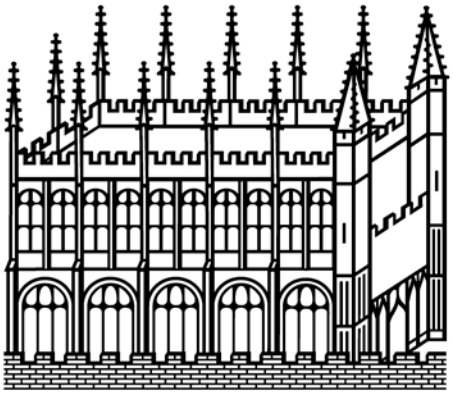

NORTON'S PROJECTILES.

A LIST

OF

CAPTAIN NORTON'S

PROJECTILES,

AND HIS OTHER

NAVAL AND MILITARY

INVENTIONS;

WITH

ORIGINAL CORRESPONDENCE.

GRAVESEND:
CADDEL AND SON, PRINTERS, KING STREET.
1860.

GRAVESEND :
CADDEL AND SON, PRINTERS, KING STREET.

Dedicated

To the Volunteers of the

British Dominions.


BODLEIANA · BIBLIOTHECA ·
DOMINUS ILLUMINATIO

CONTENTS.

Paper read by Captain Norton

AT THE

U. S. INSTITUTION,

On the Night of the 17th of MAY, 1858,

Vice-Admiral SIR THOMAS HERBERT, K. C. B.

IN THE CHAIR.

The principle of the rifle and its *elongated shot,* has been so ably and eloquently explained in Colonel Beamish's letter to the Editor of "The United Service Magazine," August, 1852; and recently by Mr. Boucher's two lectures at this Institution, that I will not trespass on your valuable time by adverting to the subject further than is necessary in explaining some of the rifle projectiles now under consideration.

From much practice in my youth, with the sling, the bow, and the spear, I observed the greater penetration of the arrow and spear over that of a leaden ball projected from a sling, obtained by what I may call direct continuity of momentum; I concluded from these results, that an *elongated* form was the best also for a fire arm shot, provided it could be made to fly *point-foremost,* and after numerous experiments, I found that a rifled barrel was the only means for obtaining that end, which I discovered in 1821, when serving in South India; but I reserved my discovery till I should return to England, which was in the summer of 1823.—Colonel Jacob, of the Bombay Artillery, who was educated at the Honorable Company's Military Seminary, Addiscombe, *after* I had made known practically in the spring of 1826, at Addiscombe, the efficiency of my rifle percussion shell, has since proved that from his rifle, using my shell, an ammunition waggon can be blown up at the distance of *eighteen hundred yards.*

1.—It was in the year 1824, when I was stationed at Enniskillen with my late Regiment the 34th, that a brother officer, Captain Nichols, kindly lent me his German rifle of eleven-bore, and thirteen grooves, to make experiments with my elongated rifle-shot and percussion shells; it was with that rifle that I successfully tested the shells at Woolwich in presence of the Select Committee, in the early part of 1826, by firing *twelve* of them into a wooden target at the distance of one hundred and twenty yards.—In the same week, I blew up an ammunition box at Addiscombe, in presence of the Lieut. Governor, the Professors, and all the Students. Also at the Royal Military College, Sandhurst.

2.—It was at Enniskillen in the same year, that I met an old fellow-campaigner of Peninsular days, Captain Simon Newport, late of the 39th Regiment, who seeing how I was engaged with my rifle-shell, said, if you could contrive some means for the defence of isolated country houses, the gentlemen living in the country would be much obliged to you, as they are much in fear of being attacked by the Rockites. I then contrived a percussion hand-grenade with many chambers, the manner of using it was to allow it to slide down a tube passing through a window, or an inclined hole in the wall of a house, the tube having an iron stirrup at its bottom for the percussion appliance in the base of the grenade to strike on, when the grenade in falling from the stirrup would explode among the assailants. On reflection, I considered that so destructive a grenade was not necessary, but that the present military grenade made into a percussion one, which is easily done, would answer all requirements. To be seen in the Museum of the United Service Institution.

3.—My RAILWAY GUARD AND PASSENGER SIGNAL, made of wood, and which is described by a drawing in "The Engineer" of Friday last, is on this principle.

4.—Another means for HOUSE DEFENCE against burglars, or as an ALARUM SIGNAL against poachers, is by using a frictiona igniter in the mouth of the iron or wooden tube, or separate from it, but attached in such a manner as to fire into its mouth by the sudden pull or strain on the cord; for the defence of a house, this cord should reach to within seven feet of the ground, and being tied to the eye of the frictional-wire, the upper end of the cord is held in the hand, or fastened to anything that will firmly hold it, the grenade is then thrown out of the window and explodes at the lower end of the cord, in the faces of the assailants.* "*Miles faciem feri.*"

This frictional shell can also be used to warn a train not to run into a train at a stand still, as unfortunately happened at Straffan near Dublin, some years ago; for this purpose the shell is thrown high into the air and explodes by the check of the cord attached to the eye of the frictional-wire.

5.—RIFLE FIRE-SHOT OR SPINSTER.—This messenger is intended for blowing up ammunition waggons, bags of gunpowder, and setting fire to dry grass or jungle. I have thrown one from a rifle of fourteen-bore, to a distance of *eighteen hundred yards* and upwards, in the presence of many witnesses at Monkstown, near Cork, about six years ago; the slow-match attached to its

* This frictional igniter can be made to fire shells rolling down a glacis, or the slope of a hill Fort, at the exact spot required.

base is made very inflammable by being saturated with a liquid paste made of gunpowder mixed with chloride of potas and sulphuret of antimony. The screw which holds this match in the hollow base of the shot, gives it *stiffness*, and preserves its correct shape. Finding this to be the result, I have inserted an iron screw or nail of cast iron also in the hollow base of my elongated rifle-shot, as may be seen by a drawing in "The Field" of Saturday last, These Spinsters are best adapted to breech-loading rifles, such as Sharp's American breech-loading carbine, or Leetch's.

This Spinster is far more safe and efficient than the rifle percussion shell, for blowing up ammunition waggons.

6.—ELONGATED RIFLE-SHOT FOR VERTICAL FIRE.—This shot falling arrow shower fashion among troops sheltered from horizontal fire behind ramparts, strong buildings, and other cover, would much annoy them, particularly as modern soldiers have no defensive armour.

7.—SABÒT MADE OF *concave* PASTEBOARD WADS.—Some six or seven of these wads are attached to the base of an elongated iron shot, will allow the shot to go down the rifle barrel easily, and being forced forward on the base of the shot by the explosion of the charge, will fill up the grooves and impart the rotary motion to the shot, without *leading* or injuring the grooves of the rifle; as I proved five years ago at Woolwich, from the rifle nine-pounder field-gun, in presence of the late General Chalmer, and Lieut. Carpenter R. A., which was duly reported in "The Globe" of the same evening.

8.—A SAFE WAY OF FIXING PERCUSSION-APPLIANCES IN THE MOUTH OF RIFLE-SHELLS FOR RIFLE-CANNON.—This is done by inserting the appliance *below* the mouth of the shell, the ramrod cannot then press on it, and if the shell should fall from the hands on the ground, percussion-end foremost, it is still safe, but by striking an object with great force when discharged from a gun, it *cuts* out its own plug which explodes it.

This shell is well adapted for destroying clay defences, on which fuze-shells are extinguished, and consequently have no more effect on them than mere shot. The appliance is the same I use with my blasting-cartridge.

9.—RAPID VERTICAL FIRE.—I have fired elongated iron-shot from a rifled one-pounder, by having the gun placed upright with a slight inclination, and then allowing the shot with its percussion cartridge attached, to slide down, when it exploded by percussion at the bottom of the gun. See No. 6.

10.—CONCUSSION-FUZE.—About eighteen years ago, the late Lord Vivian being Master General of the Ordnance, having first pronounced my rifle-shell to be a perfect thing, added, what we now want is a shell of the spherical form to be fired either from mortar or cannon not rifled, that shall explode the instant of striking a ship's side, our navy want such a shell. I replied I have been thinking of such a shell, and will do it if you will only give me a little time; in less than three months after, I went to Woolwich with *twelve* beechen fuzees prepared with rivets after my plan, they were fixed in twelve ten-inch shells, and fired from the ten-inch guns into two bulk-heads resembling

the sides of a first-rate man-of-war, at the distance of twelve hundred and forty yards. Colonel Hardinge, R. A. was present, and kindly assisted me in fixing the fuzees in the shells. Nine shells struck the bulk-head and instantly exploded, three struck the clay mound but did not explode, the fuzes being *extinguished* by the *clay*. The rivet heads were cast in the sockets on the ends of the connecting bar, and were *puckered* by the wood of the fuze-case, but by inserting a metal cup on the ends of the bar the molten lead forms a *smooth* head fitting closely. The Select Committee at Woolwich after this successful experiment, reported *officially* that my invention of the concussion fuze, was "simple, safe, and efficacious, being well adapted for horizontal fire with high velocities."

11.—Liquid-fire rifle-shell.—I charge this shell with phosphorus dissolved in bisulphide of carbon, and hermetically stop it with a metal screw-plug for use. Mr. Wentworth Scott's liquid is very powerful, but I do not know how it is prepared. Mr. Acklam, of Gravesend, branch Editor of "The Kentish Independent," suggested to me, to keep the two component parts *separate* in the shell till a few minutes before use, and this I do, by turning the screw a few turns which forces the bits of phosphorus into the liquid in which they are dissolved in a few minutes. As a more simple way, I now first put in the liquid and then the phosphorus, hermetically closing the shell immediately.

12.—Gossamer seamless cartridge.—"Extract of a letter from Major Hector Straith, Professor of Fortification, at the E. I. C's. Military Seminary, Addiscombe, dated the 2nd. of

November, 1835."—"Your second experiment of firing entire cartridges from the carbine with the percussion caps of Manton, were successful in every case, both with cartridges in paper and in linen, by this, the motion of biting the cartridges being saved, time is saved in loading, and the entire charge, without the usual waste, is always delivered into the piece."

My present *net* cartridge is an improvement on the above; in making it, the thin tough paper is first placed with its centre on the point of the mandrel or former, and the net in the same manner over the paper, both together are then pushed into the tube mould, the ends are drawn down, and the mandrel drawn out, the powder or gun-cotton is then put in and the ends of the paper and net are tied up; in preparing it for Sharp's breech-loader, I place a little gun-cotton first in the lower end of the cartridge, and gunpowder over the cotton, the fire from the cap is *sure* to fire the cotton; but not always sure of firing the gunpowder through the thin paper. On firing this cartridge, the net is carried out of the barrel of the gun, and resembles a fine brass wire net, no residue whatever is left in the barrel of the gun. This cartridge is described with a drawing in "The Wellington Gazette" of the 15th Instant.

N. B.—The best powder for this cartridge is Curtis and Harvey's improved coarse grain gunpowder, No. 3.

13.—PERCUSSION BLASTING CARTRIDGE.—Having for a long time observed the disruptive effects of my rifle percussion shell, I thought of applying such a means in blasting the stumps of trees, and found it to answer my most sanguine expectations;

a trench being cut round the stump, and the roots cut through, in order to allow the pieces to separate, a hole is bored into the *tap* or principal root, two or three inches below the centre of the stump, the cartridge made damp-proof is rammed with its wooden head uppermost to the bottom of the hole, and then a round iron bar with either of these two percussion-appliances inserted in its lower end is placed on the head of the cartridge, and a long plank raised by a rope attached to its upper end, is allowed to strike the projecting head of the bar, when instant explosion takes place, rending the stump asunder. When the stump is very large, *three* cartridges can be inserted in three different holes, bored about a foot asunder, and in a triangular form, a strong flat piece of timber being laid on the heads of the iron bars, a heavy blow (using a monkey) on this three legged stool, instantaneously fires the charges, making a perfect wreck of the stump. The percussion appliance is a small cartridge filled with the heads of lucifer matches mixed with coarse emery grains.

14.—Whistling rifle-bolt signal.—This is formed after the manner of the whistling arrow used in England a long time ago, and now still in use in India and China; a letter rolled up may be placed within the shaft of the bolt, and the bolt can be shot from a rifle to the distance of twelve hundred yards, across a rapid river where no other means of conveying the letter can be used.

15.—Explosive percussion bolt-signal.—This bolt is sure to explode by falling on grass or soft clay land, and may be used by the rear-guard of a train to give orders to the driver of the

engine. See Nos. 6, 8, and 9. The percussion appliance is the same as with the blasting-cartridge.

16.—ARTIFICIAL STONE RIFLE-SHOT.—This shot was moulded in a rifle-mould; it will stand the explosion of the charge in the rifle, but breaks on striking a thick plank, it however may be made much harder and adhesive than at present.

17.—IMPROVED CORDAGE.—The strands are equally stretched without any *twist*, like the hairs in the bow of a violin, and cemented together with a solution of gutta-percha, or other water-proof glue or cement.

18.—IMPLEMENT FOR FIRING CANNON WITHOUT VENT OR TOUCH-HOLE.—It is easily fitted at the mouth of the gun, and the firing of the gun or mortar cannot disturb or injure it.

19.—FOG ALARM SIGNAL.—This model is merely stuffed with paper, the water-proof-paper-case shows the stages of formation; it is evident that it cannot *rust*, or become *damp*, neither is there anything to fly and cause injury; it may be used in many cases as a military alarm signal. "*Quadrupedumque Pedum.*"

In all discussions, more particularly on practical matters, whether political or private, it is of the first importance towards rendering arguments intelligible, or communication available to any useful purpose, that the terms resorted to should on both sides be clearly understood; such a condition is doubly necessary when we have to do with persons who think they may find their account, in the substitution of vagueness for distinctness, and confusion for perspicuity, towards the furtherance of real objects which they do not avow, or the indirect hinderance of others, to which they offer a feigned attachment.—*Leading article of "The Times," 15th December*, 1843.

NORTHFLEET VOLUNTEER RIFLE CORPS.

To the Editor of "The Gravesend Free Press."

Sir,—I yesterday evening fired some of my gossamer cartridges from Leetch's breech-loading rifle, and explained the nature of both to the serjeant instructor of that corps, assembled for drill in the Rosherville Gardens. It is my wish to depute to a youth of Rosherville, whom I have instructed in the manner of making my cartridges, to instruct the serjeant-major of each Volunteer Rifle Corps within a circuit of ten miles of London, solely at my own expence. I can make my gossamer cartridges perfectly waterproof, although I have such a high opinion of British Volunteers, that I am certain each and every man of them "will keep his powder dry."

I am, Sir, yours, &c.,

J. NORTON.

Rosherville, April 20th.

HULL DOWN, AND RAPID VERTICAL FIRE.

To the Editor of "The Gravesend Free Press."

Sir,—The great facility and rapidity with which I fired elongated rifle-shot vertically, at an elevation of thirty-five degrees from my one-pound rifle cannon, in the Victoria Park, Cork, eight years ago, convinces me that red-hot iron rifle-shot may be fired from a gunboat into a naval arsenal, or dock-yard, from a distance of *six* miles, a distance at which the hull of a gunboat cannot de discerned.

I am, Sir, yours &c,

J. NORTON.

Rosherville, April 27th.

DIRECT CONTINUITY OF MOMENTUM.

When in the Summer of 1823, I stated to the Select Committee of Artillery Officers at Woolwich, that I had frequently, at the distance of twelve yards, pierced a brass plate of about the thickness of a shilling, with an arrow or dart having its shaft formed of a steel knitting-needle, and its lower or inner end of elder pith, after the manner of the dart that is used by the Malays for blowing through a tube of about six feet in length, but that the dart only pierced the plate when it struck it direct without any *obliquity*.—Colonel Miller, one of the Members, said to me, "Mr. Norton, you make experiments for your amusement, and then you come before us to know our opinion of them." I replied with surprise and emotion, "I do, and if by amusement I can add power to the arms of England, I shall be proud and

happy for it." My present improved elongated projectile for fire-arms is derived from the expanding action of the *plastic* lotus pith placed on the inner end of the tube dart. In the Autumn of 1823, being on leave of absence in Ireland, I presented the Malay tube with its quiver of darts, which was given to me at Bangalore, in 1818, to the Museum of the Royal Society in Dublin, prescient of their *teaching*.

J. NORTON.

To the Editor of "The Daily News."

SIR,—Having read in your journal of yesterday a highly interesting letter, signed "Pharmacides," I trust you will have the kindness to give a place to a letter of mine, on the same subject, written some months ago.

REASONING BY INDUCTION,

To the Editor of "The Liverpool Journal."

SIR,—It is recorded in "The Annual Register," for the month of September, 1826, that a new powder magazine at Antwerp, containing 1,400 barrels of gunpowder, was blown up, supposed by accident; the stones and other *debris* of the massive building were thrown to the distance of more than three miles. On the occasion of the violent storm of the 14th November last, in the Black Sea, it is stated in the public papers that a transport, containing 900 tons of gunpowder, went down. Reasoning by induction, had this transport been blown up near to Sebastopol, not only the shore batteries, but the town itself would have been shaken to its foundations. The igniting of the powder could be effected by means of an electric wire, or by my frictional igniting

wire; this latter is represented, "with variations" (pages 31-2,) in "The Practical Mechanics' Journal" of May last. It was with it that I on two separate occasions fired my submarine explosive shell in the centre of the river opposite the landing stage. "The Scientific American," of the 28th October last, speaks of it as follows:—"Exploding Mines and Grenades.—Captain J. Norton, of Cork, Ireland, seems to be devoting his life, with success, to some of the most astonishing applications of military engineering. He has invented the means of firing grenades for house defence, submarine shells, exploding mines, &c., by a most simple frictional contrivance, which is operated by pulling a cord which may be of any length, and is more convenient than a galvanic battery."

I am, &c.,

J. NORTON.

Owen's Hotel, December 22nd.

SELF-SUPPLYING CARTRIDGES BY VOLUNTEER RIFLE CORPS.

To the Editor of "The Morning Advertiser."

Sir,—As you have been one of the most strenuous promoters of the Volunteer Rifle Movement, I beg leave through your widely read journal to state for general information that, having instructed some youths at Rosherville in the method of making my gossamer cartridges, I am willing (at my own expense) to depute them to instruct the serjeant-major of each Volunteer Rifle Corps within a circuit of ten miles of London. I can make these cartridges waterproof, although I feel that every volunteer will "keep his powder dry."

I am, Sir, your obedient servant,

J. NORTON.

Rosherville, April 25th, 1860.

THE TRAJECTORY OR SHOT'S PATH THROUGH THE AIR.

Sir,—To instruct men in rifle practice, and give a correct idea of the trajectory or shot's path through the air, I would use a balista, made after the manner of the ancient Greek balista, with an open space in the centre for the ball to pass through, without the necessity of turning up the ends of the bow, as with our present steel cross-bows. The flight of the ball shot from a balista is always uniform, because there is no friction to cause deflection in its passage through the air.

J. NORTON.

Rosherville, 13th November.

THE COLARY STICK OF THE GENUS BOOMARANG.

Sir,—When on duty at Sidney, New South Wales, in the year 1815, I became acquainted with the extraordinary evolutions of the Boomarang, when thrown by the well practised natives. In the year 1816, when stationed in the fort of Vellore, South India, I saw a native from the Colar province or district, throw his colary stick at a tuft of grass, distant from him about sixty or seventy yards, which rapidly revolving horizontally on its flat side, struck the tuft and cut it nearly through. The natives use these projectiles in war and the chase, and are said to be able to kill a bird on the wing, or a hare running at full speed. Specimens of these instruments are to be seen in the Museum of the United Service Institution. The broad upper one is similar to that I saw at Vellore, the two under, being of less width, resemble those found in the ancient tombs of Egypt.

Yours, &c.,

J. NORTON.

Garden Court, Temple, 4th February, 1859.

My Dear Sir,—Allow me to congratulate you very sincerely on the report which appeared in yesterday's "Times," of the successful trial of your paper-coated bullets. I have long been of opinion that they are precisely the missile which ought to be adopted in the Service, their superiority over every other kind of bullet hitherto tried, is beyond all doubt; and no one who knows anything of rifle-shooting will hesitate to confirm this opinion.

Believe me to remain,
My dear Sir,
Most sincerely yours,
HANS BUSK.

Captain Norton.

TWO STRINGS TO MY BOW.

To the Editor of "The Kentish Independent."

Sir,—When I last fired my submarine exploding beelzibub, as reported in "The Independent" of the 5th instant, it was by means of my waterproof igniting cork. I thus fired my close-to-shore shipwreck signal by means of my glass-tube igniter. The raft which carried the signal having its paper shell placed in its centre, and being lowered into the water from the stern of a boat, I then inserted the igniter by letting it—suspended by a piece of fine twine—lower itself by its own gravity into a tube, which was united by a small piece of gutta-percha tubing to a stick, about three feet in length, and projecting from the bottom of the raft. When the raft shifted to the shore from the deep water were it was first lowered down, the stick touched the bottom,

and by the pressure of the raft moving onwards, the glass-tube igniter was broken, and the consequent friction on its inner coating of Bell's lucifer composition, fired the shell signal.

Yours, &c.,

J. NORTON.

Rosherville, July.

CHATHAM, SEPT. 6TH.

CAPTAIN NORTON'S PROJECTILES.

In order to demonstrate the method by which sporting guns can be utilised as military arms, and the ordinary muzzle-loading, patent breech sporting guns rendered available for military purposes, Captain Norton has just completed some trials at this garrison, the results of which have proved very satisfactory. Captain Norton proposes to use the gossamer cartridges with a close fitting spherical bullet inclosed in a thin greased patch of elastic cotton net. Several of these gossamer cartridges used as described, were fired from an ordinary sporting gun, all with the best effect. The same description of cartridge was then used in firing one of the "jacketed" rifle shots from a 14-bore grooved rifle having a patent breech, the trials with which were deemed to be equally satisfactory by the officers present, to whom Captain Norton explained the principles of his discovery.

THE PHILOSOPHY OF THE RIFLE.

To the Editor of "The Morning Herald."

Sir,—I have read lately several treatises on the theory and practice of the rifle, and have also attended many lectures on the

same subject. It is stated that a ball fired from a barrel *not* rifled has *one* motion onward, which is liable to wander from the correct line of aim. But all balls fired from a barrel not rifled have *two* motions—one onward, the other rotatory, which latter causes the ball to *deflect* from the correct line of aim. This rotatory motion is caused by *friction* in passing through the barrel, and is not coincident with the axis of the barrel, but at right angles with it, and resembles the *side* stroke on a billiard-ball, the results of which are well known to the initiated. The day and hour has arrived when the British youth must be instructed in the true grammar of the rifle. I have laboured so to instruct them, "*inter spem curamque,*" for the last 32 long years.

I am, yours, &c.,

J. NORTON.

Euston Hotel, June 2nd, 1855.

SUMMARY.

In the year 1818. The expanding of the hollow plastic pith base of the Malay tube-arrow by the force of the collected breath of a practised person, so as to fill the interior of the tube, suggested to me, that an elongated shot of plastic lead would also expand by the force of the gas of exploded gunpowder, so as to fill the interior of a gun-barrel, and thus prevent loss of power by windage, or the escape of a portion of the gas between the shot and interior of the gun-barrel.

In 1821, I discovered that the spherical ball of a rifled air-gun loading at the breech, always struck the object with the *same point* it presented when lying in the breech of the barrel.

And in the year 1823, I applied this discovery to the formation of a rifle percussion-shell, and elongated expanding-shot.

J. NORTON.

Rosherville, 3rd. December, 1858.

PRIORITY OF INVENTION OF THE ELONGATED RIFLE SHOT TO THAT OF THE SHELL.

As some very scrupulous authorities of our Military Scientific School, insist that the certificate by Lord Rosse, of my having fired my elongated rifle-shell in the barrack yard near Parsonstown, in the month of June, 1827, is no proof of my having also an elongated rifle-*shot* at *that* time. I submit a discriptive history of each:—My elongated rifle-shot *preceded* my rifle-shell, having placed a percussion-cap on the point of the shot, and finding that the cap exploded on striking hard wood, I then constructed the rifle-shell; both were cast in the *same* mould, having projections on them to suit the corresponding grooves in the rifle, and being a shade smaller than the bore of the rifle, they easily entered the mouth of the piece, and the explosion of the charge expanded them so as to fill the bore of the rifle, and thus prevent any loss of power by windage. I use these shot and shell even to the present day, and am ready to test their shooting from a rifle of twenty-four bore made by Mr. Daw, of London, after my directions, against the Enfield rifle of a similar bore and its present *compressed* shot.

