the moving army. No amount of ironclads could in these days give the same strength to the defenders, and hesitation to the enemy, as the knowledge that two such bodies could be called into existence at a few days' warning.

Preparations for Mobilization.

That is one preparation required. Another which, like the former, can only be properly done in time of peace, consists in the arrangements for concentrating all the forces when raised, at suitable places in the country selected beforehand, for collecting the necessary war stores and provisions at these places, for constructing field works in positions carefully planned before, for taking possession of certain railways and telegraphs and occupying certain lands, so that on declaration of war, all these questions will not have to be discussed by Committees at the War Office, as in 1803, but that, that declaration, *ipso facto*, will be the authority for Generals of districts, in concert with Lords Lieutenant of counties, to proceed at once to carry out the plans lying already drawn up in detail in their offices. We know that a great deal has been all ready done, and is going, towards this essential preparation, especially in the lately created Intelligence Department of the War Office, which has at once shown its value by commencing to perform that important service

towards the defence of the country, hitherto almost unattended to, of collecting the necessary information to enable the war authorities of the country to decide upon the above questions, and the constitution of the different army corps, &c., published in the Army List for December, 1875, shows how carefully and fully that Department has considered this subject. But after these Officers have completed their valuable labours, if it is not to be all lost labour and waste paper, the Government will then have to do its part, in putting the whole arrangements on such a practical and permanent footing, that the two local authorities above mentioned—the civil and the military—will have both the legal power and the practical means of carrying them out, without further direction from either Parliament or Government so that we shall not have, as happened in 1803, to discuss a Defence Act under the excitement of external war, as well as under the internal disputes of party politics, and, as they did, our family jars before the world at a time when the thoughts of the whole country should be turned solely towards its defence. And to satisfy the country of the efficacy of the arrangements, they should be put to practical proof by making the Autumn Manœuvres an opportunity of collecting forces by railway on different parts of the coast to meet an actual debarkation from our fleets.

Localization of Authority.

And yet, notwithstanding Reserves, Defences, and Acts of Parliament, there will still be confusion and delay, unless a more real localization of authority is established than exists at present. Lord Cardwell's Localization Act came in with such a flourish of trumpets, that many people believed that it completely effected this object; they should be made aware, therefore, that it merely connected the regular regiments with the militia regiments, and left the powers of local General Officers almost as limited as ever, and even reduced that of Lords-Lieutenant of counties. Now, in 1588, the counties paid for their own troops and own defences, and hence each county had an interest and a pride in making both efficient, and they showed by their acts that they had. Two centuries after, the system had so completely changed, that between 1793 and 1814, there must have been about twenty different individuals, who conducted the whole defences of the kingdom from London, each coming new to the work, each independent of the other, each with his own crotchets, which he insisted on having discussed by Parliament, as the one original and only effectual panacea for security. And if we have war in 1876, there will be two or three gentlemen in Pall Mall, who probably began to study military matters for the first time about twelve months ago, who, with the help of the electric telegraph, will equally decide on the movements of a General's army, the issue of an extra ration to Private Smith, the firing of an extra round of ammunition, and the purchase of a palisade; and these gentlemen may be changed at any moment for two or three others, who will have equally to decide these questions with probably equal knowledge of them. This is not a system suited to the English character; that is only brought out into full action by the responsibility of independent power within the range of each man's sphere of duty. This I believe to be the chief cause of the success of British seamen, and of the constant vitality of our Navy through all England's difficulties. The General of a district ought, like the Admiral of a Fleet, to feel

himself responsible for every part of the military matters in his district; for the fortifications, the guns, the military stores, the provisions, and for the efficiency of all arrangements we have been talking of, for the defence of the country. At present he is virtually only responsible for the discipline of the troops and the drill of the infantry and cavalry; and it has this doubly injurious effect that the Generals cease to take a real interest in the defensive measures of the country, and it comes to be considered that ability in drilling troops of the line is the one essential qualification for a General. As there is the same want of unity of knowledge and power in the War Office in London. There is no Commander-in-Chief of the British forces really; he is only the Officer commanding the Regular troops in the United Kingdom. We have little wars going on continually in every climate on the globe, and we don't know how soon we may have great wars going on in peace we are totally ignorant of, and yet we have only just established an Intelligence Department to collect the indispensable information for such wars; and we have now no one permanent person in a position to combine that information with a knowledge of all the war resources of the empire, in such a manner as to guide the temporary political War Minister in conducting the defence of it.