Sir Richard Airey, Quartermaster General, a few months ago, in presence of Colonel O'Brien, Assistant Quarter Master General, said to me, "I am ready to state, when called upon, that you brought forward your elongated rifle-shot and shell, at Woolwich

in the Autumn of 1823, and that I saw you practically use them at that time," and added, *emphatically*, "I will *swear* to it if necessary."

J. NORTON.

Rosherville, 26th July, 1858.

SHOWING THE WAY HOW TO DO IT.—NO. 2.

From Colonel Beamish's letter to the Editor of "The United Service Magazine," August, 1852.

"The following still more remarkable trial took place on the 16th Instant in the same locality:—

1.—A block of well-seasoned Irish oak, eight inches thick, was placed against an eighteen inch stone wall, *Norton's iron-fronted rifle shot*, (No. 4, in preceding list) was fired from the same rifle as that used in the preceding experiments, charged with 4 drachms of sporting powder, at the distance of forty yards when it perforated the eight inch block, and entered the wall to the depth of about three inches. 2.—*Norton's iron-fronted rifle shell*, of the same form and proportions as the preceding, (three ounces) being in fact the *shot* converted into a *shell*, by drilling the top, filling the cavity with percussion powder, and stopping it with a wooden plug, was then fired under the same circumstances, with the exception of the timber being only five-and-a half inches thick, and having behind it a bag containing two pounds of coarse powder mixed with sawdust, the shell perforated the timber, exploded the powder, and passed through the wall, which in that part was about nine inches thick. The following gentlemen were present with the writer:—Major Bentinck, 7th Dragoon Guards; Captain Cowper, Royal Engineers; Crewe Townsend, Esq., Woodside, Cork; James Beale, Esq., Cork."

CAPTAIN NORTON'S FRICTIONAL GRENADES.

The use of frictional-grenades (upon which Captain Lempriere, R. E. reports very favorably) thrown from the towers of parish churches would convert all the villages in England into so many Hugemonts.

"*Mechanics' Magazine*," 18th February.

From Colonel Beamish's letter to the Editor of "The United Service Magazine," August, 1852.

"It is interesting to trace the progress of human invention, to observe the unaided struggles of genius, the frowns of fortune, the rebuffs of ignorant officials; "the hope deferred" the assumption, presumption, and jealousy of rival aspirants, until the name, and fame, and identity of the original inventor, are mystified and over-laid by modern pretenders, and the public are left in the pleasing predicament of not knowing "which is which"

PERILS TO AN INVADING ARMY.

On the 27th of July, 1813, when Lord Hill's Corps of the Army was retiring in the Valley of Bastan, Pyrenees, before the Division of Count D'Erlon. I was on the evening of that day posted on outlying picket, and as our troops had orders to retire noiselessly in the dusk of the evening, and I had orders to keep my post till I saw that the last of the troops were on the march, and then to cut across the hills with a guide and join the main body on the high road; I had ample opportunity of observing from high ground with what extreme *caution* the enemy in front

advanced; first an officer advanced *alone* among the wood and hedge rows and when he saw that there were no concealed enemies, he placed his cap on the point of his sword and held it up so that his followers who were previously halted, might see it and advance to the point where he stood, they were then halted again and he went forward as before; this extreme caution was observed by the best soldiers of Napoleon the 1st., so that we may form an opinion in what manner French Soldiers of the present day would make their way over the well hedged and ditched fields of England in the event of their invading our shores, they would expect that an Englishman with his rifle and revolver was concealed behind every bush and bank on the look out for a devoted Frenchman.

J. NORTON.
Late Captain 34th Regiment.

Rosherville, 10th March.

SPINSTERS.

Thirty years ago, I fired these spinsters from Staudenmayer's rifle air gun, in presence of Sir James Alexander, and other members of the Junior United Service Club; the ignition of the slow match was effected by placing a wad of hard pasteboard at the bottom of the barrel, a small glass bead containing sulphuric acid and encompassed with the white powder chloride of potas, and white sugar, was sewed up in the centre of the quick match, on discharging the gun, the pressure of the wad on the glass bead fractures it, and the match is ignited to a certainty. This method will apply equally well to breech-loading rifles.

J. NORTON.

RIFLE TELEGRAPHS.

In these days of "big war," I think I may do some public service, by stating that I can enclose a roll of paper containing information in writing, in the wooden shaft of either my rifle whistle-signal, or percussion explosive bolt; both of which can be thrown to the distance of one-thousand yards from a rifle of one-inch bore, using a gun-cotton cartridge; as I have frequently proved in the open fields near the Tilbury station, in presence of the Railway Officials. These messengers could be thrown across a broad and rapid river where no boat could live; as they fit with their projections (placed in front and at the base) into the spiral grooves of the rifle, there is little friction; the central part of the shaft having none whatever. A drawing of the whistle-bolt will appear in the Practical Mechanics' Journal for next month, October. Specimens of these rifle-bolts are to be seen at the South Kensington Museum of Inventions.

J. NORTON.

Rosherville, 12th September.

SHELLS FOR DEFENDING HILLY COUNTRIES.

To the Editor of "The Morning Advertiser."

Sir,—When the British army, under the Duke of Wellington, occupied the Pyrenees, in the latter end of 1813, the different divisions were provided with large shells, of about the size of 32-pounders, for the purpose of allowing them to roll down the hills against an approaching enemy, their fuzes being first lighted. I practically demonstrated my improvement on this old plan, by hooking on my frictional igniter to the fuze-hole of a wooden

model of a 32-pounder, and then allowing the shell to roll down the glacis of the fort where Captain Lampriére, R. E., resides. This shell, on arriving at the end of the attached cord, fired the igniter by the check of its stoppage at the exact distance desired, being about 20 yards. This was done in presence of Captain Lampriére, R. E. Immediately after this, Sergeant Sturrock, R. E., fired several of my gossamer blank cartridges from Mr. Leetch's ingenious and very efficient breech-loading rifle carbine. About a year ago, I in due order submitted the above-named cartridges for the consideration of the Secretary of State for War, and the official answer I received was, that the cartridges would be tried when practicable. I have heard nothing of them since that distant day. ! ! !

I am, Sir, your obedient servant,

JOHN NORTON.

Rosherville, April 27th.

GOSSAMER CARTRIDGES.

Captain Norton has received the following flattering testimony from Count Stuart D'Albini :—

[COPY.]

"DEAR SIR,—I have the pleasure to acknowledge your kind letter, and of the gratifying samples of your admirable and valuable cartridges. I thank you very much for the opportunity of judging of them by inspection; I perceive at once all their value, and appreciate entirely their admirable ingenuity, efficiency, and simplicity. Their practicable operation in the field will be of the highest value, and ought immediately and generally

to supersede the use of any other hitherto introduced. I shall not fail to bear testimony to their pre-eminence, and beg of you to receive the sentiments of high esteem and consideration with which I am

Yours faithfully,
The COUNT STUART D'ALBINI,
11, Duchess Road, Egbarton,
Birmingham.

Captain Norton.

NOTE.—Many years ago, I made what is now called the SKIN cartridge, but I found it liable to decompose and ROT being animal matter. All varnishes to prevent damp are worse than useless, as they CLOG the interior of the barrel.

J. NORTON.

"BROWN BESS" RECUSITATED AUCTO SPLENDORE.

To the Editor of "The Gravesend Free Press."

SIR,—What appeared in your columns some months ago, respecting the efficiency of "Brown Bess," when using a close fitting ball in connexion with my gossamer cartridge, has been more than fully carried out, at Gravesend, yesterday, by Master-gunner Alexander, R. A., instructor to the Gravesend Volunteer Artillery, I having instructed a young member of that corps in the method of making my cartridges. The Master-gunner in the trial yesterday put twenty shots in succession into a two feet target at the distance of two hundred yards, and nearly twenty more into a similar target at two hundred and fifty yards. In

firing these forty rounds there was no difficulty in loading, although the balls fitted so closely; the barrel appeared to be sponged out by the expanding of the felt wad, which, enclosed in the fine elastic bobbing net with the ball forms the shank or neck on which the cartridge is tied, and by the rubbing of the gossamer outer casing of the cartridge. The balls were cast in a No. 12 mould; the charge of powder was two-and-a-half drachms The diameter of the cartridge is two sizes less than the diameter of the ball which adds to the facility of loading, with these cartridges all the circumlocution attending the present manner of loading is got rid of. It now becomes a question, whether "Brown Bess" may not prove the better arm in actual warfare.

I am Sir, yours, &c.,

J. NORTON.

Rosherville, May 12th.

WAR APPLIANCES.

To the Editor of

Sir,—This being Her Majesty's birth day, the Gravesend Volunteer Artillery paraded and paid the due honors, the great guns fired a Royal Salute and the men fired my gossamer cartridges made by one of their own company who was instructed by me in the method of making them. I made use of this opportunity to exhibit some of my war appliances.—

1.—By firing my elongated rifle-shell charged with liquid-fire, from a rifled musket of the present Enfield pattern, but with

deeper grooves to admit easily and hold fast the shell which had projections on it suited to the grooves of the rifle, being similar to the elongated rifle shot and shell that I used at Woolwich in the summer of 1823. This rifle was made by Daw, of London, and the grooves were cut deep by my instructions, the cartridge used was one of my waterproof gossamers; the object fired into was a mass of paper placed between two thick hard boards, the first shot pierced the front board, and instantly set fire to the paper. This shell may be rammed home with a solid headed ramrod, as no pressure can cause it to explode like a percussion shell.

2.—Fired one of my frictional-grenades by throwing it into the air, when the check on the frictional wire hooked to the end of the cord, instantly fired it.

3.—I next shewed the operation of the lady's grenade for house defence, which being placed in a spout, and locked and supported by an iron pin, was fired by pulling out the supporting pin, when the grenade shot down by its own gravity, and exploded by the check on the frictional-wire at the end of the cord.

4.—I then shewed the application of my fog-signal for Railways, made available as a bull's-eye explosive-signal for rifle ball practice, also, as an alarm-signal against housebreakers, robbers of orchards, poachers, and light-footed thieves generally.

I am, Sir,

Yours, &c.,

J. NORTON.

Rosherville, 18th May.

Chatham,
28th January, 1859.

Dear Captain Norton,

The four last bullets you brought carried up from 250 yards, the distance I was firing at to-day with the men, very well, two centres,—two outers. The four with small cavities, nail at the base, one miss,—one centre, —two outers,—the miss *not* the fault of the bullet—

Five with large cavity or hollow, two misses,—three outers. I think you have hit the right nail on the head in the first-mentioned.

In haste,
Very truly your's,
GEORGE R. LEMPRIERE.

N. B.—All the above-mentioned shot were paper-coated, and without any plug at the base, they were cast in a mould made by Mr. Lancaster according to my order to correspond with the elliptic bore of his rifle. Specimens are to be seen at the Museum of the United Service Institution.

Any kind of lead answers for casting these shots, but it requires the *purest* lead for casting the expanding-shot for the Enfield rifle. For the above reasons I prefer the Lancaster to the Enfield rifle as a military arm.

J. NORTON.

Rosherville, 29th January.

The Gravesend Volunteer Artillery Corps mustered in strong number, fully accoutred, on the Terrace Pier promenade, on Wednesday evening, and marched from there headed by the band, to the Bat and Ball cricket ground, in which both its companies under their respective officers, went through field exercises. The following letter from an old Peninsular warrior containing his opinion of their evolutions and bearing as soldiers, should be highly esteemed as coming from so competent a judge.

DUPLEX RIFLE PERCUSSION SHELL.

To the Editor of "The Gravesend Free Press."

Sir,—I took the opportunity of the Gravesend Volunteer Artillery assembling for drill at the Bat and Ball ground, in Gravesend, this evening, to practically demonstrate the action of my duplex percussion rifle shell, by firing it at loose hanging canvas, from my heavy rifle of an inch and a half bore. The shell charged with liquid fire and gunpowder, exploded on striking the canvas, and set it on fire; I then proved that I can load and fire the same heavy rifle *three* times while a practised rifleman can load and fire the Enfield rifle but once, according to the present circumlocuting manner of loading as practised in the service. The liquid fire as I use it, is by far the best spontaneous combustion that I am acquainted with, not even excepting the far famed "Kentish fire." The Gravesend Volunteer Artillery went through their evolutions like well trained veterans, their appearance was most soldier-like, and the numerous assembly that admiringly witnessed their movements

must have perceived that "Mars was in their heavy tramp."

I am, Sir, yours, &c.

J. NORTON.

Rosherville, 6th June.

NORTON'S CONCUSSION SHELL.

Letter from Captain Sir Thomas Hastings, commanding H. M's. Ship Excellent, stationed at Portsmouth.

R. N. C. September 11th, 1841.

My Dear Sir,—The object you propose to attain by your concussion shell is very desirable, and if such a spherical shell can be prepared, and used with safety, it will be one of the greatest improvements made in gunnery for a century. If anything should bring you this way, I will be happy to profit by your obliging offer. Believe me, you need not apologize for addressing me, I cannot but respect the zeal you have shown in prosecuting your investigations into this, and more subjects connected with naval gunnery.

I am always most sincerely yours,

THOMAS HASTINGS.

To Captain John Norton,
late 34th Regiment.

Agreeable to the recommendation of Captain Sir Thomas Hastings, preferred in his official report to the Lords of the Admiralty, dated 30th June, 1843, and in obedience to the commands of the Master General and Board of Ordnance, Captain Norton has instructed the operatives in the Royal Laboratory at Woolwich, in the manner of preparing his concussion

fuzes, under the supervision of Colonel Cockburn, and Colonel Dansey, C.B. The *official* report of the select committee of artillery officers at Woolwich, (of which committee the above named officers formed part) dated 15th October, 1842, pronounced these fuzes to be "simple, safe, and efficacious, being well adapted for horizontal fire, with high velocities, and to explode the instant of striking solid substances." And Captain Sir Thomas Hastings in his *official* report, dated 30th June, 1843, stated that "a shell fitted with Norton's concussion fuze, was more sure, as well as more ruinous in its effects, than a shell fitted with the common fuze." More than *two hundred* of these shells have been already successfully tested at *all ranges*.

WONDERFUL DISCOVERY IN THE SCIENCE OF GUNNERY.

For some weeks past a correspondence has been carried on in the "Field" newspaper on the above subject, in consequence of a Mr. Greener, a gun maker, modestly desiring to appropriate to himself nearly all the improvements which have of late years been made in the rifle, and in rifle shot. Last week there appeared in that journal a letter upon the subject from Colonel Sir J. S. S. Lillie, and as it so forcibly sets before the public a matter to which we have for some time past repeatedly called attention, we do not hesitate to transfer that letter to our columns.

"Sir,—I am glad to find that some of the wonderful discoveries claimed by Mr. Greener have been so ably commented upon by Mr Bouchier, and their fallacies exposed in your columns, particularly that which relates to the elongated rifle projectile; as I can add my testimony as to the fact of this

important improvement in the art of war being due to an old brother campaigner in the Peninsular war, Captain Norton, who submitted it to our military authorities, upwards of thirty years since. Their not having deemed it worthy of their notice, was more a proof of their want of capacity than of its want of merit. Our late allies were not, however, blind to this improvement; but, to cover the piracy so as to enable them to claim it as an original invention, they introduced an iron cup into the flat end, and gave it the name of the Minie projectile. It was thus introduced to our military authorities as a foreign invention, and adopted by our army, until it was discovered that this iron mask was objected to. It was accordingly removed by a PROTEGE of the War Department, who received £1,000 for tearing off the mask, and leaving it as originally projected by Captain Norton, and rejected by that department.

"Robins, the author of a celebrated work on gunnery, predicted upwards of 100 years ago, that rifled fire-arms, when brought to the required degree of perfection, would cause as great an improvement in the art of war as the invention of gunpowder in the days of yore. It must therefore be very galling to the feelings of a gallant veteran like Captain Norton to find after he had succeeded in making this discovery that the merit and the rewards have thus been bestowed on others.

"Having commanded a rifle corps during the Peninsular war, I can also bear testimony to the fact that without such a projectile, rifle barrels are useless, and inferior to smooth barrels, as they require more time to load; and, when loaded with spherical balls, no spiral motion can be obtained. This spiral motion during the flight of the projectile is what constitutes its value.

"So long as we are threatened with a French invasion, unless we alter our laws at French dictation, I trust that the "Field" will continue its aid to the field of battle as well as the sporting field; and that, if this threat should be carried into execution, our sportsman will lend their assistance in making game of our enemies, and make them feel not only our priority of claim, but our superiority in the use of this elongated projectile.

"J. S. LILLIE,
Late Lieutenant-Colonel, Grenadier Guards,
and Major-General Portuguese Service."

"Reform Club, March 1st, 1858."

INTERESTING TO OUR GALLANT VOLUNTEERS.

To the Editor of "The Edgeware Chronicle."

Sir,—A Gravesend Volunteer Artilleryman, young Mr. Westbrook, having been instructed by me in the method of making my gossamer cartridges, received orders on the morning of Thursday last to make six hundred blank cartridges to be fired by the corps on the evening of that day; with the assistance of his brother and another young person, he did make the required number, and all who witnessed the firing of them in that very appropriate drill and practice ground, the chalk quarries belonging to the commandant of the corps, Captain Gladdish, were struck with the sharp report of the gossamer cartridge, in comparison with the sickly report of similar charges of powder poured loosely into a fire-arm, according to the present old-fashioned manner of loading.

I am, Sir, yours truly,

J. NORTON.

Rosherville, 29th May.

IMPROVED ELONGATED PAPER-COATED RIFLE SHOT.

To the Editor of "The Gravesend Reporter."

Sir,—I beg to enclose a letter from Lieutenant Busk, of the Victoria Rifle Regiment, and author of the Rifleman's Manual:—

"17th November, 1858.

My Dear Sir,—I took an opportunity when in the country yesterday, of trying the twelve paper-coated bullets you handed to me for that purpose, and I beg to enclose a diagram, shewing the result of the twelve shots at 200 yards. The wind was strong across the line of fire, and my eyesight is not so good as it once was, or I should have done better.

I think very highly of your invention, for so far as I have been enabled to judge by the above experiment your system of partially coating the bullets with paper, appeared to answer all the objects you had in view.

Believe me to remain,
Yours very faithfully,
HANS. BUSK.

Captain Norton.

Note.—It appears from the largest diagram, that the twelve shots all struck within the two-feet circle, and that *six* of them were in the bull's eye, gaining in all thirty points. The shot were hollow half-way up from the base, and expanded like the

hollow pith base of the Malay tube-arrow, without the agency of any kind of *plug*.

Yours, &c.
J. NORTON.

Rosherville, 20th November.

The paper-coating prevents leading, and consequently reduces the amount of recoil, the edge of the base is an eight of an inch thick, which is sufficient to prevent collapsing. The paper-coating pressing equally on the interior of the barrel, keeps the shot centrally in the barrel.

To the Editor of "The Military Spectator."

Sir,—Wishing to have the highest testimony as to my priority in the invention of *elongated* rifle shot and shell, I wrote a few days ago to the Earl of Rosse, late President of the Royal Society, and whose knowledge of mechanics is of world-wide celebrity, from whom I received the following answer.

I am, Sir,
Yours obediently,
J. NORTON.

Rosherville, 23rd March, 1858.

The Castle, Parsonstown, March 20th, 1858.

My Dear Sir,—In reply to your letter, I beg to say that I perfectly recollect the experiments you allude to, they were made in the barrack-yard when you were quartered here, the shells were elongated, cast with projections to suit the grooves in a Staudenmeyer air-gun, from which they were projected. A

parcel containing gunpowder was placed behind a wooden target, and the first shot which struck the target in the proper place, passing through the wood, ignited the gunpowder. I saw the mould in which the projectiles had been cast, and the arrangement was that a little tin tube in the act of casting was secured in the lead, forming at the same time, a recepticle for the gunpowder, and a nipple for the cap.

Believe me to be,
My dear Sir,
Truly yours,
ROSSE.

Captain Norton.

To the Editor of "The Morning Advertiser."

Sir,—I have just received the following letter from an intelligent and energetic officer of the Bengal army, Major Nuthall which I trust you will be so kind as to insert in your widely read journal, for general information :—

"North Lodge, Kilburn, Aug. 14th, 1859.

"My Dear Norton,—Busk, in his lecture before the Cambridge University, said :—As there are many thousands of the old regulation muskets in existence, and there is every probability, for some time to come, of a greater demand for rifles than all the government and private manufactories can supply, it should be known that with an improved and very simple ammunition, devised by Captain Norton, this smooth-bore will show

tolerable practice up to 200 yards, and would answer very well for the instruction of beginners, at any rate.

"May I ask you kindly to let me know to which of your bullets he alludes, as this is a most important matter for all those troops in India still having the smooth-bore; for instance, my own regiment.

Sincerely yours,
"W. F. NUTHALL,"

The bullet Lieutenant Busk alluded to, is one of 12-bore, which, with a thin greased patch surrounding it, fits accurately the bore of Brown Bess. It may be attached to, or kept separate from my gossamer cartridge.

Mr. Rielly, gun-manufacturer, 315, Oxford street, W., is well acquainted with the construction of this cartridge, which he has successfully tested in the shooting-gallery attached to his premises, and will explain everything to all interseted in such matters.

I remain yours, &c.
J. NORTON.

Rosherville, Aug. 16th.

YOUNG RIFLE VOLUNTEERS.

To the Editor of "The Gravesend Free Press."

SIR,—Being in the 72nd year of my age, I have found, till lately that sudden noise startled me more than in former years; but from making frequent experiments with my gossamer cartridges, their report when fired has restored my nerves to the steadiness of early manhood. I do not know a better means for

young Rifle Volunteers to acquire coolness and steadiness in rifle shooting than the habit of firing blank cartridges, taking at the same time, aim at a mark with the same care as if they were firing with ball cartridge. With such practice, and the constant habit of walking on an average six miles a day, I contrive to keep myself in light marching order.

I am, Sir, your obedient servant,

J. NORTON.

Rosherville, Feb. 3rd.

ELONGATED SHOT OR SHELL AND EXPANDING SELF-CLEANSING SABOT.

This shot differs from the expanding-shot that I invented in the year 1823, and is superior to it, inasmuch as by using the expanding-sabòt there is no *friction* or *leading* by the passage of the shot through the barrel; it assimilates more closely to the Malay arrow, which expands at its hollow base, formed of the pith of the lotus plant, and which arrows first attracted my attention, and directed it to remedy the evil of the loss of power in shot from *windage*, as far back as the year 1818, when serving in the East Indies. The expanding-sabòt may be fortified by a disc of leather or card glued on its base, or it may be formed altogether of leather. The circular cavity in the centre of the sabòt is cut by a sharp tube like the upper part of a steel pen, and by pressing it home on the square shank it takes the square form. Cork can be compressed into the form by heating it in boiling water, then forcing it into moulds, and allowed to cool, after the plan of Mr. Robert Jennings, of Cork. It is of no consequence if it separates from

the shot on leaving the mouth of the rifle, as the rotary motion is already fully communicated to the long axis of the shot. All difficulty with rifle-cannon is now overcome by the application of the expanding-sabòt to the shot or shell. The cartridge may be attached to the sabòt, and the fire communicated horizontally from the centre of the breech, as shown by Fig. 23, page 7, in my pamphlet on projectiles.

In the *Liverpool Courier* of the 14th of February, under the head of "What is a Lancaster gun?" there is the following sentence:—"As a rule, cannons must be supplied with iron balls; and iron balls are altogether unmanageable in connexion with the principle of ordinary rifles." I have used iron balls having expanding-sabòts attached to them, from ordinary rifles, and also will engage to adapt them to rifle cannon. If the sabòt is made about double the length of that represented, it will cause the shot or shell to carry "point foremost," when discharged from a barrel *not* rifled, and is then efficient for *vertical fire* to dislodge the enemy from behind barricades, even when discharged from an ordinary dragoon's pistol.

J. NORTON.

RAILWAY SAFETY SIGNAL.

My intention was engaged to make an improvement in alarm-signals for railways, in consequence of the terrible disaster on the railway near Straffan, in Ireland, about three years ago, Colonel Beamish, Chairman of the Cork and Bandon Railway, had six fog-signals placed on the rail at the Cork terminus, and

when the engine passed over them, two or three failed to explode, I requested that one which was not tested should be opened, and I found that the gunpowder within was *caked*, as if from damp, the three iron nipples were rusted, and the percussion caps on them rendered defective from verdigris; the circular tin case was also nearly eaten through with rust. Recollecting that the composition with which I charged my rifle percussion shells, as far back as the year 1823, made a louder and sharper report than any gunpowder I could find, I thought this composition equal parts by weight of chloride of potass, and sulphuret of antimony, both finely pulverized, the charge in each signal is ten drachms, would be the best adapted for charging my fog signals, which are made of pasteboard, varnished over to make them water and damp proof; they are exploded by means of my patented glass tube igniter which lies *flat* in the centre of each, and cannot take rust or become impaired by any length of time in keeping. The weight of the signal is not quite *half* that of the tin signal now in use, while its report is louder and sharper. It is perfectly safe for carriage, as the glass tube igniter being *less* in thickness than the wooden ends of the pasteboard case, the ends must be crushed by the weight of the engine before the tube can be crushed and consequent explosion take place.

J. NORTON.

EXPERIMENTS AT BEAUFORT HOUSE, WALHAM GREEN, BY CAPTAIN NORTON.

To the Editor of "The Gravesend Free Press."

Sir,—On Saturday last I made the following practical experiments at Beaufort House, in presence of numerous witnesses.

1.—Firing a bull's-eye-explosive-signal by a shot from a rifle. This signal is constructed after the same manner as my patented Railway Fog-signal, but is made to explode with a much less pressure, such as the stamp of a man's foot, which renders it useful as an alarm signal against burglars, poachers, robbers of orchards, &c., &c.

2.—Splitting stumps of trees with my Patented Percussion Cartridge. This simple process always succeeds, notwithstanding that, when, in the year 1853, I submitted it to the War Department, I received the following official answer:—

Office of Ordnance, 15th Oct., 1853.

Sir,—The Master General has had before him the reports of the Officers of the Royal Engineers, with your blasting-cartridges. I am directed by his Lordship to acquaint you, that, it results from these reports, and the opinion of the Inspector General of Fortifications thereon, that the invention is not applicable to military purposes, or to any immediate services connected with this department.

Signed,
EDWARD ELLIOTT,
Secretary.

Captain Norton.

3.—Firing charges of powder under water by means of my Patented Frictional Igniter. The action of this may be elucidated by artistically enclosing a water-proof cartridge within an outer casing of any kind of meat, and trailing it in a ship's wake in the region of sharks, the ravenous monster, on seizing the bait, explodes the cartridge in his mouth, and in consequence is induced to think that he has made a mistake. This frictional

cartridge so covered may also be employed in destroying lions, tigers, wolves, and other ferocious wild beasts.

4.—Firing the Lady's Grenade of two kinds, in a perfectly safe manner, without exposing the person. I began to think of some such means for house defence, as far back as the Irish Rebellion of 1798, when I was only ten years of age.

Yesterday, Serjeant-Major Morton, of Lord Ranelagh's Volunteer Rifle Corps—the South Middlesex—fired one of my elongated hollow rifle punches, jacketed with paste-paper closely *swedged* on, through a deal plank, the perforation showing that a circular piece of the plank was cut clean out as if by an auger or drill. This hollow iron rifle punch will appear at the coming exhibiton of recent inventions at the house of the Society of Arts, John Street, Adelphi.

I am, Sir, yours obediently,

J. NORTON.

Rosherville, 21st March.

IMPROVED METHOD OF MAKING ROPES, BANDS, AND CORDAGE.

Having for many years endeavoured to make bow-strings as strong as possible, I had each strand of the string held at its utmost stretch by a weight attached, and then closed together by a solution of gum, glue, or starch. I found all these objectionable on account of the string being liable to be damaged by rain or moisture. I then tried a solution of gutta-percha, and find this meets all my wishes. The bow-string thus made is not twisted, or only very slightly so, my object being to

follow what nature indicates in the formation of the stem of the flax-plant, or that of the hemp.

J. NORTON.

Euston Hotel, April, 1855.

A BALISTA FOR FIRING CANNON AT THE MOUTH, AND WITHOUT A VENT OR TOUCH-HOLE.

This Balista is merely the clasp or clip which holds letters, &c.; any other similar spring will answer. A piece of cork is secured to the front of its upper or moveable limb, the instrument is fixed on the face of the cannon in a manner so that the front of the cork shall reach to within about half an inch of the mouth of the gun; there is a small hole made by a pricker in the centre of the front of the cork, into this an ignited Vesuvian is inserted by the wooden stem, the head of the Vesuvian hangs over the mouth of the gun, and when the Balista is let go, a *shower* of sparks is shot into the interior of the gun, and down on the charge, or cartridge; the latter has a *quick-match* inserted in the cartridge, and projecting with its branchy head on a level with the front of the shot.

J. NORTON.

Euston Hotel, April, 1855.

HOW TO MAKE A HASH OF A WASP'S NEST,

More than two years ago when experimenting with my submarine exploding beelzibub in the river near Cork; the explosion which was effected by means of my frictional-igniting-cork inserted in a wine bottle filled with gunpowder, and pulled by a

long cord attached to the eye of the twisted wire, the ball of wood which was twelve inches in diameter and intended to represent a shell, was shot at least three hundred feet vertically into the air. The force of the explosion downwards in a depth of fifteen feet of water, was so powerful that it pressed a full grown fluke against the gravelly bottom, causing a stone to inflict such a wound in his breast, that when he arose to the surface in a state of great perturbation, one of the men in the boat with me easily picked him up. This incident suggested to me the idea that I might destroy wasps in their nests at dead of night, by having a heavy block of wood like a butcher's block, bored with a two inch auger about eight inches deep, and the chamber thus formed to be charged with a cartridge containing gunpowder, the block to be then placed with its chamber over the position of the wasps' nest, and the frictional-igniting-cork under the charged chamber, a sudden pull of the cord will fire the charge, and the violent *blow* from the explosion downwards will crush the nest, wasps and all, into a most approved "haggis."

J. NORTON.

Rosherville, June 9th, 1856.

I this day successfully tested my Rifle Alarm Whistle, by firing it from my four-pounder rifle cannon into the river, near to the Rosherville landing place, the shaft of the whistle was formed of Sycamore a foot in length, having three projections to fit into the corresponding three grooves of the gun, which may be called the feathers of the bolt, and its head of an empty cocoa-nut, having a square hole cut in it like a humming-top, and fastened to the shaft by a light tube of brass, the length of shaft gave it buoyancy so that it floated on the water after rising from its

plunge into it; the hum or whistle was distinctly heard by those standing at the gun during the time of its flight to a distance of seven hundred yards. This whistle can be improved by having it made of Queen's metal, and may be formed with a double whistle. I have formed it after the manner and on the principle of the ancient whistling arrow, and am of opinion that such a rifle whistle may be useful in many instances, such as a fog at sea, &c.

J. NORTON.

Rosherville, July 9th, 1856.

N. B.—Mr. Sidney Herbert the present Secretary of State for War, about thirteen or fourteen years ago, saw my concussion-fuze which I personally explainded to him, and on which the Select Committee at Woolwich reported officially, that it was "simple, safe, and efficacious, being well adapted for horizontal fire with high velocities." This was *before* Serjeant Major Freeburn's fuze was constructed. The late General Chalmer, R. A. being Secretary to the Select Committee at the time, informed me, that the Committee were so convinced of the principle and efficiency of my fuze, that they were resolved to recommend me for the Ordnance Pension of five hundred a year, and Captain Maule, a member of the Junior United Service Club, told me that he had dined a few days before with Sir George Murray, Master General, where there was a very large company, and that Sir George declared to them that the official report on my fuze was so favorable, that he was resolved to recommend me to Government for a pension of five hundred a year.

I am thus particular in describing its usefulness, because I sometime ago read a speech in the public papers by his Royal Highness the Commander-in-Chief, wherein he stated that he should be glad to receive information on military matters from all persons qualified to give it; and also because when I had the honour to attend a Levee at the Horse Guards more than a year ago, his Royal Highness was pleased to say, "We ought to be much obliged to you."

J. NORTON.

Tunbridge Wells, January 23rd, 1856.

My Dear Norton,—I have indeed been surprised and gratified by the receipt of your note, enclosing the extract from the Bombay Paper about Major Jacob's rifles; I had so entirely lost sight of you that I did not know where you were, or how engaged.*** As to the rifle shell, it is undoubtedly your own discovery, and I wonder to this hour, how such a weapon has not been perfected and more extensively used; if you could go to the East India House, Cadet Office, you could ascertain when Major John Jacob went to Addiscombe, and when he left it, he was certainly there although I forget the year, but supposing it not to have been in 1826, he would have heard and seen those cadets to whom the invention was familar, and he ought to have given you the credit of it, which perhaps he may have done, although it does not appear in the article you have quoted from the Bombay Paper. The range of Jacob's rifles and the expertness of his horsemen in their practice, is somewhat extraordinary, Jacob, is, I believe, a fine noble fellow, and would I am sure be ready to give every man his meed of praise; I hear that he was in England lately, and should you ever go to London now, you

might hear of him at the Oriental Club. With most kind regards, I am my dear Norton,—Yours sincerely, W. Straith. Major Straith was Adjutant to the 34th Regiment, in India, in the year 1818, when I *first* directed my attention to the *expanding* arrow of the Malay tube, with a view of adapting an expanding elongated shot to fire arms, and he is well acquainted with my labors up to the time that I accomplished it in the Autumn of 1823.

J. NORTON.

Rosherville, 29th January.

Sir,—More than two months ago I challenged all Artillery, as now constructed, to compete with my rifle-cannon for extent of range and accuracy of fire, and backed my challenge with a wager of one thousand pounds, but it has not been taken up. I now offer the same wager of one thousand pounds, that I will fire my rifle-cannon by a new process, which will prove itself far more rapid than any manner of firing now practised in the British service. I would say, that by my plan, I can fire *two* shots for one of the present mode of firing, and that I require but one man to assist me at the gun— and as bombardment appears to be quite the fashion now a-days, a plan of firing, by which *one* gun shall do the duty of two, appears to me to be a consummation devoutly to be wished for. The cannon that I use for this rapid firing is cast with the rifles ready formed, which are four in number, equally divided, grooves and bearings, with a three-quarters turn in four feet, and two-inch bore. Any person choosing to call a two-groove rifle not a rifle, but a gun with an elyptic bore, may call my rifle-cannon a double-elyptic

bore gun. The *Practical Mechanics' Journal* of this month, May, (page 32,) gives a full description of my rifle-cannon.

J. NORTON.

19th May, 1854.

The principle of my Concussion Fuze is easily demonstrated by first throwing it with force on a wooden floor, when it will be seen that the rivet remains firm in its position. Then by placing a small metal tube in its open front resting on the connecting band of malleable zinc (or other suitable matter) of the rivet, and then pressing a heated iron rod through the tube on the band, which will melt it in its centre, after this, throw the fuze with force on the floor and the rivet heads will start out of their places.

J. NORTON.

PRACTICE WITH CAPTAIN NORTON'S NEWLY DISCOVERED MONSTER MORTAR OF UNLIMITED POWER.

The practice is after this manner: A round block of tough wood, such as lime-tree, and about a foot in diameter, is grooved out at its lower side as it lies in the water, so as to admit a wine bottle to fit into it half-way up its diameter, the other half projecting beyond the surface of the ball or shell, and to be secured horizontally in its position, by a cord tied firmly round it, and passing through a circular groove in the block. The bottle is filled with blasting powder, about two pounds or more, and a cork, fitting close, and having a piece of Bickford's Safety Fuze, about a foot in length, passing through its centre, and reaching to the centre of the charge, is inserted; the cork being pressed down into the neck of the bottle to about a quarter of an inch below

its mouth, will allow of a melted mixture of pitch and tar to be poured into the quarter of an inch cavity, so as to fill it up to the brim, in the same manner as used in his cartridges for blasting under water. This composition will, to a certainty, prevent any water from forcing itself into the charge of powder, although the bottle may lie for weeks under water. The fuze may be ignited by friction, when the ball is immediately caused to fall into the water, from the side of a steamer or rowing boat. This length of fuze burns for about three minutes, so that the boat has time to row to a distance perfectly safe from the reach of the falling ball; and, on the bottle exploding, the wooden ball, weighing about nine or ten pounds, is shot to the height of about six hundred feet into the air. When I want to use the wooden ball as a shell, I have a hole bored into its upper part; this is charged with gunpowder, and caused to explode high in the air, by having another slip of Bickford's fuze about an inch longer than that which ignites the powder in the bottle. Both fuzes are lighted at the same instant—the shorter explodes the bottle, and the longer the powder in the upper part of the ball. The same result is effected, by having, instead of the longer fuze, a frictional twisted wire passing through the centre of the cork that closes the charged chamber, in the upper part of the ball—this wire is attached to a cord about sixty feet in length, in the same manner as it is represented by a diagram in my printed paper on Railway Signals; the other end of the cord is tied to a peg in the ground, or to a float or buoy in the water, and upon the ball being shot into the air, and arriving at the extreme end of the cord, the sudden pull of the twisted wire through the closely tied heads of Bell's lucifers, on the inner side of the cork, causes the ignition

which explodes this representative of a shell. These two plans have been repeatedly practically proved in Cork Harbour opposite to Queenstown; in the broard part of the river near the Cork and Passage terminus; and in a drain in the centre of the Victoria Park. I have found on one occasion, that when the ball was shot to the height of about three hundred yards in Cork Harbour, it was carried by the force of the wind to a distance of two hundred yards from the spot from whence it was shot up, and the wind was not blowing particularly strong. This result naturally suggests the idea of using the ball for carrying a coiled line from a wrecked vessel to a *lee* shore, something after Captain Manby's plan for saving the lives of the passengers and crew. It is obvious, that the power of this newly discovered artillery is unlimited, and the Mortar itself indestructable.

EFFICIENT RIFLED CANNON, NOT SO VERY NEW.

To the Editor of "The Mechanics' Magazine."

GENTLEMEN,—I invite all those who affect to think that efficient rifled cannon is an improvement of yesterday, to inspect the one-pounder brass cannon, which was rifled by my direction at Woolwich, about twenty years ago; it has four grooves, about one turn in five feet, being the true "spiral line of beauty." Rifle shells showing its calibre, having lain for general inspection at the Royal United Service Institution for the period of about twenty years. This gun now lies on the green sward in the Rosherville Gardens, for the examination of all who take an interest in such matters.

Yours, &c.

J. NORTON.

Rosherville, June 18th, 1860.

RIFLE AND ARTILLERY PROJECTILES.

To the Editor of "The Morning Advertiser."

SIR,—You will oblige me by inserting the following communication, in reference to my rifle shot and shell:—

Oxney Court, Dover, April 2nd, 1860.

MY DEAR NORTON,—I should be happy to comply with your wishes, but even if the report of the Committee of Artillery Officers, in 1826, to which you refer, is still in existence at the War Office, I fear the authorities would refuse to present it to the House of Commons, because such a document after the lapse of so many years, during which, so much progress in the science of projectiles has been made, would not be of sufficient public interest to make it worth the expense of being printed; nor do I see what way the production of this report could now in any way benfit you, as this is not a question that Parliament could be induced to take up. I have to thank you for some papers and models which you were lately kind enough to send me; and, with Lady Davie's compliments, who, by the bye, perfectly recollects firing one of your rifle shells in the way you describe.

Believe me, truly yours,
H. R. FERGUSON DAVIE.

Captain Norton.

Allow me to state that there has been no improvement in rifle projectiles since I perfected my elongated rifle shot and shell in the summer of the year 1823, and used them at Woolwich, as General Sir Richard Airey is "ready to testify to if called upon,

and to swear if necessary." My shot and shell were cast, using the barrel of the rifle as a mould. The Whitworth shot is in every respect formed on this principle; so is the Jacob shot and shell.

More than twenty years ago, when one day I was in the Adelaide Gallery, the present Emperor of the French came in, accompanied by Surgeon O'Meara, and halted at the glass-case in which my elongated rifle shot and shell were exhibited. O'Meara, to whom I was well known, came to me and said, "That is Prince Louis Napoleon; he is examining your inventions, and is greatly pleased with them. I wish to introduce you to him." I replied, "I shall be most happy to explain everything to the Prince" which I did, and in a few days afterwards fired several of my shells in his presence, in the small garden of my lodgings, in Upper Berkeley Street, to the Prince's great satisfaction, fully and pleasingly expressed.

I am, Sir, yours &c.,

J. NORTON.

Late Captain of the 34th Regiment.

SCIENCE FOR WORKING MEN.

From "The Scientific American,"

April 9th 1859.

Science can raise the working man in various ways; his master appreciating his skill, will advance his wages. An intellectual operative, also may take his position among the higher order of minds in the country. As a citizen he belongs to an

aristocracy too lofty to be the creation of monarchs. His sciences may eventually place him side by side with our Franklins, Arkwrights, and others. Study also will make all the abstruser branches of knowledge easy, and even religion will be seen without a veil; so that we shall become socially, intellectually, and morally great.

HOLLOW RIFLE-PUNCHES FOR RIFLE CANNON.

To the Editor of "The Gravesend Free Press."

Sir,—More than thirty years ago, observing that cannon shot on passing through a ship's side left a perforation that was easily plugged up, I tried a hollow rifle-punch, formed of a mixture of lead and antimony, and fired it from a rifle into a plank of wood, when I found it cut a clean hole like a wad-cutter, I expected two results from this form of shot, one, the object above described, the other, a low trajectory for the shot. I am now re-reviewing the experiments with steel and iron punches coated with pasted paper well pressed on by swedging.

I am, yours obediently,

J. NORTON,

Rosherville, 5th March.

One of these was this day fired from a 14-bore rifle, through a deal plank an inch thick, by Serjeant Major Moreton, of the South Middlesex Volunteer Rifles, at Beaufort House, Walham Green, *cutting* a clean piece out of the plank. This hollow punch is now exhibited at the Society of Arts, John Street, Adelphi.

A VETERAN WITNESS GOOD AND TRUE.

To the Editor of "The Gravesend Free Press."

Sir,—In the autumn of the year 1823, when on leave of absence in Ireland, and residing at Clontarf, near Dublin, I met an old Peninsular campaigner, also residing there, Captain James Whitley, late 9th Regiment, from whom I have just received the following letter:—

Dear Norton,—When you consider how anxiously I witnessed your first labors at perfecting the long rifle ball, you may easily conceive the continued interest I hold in all you are doing in that line, and had I the means of attending those labours, and could in any way be serviceable I should have been extremely happy. Again, if I knew your whereabout, I should take the liberty of writing occasionally on this, to me, most exciting subject. I deferred writing until I observed a note of yours in *The Army and Navy Gazette* on the very subject of my thoughts, and as I do not know the exact latidude of Rosherville directed this to the care of that paper. I am constantly in wonder at the hesitation in ascribing the invention of the long rifle ball to other than Captain John Norton. Where are the members of the Board at Woolwich, which sat to *dispute* the wonderful range and precision of that ball; and I am fully of opinion that the rumours so publicly circulated at that day reached the Continent, and were the origin of the invention being carried out there. At the same period I invented a breech-loading *needle* cannon, fabricated at Truelock's factory in Dublin which I submitted to General Smith, then commmander in

Dublin, who slighted it as his Woolwich *confrères* did your invention, alleging that they did not want better than they possessed. I went to London with the same intent, but from consideration of the reception you met with, and other information of the feelings against intruders on their functions, I retired, nor thought more on the subject, until the late perfection in that arm called up my pride, and now feel assured that had I met proper patronage I should have produced a useful weapon of destruction; its simplicity would strike your approbation, I believe, and should you ever pass through Bangor, and favor me with a call, I will show you the gun.

J. WHITLEY.

Bangor, North Wales, 1st March, 1860.

Captain Whitely was an indefatigable sportsman with the gun and a first-rate shot with all arms. When testiug my elongated shot and shell on the level sands of the North Bull near Clontarf, I frequently met him on the look out for curlews, many of which he was sure to bring down from his hiding place under the long stone pier of that estuary, in the same manner that a well-trained rifleman would, crouching behind cover, bring down his opponents on the battle field.

I am, Sir, yours &c.

J. NORTON.

Rosherville, 5th March.

THE LONG GAME.

To the Editor of "The Gravesend Free Press."

Sir,—Finding by the Paris papers that the Emperor of the French has recently rewarded the French Captain Delvigne with

a large pension as the inventor of the *elongated* projectiles which constitute the great improvements in the rifle adopted all over the globe, and that Captain Delvinge claimed the improvements as far back as 1840, you will perhaps allow me, through your columns, to submit in reply to this claim, that I laid before the British Government many years previous to 1840, the improvements in question, and that they were not approved of by our Ordnance Committee until after they had been adopted by the French, as I can prove by official documents, as well as by the proceedings of a public meeting presided over by Colonel Sykes, M. P. at Willis's rooms the year before last, where the evidence of Lord Rosse was alluded to, as having witnessed various trials of these improvements at his seat in Ireland, in the year 1827. How far this award to a foreigner for the invention of an old Peninsular campaigner is consistent with justice, your readers must judge as well as to the credit due to our Ordnance Committee for the rejection of such a valuable improvement in the art of war, when laid before them by a British officer, and only recognising its value when it reaches them as a foreign importation after its adoption by the French army.

General Sir Richard Airey, Quarter Master General, is ready to state if called upon, and if necessary to *swear* to it, that I fired my *elongated* rifle shot and shell in their present perfect form, at Woolwich, in the summer, of 1823, and Captain Thomson, relation to Lord Ranelagh, can also testify to the fact.

I am, yours obediently,

J. NORTON.

Rosherville, February 14th.

CONCUSSION AND PERCUSSION SHELLS.

To the Editors of "The Mechanics' Magazine."

GENTLEMEN,—In page 96 of Captain Jervis's "Engines of War," he states that "Captain Moorsom, R. N. perfected concussion fuzes." Captain Moorsom's shell was and is a percussion shell. It was I who invented the concussion fuze as far back as 1842, and the Select Committee of Artillery Officers at Woolwich were so pleased with its performance that they officially reported that it "was simple, safe, and efficacious, being well adapted for horizontal fire with high velocities." I gave it the name of concussion fuze to distinguish it from all percussion shells of the spherical form, which latter I considered to be highly dangerous, as has since proved to be on more than one occasion. See former numbers of the MECHANICS' MAGAZINE.

I am, Gentlemen, yours obediently,

J. NORTON.

Rosherville, 24th Oct.

A BRITISH WARRIOR QUEEN.

To the Editor of "The Gravesend Free Press."

SIR,—About eighteen years ago, when I was staying at Brighton, and being in the daily habit of showing the effects of my elongated percussion shells, Mr. Scott, a young gentleman who was intimate with Prince George of Cambridge, informed me that His Royal Highness would be glad to see me blow up the representation of an ammunition waggon with my rifle shell, if I could do so in a way not to attract public curiosity. I replied that I could easily manage it on the Pier Head,

where the Royal party were in the habit of taking daily exercise. I accordingly one morning had the representation of a limber-box placed in a proper position on the pier head, and when Her Majesty Queen Adelaide, accompanied by Prince George, Lord Howe, and others of the Royal cortege, came on the pier, being introduced by Mr. Scott to the Prince, I began to explain the nature of the shell, Prince George said, "I know all about it, as it has been so well explained to me before." Her Majesty Queen Adelaide stood close to my side when I fired at the strong box, charged with two pounds of blasting powder mixed with sawdust, and blew it up. The whole party expressed admiration. The Queen was not in the least alarmed. Who will now say that our fair countrywomen will not display presence of mind and the highest courage in "the hour and day of danger"?

I am, yours obediently,

J. NORTON.

Rosherville, 21st Feb.

SOMETHING "TO MAKE THOSE THINK WHO NEVER THOUGHT BEFORE."

Dienon apopneiousa Puros Menos Aithomenoio.

To the Editor of "The Gravesend Free Press."

Sir,—The recent experiments with Whitworth's rifle cannon, more particularly his three-pounder, throwing its elongated shot to the distance of five miles and a half, prove that he could throw elongated rifle shells, charged with liquid fire, from the high ground at Ryde, Isle of Wight, into the Arsenal and Dockyards at Portsmouth. It therefore becomes a question for our Government, or rather their masters the tax-payers to ponder well whe-

ther it would be wise to expend millions of money in constructing fortifications that would now be utterly useless.

I am, Sir, yours &c.,

J. NORTON,

Rosherville, 1st March.

VOLUNTEER RIFLE CORPS.

To the Editor of "The Gravesend Free Press,"

Sir,—Mr. Nickoll, a member of the Gravesend Rifle Corps, having written to me, asking information on the subject of rifles and rifle uniform, I cheerfully wrote him the following answer.

I am, Sir, yours &c.,

J. NORTON.

Rosherville, August 4th.

Rosherville, 27th July, 1859.