NAVAL PREPARATIONS IN ENGLAND.

Over Confidence in our Security.

I am not competent to enter into any detailed discussion of the lesson to be drawn from the naval preparations in England to oppose the projected invasion of 1803. I can only state, that briefly, the general character of them, and such points in them as strike me to be prominent; leaving it to naval men to extract what moral they can for the next time.

The general impression made upon me by the records of the naval part of the defence is, the confidence in the successful result of it that was felt both on sea and land; and yet the navy was in just the same condition of unreadiness as the army when the war broke out. Twice in his career had Mr. Pitt to re-construct the British Navy—once in 1793, and again in 1804. In 1792 there were only 15 line-of-battle ships in commission and 15,000 seamen; in 1794 there were 80 liners in commission and 70,000 seamen. Here seems an argument for providing a large reserve for the Navy, of seamen, ships, and stores; what expense, what labour, what unjust misery must have been occasioned by having to purchase, build, and impress to that extent in a year. The unsatisfactory character of the impress was shown by Pitt's attempt, in 1894, to raise a reserve, by taking a tithe of men, out of the Merchant Service, in a systematic way, according to tonnage, by which, out of a total number of 100,000 merchant seamen, he expected to get 20,000; and another 10,000 by levying one man from every parish. But this rude and unjust method did not apparently succeed any better than the still ruder and more unjust impress. In 1802, the number of seamen was allowed to get down to 30,000, and in 1804 it had to be raised again to 80,000. And of the vessels purchased at this time for the Navy, to replace those sold in 1801, many were lost owing to their weakness for the purpose. James says that, in 1804, there were 97 war vessels launched; the Government, in 1802, had evidently been "preparing for peace," according to Mr. Foster's interpretation.

Notwithstanding this makeshift fleet, there seemed to be no doubt in anybody's mind that "the narrow seas" were quite securely guarded. The tone of the Navy is that of men accustomed to victory, and whether the squadrons were large or small, badly found or not, there was no hesitation about keeping up the blockade of the enemy's naval forces. This difference of feeling, as compared with the land forces, was not due to any difference in the men themselves, for as soon as England got a really efficient army on the Continent, under a really efficient commander like Wellington, we find exactly the same atmosphere of victory, and feel the same confidence in ultimate success in all difficulties. In each case the men were confident in their own strength, only in the Navy that had grown up as a part of their necessarily self-dependent and responsible existence; whereas in the Army, that sense of existence is a war plant not grown in peace time.

There is, however, I think, a note of warning to us, in that very confidence of the people of England in the secure guarding of the narrow seas; for it was that underlying feeling which caused them to neglect their defences on land. There was evidently at the bottom the unspoken idea that all the preparations on land were very well as an evidence of the spirit of the people; but the enemy would never really come, the Fleet would take care of that. We shall see in the next part how very, very nearly the enemy were in coming in spite of the fleet.

Naval Forces in 1805.

In 1805, according to James's list, there were altogether in the British Navy about 800 vessels having a total tonnage of 660,000 tons, including 80 building; this list does not appear to include the special flotilla got up for opposing the French flotilla; for in 1804, the Secretary of the Navy, in the House of Commons, stated that there were about 600 vessels in the flotilla, in addition to 890 in the main part of the Navy. Of this fleet, 180 were of the line, but only 60 of those were commissioned as sea-going. In Steel's Navy List for April, 1805, the following is the distribution of the ships of the line; this month's list fairly represents the general disposition of the fleet for opposing the scheme of invasion, and before the opening of the ocean drama of 1805 by Napoleon disturbed the previous general arrangements.

(To be Continued.)

British Columbia.