My Dear Sir,—I have great pleasure in giving you all the information in my power on the subject of the rifle and the uniform for riflemen; the best rifle in my opinion is the breech-loader by Mr. Leetch, of 68, Margaret Street, Regent Street, London. It takes the Government cartridge, also my own, which I call the Gossamer, and which does not require to be opened previous to insertion, and is so simple of construction that any person can make it. I shall be happy to show you how I do it, all riflemen should know how to make their own cartridges, for the first object of an invading enemy would be to destroy Woolwich Arsenal, and then how is the Government

cartridge to be supplied to the hundreds of thousands of our peasantry. As to uniform, it should be as free and easy as a sailor's dress, the colour of the uniform might be that of the green linnet, which is very pleasing to look at, and tastefully ornamented with small golden epaulets. It is also admirably adapted for concealment in woods, copses, and bushes, where the keen eye of the hawk cannot discern it. You can make what use you please of this letter.

I am, Dear Sir,

Very truly yours,

J. NORTON.

J. J. NICKOLL, ESQ.

IMPROVED RIFLE FIRE BRAND.

To the Editor of "The Gravesend Free Press."

SIR,—The rifle-brand, charged with phosphorus dissolved in bisulphide of carbon, which I lately successfully tested at Chatham, with the sanction of his Royal Highness the Commander in Chief and the late Secretary of State for War, was so constructed that its neck was broken on striking loose hanging canvas, when the liquid spread on the canvas and immediately set it on fire. My present improved brand has a tube of glass charged with the liquid placed within. It is then closed in front with a plug of lead. On firing the rifle the glass tube breaks by the jar of the exploded charge. The liquid is diffused in the interior of the brand, and cannot immediately escape from it; but after a few minutes it will percolate through the sap pores of the wood, and burst into flame. This brand is therefore well adapted for setting fire to long grass, bushes, weeds, &c.,

that cause no shock to the fall of the brand, and will set fire to the vegatation all around a hostile battery of artillery wherever it moves.

I have found that after using a leaden shell charged with the liquid, when all the liquid appeared to have burned out, on melting the used shell in an iron ladle, a portion of the phosphorus, which remained on the lead in a state of incrustation, continued to burn for some minutes. This proves the extraordinary "vitality of the liquid fire."

I am, Sir, yours &c.,

J. NORTON.

Rosherville, July 30th.

WHAT MILITARY SCIENCE WAS!

Many years ago, when explaining the nature of my elongated rifle-shot, and percussion-shell to an Officer of my late Regiment the 34th, he being a countryman of mine, and a jolly good fellow withal, after apparently listening to me with attention, replied, "augh! you are a rum fellow." No non-commissioned officer would have made such a reply, because non-commissioned officers get their appointments on account of their superior intelligence.

J. NORTON.

Captain Norton's missiles and explosives, exhibited last Saturday at Walham Green, are not all devoted to sanguinary effects. The whimsically-named "Beelzebub shell" appears to us likely to be of the greatest benefit to our colonists engaged in clearing forests. It was used to split the root of a tree about 4 feet in diamater. which was cracked and riven in all directions. The pursuits of peace ought to gain something by these inventions; they are dis-

turbed and perilled enough by the majority of such applications of science.—*Weekly Dispatch, Nov. 20th,* 1859.

THE FATE OF INVENTORS.

There would be no practical use in attempting to analyse the merits of the various rifles which have been submitted to public notice. The man who has spent his life, his money, and his best energies in improving and inventing, must often rest content with the barren honours which "posterity," when in the mood for research, may feel inclined to record upon his tombstone, if he has one. The inventor of the Armstrong gun may be an exception to the truth of this remark; and I trust Captain Norton will live to prove its inapplicability. In the golden returns which the present age has made to Colonel Colt, he, no doubt, finds full compensation for his admirable adaptations: but as a general rule, there has been hitherto only scant encouragement to those who have "invented"—that is, discovered the application of a principle to the art of war, or the manufature of its implements. Now-a-days there is this immense advantage open to the practical mechanic, that he can obtain public support for his inventions, if they be of real merit, for he can give publicity to their pretensions; and there is now, we hope, an overwhelming demand for the work of every good manufacturer.—W. H. Russel, "The Times'" Special Correspondent.

"The time has arrived when the men who are decorated with the insignia of social distinctions, are but the journeymen of the unnamed and unornated toilers, who pass their lives in applying natural laws to practical purposes." "*Times, 9th Feb.*

To the Editor of "The Gravesend Free Press."

SIR,—A description of my 4-pounder rifle cannon that was succesfully tested in a chalk pit, outside the Rosherville Gardens on Saturday last, may not be uninteresting to your readers at the present time. Its weight is 6½ cwt., length 4 feet, diameter of bore 3 inches, number of rifle-grooves 3—grooves and bearings equally divided; depth of grooves ⅛ of an inch, turn of rifle ¼ in the length of the gun. I fire it with one of my glass tube igniters coated on the inside with lucifer composition, this is placed upright in the vent, a cord with a loop at its end is placed round the upper part of the tube, and a quick or slow pull of the cord breaks the tube and the resulting friction on the composition fires the charge. The gun was cast in a masterly manner, by the Messrs. Glover, of Drury lane: the metal used was Sterling's toughened and "cold blast" iron. As by my process of casting ordnance complete without requiring any after boring or rifling, will greatly reduce the cost and labour, a howitzer of monster size, to carry a shot or shell of 30 inches diameter, could be cast in position with the necessary elevation of from thirty to forty-five degrees, a solid rock would form its carriage, and by this means shot and shell could be thrown into a fortress from a distance far out of the range of the guns of the fort— such a howitzer needs no vent.

I am, yours obediently,

J. NORTON.

Rosherville Hotel, 1st November.

LIKE A CHAMPAGNE BOTTLE.

To the Editor of "The Kentish Independent."

Sir,—I this day fired into the river, from my 4-pounder rifle-cannon, planted on the Rosherville Terrace, a bottle encased in its elongated wooden sabot; a waterman on the look-out in in the river brought back to me the bottle with its neck fractured and driven into its wooden case or sabot by the concussion and resistance of the water. This proves that elongated rifle shells charged with the liquid fire (phosphorus dissolved in bysulphuret of carbon) may be efficiently used as incendiary shells, and they are, in my opinion, much more *comfortable* in practical use than shells charged with molten iron, which latter require a *furnace* for their preparation, whereas the liquid fire shells may be carried without inconvenience or hazard, they moreover act independent of a fuze or percussion appliance.

J. NORTON.

6th July.

HOUSE DEFENCE BY FRICTIONAL GRENADES.

To the Editor of "The Kentish Independent."

Sir,—Having read lately in the "*Times*" three letters signed respectively, "Revolver," "Pistol," and "Man-trap," stating that attempts had been made by robbers to enter houses in the vicinity of Notting Hill, I beg to submit for consideration, by reference to the *Engineer* of the 14th of March last, my "Frictional Grenade," which can be effectually used, without any

exposure of the person. I have already, without *besceeching* any " circumlocution office," explained the nature of this very simple and efficient grenade to the serjeant of police at the Notting Hill police station.

Yours, &c.

J. NORTON.

Rosherville, September 25th, 1856.

A NEW WAY FOR DESTROYING LIONS, TIGERS, WOLVES, &c.

To the Editor of " The Kentish Independent."

Sir,—About thirty-six years ago, when serving in India, on the Madras presidency, I had the good fortune to make the acquaintance of Captain Croker, of the 84th Regiment, he was deservedly considered the greatest Nimrod of that day, having killed the largest serpent—a boa constrictor—that was known or found in an Indian jungle, besides numerous elephants, tigers, &c., &c.; he was so great a favourite with the general officers and officers of his regiment that he had unlimited leave of absence to pursue his favorite sport. On one occasion, when I met him at the fortress of Bellary, he got information from the natives that a tiger was in the vicinity and destroyed a number of cattle, he immediately procured a kid and tied it to a stake among some bushes, and had a cord tied to the animal, he then concealed himself at a distance of about eighty yards, and by pulling a cord caused the kid to cry out, but the tiger did not come to the various invitations. Having seen what his practice was I would have a kid or lamb secured in a similar way, where

lions and other such animals frequented, and to the bait I would attach my frictional shell—a common wine bottle—filled with gunpowder and closed with my frictional igniting cork, the cork held in by a wire, like the soda-water bottle, so as not to draw out by the pull of the lion when he seizes his prey; the explosion of this shell would at least blind the robber and otherwise paralyse him so that he could be easily captured. This shell is exhibited in the museum of the Society of Arts, Adelphi, London, and also at the museum of the U. S. Institution; Polytechnic, and the Crystal Palace.

Yours obediently,

Rosherville, 8th April. J. NORTON.

This frictional igniter is one of the two with which I blasted rocks on Spike Island in Cork Harbour nearly three years ago, with the permission of the Master General of the Ordnance, and which igniter was *officially* reported by the Select Committee at Woolwich, and the Inspector General of fortifications, to be totally inapplicable to the engineering-service, or any department connected with it. ! ! ! !

WOODEN AND STONE WALLS.

To the Editor of "The Liverpool Review."

Sir,— In the "*Times*" of the 6th Instant, I read the following passage:—"Whether this smoke was in favor of the ships or the forts we are unable to say; but the fact remains the same, that it is proved possible to attack as strong a fort as was ever made by the hands of man, at any range, not only without certain destruction, but with considerable success." From this conclu-

sion I dissent, and my reasons are as follows:—About ten years ago I fired twelve of my concussion shells from a 10-inch gun, in the marshes at Woolwich, against a bulkhead resembling the side of a man of war, at a distance of twelve hundred and forty yards, nine of the shells struck the bulkhead, each instantly exploding and tearing the strong timbers to pieces; three shells struck the soft clay mound behind the bulkhead, but did not explode. Lord Dundonald, whom I look upon as the best living authority in such matters, says that ships are "combustible." I would add they are floating magazines. The Select Committee of Artillery Officers at Woolwich, reported officially that my concussion shells, were simple, safe, and efficacious, being well adapted for horizontal fire at high velocities." The fuze of this shell, if it fails in causing the shell to explode by cuncussion on striking the object, will yet explode it on burning to its end in the usual way. It is described with a diagram, in page 2. fig. 7, in my Pamphlet on Projectiles.

Yours, &c.

J. NORTON.

Owen's Hotel, 9th Nov., 1854.

ERRONEOUS NOTIONS ON IMPROVEMENTS IN THE ELONGATED RIFLE SHOT OF THE YEAR 1823.

To the Editor of The

SIR,—A galant general officer, and Member of Parliament, seems to think that improvements have been made in my elongated rifle shot which I fired at Woolwich in the Spring of 1826, in presence of the Select Committee of Artillery Officers. Those shot and shell were cast in the barrel of the rifle used on the occasion. The shells and shot that I used in the summer

of 1823, were cast in a similar manner; I therefore defy any shot to be constructed in a more perfect manner.

J. NORTON.

Rosherville, 4th April, 1860.

THE AUSTRALIAN WAR-SPEAR.

To the Editor of "The Gravesend Free Press."

Sir,—In the Autumn of 1815, being on military duty at Sidney, New South Wales; I was instructed by the swarthy lady of the native Chief Bungaree, in the art of throwing the Australian war-spear, and I found that when I had fully acquired the art, I could throw a light bamboo spear six feet long, to the distance of 170 yards; finding the practice conducive to health, and strength by opening the chest, causing the attitude to be erect, and giving muscle to the sword-arm; I am anxious to introduce the exercise of throwing the spear in the "Bat and Ball," Cricket Ground, in Gravesend; and shall give three prizes of one pound to the adult who shall first throw his spear to the distance of 150 yards; ten shillings to the youth who shall first throw his spear to the distance of 100 yards; and five shillings to the boy who shall first throw his spear to the distance of 70 yards. All this is quite practicable. Her lithe ladyship, the swarthy spouse of Prince Bungaree, when instructing me in the barrack square, at Sidney, threw a spear seven feet in length, to the distance of 120 yards. When I made this announcement a few days ago, in the Rosherville Gardens.—

"Brown Exercise rejoiced to hear,
And Sport jumped up and siezed her beechen spear."

I am, Sir, yours, &c.,

Rosherville, 28th June. J. NORTON.

MY WAY OF SPONGING OUT A MUZZLE-LOADING RIFLE-CANNON.

To the Editor of "The Morning Advertiser."

SIR,—As the difficulty of effectually sponging out a muzzle-loading rifle-cannon is very perplexing, I wish to give publicity through your instructive columns, to the method I employ for effectually cleansing the interior of a muzzle-loading rifle-gun. I use a close fitting tube of brass which reaches to within 2 or 3 inches of the breech, and insert into it a plug of tow or other absorbing substance; this being pushed home by a rammer having a worm or screw at its end, causes the plug to swell out at the bottom of the barrel, absorbing the remnant of burnt gunpowder; and drawing the tube and rammer upwards, the barrel is cleansed, commencing at the bottom. This operation may be repeated until the gun is perfectly clean.

I am, Sir,

Yours, &c.,

J. NORTON.

Rosherville, June 30th.

FIRST SPECIMEN OF THE ELONGATED EXPANDING SHOT.

To the Editors of "The Mechanics' Magazine."

GENTLEMEN,—Having good reasons to believe that the authorities are now willing to ascertain who was the *first* to suggest and practically to demonstrate the superior advantages of an elongated expanding shot; I beg leave to submit for your inspection a specimen of the expanding shot, devised immediately

from the expanding lotus pith base of the Malay tube arrow or dart, which I submitted and fully explained to the Select Committee of Artillery Officers at Woolwich, as far back as the summer of 1823. The officers now living that can bear testimony to the fact, are, General Sir Robert Gardiner, R. A., General Sir Richard Airey, now Quarter Master General; Colonel Barlow, Chairman of the Southampton Docks Company; Major Hector Straith, late Professor of Fortifications, at Addiscombe; Captains Thomson, and Hadwen. The last five of whom were present with my late Regiment the 34th, at the time. Colonel Beamish, in his memorable letter of August, 1852, to the Editor of the United Service Journal, at page 3, gives a full and clear narration of the facts.

I am, your obedient servant,

J. NORTON.

Rosherville, 23rd. Nov.

"TANTÆNE ANIMIS CŒLESTIBUS IRÆ."

About the beginning of the month of November, 1830, I called upon the late Earl of Munster, to request that he would be so kind as to witness an experiment with my rifle percussion-shell, to be fired from Bevan's breech-loading rifle into a box made of elm boards an inch and a half thick, and containing gunpowder, similar to those I blew up at the Honorable Company's Military Seminary, Addiscombe, and at the Military College, Sandhurst, in the spring of 1826, the first being the same College in which Colonel John Jacob was afterwards instructed. His lordship readily and cheerfully assented. The experiment was successfully tested in the late Mr. Moore's shooting ground, Notting Hill; and his Lordship expressed him-

self well pleased. On the 6th of the same month, November, there appeared the following passage in the leading article of the "Court Journal." It may be doubtful whether the millenium is sufficiently near, even supposing Parson Irving's prediction prove correct, to make "the peace society," fashionable at present; its birth we imagine is somewhat premature; and there will yet be sufficient scope for the great pyrotechnic warrior, (by the bye, where is he?) to bring his rockets to still greater perfection, and to invent, if he will, new bombs upon fundamental principles of explosion." It is unnecessary to comment upon the motive of this passage. I had sold out of the service in the preceding year, after twenty-four years service in the five great divisions of the world, *twenty* years of that, a subaltern officer!!! Even official cold water did not quench my "will." It is a "sottice" to talk of a millenium, so long as the instinct, *Oh! si angulus* commands the greater number of votes in the human breast, we shall always have wars, and "rumours of wars somewhere or other throughout the extensive dominions of the British Empire. In "The Times" of the 30th ult. there is an interesting report of Colonel John Jocob, blowing up the representative of an ammunition waggon, at a distance of 1,800 yards with a rifle percussion-shell.

J. NORTON.

Rosherville, 1st. Nov.

EXPERIMENTS ON CAPTAIN NORTON'S SHELLS.

A most successful trial of Captain Norton's Concussion-Shells was yesterday made by the Excellent, on the hull of the old Swiftsure hulk. The number of the shells fired was 23; the

distance was 1,460 yards; and the elevation of the 68-pounder guns was four degrees. The practice was considered good; only about two shots going over, which burst on striking the ground beyond, from the weight of the fall, the mud not being very deep, and the ground below hard shingle. The hulk lies over on her larboard bilge, presenting her starboard gunwale, and about half of her upper deck, as a target; but as her larboard quarter is farthest off, a direct shot can be had only at her larboard bow, and this was hit three time, once at the water line, under the second port, and once on the main deck over the foremast port. These shots made dreadful havoc. Another shot carried away a large portion of the head; the deck and inner edge of the upper gunwale were terribly torn up, being hit most frequently, and as the shells all exploded in an instant after striking, the effect on the crew, if her decks had been full of men, would have been most destructive. In one place where the shot had gone through the starboard side, five streaks of planking were disturbed and rent, sufficient to have admitted a quantity of water had it been on the water line; indeed the planking under the larboard bow and quarter were so shattered at the water line that it would have been difficult to have kept the ship free from leakage had she been under way at the time. The whole trial must have been highly gratifying to Capt. Norton, none of his shells exploded while in the air, and their safety and usefulness are thus eminently established. A large number of officers were present at the Dock-Yard, on board the Excellent, on the Portsea Lines, and the different ships in ordinary; among whom we observed the Duke of Leeds, Lords Tyrconnell, Cholmondeley, Northesk, and Cadogan, R. N.; Admirals Dacres, Ommanney, Chetham, Sir W. Montagu; Captains Moresby,

Codrington, Herringham, Sir R. Grant, Harrsion, Sir T. Hastings, Stevens, R. M. A., Daly, Sir C. Napier, Sir J. Stirling, Sir H. Leake, Honourable H. D. Byng, Rowley, Mowbray, G. Smith, Sir A. Clifford, General Sir H. Pakenham and Son, Sir H. Seymour, Colonels Trevor, Dansey, R. A., Daly, Professor Maine, and several Officers of the Guards, from Winchester, and W. Knight, Esq., M. P. To-day the trial with Captain Norton's shells was continued, but the practice was not so good as yesterday; only nine shells hit the Swiftsure, and fourteen missed her, and four of the shells (thirty-two pounders) exploded on leaving the guns. It should be quite understood, that Captain Norton did not prepare these shells himself, they were prepared at Woolwich, he having giving the instructions as to the mode; but probably the noviciates in the art may not strictly have attended to the method laid down. Such shots as did strike the hulk, from going into her interior, did more fearful havoc than even yesterday's execution. We are satisfied therefore in saying, that these shells will give a good account of any fire ship an enemy may direct against the naval arsenals of England, and do away with the dangerous use of red hot shot. Further experiments will be continued on Monday next.

November, 1844. *Hampshire Telegraph of Saturday.*

THE DEFENCES OF LONDON AT MILLIONS OF MONEY COST.

To the Editor of "The Morning Advertiser."

Sir,—The great talk at present is all about the defences of London, and millions of money are freely offered for that most vital object. More than a year ago I stated, through your clear-

speaking colums, that a hundred millions of money expended on coast fortifications would afford no security against invasion. The sure and inexpensive defence of London and other towns throughout the country would be insured by a liberal supply of the lady's grenades, which could be used by men, women, and boys, without the least difficulty or any previous training, and with perfect safety to their persons, as there is no necessity for exposing themselves to the fire of the enemy. This grenade can be placed in position on the wall outside the house, and in order to let it explodefull in the faces of the assailants, it is only necessary to pull a string in the manner of ringing a bell.

I hope soon to be allowed to exhibit practically this lady's grenade at the South Kensington Museum, for the instruction of millions of pale faced Londoners.

I am, Sir, yours, &c.,

J. NORTON.

Rosherville, July 3rd.

BEST SHOES FOR ACTIVE SERVICE.

To the Editor of "The Morning Advertiser."

Sir,—Every description of boots, gaiters and shoes were put to the test during the seven years' campaigning in Portugal, Spain and France. Having myself tried all, I found a correct easy-fitting shoe such as a Blucher, was by far the best, and the severest trial was that during the retreat from Burgos, which was in the winter, the day on which General Sir Edward Paget, was taken prisoner. It rained throughout the day, the streams were all flooded, and I had to wade through all on the line of march; the water that got into my shoes was soon pumped out again by the action of

walking. I would therefore recommend such shoes to the attention of our gallant volunteers.

I am, Sir, yours, &c.,

J. NORTON.

Rosherville, Feb. 2nd.

THE GARIBALDI SUBSCRIPTION.

To the Editor of "The Morning Advertiser."

Sir,—Allow me to thank you for your excellent article in to-day's *Morning Advertiser*, urging the Licensed Victuallers to join in the "Garabaldi Testimonial."

For their information I beg to state that authorised lists for subscriptions will be obtainable on application to the Secretary, at the Central Committee Room.

I am, Sir, yours, &c.,

W. P. HODGE, Hon. Sec.

Central Committee Room, Anderton's Hotel,
Fleet Street, June 16th, 1860.

[We hope that many of the Trade will send for these subscription papers and lay them on their parlor tables—Ed. *M. A.*]

To the Editor of "The Morning Advertiser,"

Sir,—Responding to the excellent observations in your journal of this day, headed as above, I beg leave to announce my adhesion by enclosing a cheque for five pounds, and am, Sir,

Your obedient Servant,

AN OLD GARIBALDI BOY,

Rosherville, June 16th.

[We have received "An Old Garibaldi Boy's" cheque for five pounds, and will forward it to the Committee appointed to collect subscriptions for the great hero of Italian freedom. We are sorry that our Correspondent does not authorise us to give his name. He is himself a distinguished soldier.—Ed. *M. A.*]

THE MINIE RIFLE.

To the Editor of "The Morning Advertiser."

Sir,—I send you the copy of a memorial, written by Colonel Beamish, during the time of the meeting of the British Institution for the Encouragement of Arts and Sciences at Cork in the year 1852. It was presented to Her Majesty the Queen by His Royal Highness the Duke of Cambridge. Her Majesty handed it over to the late Lord Hardinge, who was at that time Master-General of the Ordnance. His Lordship having officially reported to Her Majesty that I was the original inventor of the so-called Minie rifle shot, Lord Hardinge shortly after was appointed Commander-in-Chief, and handed over my memorial to the late Lord Raglan, who was appointed to the post of Master-General of the Ordnance. I have heard nothing of the memorial from that day to this.

I am, Sir, yours, &c.,

J. NORTON.

Rosherville, March 3rd.

[In the present crowded state of our columns, we cannot find space for the memorial referred to by Captain Norton. —Ed. *M. A.*]

TO THE QUEEN'S MOST EXCELLENT MAJESTY.

The Memorial of John Norton, Esquire, late Captain in your Majesty's 34th, or Cumberland Regiment of Foot.

May it please your Majesty,

Memorialist begs leave most respectfully to submit to your Majesty's gracious consideration the following facts :—

That Memorialist has served your Majesty's Royal Predecessors in the ranks of the British Army in various parts of your Majesty's dominions for nearly a quarter of a century.

That Memorialist has shared in the sufferings and participated in the glories of the most important Campaigns in the Spanish Peninsula, for which Memorialist has been honored by your Majesty with a Medal and six clasps.

That Memorialist's brother, Captain Brett Norton, of the 63rd. regiment, having purchased all his commissions, fell a victim to the yellow fever, in the Island of Barbadoes, at the early age of 23, by which calamity the purchase money was lost to his family; and that another brother, Captain Fletcher Norton, of the 18th Madras Native Infantry, died at Cannanore in the East Indies, after a continuous service of 19 years in that debilitating climate.

That the chance explosion of the French Ammunition Waggons at the celebrated Battle of Busaco, in 1810, by a shot or shell fired from the Battery of Major Victor Von Arentschild, impressed Memorialist with the importance of a projectile that could be made to produce with certainty such results, and after the conclusion of the War, namely in 1823 ; Memorialist taking

the idea from the expanding tubular arrow used by the Malays and natives of South India, invented an elongated expanding Rifle Shot and Shell, *identical in principle* with the present so called *Minié Ball.*

That in the year 1826, Memorialist submitted this invention to the Select Committee on Fire Arms, at Woolwich, by whom it was rejected as inapplicable to your Majesty's Service.

That in 1833, Memorialist presented to the United Service Institution his elongated expanding Shell and Shot, which presentation was duly recorded in the Mechanics' Magazine of the same year.

That this and other elongated projectiles invented by Memorialist, and the construction of which involved considerable sacrifices of time, labor, and pecuniary outlay, have been successfully tested in the presence of your Majesty and Prince Albert, the late lamented Queen Dowager, His Royal Highness the present Duke of Cambridge, Earl Howe, and other high personages, to the apparent surprise and satisfaction of the distinguished spectators.

That the great superiority of Memorialist's Shot and Shells over the ordinary *spherical ball,* as well in penetration and precision as extent of range, has been witnessed and admitted by the most competent judges, amongst whom may be mentioned, the Earl of Orkney, Colonel Hall, (1st. Life Guards,) Captain Chads, R. N., Doctor Gilborne, Royal Artillery, J. C. Hannington, Esq., Dublin, and numerous others.

That Warner's "invisible shell" and "long range" are mere imitations of Memorialist's Percussion Shell and Hand Grenade, charged with fulminating mercury.

That during the present National Exhibition of Ireland, in Cork, where specimens of Memorialist's inventions were exhibited, and further experiments instituted, the Executive Committee of the Exhibition considered the details of the results obtained from the trial of these projectiles of sufficient importance to form an Appendix to a Lecture upon Fire Arms, delivered by Colonel Chesney, of the Royal Artillery, to which lecture in its printed form, engraved representations of Memorialist's projectiles were added at the expense of the Committee.

That Memorialist has invented an efficient Rifle Shell for Cannon, thus effecting an important object which had never been previously accomplished.

That the modern *Minié Ball*, which has been recently introduced into your Majesty's service, is a mere modification of the elongated expanding shot invented by Memorialist in 1823, and rejected by the Woolwich Committee in 1826.

That the French reputed inventor of this Ball, (Captain Minié) has, according to announcements in the public papers, been handsomely rewarded by the Government of his Country, while Memorialist, the real inventor of the projectile on which the French missile is founded, has not only been unnoticed, but in the strongest sense of the expression, discouraged and discountenanced by the Military Authorities of your Majesty.

Memorialist therefore respectfully submits to your Majesty, his just claim to the consideration of your Majesty's Government. He is desirous that his projectiles should undergo the severest trials that may be deemed requisite to test their efficiency, and having clearly established the priority of his invention as

regards the Minié Ball, looks with confidence to that Royal recognition which has never been withheld from a deserving subject.

And Memorialist as in duty bound will ever Pray.

Victoria Hotel, Cork,
August, 16th, 1852.

CAPTAIN NORTON'S GOSSAMER CARTRIDGE.

This cartridge, the great object of which is to prevent the necessity of the soldier biting off the end of the cartridge, an operation very distasteful to soldiers, is made by putting the powder of the charge in a small bag or cap of thin paper without any previous preparation of the paper, and then adding strength to this thin covering by enclosing it in a small piece of common cotton net. It has been successfully tried at Tilbury Fort, with the ordinary Enfield rifle, and it was found that, without puncturing or piercing the cartridge previous to loading, the flash of the percussion-cap was amply sufficient to penetrate the thin paper through the opening of the net-work and fire the charge. The soldiers of the fort who witnessed and tried the experiments were delighted with the cartridge, as being such a great improvement on the common cartridges. On firing the rifle the net is carried out, leaving no residue whatever in the barrel.

RIFLES FOR VOLUNTEER CORPS.

To the Editors of "The Mechanics' Magazine."

GENTLEMEN,—At a numerous meeting held by the gentry of Sussex, at the Hayward-heath station, on the 22nd instant,

Lieutenant Busk, of the Victoria Rifle Corps, read a most lucid paper on the properties of the rifle, which was received with reiterated plaudits, and most deservedly so. I had the happiness to be present, and can safely say that the enthusiasm manifested by the gentlemen composing the meeting will find an echo throughout all England. The choice of the proper rifle for volunteers is now a matter for grave consideration. I do not hesitate to prefer the Lancaster muzzle-loader to the Enfield. A most clear description of the practical results of both weapons, as evinced from their use in the late war in India, appeared recently in the *Times*. It was written I believe, by Staff Sergeant Sturrock, of the Royal Engineers, than whom a more perfect master on the subject of the rifle, and its now various missiles, I never conversed with. In support of my preference for the Lancaster rifle as a military arm, I will state that I lately met a sergeant of the 96th regiment, now stationed at Plymouth, who informed me that he had fired forty rounds in succcession from the Lancaster rifle, using pure suet or tallow for the lubricating matter, without finding the slighest inconvenience from loading. The sergeant had received honours and increased pay for his excellence as a marksman, and therefore must be a good authority on the superior efficiency of the Lancaster rifle.

As regards breech-loading rifles, I have a high opinion of that invented by Mr. Leetch, of 68, Margaret Street, Regent Street. As a proof that I think well of it, I have ordered one to be made for me, to use when I become a guerilla, in conjunction with some hundreds of thousands of the "bone and sinew" of the

land. It is a source of pride to me in my advanced stage of life, to be able truly to say that as far back as the year 1823, I had perfected my elongated rifle shot and shell, and thus evoked "the strength that slumbered" in a rifled arm.

I am, yours, &c.,

J. NORTON.

Rosherville, June 25th.

UTILISING THE MILLIONS.

To the Editors of "The Mechanics' Magazine."

GENTLEMEN,—As it appears there is no use now made of the fifty millions of iron cups for inserting in the hollow base of the Minié rifle shot, which were manufactured by Mr. Greenfield by order of the War Department I make use of them in forming the head and front of my elongated rifle shells.

I am, yours obediently,

J. NORTON.

Rosherville, 28th June.

A LONG RANGE.

To the Editor of "The Land."

SIR,—In 1854, a day or two before the meeting of the National Association for the encouragement of the arts and sciences in Liverpool, I wrote to the Editor of one of the Liverpool Journals, stating that I would construct a cannon that should

throw its shot to the distance of six miles, and that a good position for testing it would be Shooter's Hill, pointing towards London, or from St. Cloud, pointing towards Paris, or from Killiney Hill, pointing towards Dublin; and this cannon I am determined to see constructed whether the authorities at Woolwich like it or not. It is to load at the muzzle, and not at the breech like the Armstrong gun. The great penetrating power of elongated iron or steel shot, as described in the following extract from Colonel Beamish's memorable letter to the editor of the *United Service Journal*, August 1852, convinced me that it would be possible to throw a shot from a rifle cannon to the distance of six miles, and the recent experiments with Mr. Whitworth's rifle cannon, at Southport, have verified my prediction:—"A block of well-seasoned Irish oak, eight inches thick, was placed against an eighteen inch stone wall; *Norton's iron-fronted rifle-shot* was fired from the same rifle as that used in the preceding experiments, charged with four drachms of sporting powder, at the distance of forty yards, when it perforated the eight inch block, and entered the wall to the depth of about three inches."

Yours obediently,

J. NORTON.

Late Captain 34th Regiment.

Rosherville, Feb. 21st.

[Captain Norton has shown us a sample of a small rifle cannon cast ready bored and rifled on an improved rifled core. This method of casting rifled cannon would, if rightly acted on save a great expense in producing an arm now about to be universally used.—Ed.]

TOWERS OF STRENGTH.

To the Editors of "The Mechanics' Magazine."

GENTLEMEN,—All soldiers who have been engaged in "various wars," know that the first object of an active enemy is to rush at and seize upon strong buildings, such as churches, mills, factories, &c., and immediately set to work in fortifying them in such a manner as to cause great loss to those who would endeavour to retake them. All our churches are strong buildings generally fortified with towers. In the event of invasion, I would defend such buildings with my frictional grenades, which can be made to explode with unerring certainty within five or six feet of the ground, whatever height the building may be of high church or low.

This frictional grenade formed one of the many practical experiments I recently made at Chatham, with the sanction of his Royal Highness the Commander in Chief, and the late Secretary of State for War. Captain Lemprière, R. E., who superintended the experiments, reported of the frictional grenades that they answered admirably. Having obtained permission from Mr. Jones, proprietor of the far-famed Rosherville Gardens, I shall with great pleasure show the manner of using my grenades to all persons wishing to understand it, as well as other experiments such as were practically demonstrated at Chatham; Mr. Lock, the instructor of rifle practice on the grounds, will assist me in the course of the experiments.

I am, your obedient Servant,

J. NORTON.

Rosherville, 25th July.

TEACH THE YOUNG IDEA HOW TO SHOOT.

To the Editor of "The Daily Telegraph,"

SIR,—In the spring of the year 1826, a few days after I had fired 12 of my rifle percussion shells from a rifle of the old musket bore, into a target at the distance of 120 yards, in front of the butt at Woolwich Arsenal, in presence of the members of the select committee and a great number of other artillery officers, with perfect results, each shell striking point foremost. I proceeded to the Hon. East India Company's Military College at Addiscombe, and having explained the nature of my invention to the Lieutenant Governor, all the professors and students, a box made of elm boards, each an inch-and-a-half in thickness, and having seven pounds of gunpowder put into it, was placed against the bottom of the wall of the racket court. I stood about eighty yards from it, fired my percussion shell into it, and the explosion of the seven pounds of gunpowder blew the front board of the box backwards towards me and high over my head, and, breaking through the bay windows of the model room, smashed forty panes of glass. Major Hector Straith, Professor of Fortification at the college, was present, and explained the nature of this shell in his well known treatise on fortifications. Some of the *ripest* fruit of this teaching is manifested in the following extract from the *Daily News* of Friday last, the 11th instant.

Yours obediently,

J. NORTON

Rosherville Hotel, Gravesend.

" Quæ regio in terris nostri non plena labor is."

THE UPPER SCINDE RIFLE.

From "The Bombay Times" November 22nd.

We some time since received from Major John Jacob, C. B., a report of the rifle practice at Jacobabad for the past ten months, and are now able to comprehend the nature of those terrible weapons which a Bombay artillery officer has introduced and perfected and which seem to be so far beyond the highest conceptions of military men at home. We have had reason from time to time to mention the carbines of the Scinde Horse, so light and convenient in size, and so deadly in their effects, that a squadron charging, can at 40 yards throw in a volley on the enemy, which disabling at least a half of the opponents, leaves time enough to dispose of the fire arm and draw the sword before the shock of the encounter occurs. The rifle is a different weapon; and we are not informed of its fashion; or of the circumstances under which it is employed. The weight of a single piece is generally set down at ten pounds, its barrel is thirty inches in length, and " gauge sixteen, " which means, we presume that it will receive a bullet an ounce in weight. Some of the rifles are mentioned as double barrelled weighing no more than nine pounds, a peculiarity not explained, while we have other rifles of fourteen and a half pounds, " eight gauge," carrying shot, we imagine, two ounces in weight. The Jacobabad riflemen do not however employ spherical bullets, but flat-bottomed shells, some of which weigh as much as three ounces and a half;

these are charged with powder, and surmounted by a percussion cap, which causes them to explode the instant they strike, tearing up in the body impigned upon a frightful hole many times their own size. A wound from such a missile must, one would fancy be at all times fatal; and should they strike a cartridge box, a flask, or any other repository of powder the result must be an instant explosion. The peculiarity of the Upper Scinde Rifle practice is the certainty of aim and enormous length of range. The target never seems to have been nearer than 1,000 yards, or nearly two-thirds of a mile—in many cases it was 2,000, or little short of $1\frac{1}{4}$ mile. At these incredible distances the shot seems frequently to have hit the bull's eye on a wall, and to have penetrated four or five inches before it burst. When wide of the mark the amount of error is never such as to neutralise its effects against a body of men, and though it might not hit the individual aimed at, it was sure always to be fatal to some one. It was mentioned a week since, that when the Santhals followed the troops under Lieutenant Dunbar, and surrounded the camp at the distance of about half a mile, four of them were brought down by the riflemen 800 yards off. Jacob's marksmen would have considered this as taking an unfair advantage of them—like killing a hare in her form— and probably desired them to get out of the way a bit, that some of them might have a chance of escaping, just to be enabled to tell at home what had happened to nine-tenths of their brethren, as this probably would have been the proportion made to bite the dust. It is certainly one of the most singular things that can be conceived that England, which more than any other nation seeks the aid of science, and is triumphant accordingly in every peaceful art and manufacture

should of all things in the world neglect it in that of war. What a contrast is presented betwixt the Guards marching from St. James's Park with antiquated flint-lock muskets—the magnificent cavalry officered by the nobility of England, armed with swords that would not cut, and firelocks they were forbidden to use, trusting to brute courage and strength alone, when placed beside the wild men of the Scinde Irregulars, with their percussion rifles, projecting shells fatal a mile off, or discharging in full career their deadly carbines, without interfering with the effect of their tulwars, elastic and keen edged as Damascus blades, and irresistible almost as destiny itself. In the one case we have the fruits of patronage, jobbing and monopoly—in the other the result of the skill and chivalry consequent on merit, selection, and intellectual freedom of exertion substituted for mechanical routine.

WAR APPLIANCES.—PRACTICAL DEMONSTRATION.

To the Editor of "The Gravesend Free Press."

Sir,—I made the following practical demonstration of my appliances for war and home defence this day, at Beaufort House, Walham Green, in presence of Lord Ranelagh, his corps of volunteer rifles, and a numerous party of ladies and gentlemen amateurs.

No. 1 in the catalogue.—A railway guard and passenger explosive signal, to slide down a tube in a railway carriage on the iron rail, by which it explodes by percussion with a report much louder than a fog signal such as is now in use.

No. 2.—A grenade fired by friction at about seven feet from the ground by the check of a cord reaching to that height from an upper window. This grenade was thrown out of a window of Beaufort House by a young gentlemen of about the age of 15, It can be used in perfect safety by ladies in defence of "home, sweet home," thus "placing the weak on a par with the strong."

No. 3.—Rifle fire-shot, or spinster. This missile is far more efficient than the rifle percussion-shell for blowing up ammunition waggons.

No. 4.—A safe way of fixing percussion appliances in the mouth of elongated rifle-shells for rifled cannon. This is done by inserting the appliance about a quarter of an inch below the mouth of the shell. The ramrod cannot then press on it, and if the shell should fall from the hands on the ground, or the deck of a man-of-war, percussion-end foremost, it is still safe: but by striking an object with great force when discharged from a rifled gun, it cuts out its own plug, which explodes it, Lord Ranelagh fired two elongated wooden shells on this principle, from a large rifle into a heap of loose sand, where they instantly exploded, proving that iron shells on a similar construction can be employed from rifled cannon to destroy clay defences, on which mere shot have little effect.

No. 5.—Gossamer Cartridges. Lord Ranelagh fired several of these from a dragoon's pistol of the Enfield bore, and similarly rifled, showing how rapidly and efficiently they can be used in loading. They do not require to be broken or opened previous to insertion, as the military cap fires them to a certainty, pro-

vided the upper part of the nipple is countersunk so as to take in the whole fire of the cap. The cartridges were charged with Curtis and Harvey's improved coarse-grained gunpowder, No. 3.

I am, Sir, yours, &c.

J. NORTON.

Rosherville, December 3rd.

RIFLING LARGE CANNON.

To the Editor of "The Review."

Sir,—Captain Jervis, R.A., in his place in Parliament, has asserted that it is impossible to rifle large cannons. I will undertake to have a sixty-eight pounder rifled, which shall throw an elongated iron or steel shot, poised on wooden wings, to prevent injury to the interior of the gun, and of between two and three diameters of the bore of the gun in length, and undertake, also, to fire two such rifled cannons simultaneously by percussion, after the manner that I fire two of any percussion blasting-cartridges placed in the same line, and two or three feet apart, when blasting the monster stumps of large forest trees. I should like to know how plates of iron, four-and-a-half inches thick, could stand the simultaneous blow of two such elongated shot, or rather bolts.

I am, Sir, your obedient servant,

J. NORTON.

Rosherville, July 16th.

A SIMPLE MEANS OF DEMONSTRATING THE WORKING OF LIQUID-FIRE SHELLS.

The bisulphide of carbon is first poured into the shell, and then small bits of phosphorous are dropped in; the mouth of the shell is then closed with a cork, partly projecting, like the cork in a wine bottle. The shell may then be laid on canvas, or other combustible matter; and in about ten minutes, the fermentation of the mixture will force its way through the pores of the cork, and, meeting the oxygen of the atmosphere will become ignited; the cork acting like the wick of a candle, and the liquor underneath feeding it. A leaden shell thus charged, and adapted to the Lancaster military rifle, will continue to burn for ten minutes with an intense flame, which cannot be extinguished by water.

J. NORTON.

CAPTAIN BLAKELY'S MUZZLE-LOADING RIFLE CANNON.

To the Editor of "The Morning Advertiser."

Sir,—Captain Blakely's muzzle-loading cannon is proved to be more efficient than either the Armstrong or Whitworth breech-loading cannon. About twenty years ago the Master-General of the time gave directions that a one-pounder brass cannon should be rifled according to my wishes. It was, in consequence, rifled with four grooves. Having made successful practice with it at Woolwich, I purchased it from the Ordnance, and now have it

in the Rosherville Gardens. About four months ago I proposed to the Secretary for War, Mr. Sidney Herbert, to have the grooves in it widened into the elliptic form by the rifling apparatus at Woolwich, in order that the gun might be more readily and effectually sponged out, and that I would willingly pay the expence of the rifling, and added that if the practice with the gun should prove satisfactory, I would offer it unconditionally to the service. Mr. Sidney Herbert, after referring my letter to the Select Committee, at Woolwich, declined either allowing my one-pounder to be fresh rifled or to accept my unconditional offer to the public service.

I am, Sir, yours, &c.,

J. NORTON.

GUN COTTON.

To the Editor of "The Military Spectator."

Sir,—I have found after many trials, that a gun-cotton cartridge fires stronger from a breech-loader than from a rifle loading at the muzzle. The reason is, that in firing from a breech-loader the shot offers more resistance than when loading at the muzzle, consequently the whole of the gun cotton is ignited; whereas, loading at the muzzle, the shot not offering so much resistance, a portion of the guncotton is blown away without being ignited, the same rule applies to gunpowder.

I am, Sir,

Yours, &c.,

J. NORTON.

Rosherville, July 5th 1858.

BELLATRIX VIRGO.

To the Editor of "The Military Spectator."

Sir,—A few weeks ago, through your journal, I gave a challenge to the authorities to match my rifle-spinster, fired from a rifle musket, same bore as the Enfield rifle, they using their present cartridge with its elongated service shot. My challenge has not been accepted. As the spinster is admirably adapted for the blowing up of ammunition waggons, I think it a pity that her services are not duly appreciated by the authorities. In that pre-eminent school of rifle instruction, the Victoria Regiment's practice ground at Kilburn, the services of the spinster have been practically and successfuly tested. It is something to be able. to send this blazing messenger well in among a train of ammunition from a distance of *eighteen hundred yards*—a distance from which neither the flash of the rifle can be seen nor its report be heard. *Longè fallens.*

I am, &c.,

J. NORTON.

Rosherville, September 11th.

THE ARMSTRONG AND WHITWORTH RIFLE CANNON.

To the Editor of "The Land."

Sir,—As it appears from the answers given by the Secretary of State for War, to honourable members of Parliament as to the relative merits of the Whitworth and Armstrong rifle cannon,

that our War Department had not as yet quite made up their minds as to which was the most serviceable gun, perhaps the selection by foreign powers, who understand such matters, may decide the question in the same manner that the clear-sighted foreigners approved of and adopted my elongated rifle-shot and shell into their service years before it was adopted by our own War Department.

I am of opinion, also, that my concussion-fuze for causing spherical shells to explode on striking and entering a ship's side, and which, although not so perfect as it now is, was *officially* reported, by a select committee of artillery at Woolwich, in the year 1842, to be "simple safe, and efficacious, being well adapted for horizontal fire at high velocities," will be adopted in our service after its general use by foreign countries will open the eyes of our own Government. I take the liberty of leaving a specimen of my improved concussion-fuze, which is fully described with a drawing in a back number of the *Mechanics' Magazine.*

And am, yours, &c.,

J. NORTON.

Rosherville, 14th March.

CORPS OF BRITISH ARCHERS.

To the Editor of "The Morning Advertiser."

Sir,—Having for many years entertained the opinion that the long-bow might be again advantageously employed in warfare in combination with fire-arms, I wrote the other day to my old

friend, Captain Norton, who, owing to his great experience in the Peninsula war under the late Duke of Wellington, together with his thorough knowledge of archery and rifle shooting, is perhaps the best living authority upon such a subject, to know whether my ideas in favour of a corps of British archers being organised were correct or erroneous, calling to his recollection the following passages in *Grose's Military Antiquities*, a work published in 1801, viz., at page 272, vol. ii. :—" The long-bow maintained its place in our armies long after the invention of fire-arms; nor have there been wanting experienced soldiers who were advocates for its continuance, and who in many cases preferred it to the harquebuss or musket." At page 270, *idem* :—" The range of the bow, according to Neade, was from six to eighteen and twenty score yards ; and he likewise says, an archer may shoot six arrows in the time of charging and discharging one musket." At page 267, *idem* :—" No person above twenty four years of age might shoot at any mark whose distance was less than eleven score yards," and referred the reader to an act passed 33rd Henry VIII., chapter 9.

I reminded Captain Norton, also, amongst other things of the facility afforded in almost every part of the country for obtaining eligible practice-grounds for archery, whereby British bowmen would be enabled to perfect themselves in this formidable weapon ; a facility not so easily afforded to riflemen for rifle shooting.

You will perceive by Captain Norton's letter in answer—a copy of which I enclose—that he completely corroborates my

views, and that he patriotically offers to render every assistance in his power towards the organisation of a corps of British Archers in conjunction with the Volunteer Movement,

I am, Sir, your obedient servant,

W. BRYAN COOKE.

Royal United Service Institution, July 21, 1860.

My Dear Cooke,—I have been for many years of a decided opinion, that if the modern Briton was practised in the use of the long bow, as our sires of old, that the arrow falling on masses of an enemy of the present day, having no defensive armour, would cause confusion and loss to such an enemy. The eye seeing the shower of arrows in the air would plainly whisper, "*sauve qui peut.*"

I would have the modern long-bow made of cleft lance wood; such a one I have and will show you. I would have the arrows made without feathers, as feathers though they ensure accuracy of flight, shorten the range, and a long range, in the use of a war-bow is a great advantage. The arrows I would make of American ash or elm, which are both very straight in the grain. A range of 300 yards would be attained by our men of the active open air, labouring class. I have shot arrows having no feathers to the distance of 280 yards, with feathers 240 yards was my average range. I would not have horn at the ends of a lancewood bow; the notch for the string can be made in the wood without any foreign aid.

I have practised every gymnastic exercise from my youth upwards, and I know of no exercise to be compared to the practice of drawing the bow for expanding the chest, giving muscle, the general improvement of health, and endurance of fatigue.

I am of opinion that the old act, enacting that "no person above twenty-four years of age might shoot at any mark whose distance was less than eleven score yards," was not to restrict men to that distance, but to compel them to practise to attain the longest possible range, and not to be satisfied with a range of eleven score yards. I should be most happy to carry out your suggestions if my time of life, being now in my 73rd year, would permit me to take an active part. I am quite ready to give what information I am in a condition to give from practice in archery from the early age of six years.

I can now truly say, to all who wish to know, to what I attribute my present health and activity, in the words of a warrior and most accomplished gentleman, "My early youth was bred to martial pains." And I am of opinion that the present great national movement of our youth and manhood will ensure to them health, strength, and happiness.

"In arts like these of old, Laconia nursed her hardy sons."

You are at liberty to make whatever use you think proper of this letter.

Believe me, yours sincerely,

J. NORTON.

Thanet Lodge, Rosherville, 18th July, 1860.

RIFLE CANNON.

From "The Cork Daily Reporter," 5th February, 1856.

In reply to an offer by Captain Norton of his inventions to the Emperor of the French, that gallant officer has received a letter, of which the following is a translation:—

"Cabinet of the Emperor, Palace of the Tuileries,
January 21st, 1856.

Sir,—I see by the letters, that M. le Colonel Fleury has transmitted to me, that you desire to make known to the French Government several inventions of which you are the author. Every question of this kind requiring to be submitted to the examination of the Minister whom it concerns, you will have, if you judge it desirable, to send to the Emperor a separate description of each of your inventions. His Majesty will then give orders, if there be ground for it, that they shall be tested by competent persons. I am directed to make this known to you. Receive, Sir, the assurance of my most distinguished sentiments,

FAVE,
Officier d'Ordonnance de l'Empereur."

The descriptions forwarded to the Emperor are those connected with improvements in the construction of rifled cannon, on the principle of experiments made during the National Exhibition in Cork, in 1852, when Captain Norton's elongated shot and shell pierced a plank of oak* eight inches thick, and exploded gunpowder placed behind another plank five-and-a-half inches thick,

(* See Norton's Pamphlet on Projectiles, p. 14, Herbert's, Cheapside)

as witnessed by several members of the executive committee. It would be a great reflection on the British military authorities, if, after all, these inventions were taken up by the Emperor of of the French.