It is estimated that the wheat yield in Walla Walla valley this year will aggregate 1,000,000 bushels, and other grain in proportion.

The Colonist regrets that the Local Legislature at its late sitting did not provide for taking a census of the Province. It claims that the total population must now reach 18,000 to 20,000, and urges that this fact should be demonstrated immediately, by means of a census.

Dunsmuir, Diggle & Co., proprietors of the Wellington colliery, at Nanaimo, have struck a seam of excellent coal in what is known as the "sub-st." at Departure Bay. The seam is 562 feet from the surface, and the workmen have already bored two feet eight inches into the seam and not bored through it. This is, indeed, an excellent prospect.

Terrible Calamity by Fire.

LONDON, June 16.

A fire broke out to day in the extensive carpet manufacturing and woolen works at Ayer, belonging to James Templeton. The fire was caused by the friction of machinery, and spread to all parts of the building. The operatives were at work at the time. It is believed that the men except one escaped. A number of women rushed out saying there were others inside unable to escape. Soon afterwards there were twenty four women buried in the ruins and perished. One woman who leaped from an upper window, was so badly injured that she died soon after being taken to the hospital. It is reported that an overseer named Barr, locked the door of the room in which the female operatives were working. Barr himself perished in the flames, and it is impossible to ascertain the truth of the report; but as the women had ample time to escape the catastrophe, it is otherwise inexplicable. The works were entirely destroyed. The loss is estimated at \$200,000.

Saunders's paper warehouses caught fire to-day and was destroyed with all its contents. The war-house was situated next to the burned building on Brooks' wharf, and ignited from the smouldering remains of Thursday's. Loss, \$150,000.

In the fire at Brooks' wharf last evening 40,000 chests of tea were burned.

Another great Fire.

St. Jouis, Qre., June 18—11 a.m.

About eight this morning fire was discovered in the lumber piles in rear of Bousquet's saw mill. It soon grew till the large piles of lumber and saw mills were in flames. A heavy south wind was blowing at the time and the fire spread with great rapidity. About 8:45 a.m. it had extended to the corner of Partition street, having destroyed the Custom House, the Post Office, Telegraph and Express Offices. The fire continued to spread till at 10:45. The whole of Richelieu street from South to North was in flames; but a building was saved on this, the principal business street. It is reported that eighty thousand dollars worth of flannel was burned with the woolen mill. The east side of Champlain street is also in flames. It may safely be stated that in value, half, or two thirds of the town is destroyed. Assistance is expected from Montreal.

LATER.—The fire is spreading and the people were fleeing for their lives, being stifled with the smoke. The scene was really heartrending to see mothers grouping in dense smoke calling their children and bewailing their loss.

The Post Office, Custom House, both hotels, several splendid stores with their contents, and the Telegraph office on Richelieu street were burned down; in fact the whole place is in ruins, and the loss is estimated at about one million dollars.

LATER.—11:45 p. m.—The fire is completely extinguished with exception of smouldering ruins, and the danger may be considered over.



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Secures health and comfort of body, with grace and beauty of form.

Three garments in one. Approved by all physicians. Agents Wanted. Price by mail, in London cord, \$2; Satin, \$1.75. Samples to agents at 25 cts. less. Give size of waist, and state whether long or short front is desired.

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OPINIONS OF THE PRESS.—Fair dealing can be relied on.—N. Y. Herald, August 23. A genuine distribution.—World, September 9. Not one of the humbugs of the day.—Weekly Tribune, July 7. They give general satisfaction.—Sears Zeitung, August 5.

REFERENCES.—By kind permission we refer to the following: Franklin S. Lane, Louisville, drew \$1160; Mrs. Hattie Banker, Charleston, \$2,000; Mrs. Louis F. Blake, Saint Paul, Piano, \$7,000; Samuel V. Raymond, Boston, \$5,000; Eugene P. Brackett, Pittsburg, Watch, \$200; Miss Annie Ugwood, New Orleans, \$3,000; Emory L. Pratt, Columbus, Ohio, \$7,000.

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1776. 1876.
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