PRACTICE WITH RIFLE-BOLTS.

To the Editor of "The Army and Navy Gazette."

Sir,—Lord Ranelagh this day fired one of my rifle-bolts from a Lancaster military rifle into a plank of wood, having a sheet of white paper placed over it, in order to prove by the circular perforation in it that the bolt, although in length three diameters of the bore of the rifle, struck the object point or front foremost. This bolt was cast in a mould made of a section of the barrel. The wooden or pasteboard jacket being first swedged into its proper position, the molten lead is then poured in, forming the front part and protecting disc at the base of the bolt. The wooden or pasteboard jacket alone rests on the interior of the barrel, so that leading—that "plague-spot" in rifle shooting—is altogether prevented. My principal object is to prove that iron or steel bolts, covered in the centre with such jackets, may be used from large cannon rifled on the Lancaster principle, and that they would pierce plates of iron four inches and a half thick. For I am of opinion that the failure of Lancaster's cannon did not result from any defect in the rifling, but solely from the malformation of his shot and shell. When I use iron or steel bolts I have a small open chamber in front. This chamber is blocked by a plug cut out of the plank fired into, thus proving that the bolt struck point foremost.

I am, your obedient servant,

J. NORTON.

"THE LONG GAME."

To the Editor of "The Army and Navy Gazette."

SIR,—I find by your observations on my letter headed "The Long Game," that, from some obscurity in it, my meaning was misunderstood. Nothing could be farther from my thoughts than to reflect upon the good sense, discrimination, and generosity of the Emperor of the French in rewarding so intelligent and hard-working an Officer as Captain Delvigne, and by heading my letter with the words "Long Game," words so well known and acted on by certain men of the *law*, I did mean to reflect on the strange conduct of successive British Governments in ignoring my claim to the invention of the *elongated* shot and percussion rifle shell, which I offered to my country through the War Department as far back as the summer of 1823. Captain Delvigne by his statement in the *Spectateur Militaire* of December, 1830, honourably disclaims all pretension to the invention of the *elongated* percussion shell. As for the rifle called Minié or Enfield, I lay no claim whatever to it or any other rifle, except, perhaps to one with *three elliptic* grooves, which I submitted to the War Department in the year 1828, and which the select committee at Woolwich rejected because it had *only* three grooves. They, however, afterwards, on mature deliberation, introduced a *foreign* rifle with *two* grooves! I satisfactorily used a German rifle of a proper strength and weight having thirteen grooves, and of the "Brown Bess" calibre, as far back as the year 1824, for firing my elongated shot and rifle shells being at that time stationed with my late regiment, the 34th, at Enniskillen.

I am, Sir, your obedient Servant,

Rosherville, Feb. 20th, 1860. J. NORTON.

UTILISING MUZZLE-LOADING SPORTING-GUNS AS MILITARY ARMS.

To the Editor of "The Review."

Sir,—I am happy to be enabled to inform you that muzzle-loading sporting guns may be made available as military arms, in case of emergency, simply by using gossamer cartridges, and a close-fitting sperical bullet enclosed in a thin greased patch of elastic cotton net. This I successfully proved this day, at Mr. Reilly's shooting gallery, 315, Oxford street, W. The young man attending there fired three blank cartridges in succession without failure. The lubricating felt wad, forming the head of the cartridge, carries the unconsumed portion of the net and thin tough paper clean out of the barrel at every discharge. The American civilians armed with sporting guns, did good service at the battle of Bunker's hill. By following the above instructions, England could command at a moment's notice, the willing services of a million of ready trained and well-armed guerillas self-relying and independent of Woolwich for their munitions of war.

"Aneres este philoi mnesasthe de thouridos alkes."

For the meaning of these Homeric words, ask the British Boy who prodigally poured out his young blood on the hundred battle fields of Portugal, Spain, and France, and will always be ready to run the same course whenever and wherever his country calls.

I am, yours, &c.,

J. NORTON.

Rosherville, 24th August, 1859.

NOTE.—At the close of the battle of Albuera, passing the ground where the gallant 29th contended against the furious onset of a French column; I observed the naked bodies of three young officers of that Regiment, who fell gallantly defending the colors. The youngest of them was the body of the handsome Ensign Furnace, the agile and most successful rider at the races, and from that circumstance, and his general amiable deportment was the pet and almost spoiled child of General Hill's division.

J. NORTON.

AN ADVANTAGE IN BREECH-LOADING ARMS WORTH KNOWING.

To avoid the leakage that takes place in the joint of a breech loading fire-arm, from constant opening and shutting at the breech, such as in Sharps' American breech-loading carbine; I load it at the muzzle, and only open the breech for the purpose of cleaning out the barrel, which is easily done with an oiled rag, without the necessity of washing out with soap and water.

J. NORTON.

Rosherville, 8th August, 1860.

BOMBARDMENT OF DELHI.

To the Editor of "The Daily News."

SIR,—We learn from the public papers that Sir Henry Barnard intended to bombard Delhi, and was only waiting for heavy ordnance. I would suggest that as the revolt in India is likely to be a protracted affair, light guns (18-pounders) should be

rifled. Such guns would throw my spinster fire-shots and liquid fire-shells to the distance of two miles, which would reach to the very centre of Delhi. I have submitted this proposition for the consideration of Lord Panmure. Specimens of these missiles are to be seen at the National Museum of Inventions South Kensington.

I am, &c.

J. NORTON.

Rosherville, August 10th.

A REPEATING DEFENSIVE ARM.

Sir,—In the Museum of the United Service Institution there is a Chinese cross-bow having a *magazine for bolts* affixed to it, and the action of placing the bolt in a proper position is by using a lever like the act of pumping, so that the bolts can be discharged with great rapidity. The bow of this weapon is made of bamboo, consequently it has not much power, but if it were made of steel, I think such a weapon would be well adapted for the defence of posts.

I am, &c.

J. NORTON.

Rosherville, 22nd March.

POIKILOMETIS; OR THE WAY TO AFFILIATE IT.

His Majesty the Emperor of the French presented Captain Minié with one thousand pounds out of his own private purse, for putting an iron cup or culot into the hollow base of my elongated expanding rifle-shot; and Lord Raglan persuaded the

British Government to give Mr. Pritchard, an intelligent London gun-maker, one thousand pounds for *not* putting an iron cup or culot into the hollow base of my elongated expanding rifle-shot.

J. NORTON.

From "The Cork Reporter."

VARIATION IN THE RANGE OF HEAVY SHOT & SHELLS.

To the Editor of "The Daily Telegraph."

SIR,—About thirteen years ago I was present when experiments were made with Mr. Monk's 56-pounder gun, on the sands between Deal and Pevensey Bay. The late Sir George Cockburn and other Lords of the Admiralty were there, as well as several senior officers of the Royal Artillery. The shot used, I understood, were hollow and filled with lead. One shot ranged 5,700 yards; this I was informed was the longest range on record. With the same charge and elevation on that day, the average range was 5,000 yards. On another trial a few days after, in the same place, the gun burst.

Yours obediently,

J. NORTON.

Rosherville Hotel, Gravesend, Dec. 3rd, 1855.

DIRECT CONTINUITY OF MOMENTUM.

To the Editor of "The Daily Telegraph."

SIR,—I read that Mr. Napier, of Glasgow, has constructed a floating-battery, encased and fortified with wrought iron plates

four inches thick, and found to be proof against spherical shot of the largest size at present in use. I much doubt if this cuirass would resist my cylindrical punch-fronted rifle iron shot, on the principle of that represented and described by figure 12, page 6, in my Pamphlet on Projectiles; Herbert, 88, Cheapside. I would fire two such missiles from my double-barrel rifle cannon, of ten-inch bore, at breaching distance, four hundred yards, both barrels fired *simultaneously*, by means of my glass tube frictional igniters. The shock of the two shots, weighing four hundred pounds, I expect, would make such a breach that the late Dan O'Connell's coach and six could drive through.

I am, &c.

J. NORTON.

Rosherville, 30th. January

This was written some years ago.

CHIVALRY OF THE FAIR SEX,

A BRIGHTON REMINISCENCE.

To the Editor of "The Gravesend Free Press."

Sir,—About eighteen years ago, while residing in a boarding house at Brighton, and in the daily habit of showing the practical results of my elongated rifle shot and shell; one day after dinner the conversation ran on the fact of my having blown up the representative of an artillery limber-box on the pier head in presence of the late Queen Adelaide, and Prince George of Cambridge, when the company remarked on the slowness of the War Department in favourably noticing so valuable an invention of mine. I said that I would get the fair sex to take my part,

and fight the battle for me. When a lively and accomplished lady of a shining Nubian tint, observed "you cannot do a more judicious thing, we will strongly advocate your cause, and not spare the authorities, they must 'kiss the rod' for they cannot *call* us out."

I am, Sir, yours, &c.

J. NORTON,

Rosherville, 24th March.

GARIBALDI TESTIMONIAL.

To the Editor of "The Morning Advertiser,"

Sir,—Responding to your letter published in the *Morning Advertiser* of this day, I beg leave to enclose a cheque for five pounds towards the necessary funds for fitting out two steamers to be armed with rifle cannon. As naval engagements will in future be decided by the most smashing artillery, I would suggest that muzzle-loading rifled cannon, such as that contrived by Captain Blakely, should be used in place of any breech-loading rifle cannon. The clear seeing Americans and our lively neighbours appear to be fully aware of the greater efficiency of muzzle-loading rifle cannon. It is not possible to make breech-loading ordnance sufficiently strong in the joint part to stand the violence of the explosion of a charge of powder strong enough to propel an elongated shot or shell weighing two hundred pounds.

Your appeal will, I have no doubt, be responded to by the

numerous admirers of the good and brave Garibaldi, and their name is "legion."

I am Sir, your obedient Servant,

J. NORTON.

Rosherville, July 5th.

[We have received Captain Norton's cheque for five pounds, which shall be immediately forwarded to the proper quarter.—Ed. *M. A.*]

"FESTINA LENTE."

To the Editor of "The Daily Telegraph."

Sir,—On the 5th of June last, being referred by General Chalmer, R. A. to communicate with Captain Dickson, R. A. inspector of small arms, on the subject of my new patented cartridge. I wrote to that officer, stating that I was quite ready to go to Enfield and prove the nature and efficiency of my cartridge. I received from him the following reply:—

Woolwich, June 13th.

Sir,—In consequence of the removal of the residences of the sub-committee on small arms to Enfield, and other changes, a suspension for a short period of the duties of the committee has been ordered by Mr. Monsell, until the buildings of the new factory are in a sufficiently forward state to allow of the business being carried on there.

It was not until the 9th of September last, that I was allowed to explain and practically prove the nature of my cartridge, by

firing it in an unbroken state, from a small revolver pistol, having its nipples at right angles, with the bore of the barrels.

I am, &c.

J. NORTON.

Rosherville, Feb. 2nd, 1856.

MASKED AND ARMED BURGLARS AGAIN.

To the Editor of "The Daily Telegraph."

Sir,—Having read in the *Times* and *Morning Herald*, under the above heading, an account of a burglary in South Staffordshire, I beg to submit for consideration a reference to my frictional grenade for house defence, as exhibited and explained at the Crystal Palace, the Royal Polytechnic Institution, and the United Service Museum. This grenade may be made of paper, and is so simple and safe that it can be used by a servant maid without any exposure of the person, it can be adjusted to burst within four feet of the ground, or on a level with the whiskers of the assailants, so as to singe them and mark them, the cord which causes the igniting friction being of the desired length.

Yours obediently,

J. NORTON.

Rosherville, Oct. 20th, 1856.

To the Editor of "The Daily Telegraph,"

Sir,—I shall be obliged by your inserting the following letter.

Yours obediently,

J. NORTON.

Rosherville, March 3rd.

H. M. S. Devastation, Greenhithe, March 1st.

Dear Sir,—With many thanks I return your pistol, &c. There can be no doubt of the value of the gun-cotton cartridge, its superiority over the gunpowder cannot be doubted, and I only hope the plan will be adopted by our service. Captain Marshall has read your papers, and is much obliged to you.

Trusting you are well, believe me,

Dear Sir, yours very faithfully,

GEORGE GORDON LOMAX,

Lieutenant R. N.

Captain Norton.

" O' Fortunati nimium sua si bona norint Agricolæ."

To the Editor of "The Gravesend Free Press."

Sir,—I am grieved to find the remains of so many thrushes, starlings, goldfinches, and linnets lying everywhere about the Rosherville Gardens; the poor birds come there to die quietly, finding themselves poisoned in their *native* fields by the farmers. The best writers on farming have clearly proved that small birds are the best friends to farmers; because they destroy myriads of insects, including the wireworm, and keerogue, that would otherwise seriously injure the growth of their crops, besides a a pest of stinging flies. The stalworth natives of New Zealand protect and *cherish* the "minstrels of the woods" while the farmers of Kent ignorantly and barbarously poison them.

Yours &c.

J. NORTON.

Rosherville, 1st March, 1858.

To the Editor of "The Kentish Independent."

SIR,—About the year 1838 I personally explained to the late Lord Hill, at the time Commander-in-Chief, the great advantage that would follow the adoption of the percussion principle in military arms; his lordship replied "there is nothing like the old flint." I wrote to the editor of the *Times*, urging his powerful influence towards the subject. The editor did not acknowledge the receipt of my letter, but Captain, now Colonel Boldero, being then clerk of the Ordnance, informed me that the editor of the *Times* had sent my letter to the Master-General and Board of Ordnance. About the same period the annual general meeting of the members of the U. S. Institution took place. Lord Vivian was chairman, and his lordship thanked me for my labors on the improvement of the naval and military arms of the service, and the following notice of what then took place I have extracted from the *Literary Gazette*, of 7th April, 1838:—

"United Service Museum. Secondly on the application of percussion caps to firelocks in the army and navy, by Captain Norton. Although the superior efficiency of the percussion over the flint lock has been universally admitted, it has been urged, as an objection to its adoption in actual service, that the percussion powder becomes deteriorated by the action of the atmosphere, particularly on board ship, or when exposed to damp or night air. Captain Norton obviates this object by covering the orifice of the cap with tinfoil, prepared with waterproof varnish, and passing it through a hollow wooden cylinder; the foil will then not

strip off by any friction the caps are liable to in packing or carriage. In fixing the cap on the nipple of the firelock, the foil gives way, and from the close binding no wet can afterwards prevent the certainty of fire. It has been urged as an objection that the percussion cap is liable to slip through the soldier's fingers in the act of priming. This difficulty Captain Norton met by enclosing the cap, either with or without the foil, in a perforated piece of stout leather, either buff or sole. In order to unite rapidity of loading with efficiency, the cap is attached to the cartridge by tying it to the priming end, so that the motion of fixing the cap on the nipple and withdrawing the cartridge shall open it without an irregular tearing, and allow the powder to pour into the barrel as from a small funnel. Captain Norton went through the motion of loading a rifle with great expedition; he also fired off several percussion caps, which, prepared with tinfoil as above described, had been soaking in water for six days. Thanks were voted. The meeting adjourned to the 16th inst."

The percussion principle was adopted about the year 1841, and our military authorities like the "Matrona potens" of Juvenal,

"Aude aliquid brevibus Gyaris, et carcere dignum,
Si vis esse aliquis; Probitas laudatur et alget."

Yours, obediently,

J. NORTON.

Rosherville,
17th March, 1856.

CAPTAIN NORTON'S INVENTIONS.

Considering the success that has attended the experiments so often made with many of Captain Norton's inventions for mili-

tary and warlike purposes, many persons believe that he has never taken the proper steps to bring the inventions before the notice of the authorities, and in this they seemed to be confirmed from the fact that though in 1823, he projected the elongated conoidal rifle shot, that it was never used until it was appropriated some twenty years afterwards, by Colonel Minié; in fact Captain Norton has been told that he has "never been true to himself." In justification of himself, Captain Norton has recently written the two following letters upon the subject, to the editor of the *Daily Telegraph*, shewing that though with the utmost charity we may excuse individuals from blame, yet we cannot but say that blame must lay somewhere, and we must therefore conclude that "it is the system."

Sir,—Immediately after Colonel Chesney, R. A., gave his lecture on fire-arms, at the Cork National Exhibition, in 1852, Colonel Beamish wrote a petition for me, which, at his request the Duke of Cambridge presented to the Queen, Her Majesty handed it over to Lord Hardinge, Master General of the Ordnance, and on his Lordship becoming Commander in Chief, he handed it over to the late Lord Raglan, just appointed Master General. I have not heard anything of it from that day to this.

Yours obediently,

Rosherville Hotel, Gravesend,
November 4th.

J. NORTON.

Sir,—As far back as the autumn of 1823 the late Lord Raglan must have known of my proposal to the Woolwich Committee to use elongated expanding shot for all arms, because it was known to the Duke of Wellington, and was freely discussed at the United Service Club, the members of which were generally

of opinion that it would cause a great revolution in the construction of arms and their missiles. Of this fact I was informed at the time by Major Wilmot, Royal Artillery. About the year 1828, Mr. Moore the well known gun-maker of St, James-street, who took a great interest in my invention, proposed to me to blow up some gunpowder placed in a bag behind a plank of oak, four inches thick, and that he would manage so that Lord Fitzroy Somerset should see the effect on the plank. I successfully proved the efficacy of my rifle percussion-shell in Mr. Moore's shooting-ground, the shell penetrating about three inches, and the fire of its explosion passing the small fissures in the remaining inch, and firing the gunpowder behind. Mr. Moore exhibited this plank in his shop in St. James street, and one day when Lord Fitzroy called there to look after a sporting gun of his own, Mr. Moore directed his attention to the plank, when his lordship coldly remarked, "O yes, I see it."

About two years ago, I read in the public journals that Lord Raglan presented to His Royal Highness the Prince of Wales, on the anniversary of his birthday, a small rifle-cannon with its expanding Minié Ball.

Yours obediently,

J. NORTON.

Rosherville Hotel, Gravesend,
November 8th.

GUN-COTTON AND CANNON.

The Austrian artillery has been making experiments with rifled cannon loaded with gun-cotton. Although the twist is very considerable, the pieces can be loaded at the muzzle. At

the last account, they had succeeded in throwing a six-pound ball three miles with six ounces of gun-cotton; these guns are very light, and this, with the small quantity of ammunition required, renders them particularly applicable to mountain warfare, especially as it is possible to fire for a considerable time before the enemy learn whence the shots are coming, since the gun-cotton makes no smoke. *Scientific American*, 14*th July*, 1860.

THE SEPOYS NOT OUR ONLY ENEMIES IN INDIA.

To the Editor of "The Daily News."

Sir,—I have waited for some days in hopes that some abler pen than mine would contradict the very unfounded and singular statement which appeared lately in the *Times* newspaper, and which statement is calculated to do infinite mischief if permitted to remain without contradiction. I allude to the assertion that in the insurrection of 80,000 Bengal sepoys, we see all assailants worthy of consideration which can be arrayed against us in India, whereas our force is hourly increasing. There never was a more unfounded and dangerous statement propagated.

In India, with the exception of the tradesmen and the artisans—I so denominate them to meet the general understanding of your readers—every man is a powerful swordsman, and "puelwan" (athlete), and more than a match in a sword combat for any British soldier, with the exception of our cavalry and horse artillery, perhaps. I have no doubt that in three months 100,000 horsemen could be raised against us between Cape Comorin and the Sutlej, should this terrible insurrection become general, and that the mutinous sepoys, now in arms against us

will in that case be reinforced daily by exactly the same stamp of men who fought against us at Plassy, Assaye, and in other well-known fields. I earnestly trust, therefore, that our government, hitherto so apathetic, will not permit this singular mistake to deceive it. In many parts of India every one of the cultivators (at the plough!) may be seen with "his sword at his side," and, moreover, they can all use this weapon with great vigour and dexterity. Every man you meet in travelling, particularly those on horseback, is armed with matchlock, spear, and sword. Clive and Wellesley, and Napier, fought against no better men.

I am, &c.,

Sept. 30th. GOOLUNDAZ.

A GOOD SERVICE RIFLE.

To the Editor of "The Kentish Independent."

Sir,—The following is an extract from "*The Scientific American* of the 12th Instant." "Then came the piece so well-known as Sharpe's. It has the gas choke in it, and it fired, by the aid of the primer arrangements, *eighteen shots in fifty-five minutes*," an unprecedented rapidity; not but that any breech-loader could do the same with proper arrangements for primers. Let Americans think of this:—Are soldiers brought before an enemy for the purpose of *receiving* or of *giving balls?* If I were to arm a tenth legion, composed of the fervid youth of England, it should be with Sharpe's breech-loading rifle carbine *elongated* to musket length, or Leeche's. Some such step must be taken, for we are evidently in for a conflagration that may yet extend *ultra flammantia mœnia mundi.*

Rosherville, 26th September. J. NORTON.

IS ENGLAND A MILITARY NATION?

Our paper of Saturday last contained an article upon this subject, extracted from the Naval and Military Gazette, and as there appeared on the same day in the "Field," a letter from Captain Norton, bearing somewhat upon the same subject, and also upon cylindro-conoidal rifle-shot, of which he is the "great-grandfather," we do not hesitate republishing the letter.

"Sir,—I think I can answer 'Bagshot's' queries in saying that the proper form of the elongated rifle shot or percussion shell should be cylindro-conoidal. The conoidal form alone is not sufficient to ensure the correct flight of the shot. The cylindrical portion should be in length one eighth of an inch more than the diameter of the bore of the rifle; this prevents its otherwise disposition to incline to the right or left in its line of flight. Leading is a great impediment to the free passage of the shot through the barrel. I meet this difficulty by using a sabot made of papier-mache. This enables me to use elongated iron shot from any rifle without injury to the rifling of the barrel.

Mr. Boucher's letter is in my opinion an admirable one. I have often, through the press, advocated the training of the youth of England to the practical use of the rifle, as they were in the days of yore practised in the use of the long bow. A hundred millions of money laid out in fortifications would be no security against invasion. The faciltiy with which two hundred thousand men were landed in the Crimea proves this. But if the youth of England were practised in the use of the rifle, England might then laugh to scorn any threats of invasion.

J. NORTON.

From "The Kentish Independent," 1855.

TO THROW SHOT OR SHELL WITHOUT A MORTAR.

To the Editor of "The Gravesend Free Press."

SIR,—More than twenty years ago, a gentleman residing near Wrexham, wrote to me stating that on trying an experiment with one of my iron percussion winged grenades, the grenade having been thrown from the upper window of a house did not fly to pieces by explosion on striking the ground, but took a bound into the fields to the distance of five hundred yards. Taking the *hint* that the grenade gave me, I, about five years ago when residing at Cork, had a solid ball twelve inches in diameter turned, of tough elm timber, and attaching it to a common wine quart bottle charged with gunpowder, and having a piece of Bickford's waterproof fuze about sixteen inches in length passing through the cork into the powder charge. I lowered the wooden shot into the water from a boat in Cork Harbour, and then lighting the fuze rowed away as fast as the men could pull to a respectful distance; when the fuze burned down to the charge, the bottle being undermost exploded and threw the heavy wooden ball upwards, to the height of three hundred yards or more, the water acting as a fulcrum. From these *two* results, I am of opinion that shell strongly cast of *thirty* inches diameter and charged with gunpowder, might be thrown some fifteen hundred yards without the aid of a *heavy* mortar, by merely using an iron platform of four or five feet diameter and adequate thickness as a fulcrum for the shell resting on its fuze.

Yours respectfully,

J. NORTON

Rosherville, 22nd December. 1857.

CAPTAIN NORTON AT ALBUERA.

"*The Cork Daily Reporter,*" Saturday, October 18th, 1856.

Sir,—At the crisis when all looked adverses at the battle of Albuera, Abercrombie's brigade was ordered from the extreme left of the line to the point of struggle. It did so advance for more than a mile, on level ground, under a fire of forty pieces of artillery, right well served. It was my lot, as senior lieutenant (Captain Wyatt having been seriously wounded), to command the Grenadiers of the leading regiment, the gallant 34th. When we reached the rise of ground from whence the Spaniards were slowly retiring in some confusion, and so soon as they passed by our right flank, a column of French bearskins appeared immediately in our front; and when within about thirty yards of them we delivered a well-directed volley, gave the well-known cheer, and charged, when the column instantly went to the right about as fast as they could for about the distance of one thousand yards, and then reformed, and looked as fresh as if nothing had happened. Eight of their guns opened on us with grape at a distance of about 600 yards; the Polish Lancers advanced at a smart trot from behind a small swell of ground, and made a demonstration to charge us, but thought better of it. The heavy rain had now ceased, and the smoke of burnt gunpowder had cleared away; two other columns of the French, which were advancing *en echellon,* halted on seeing their advanced column routed. This was the *final* charge, the enemy now retired in skirmishing order across the Albuera stream into the forest of evergreen oaks, from which they issued before the dawn of morning. It was the general

report throughout the brigade that they were ordered to advance at the critical moment by the urgent entreaties of the late Lord Hardinge.

I am, Sir, your obedient servant,

J. NORTON,

Late Captain 34th Regiment.

Rosherville, October 1st, 1856.

"IT IS THE SYSTEM."

A few days after the Coronation of Her present Most Gracious Majesty, I had the honor of being presented by the late General Lord Hill, as the inventor of several useful war appliances, as soon as I rose from the kneeling position of kissing the Royal hand, Lord Hill whispered something in Her Majesty's ear which caused her suddenly to turn her head, looking at me with a smile, and an expression of surprise.

I am, yours, &c.,

J. NORTON.

Rosherville, 21st July.

RIFLE BRIGADE OF WORKING MEN.

To the Editor of "The Morning Advertiser."

Sir,—Your Correspondent, Mr. A. B. Richards, has so fully and clearly pointed out in the *Morning Advertiser* of the 10th Instant, the indispensable necessity of training the working classes, "the bone and sinew of the land," in the practical use

of the rifle, and other military arms, that it must be patent to all reflecting minds that, however excellent and efficient our force of Rifle Volunteers now are, as yet they are but a "gallant few." Our millions of agricultural men, that "*genus acer virum*," are the true bulwarks of the land; and for the safety of our extended shores, they must be trained to the use of arms, without however, trespassing upon their time, which is their "daily bread," by the teaching of unnecessary evolutions, which are only required when large masses are put into action. The battles in the Peninsula, as the late gallant historian of that war has well and truly said, were for the most part fought by the troops acting as light infantry. Sundays, after Divine Service, ought to be utilised in healthy exercising in the manual and platoon—no fitter day. It was on a fine Sunday morning, the memorable 25th of July, 1813, that Soult burst through our three fortified passes in the Pyrenees—Roncesvalles, Alduidas, and Maya. A far-seeing general, such as Soult was, uses his stratagetical talents in massing heavy columns to attack simultaneously the extended line of his adversary in several unexpected positions.

Nothing more appals gallant veteran troops bravely contending against the enemy than to see, in addition to the men they are opposed to, massive columns coming down upon them like an avalanche. When a boy I read in that excellent book, *The Military Mentor*, that in battle, troops are first vanquished through the *eye*, and my after experience proved to me that the observation is a perfectly true one. I could say much more on this subject but will at present only counsel my civilian friends to recall to their minds the scenes that occured at the stormings of Badajos

and St. Sebastian. Mr. ALFRED RICHARDS has for a long time past been instructively writing, through your columns, on such heart-stirring matters; I shall be most happy to afford him my best aid in bringing to maturity his present noble efforts, by what experience I have had in fifty-five years unceasingly applied to the study of the profession of my choice. Thousands respond to his call, expressed as it is in burning words of liquid fire.

I am, Sir, your obedient servant,

J. NORTON.

Rosherville, July 11th.

On a late occasion, when I reported to the Master-General, that Serjeant Graham of the Police, stationed here in Cork, had fired five of my hollow rifle-shot in succession, into a piece of paper eight inches square, at the distance of ninety yards, without a rest, and that the charge of a drachm-and-a-half of Hall's rifle powder, contained *within* the shot, was sufficient to expand the sides of the shot into the grooves of the rifle,—I sent samples of the shot, which was of the same calibre as the present Military rifle, and suggested that similar trials should be made at Woolwich. The official answer to me was that the Committee had taken my letter into consideration, and did not think that *one* drachm of powder was a sufficient charge for the rifle shot, and that at all events they had no opportunity of trying it.

PROPERTY IN INVENTIONS.

Colonel Vergnaud, of the French Artillery, some time since memorialised the minister of war for a grant of money, by way of reward, for certain inventions by him of the application of

fulminating mercury to the priming of guns. The minister rejected his application on the ground, that in reality, these applications were known before, but, in doing so, enunciated the following somewhat startling doctrine:—"That an Officer in the army devotes himself entirely to the service of his country, and that the produce of his labors and of his genius belong solely to it: and that, if he needs any other recompence than that which is to be found in his conscience and the performance of his duties, the approbation of his commander and the satisfaction of the minister of the department ought to be all sufficient." Upon this Colonel Vergnaud again memorialised the minister, pointing out that in making his claim, he was doing nothing more than had been previously done by others in the service, who had had their claims admitted, and rewards in money granted. He did not admit the doctrine that an officer entering the army devoted all the produce of his labors of mind and body to the state, alleging that such a doctrine was at variance with moral and intellectual progress, the aim of all society, for it took away from individuals the hope of reward. He characterised the doctrine as unworthy the enlightenment of the times, and fitted only for the days of Louis XIV.—*Mining Journal of 29th October.*

"Laudatur et alget."

"Diram qui contudit hydram,
Notaque fatali portenta labore subegit;
Comperit invidiam supremo fine domari."

"IT'S POLICY."

In the spring of 1826, when I returned from Woolwich to the Garrison in Dublin, after having successfully tested my elongated rifle-shot and shell,—Captain Jones, of the Royal

Artillery, who had greatly approved of the previous successful testing in the square of the Richmond Barracks near Dublin, enquired of me, what report the Select Committee made of the practical proof. I replied that they reported, "Although it might answer my purpose of blowing up ammunition waggons, it could not be introduced with advantage into the service, as part of the ammunition of rifle corps." Captain JONES, after a short pause, as if to consider on so strange a decision, replied, "it's policy." I would ask, is policy and Priest-*cooked* religion one and the same thing.? Dr. JOHNSON, no mean authority, in his dictionary, designates policy, *craft*, *art* of Government. I have heard a Priest speak of a *pious fraud*—are there also *political* and *legal frauds?* After having paid sixty pounds sterling to *secure* my Patent for explosive appliances, The Lord High Chancellor of England refuses to sign it, on the grounds that it was *one* day too late. This delay of one day was caused by the final specification being detained in Dublin, on a Sunday, the 2nd April, no mail leaving Dublin on that day for Cork. The letter of Mr. WILLIAM JOHNSON, my Patent Agent, was dated the 31st March, and the Glasgow Post mark was the same date; I therefore received his letter only on the 3rd April. All this was set forth in my Petition, yet the Chancellor refused to sign the Patent. I ask, could such a thing as this be enacted in America. ?

J. NORTON.

THE SPENT BALL.

To the Editor of "The Cork General Advertiser."

SIR,—During the Battle of Tolouse, the 34th Regiment stormed a Field-work in advance of that portion of the city called St.

Cyprian; The French waited till the 34th had advanced within thirty yards, then fired a volley and hastily retreated within the suburbs; here we were engaged till the dusk of the evening. The French firing from the tops of the houses, out of the windows, and from behind the chimneys, then starting out and playfully *pirouetting*, quickly ran back again, showing nothing more than their caps, when in the act of firing our men used the best cover they could find. A sturdy Yorkshireman of the company that I commanded, was struck in the ear with a spent ball; I was close by him and the ball fell at my feet raising a little dust; I picked it up and showed it to the man, who only laughed and continued to fire as brisk as ever, yet he must have suffered much pain, his ear bled. The distance of the French on the highest house from us might have been about two hundred yards. Had this ball been an *elongated* rifle shot, it would have been fatal at *three* times the distance. Such results as this will, I think, be a reason independent of a more certain aim at long ranges, for eventually, superceding the musket by the rifle, as a general arm for infantry and cavalry. That fine body of men, the Constabulary of Ireland, deserve well, to have rifles, for no men take better care of their arms and accoutrements. It is a matter of the first public interest, that so efficient a corps should be armed in the best possible manner.

Yours &c.

J. NORTON.

Victoria Hotel, Cork,
18th January, 1853.

16-8-60.

Sir,—The Secretary of State for War having referred to the O. Select Committee for report, your memorial addressed to His

Royal Highness the General Commanding in Chief, in which you claim to have brought the principle of the elongated expanding bullet to the notice of the late Board of Ordnance, as early as the year 1823, I am directed to state that the Committee will be glad to give their attention to any proof you can produce of the material facts of your case. The records of the Committee, as far as they have been examined, afford no proof that you produced an elongated bullet before the year 1826, nor is there anything to shew that the rifle shell then reported upon, was contrived on the expanding principle; on the contrary it seems to have been made to fit the grooves of the rifle, which is the opposite of the principle of expansion. The Committee would be glad to see any bullets, or diagrams of bullets, which you can certify to be of as early a date as the period in question.

I have the honor to be,
Sir,
Your obedient Servant,
J. H. LEFROY,
Colonel R. A.

Captain Norton, Rosherville.

Thanet Lodge, Rosherville,
17th August, 1860.

Sir,—In answer to your letter received this morning, I beg to state that the *elongated* projectile submitted and explained by me to the Select Committee at Woolwich in the summer of 1823, was on the *expanding principle*, taken from the *hollow expanding plastic* lotus pith base of the Malay dart, which is

blown by mouth through a long tube, which fact, the Select Committee officially reported to the Master General of the time.

I beg further to state, that my *elongated* percussion shells, fired by me at Woolwich, in presence of the Select Committee, in the Spring of 1826, were made of *plastic* lead, with projections on them corresponding with the grooves of the rifle fired on the occasion, and fitting easily into the groove of the rifle, did *expand* by the explosion of the charge, so as to fill completely the bore of the rifle, and prevent *loss of power by windage.*

Specimens of both kinds of projectiles have been deposited in the museum of the R. U. S. Institution, for many years past, and are there to this day.

I have the honor to be,
Sir,
Your obedient Servant,
J. NORTON,
Late Captain 34th Regiment,

To Colonel Lefroy,
Select Committee, Woolwich.

N. B.—The elongated or cylindro conoidal form of shot, was strongly advocated by me as the proper form of shot for rifled arms, in all my correspondence with the Select Committee, who as strongly maintained that the spherical form was the only proper form for the rifle, and added, that the more they considered my statements, the more they were convinced of their fallacy ! ! !

J. NORTON.

24th August, 1860.

Sir,—I have the honor to acknowledge the receipt of your letters of the 17th and 21st Instant, which have been laid before the O. Select Committee.—I am directed to request that you will be good enough to select some of your earliest bullets from the collection at the United Service Institution, and send them to the Committee for their inspection, properly labelled.

I have the honor to be, Sir,

Your obedient Servant,

J. H. LEFROY,

Colonel, R. A.

Captain Norton,
Rosherville.

Thanet Lodge, Rosherville,
25th August, 1860.

Sir,—In compliance with the request contained in your letter of the 24th Instant, I will forward a specimen of the elongated expanding shot, such as I submitted to the Select Committee at Woolwich, in the summer of 1823,—The idea of which expanding shot I took from the Malay dart which expands at its hollow lotus pith base, when blown through their tube by a man's collected breath.—

I also send my boy direct to Woolwich this day, with a copy of my projectiles, in which are diagrams of my various missiles ever since the summer of 1823: Including the Malay dart, which gave me the idea of a *condensed* arrow, or dart, as early as the year 1818, when I received the Malay tube and darts from a friend at Bangalore, in South India.

The Select Committee at Woolwich, in the summer of 1823, *admitted* in their official report, a copy of which was sent to me, that my idea of an elongated shot was taken from the POISONED Malay dart, but that it was totally inapplicable to the Service.

I have the honor to be,
Sir,
Your obedient Servant,
J. NORTON,
Late Captain 34th Regiment.

Colonel Lefroy, R. A.
Select Committee,
Arsenal, Woolwich.

To the Editors of "The Mechanics' Magazine."

Thanet Lodge, Rosherville, April 9th, 1860.

DEAR SIRS,—I have the pleasure to enclose the copy of a letter which I received from General Sir H. R. Ferguson Davie, Bart., M. P., who was a major in my late regiment, the 34th, in the year 1826, when I fired my percussion shells at Woolwich in presence of the select committee of artillery officers; it was then, and perhaps, is still the custom of that board to make *two* reports, one, confidential, to the War Office, the other to the inventor. The one I received ran thus—"Although your rifle-shells might answer your purpose of exploding ammunition waggons, they could not be introduced into the service with advantage, as part of the ammunition of Rifle Corps." My object in writing to General Ferguson Davie, was to prevail on him as an old brother officer who was well acquainted with all that related to

my invention, to ask the Secretary for War to allow a copy of the *confidential* report to be laid before the Members of the House, that they might know *why* it was that the War Department ignored, for so many years, my claim to the invention of the *elongated* rifle-shot and shell, and continued *silent* when years after a French officer claimed the invention as his own. And as the General has not (in my opinion) given good *logical* reasons for declining to comply with my just request, I publish his letter (page 50) with my own comments on it, in order that a discriminating public may form their opinion of my case and claims.

I am, dear Sirs, truly yours,

J. NORTON.

NOTE.—Is it of no *public* interest that the blundering of our superior authorities in the Crimean War was *corrected* by the free use of my invention, the *elongated* rifle shot, which shot was also the chief means of extinguishing the rebellion in India, and of our success in China? The Emperor of the French is also indebted for his victories over the Austrians during the late war in Italy, to the free use of my invention applied to Rifle Artillery.

Is it of no *public* interest that our successive Governments have debarred even Royalty itself from exercising the universal instinct of human nature?

BLURTED OUT.

Some years ago, I having observed to a nobleman who had taken a lively interest in my invention of the elongated rifle shot, that had I allowed some nobleman to *father* the invention, the

Government would then have paid more attention to it. The nobleman replied "of course, you don't suppose that otherwise they would have paid attention to any thing coming from such a fellow as you."

J. NORTON.

BRITISH AID TO GARIBALDI.

To the Editor of "The Morning Advertiser."

Sir,—Let us hope that the call by Mr. Hodge for British aid to Garibaldi, who is nobly fighting "freedom's cause," may be generally and generously responded to by the public in supplying the necessary funds, "nor that alone, but all the works of war." That this is right, "The voice of Nature cries aloud."

I am, Sir, yours, &c.

J. NORTON.

Rosherville, Aug. 15th.

SMOOTH BORE OR RIFLED GUNS?

"Non omnia possumus omnes. Suicuique tributum."

To the Editor of "The Daily News."

Sir,—A smooth-bore 68-pounder is good for bowling its spherical shot *en ricochet* along a level plain to the distance of nearly three miles.

A rifled 68-pounder is good to throw its elongated shell charged with liquid fire to the distance of six miles, from a gun-boat, hull down into a naval arsenal such as Portsmouth, Plymouth, Cher-

bourg, Toulon, or Brest. The arsenal is a large target to fire into; the gunboat, hull down, is a mere pinkeen to fire at. For rifled cannons the elongated shot and shell should be jacketed with millboard, in order to enable them to pass through the bore of the gun quite "slick" and without allowing loss of propelling power by windage.

I am, &c.

J. NORTON.

Rosherville, August 16th.

ARCHERY, A HEALTHY EXERCISE, CONDUCIVE TO "A GREEN OLD AGE."

To the Editor of "The Belfast Weekly Mail."

Sir,—About twenty years ago, I was present when the late Mr. Crunden, the oldest member of the Royal Toxopholite Society, was shooting for the King's Cup, in the grounds of the society at Bayswater. He was then in his ninety-third year; and he planted his *second* arrow into the gold (nine inches in diameter) at the distance of one hundred and twenty yards. When in the prime of life, he was reputed the best archer throughout England. He died in his ninety-fifth year. The climate of the British Isles is rather damp for the satisfactory practice of archery—rain being hostile to a feathered arrow; but I am in hopes that an ashen arrow without feathers, can be so constructed and nicely balanced as to fly with accuracy; for I find that *some* such arrows do so; and, when the law that governs them is discovered, *all* may be made to fly correct, and even to a greater range than the feathered arrow—for feathers while they guide, are, to a certain

extent, an impediment to a length of range. I have found also, that some *elongated hollow shot* will fly *point foremost* when discharged from a *smooth bore gun*. The new plan of forming hollow *elongated* leaden shot, by Mr. Anderson—as it fashions the shot so perfect that its centre of gravity may be always accurately placed in its front, any "disturbing friction" in passing through the barrel being duly guarded against, gives good promise that this desideratum may yet happily be accomplished.

I am, Sir, yours, &c.,

J. NORTON.

SPHERICAL PERCUSSION-SHELLS.

To the Right Honourable The Earl of Aberdeen.

My Lord,—I read in the public papers that a fatal accident occurred after the capture of Bomarsund, by the bursting of a large shell (which lay on the ground) by the mere act of being *kicked*. I take it for granted that this shell was a *percussion*-shell. About ten years ago, when practising with my concussion-shells from the eight and ten-inch-bore guns, on board the Excellent at Portsmouth, under the directions of Captain Sir Thomas Hastings, R. N., I declined having anything to do with *spherical percussion*-shells, stating as my reasons that under certain circumstances, they would be *highly dangerous*. I have also read in the papers that seventeen Russians were killed by the bursting of a percussion-shell which they were examining to ascertain its structure. The cause of the bursting of both shells may be this, the shock of the firing of the gun or mortar places the percussion-

apparatus on the "hair trigger," as it may be called, and the second shock caused by the shell striking the object, causes it to explode. The authorites at Woolwich *officially* reported on my concussion-shell, that "it was simple, *safe*, and efficacious, being well adapted for horizontal fire at high velocities." Figure 7, page 2, in my Pamphlet on Projectiles, gives a full description of my concussion-shell. On the 12th July last, I wrote to the Duke of Newcastle, Minister of War, stating that if his grace would give directions to have a twenty-four-pounder cannon rifled with four grooves, at Woolwich, and order it to be forwarded to the Admiral commanding at Cork, that I would at my own expense have rifle shot and shell constructed for it, and would engage that there should be no failure in the practice with it. His grace immediately answered my letter, suggesting that I should address the Board of Ordnance on the subject. I did so, but the Board have not taken any notice of my letter.

I have the honor to be,
Your Lordship's most obedient servant,
J. NORTON.

Victoria Hotel, Cork, September, 19th, 1854.

To the Editor of "The Cork Southern Reporter."

SIR,—In the able and comprehensive lecture yesterday evening on the "National Exhibition, its objects, and its results; by J. F. Maguire, Esq., M. P.," the honourable lecturer dwelt upon the advantages of collecting together in one grand receptacle, the fruits of the industry and resources of Ireland, laying them thus open for the inspection and instruction of all who take an

interest in the onward march of science and useful knowledge. I take the liberty of giving an instance of the truth and aptitude of the lecturer's observations, in handing you the following letter from Captain Chads, C. B., the gallant and intelligent commander of Her Majesty' ship *Excellent*, at Portsmouth, although it is but an infinitessimal point in the innumerable advantages resulting from the "National Exhibition" in Cork.

I am your obedient servant,

N.

Excellent, 3rd August, 1852.

My Dear Sir,—Your note and papers reached me only to day, on my return from a month's cruise in the *Edinburgh*, during which we touched at Cork for a couple of days, when I should have been glad to have made your personal acquaintance, had I known you were in the neighbourhood. Of course, I paid the Exhibition a visit, and was much interested in seeing your various projectiles there. You appear to have been successful in all your attempts, and I hope you will be able to induce the Master-General of Ordnance to give your inventions a good trial. You will always have my best wishes, for your zeal and perseverance for the good of your country deserves acknowledgments.

Believe me always yours very truly,

H. D. CHADS.

Captain Norton.

RIFLE FIRE-BOLT.

To the Editors of "The Liverpool Mercury."

Gentlemen,—I have shot this bolt, measuring ten inches in

length, and weighing one ounce and a half, with a charge of one drachm and a half of Hall's powder, from Mr. Sharp's American breech-loading rifle, to the distance of more than 800 yards in a correct line, with an elevation of about 30 degrees; the shaft of the bolt was made of Memel pine, and its base was fortified with a circular piece of thick card glued on. An arrowy shower of these bolts would tell when discharged from the walls of a fort into the trenches of the enemy. The head of the bolt can easily be converted into a percussion shell, and used against magazines or ammnuition waggons. The action of this missile bears no analogy to Carnot's experiments with grape shot fired vertically, but is the same as the ancient cross-bow bolt, thrown to a distance three times as far as the steel cross-bow could throw it. I predict, from the experience I have had with this missile that it will become an engine of modern warfare.

Yours, &c.,

J. NORTON.

Owen's Hotel, November 15th.

FORMATION OF LAMINATED OR STRATIFIED STONE.

To the Editor of "The Cork Examiner."

Sir,—When Massena's Army retreated from before the lines of Torres Vedras, Lord Hill's division crossed the Tagus into the Alemtejo. The brigade to which I belonged was stationed in the town of Almeirim, two miles from the river, and opposite Santarem, the strong position of Marshal Junot; when on picquet near the river, and going my rounds, I observed that the ground under me cracked with a noise like thin ice breaking. On examining into the cause I found that the surface of the

ground was formed of several layers of half-formed slate, the deposits of different floods—the last not more than a few weeks old. The composition appeared to be the *detritus* of yellow ochre and slate, through which the course of the Tagus runs in the interior of the country. The water being discolored from the ochre, the river acquired the name of the yellow or golden Tagus; it is about five hundred yards broad between Santarem and Almeirim. I have seen long trains of French ammunition waggons pass as if in ostentation. The fire of a musket could not affect them, but a rifle-shell, or rifle fire-shot, would have taught the waggons "*faire sauter.*"

Your obedient, &c.

J. NORTON.

A DAINTY BAIT FOR SHARKS.

Natural History,—On my passage from Sidney, New South Wales, to Calcutta, in the year 1815, when in that part of the Indian Ocean between the north-west coast of New Holland and the island of Sumatra, numerous large sharks followed the ship. The surgeon had a great taste for, and was very dexterous in catching and cutting them up. One shark about fourteen feet in length, was caught; the surgeon examined the contents of its stomach, and among them was found a round soft ball, about the size of a nine-pounder cannon shot. All were anxious to examine it, and on opening it out, it was found to be an old greasy felt hat. This caused greater surprise and curiosity to know how the shark came by it, when, on enquiry among the crew, it was learned that one of them threw the old greasy hat overboard about three days previous to the capture of the monster.

N.

CAPTAIN NORTON'S FRICTIONAL EXPLOSIVE FLOATING SHELL, AND ARROW PERCUSSION SHELL.

On Saturday last, in the river, opposite George's Quay, from Mr. John Bennetts's boat, Captain Norton fired his floating shell by means of his frictional igniting appliance. He used two cords: one was attached to the shell, in order to keep it at the required distance from the stern of the boat; the other cord was attached to the eye of the frictional wire that passed through the centre of the cork into the powder within the shell. When the shell reached to the end of the first cord, the second was quickly pulled, and the shell instantly exploded. This was to demonstrate how a merchantman, being pursued by a privateer may cause a shell to explode under her bows or bilge without the necessity of using an electric battery, and thus cripple the privateer, or cause her to founder. The second practical experiment was with a paper-percussion shell fixed on the head of an arrow, being the same as his railway arrow-signal, to be shot from a powerful steel crossbow by the guard at the extreme end of the train, with an elevation so as to fall some fifty yards in front of the driver of the engine, to give him notice to draw up, in order to prevent an accident. Captain Norton shot this arrow percussion shell, from an ordinary long-bow, against a piece of sail-cloth suspended on a stretched line, when the shell instantly exploded by the percussion. This was to prove that it might be used effectively against wild animals, such as lions, tigers, buffaloes, &c., even when shot from a lady's bow. It is the same arrow percussion shell that Captain Norton had the honor to explain to His Royal Highness Prince Albert, at Buckingham

Palace, some ten or twelve years ago, on the occasion when he practically demonstrated the efficiency of his rifle percussion shell in blowing up a small representive of an ammunition waggon in the garden of the palace, in the presence of Her Majesty the Queen, the Prince, and Lord George Lennox.

PRECAUTIONS IN ENGLAND AGAINST FOREIGN AGGRESSION.

It is in contemplation, by the proper authorities, to construct a battery of guns in the immediate vicinity of Swansea, as a defence against foreign aggression. It is said that the site has been fixed upon. The authority is vested in the Board of Ordnance, and as there is at present no defensive work in the whole length of the Bristol Channel, under which our shipping could take refuge, in the event of an outbreak; it is to be hoped that the projected measure will speedily be carried into effect. With the exception of the fortifications at Milford, which are in course of construction, there is not on the western board of England a battery or fort worth the name from the Land's-end to Liverpool.—*Times.*

ANTIPODEAN PEACE-MAKERS.

In the year 1815, I witnessed a fight in Hyde Park, near Sidney, New South Wales, between two native tribes, the Port Jackson, and the Broken Bay tribes. They fought with spears, boomerangs, and clubs. In the hottest part of the fray the native women rushed in, *passis crinibus*, and addressed their countrymen with the greatest energy of action, and extreme volubility of

words, accompanied with a very pleasing accent. I enquired of some old English settlers what it was that induced the women to expose themselves to so much danger, and was told that they were exhorting the men to cease from fighting, reasoning with them upon the great folly of risking their lives, their numbers being so very few, and counselling them, at all events, to defer further fighting till their numbers were increased by the accession of the rising generation advanced to maturity.

N.

SNOW AND FOG SIGNALS BY LAND AND SEA.

To the Editor of "The Belfast Weekly Mail."

Sir,—Having lately heard that there is a difficulty with the fog signals being placed on the rails when heavy snow covers them, I have instructed the officials at the different stations here how to use my petard, fired by the frictional cork which closes in the charge of powder. A petard being placed at each side of the road, on any support keeping it breast high, or of a height to be above the accumulated snow, a cord of the required length is attached to the eye of the frictional pin in the cork stopper of each petard, and on the engine pressing against the centre of the cord, one or both petards are instantaneously fired. This manner of firing signals may also be used at sea, or in harbours where it is necessary to place buoys. The petards being placed on them, or on catamarans or rafts, the bows of the ship by passing against the connecting line, would fire them.

Yours &c.

J. NORTON.

Victoria Hotel, Cork, 21st Jan., 1854.

ENDURING COURAGE OF THE RUSSIAN SOLDIER — A VOICE FROM ALBUERA.

To the Editor of "The Belfast Weekly Mail."

Sir,—On the Morning after the battle of Albuera, a number of French officers who were taken prisoners, being in friendly conversation with some British officers, one of the latter, among many questions, said, addressing himself to a bronzed Frenchman "I suppose, in all the service that you have seen, you never witnessed so hard fought a battle as that of yesterday." The French officer replied, "It was a most sanguinary fight, but if you were campaigning against the Russians, you would see many such." I am old enough to remember that when the late Emperor Alexander was in London accompanied by some fine specimens of his troops, how the high-born beauties of England emulously rushed forward to press the "horny hands of his thewy Cossacks.

Your obedient,

J. NORTON.

Victoria Hotel, Cork.
23rd May, 1854.

A DREADNOUGHT FOR ACTIVE SERVICE.

To the Editor of "The Limerick Chronicle."

Sir,—During the few first years of my campaigns in the Peninsula, I tried several expedients for protection against the damp of the ground in bivouac, a camlet boat cloak, lined, being the first; but on the division of the army commanded by the late

General Catline Crawford, and consisting of ten British regiments, arriving at Abrantes in the early part of the summer of 1809, after a long day's march, carrying my knapsack, the commanding officer of the regiment, the late gallant General Maisters, setting the example; being much fatigued, I hoped to enjoy a good night's rest, "sub cœlo," but the fleas, always abounding in millions in the sandy soil, would not allow me a moment's sleep, I, in despair, sprang up and examined my shirt, and found it covered with blood; I observed thousands of soldiers standing naked round fires, and shaking their shirts over them. When we marched in the morning, as usual an hour before daylight, an officer called me to look to the rear, when I observed all the huts in flames; they were formed of the branches of pine trees, and were of a reddish hue from being so long exposed to the dry atmosphere, having been constructed by Sir John Moore's army. The men set them on fire very properly to punish the fleas and make an example of them. My boat-cloak harboured thousands of them in its seams, for weeks afterwards, and in order to get rid of them I had it boiled but their bodies reduced to a kind of paste like lobster sauce, still filled the seams. I then generously gave the cloak to a poor peasant. After this I tried the blanket, but one dewy morning I observed that two scorpions had taken possession, when I made an attempt to eject them they saucily cocked their tails and charged their bayonets at me.—I however mustered courage, and by a sudden jerk of the blanket tossed them far away; I next tried an oil cloth such as usually covers tables, and for two years afterwards to the close of the war I found it to be my best protection; it kept me dry when lying on ground crushed into mortar by the tramping of artillery and cavalry, and columns of infantry during the retreat from Burgos in the

winter time; when clay or mud fastened on it, it was easily cleaned with a wet sponge—neither scorpions or centipes had a fancy for it; I suppose the smell of the oil was not to their taste.

Your obedient,

J. NORTON.

Victoria Hotel, Cork, Feb. 18th.

A WOOLWICH REMINISCENCE.

In the spring of the year 1826 when I fired 12 of my percussion rifle-shells into a target at the distance of one hundred and twenty yards in the Arsenal at Woolwich, in presence of the members of the select committee, and a number of other artillery officers, as I fired without a rest, some of the young officers were so kind as to draw down a gun carriage for me to rest my rifle on, in order to insure a more certain aim, and when I thankfully declined to use it, they urged me to take advantage of such a rest, saying "you have no idea what a set of old rascals you have to deal with," the sequel has proved that they were quite right.

All honor to the noble fellows whoever they were!

J. NORTON.

Rosherville, 30th March.

CAPTAIN NORTON'S PRACTICES.

On the occasion of CAPTAIN HANS BUSK'S most instructive Lecture, at Rosherville Gardens, on Saturday, July 21st, 1860, CAPTAIN NORTON exhibited the following practices:—

1.—His rifle shell charged with liquid fire for setting fire to ships sails, rigging, &c. &c.

2.—The lady's grenade for defence of houses, to be used in two ways. 1st. placed in a position on the wall outside a house,

when it can be fired by pulling a string. 2nd. by throwing it from the hand from an upper window, so as to explode in the faces of the assailants.

3.—Percussion rifle shell to explode against a ship's sail; no rammer is used in loading as the shell slides down the barrel by its own gravity.

4.—Rapid vertical-fire by which *one* gun does the duty of *five*.

5.—The warning signal that explodes by the tread of a man's foot.

6.—Rifle fire-brand charged with liquid which ignites by spontaneous combustion.

7.—Throwing the Australian War Spear, after the manner of the Natives of New South Wales.

8.—Firing a percussion rifle shell into a mound of soft clay, which shell having its percussion appliance placed about the eighth of an inch *below* the orifice at its point, cannot be affected by the pressure of the rammer in ramming home, and is therefore perfectly safe in the act of loading. It explodes by percussion on entering a mass of clay, sand, or chalk, whereas, a fuze shell would fail, its fuze being extinguished by the clay, sand, or chalk.

9.—Firing the rifle spinster into a bag of gunpowder, which it explodes by means of its fiery tail composed of layers of slow, or quick-match.

10.—Firing his Gossamer Cartridges from an Enfield or Lancaster Rifle, to prove that no residue of the gossamer is left in the barrel after firing many rounds.

11.—Throwing the Colary Stick, as used by the natives of the Colar Country, South of Madras, East Indies, for killing game, &c.

12.—The Lady's Grenade fired under water, to prove that it may be a means for blowing up shot-proof line of battle ships.

13.—Firing an elongated *cast* iron shot, having four wooden wings, from his one-pounder brass cannon which was rifled for him at Woolwich, twenty years ago. This manner of adapting elongated shot to rifled brass or iron guns, Captain Norton offered *unconditionally* to the present Secretary for War, Mr. Sidney Herbert, who *declined* his *unconditional* offer ! ! !

14.—Firing an elongated wooden shell charged with liquid fire, from his patented cast iron four-pounder ship gun, cast by Messrs. Troughton and Bevan, of Gravesend.

15.—Exploding the representative of an ammunition waggon by his rifle percussion shell, as practically used by him in the Summer of 1823.

16.—Throwing a Frictional Grenade into the air, so as to explode by friction at the end of an attached cord. This may be used as a Warning Railway Signal.

17.—Firing a Bull's Eye explosive signal, being of the same construction as the warning signal, No. 5.

18.—Applying a Paper Percussion-Shell, to the splitting of a large stump of a tree.

19.—Showing the operation of his Fog Signal for Railways, by passing a garden roller over one, the crush of which exploded the signal.

20.—Firing his frictional spring-gun.

21.—Railway guard and passenger warning of danger signal made of wood, and operated in the same manner as the lady's grenade.

22.—Firing a Percussion-Shell, fitted on the point of the Australian Spear, or willow wand, which explodes by falling on grass land. London taken and sacked, "It must not be."

23.—Firing Gossamer Cartridges from a central-fire sporting gun.

MUSKETS AND BAYONETS FOR GARIBALDI.

To the Editor of "The Morning Advertiser."

Sir,—The brave and experienced Garibaldi judiciously calls for a supply of muskets and bayonets above all other appliances of war. On the morning after the battle of Albuera, I, with a few brother officers, walked over the field of contest, which we observed was blanched with the naked bodies of about four thousand slain. Seeing that the fatal wounds were all the effects of musketry, I could not help observing to my companions, "the musket is the true logic after all."

Being still of this opinion, I have the pleasure to enclose a cheque for ten pounds towards the sum necessary to supply the required number of muskets. There are sum four hundred thousand of the "Brown Bess" order of muskets spread throughout the British Isles, and the cost of each would not be more than twenty shillings; with gossamer cartridges, which admit of

rapid loading, "Brown Bess" would be more efficient than even in her palmiest days. Buying up the above number of what was called the queen of weapons, and supplying them to Garibaldi, would form the most efficient coast defence that our best informed could devise, and be attended with comparatively little cost.

I am, Sir, yours, &c.,

J. NORTON.

Rosherville, August 23rd, 1860.

[We beg to acknowledge the receipt of £10 from our gallant correspondent, Captain Norton, to the fund for supplying muskets and bayonets to Garibaldi.—Ed. *M. A.*]

EXPANSION OF ELONGATED LEADEN SHOT.

To the Editor of "The Morning Advertiser."

Sir,—An elongated shot or shell formed of plastic matter, such as lead, is more efficient when it has projections ready formed on it suited to the grooves of the rifle, than when formed without any, as in that of the Minié shot because in the first, the shot is *sure* to take the spin round its long axis even when a small charge of powder is used, whereas the latter requires a full and strong charge of powder to compel it to expand and fill the grooves of the rifle. This is obvious to all who will consider the matter.

I am, Sir, yours &c.,

J. NORTON.

Rosherville, September 3rd.

Weedon, 25th August, 1840.

Sir,—Captain Henderson requested me to write to you to inform you if we succeeded in exploding some of your shells which he left here when he went to Scotland, we tried them yesterday when Colonel Hope fired three shots at the box at about 100 yards distance, the two first shots missed the box, the third hit it and exploded it, there was about nine pounds of powder in the box, and no saw-dust, the front of it was about an inch thick.

I am, Sir,

Your obedient servant,

W. L. MELLISH,

Lieut. R. Brigade

NORTON'S CONCUSSION SHELL.

After a series of experiments commencing at Woolwich in October last, and continued at Portsmouth, Addiscombe, Deal, and again at Woolwich; this formidable auxiliary to the Naval and Military Armaments of England, has been approved of by the Ordnance, and adopted by the Government. It will now take its place as the most powerful War Engine belonging to this, or any other country.

From the U. S. Magazine.

East India House,

16th December, 1841.

Sir James S. Lushington presents his compliments to Captain Norton, and begs to say that some time back Captain Norton

in an interview did explain to Sir James the nature of his ingenious inventions regarding Shells, Hand Grenades, and Cartridges for small arms, but this will not prevent Sir James having pleasure in seeing Captain Norton again if he wishes. Sir James is generally at his house on Mondays, Tuesdays, and Thursdays from about 11 till 3 o'clock. Wednesdays being Court Days is an inconvenient time for personal interviews.

Dear Sir,—If it is not too much trouble for you to go to Woolwich on Saturday, at 12 o'clock, and ask for Colonel Cockburn, in the Arsenal, he will with Colonel Dansey, go at the question of the Rifle Carcase with you

Yours truly,

H. VIVIAN.

Take your air gun and some carcases.

November 27th, 1840.

Sir Henry Hardinge presents his compliments to Captain Norton, and has had much pleasure in reading the statement forwarded by Captain Norton of the various inventions which he has meritoriously brought into use on different occasions. Sir Henry recollects having attended some experiments when he was a member of the Ordnance Board several years ago, of which Captain Norton was the author, and of his being impressed at that time, with a strong sense of the ingenuity and skill which Captain N. displayed.

Captain Norton.

Saturday, July 23rd, 1842.

Dear Sir,—In reply to your note of this date, all due attention shall be paid to your wishes, as to the range, and firing from both 10 and 8 inch guns, and using small bursters without destroying the shells as we do at the mortar practice, Woolwich. We shall be all ready at half-past nine or ten on Monday morning, for the experiments to be made in your presence from the same place as before.

Yours truly,

R. HARDINGE.

23rd June, 1841.

Dear Sir,—I have had the pleasure to receive this morning your letter of the 19th Instant. I am too much occupied here just now to enter into any discussion on the respective merits of your invention, and that of Mr. Warner, all I shall say therefore is, that I recollect having witnessed some of your experiments at Dublin, with much satisfaction.

I remain,

Dear Sir,

Your very faithful and obedient servant,

G. MURRAY.

Captain Norton,

Kingstown, Dublin.

Sir Hussey Vivian presents his compliments to Captain Norton, and in answer to his letter of yesterday, begs to acquaint him that in the event of any reference to Sir Hussey from the Board

of Comptrol, he will be happy to bear testimony to the zeal which Captain Norton has shewn for the service in bringing forward inventions for the improvement of fire-arms.

Ordnance Office,
7th May, 1839.

Sir George Cockburn had received a report from an artillery officer who had watched the Brighton experiments and was assured that the explosion was produced by some force, like nitrate of silver, or others known to Chemists, but which required constant care and management, and therefore useless in active service, against an enemy. The Government would reward the inventor of a useful and serviceable projectile.

From the Parliamentary Debates on Captain Warner's experiment. August, 1844.

Colonel Cockburn of the R. Artillery, and one of the Select Committee that pronounced favorably on my concussion-shell, said to me in the marshes at Woolwich, on one of the days when my Shells were tested, you must not say that you have met any difficulty from us, or allow any such idea to go abroard, for if you do, it will injure you with us, "I replied, that, I would speak of the committee just as I found them, and not otherwise, and that men would also speak of them as they found them, which I could not prevent even if I wished it. This was in the Summer of 1842. In the same year, I met Colonel Cockburn in Charing Cross, he said to me, what will you say

if we find that the Wilton Fuze which we have had more than half a century at Woolwich, will answer, I replied, it is clear the Wilton Fuze will not answer for high velocities, for if it did, you would have used it during the late long war, and if it is *altered in any way to resemble my Fuze*, it then ceases to be the Wilton Fuze, and becomes mine, to this, the Colonel made no reply, but walked on.

J. NORTON.

If Colonel Dansey, or any other member of the Select Committee, insist that the Wilton is the most *efficient*, let him keep strictly to the *form* and *substance* of its rivets, as I shall to the form and substance of mine.

J. NORTON.

These competing shells that have been prepared *after* the mooring of the Swiftsure ought to be tested at different ranges, 4, 8, and 1,000 yards, as I am ready to test mine.

J. NORTON.

Prior to the year 1840, when the late Lord Vivian, (then Master General of the Ordnance) requested me to contrive a shell that should explode the *instant* of striking a ship's side, and to be *safe* in use, there was no way known to the Artillery, that was *efficient* at "high velocities" "and horizontal fire." In 1841, I contrived *four* different ways of effecting that desirable object, all of which I have explained to Sir George Murray, the present Master General of the Ordnance, and to Sir George

Cockburn of the Admiralty. These *four* ways I am ready at all times to prove from the largest ordnance to be "simple, safe, and efficacious," at all ranges.

J. NORTON.

Gosport,
14th September, 1844.

N. B.—I have *first* made the "egg stand on its end." It is therefore *easy* for Colonel Dansey, C. B. R. Artillery, and Mr. Marsh, Chemist, of the Royal Laboratory at Woolwich, to do so likewise.

J. NORTON.

I complain and protest against any competing shell devised by any person *knowing* the *distance* at which the Swiftsure was placed *previous* to the preparation of the shell. I gave instructions in the manner in which my shells were to be prepared, many months *before* the Swiftsure was placed in her position.

J. NORTON.

10th November, 1844.

It has been said that "money is the greatest power," it is no always so, military art and science is the greatest power, and when this last is treated with neglect, then "farewell and a long farewell" to the supremacy of England among the nations of the earth.

J. NORTON.

1, Sussex Road, Southsea,
11*th December*, 1844.

Sir,—I beg you will submit this my respectful request to my Lords of the Admiralty, that they will be pleased to form

an early opinion on the reports made of the trial of my Concussion Shells, as I find from statements in the *Times, Morning Post, and Sun* of the 7th Instant, that my opponents at Woolwich are making experiments with concussion fuzes, which from the description appear to be founded on their knowledge of my Fuze, and the experience derived from its perfect efficiency in practice.

I have the honor to be,
Sir,
Your most obedient Servant,
JOHN NORTON,
Late Captain 34th Regiment.

To the Honorable Sidney Herbert, M. P.

The officers of the Excellent can give the best testimony as to the result of experiments with my Concussion Shell, and their opinion as practical naval men should carry the greatest weight.

The strongest proof of the value of my Concussion Shell, is that while Colonel Dansey attempts to disparage it in the hearing of the officers of the Excellent, he endeavours to closely *copy* it by experiments at Woolwich, as some might say to *pirate* it.

If Government should prove so short sighted as to allow the Woolwich people to *pirate* my Concussion Shell, I will then make a public appeal to both houses of Parliament, and to the English press of all creeds in politics; in all times every man's hand is against the *pirate*.

TRIA JUNCTA IN UNO.

I have instructed Colonel Cockburn and Colonel Dansey, C. B. by orders from the Board of Admiralty, and the Master General and Board of Ordnance, in *three* ways of preparing my concussion fuzes, having in all three the fusible metal or solder to form the rivet-heads by *fusion*; if any *cement* is used in place of the fusible-metal or solder I defy it to answer better than what I have already *practically proved*, and am always ready to prove practically with "*high velocities*," and at the *longest ranges!* The Wilton fuze has its rivet-heads formed of *thin copper* plate, the form of my rivet-heads is a *cone*.

J. NORTON.

N.B.—To prepare a fuze that will cause a shell to explode the instant of striking the object, is no longer a difficulty, since I have proved that it can be done; *it is only to make the egg stand on the other end.*

J. NORTON.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, LIVERPOOL. SECTION G. MECHANICAL SCIENCE,

Captain Norton read a paper on "Railway Signals," which exhibited as follows.—1. Whistling-bolt for communicating between the guard of a train and the driver of the engine. This signal is discharged from an ordinary dragoon's pistol, and can be thrown to the distance of two hundred and fifty yards with a charge of one drachm of Hall's powder.—2. Bolt with a shell head, similarly discharged, the shell of which explodes by friction or percussion on falling on the ground from fifty to one hundred yards in front of the engine driver; it will explode

even by falling on grass land.—3. Explosive fog alarm signal to be placed on the rail.—4. Frictional explosive warning signal to be thrown by the hand or fired from a small mortar high into the air ; there is a cord attached to it which causes it to explode by friction the instant it reaches the length of the line. When the paper case of this signal was charged with three quarters of a pound of blasting or cannon powder, and exploded at the height of fifty feet in the air, the flash of it was distinctly seen by the driver of an engine at the distance of a mile and a half on the Cork and passage Railway.—5. Snow or fog signal for land or sea. This alarm signal is the same in construction as No. 4. It can be attached to a post or other elevation above the level of the snow, and a cord tied to the eye of the frictional igniting wire can reach across the rails and be tied to a post or other fixture on the opposite side of the rails, the coming engine pressing against the connecting cord fires the singal, of which there may be two, one on each side. This manner of igniting is applied for firing my floating petard as the fog or snow-signal at sea.—6. Fire or light-ball attached to the head of the bolt. This ball may be combined with whistling, or explosive shell-bolt.

J. NORTON.

Liverpool, 9th October, 1854.

Admiralty,
10th July, 1843,

Sir,—In return to your letter of the 6th Instant, I am commanded by my Lords Commissioners of the Admiralty to acquaint you that the Board of Ordnance have been requested to cause you to be supplied from the Laboratory at Woolwich, with ten fuzes as therein described, in order that they may be tried

on board Her Majesty's Ship, Excellent, after you shall have inserted rivets in the same.

I am, Sir,
Your most obedient Servant,
SIDNEY HERBERT.

Captain Norton,
Late 34th Regiment,
J. U. S. Club.

CAPTAIN NORTON'S INVENTIONS.

That the new committee for the examination and trial of Ordnance inventions must have work enough on its hands just now we can readily imagine; but that it is justified in withholding all attention from such important discoveries as Captain Norton's, will hardly be believed. The importance attached to these inventions by all impartial observers acquainted with their destructive qualities should have entitled the Captain to a little more consideration, particularly when, in the trials which have taken place, the results have been so strongly in favour of their being brought into practical use for the operations of the war. The success attending the numerous experiments made at his own expense, with the three-groved rifle cannon and liquid fire shell, induced a general believe that the Ordnance authorities would further prosecute them under their immediate direction, and test their applicability to military and warlike purposes. The great practical utility of such a missile as the liquid fire-shell in destroying all combustible materials of the enemy within range of our guns was at once fully recognised, and the apathy since shown at Woolwich to all Captain N's. representations certainly requires some explanation. If any mawkish ideas of humanity have been the cause of its rejection

it should be at once stated, in order that the public might decide whether such influence should be allowed to operate against the use of every means at our disposal to cripple the enemy and bring him to terms.

No objections of this kind, however, can apply to the three-grooved rifle cannon itself, the trial of which, in a small way, has proved so encouraging, and warrants the belief that further experiments with the new arm may lead to the introduction of great and important improvements in the construction of field ordnance. These experiments have as yet been on too limited a scale to afford any certain conclusions as to the use to be derived from this invention for heavy ordnance, although Captain Norton feels confident that a rifle 68-pounder iron cannon, cast with Stirling's toughened iron, and "cold blast," would throw his rifle shot or shell without fail, to the distance of four English miles, and is fully persuaded that his method is applicable to the heaviest and every description of casting. It is impossible, under present circumstances, to accept this statement to its full extent, but enough has been proved to justify the public in calling for further enquiry; and in common justice to the inventor we trust it may at once be ordered. This is not the first time Captain Norton has had to complain of unfair treatmeut, for as far back as the year 1823 he first proposed the use of elongated expanding rifle shot for all arms and the subject was freely discussed at the United Service Club, at the time, the general opinion then being that it would cause a great revolution in the construction of arms and their missiles. This important improvement was, however, condemned to oblivion until a neighbouring nation encouraged the efforts of Colonel Minie and his colleague to bring the

invention to perfection; we were then compelled, at the last hour, to adopt from a foreigner what the ignorance and apathy of our own authorities rejected when offered by one of their own countrymen. *British Army Despatch.*

THE RIFLE AND ITS MISSILES.

I had the satisfaction, yesterday, of hearing at the United Service Institution, a very instructive lecture on the efficiency of my elongated rifle-shot and shell, by Colonel Wilford, instructor of rifle practice at Hythe; General Sir Fenwick Williams of Kars, was in the chair. My rifle spinster is now under the consideration of the Select Committee at Woolwich. It is better that this rifle missile should be formed with projections on it to suit the grooves of the rifle, because the *spin* is then *sure* to be imparted to it even when *small* charges are used, sufficient to blow up an ammunition waggon at the distance of one hundred yards; for I have been many years ago, assured by the late General Sir Augustus Frazer, R.A., that I could safely do it at that distance. It is something to be able to throw this burning fire-brand among a numerous train of ammunition from a distance of *eighteen hundred yards*, a distance at which neither the flash of the rifle can be seen, or the sound of its report be heard. L ongé Fallens!

J. NORTON.

Rosherville, 29th May, 1858.

THE LADY'S GRENADE MODULATED, OR SOMETHING TO MAKE THOSE THINK WHO NEVER THOUGHT BEFORE.

To the Editor of "The Gravesend Free Press."

Sir,—Strongly impressed with the conviction that in naval warfare it would be highly desirable that casks of gunpowder

having grape-shot mixed with the powder, should be made to explode by concussion on the water, when thrown from the deck of a man of war. I yesterday, dropped from the Pier at Rosherville, on the water below, a height of about twenty-five feet, a square tin canister, filled with small stones and a quarter of a pound of cannon gunpowder, having an igniter of the size of a walnut, formed of a glass shell containing the heads of lucifer matches mixed with small pieces of broken window glass, placed in its centre. This canister, on striking the water, by the violent shock caused the surrounding pebbles to crush the shell-igniter and thus fire the gunpowder, throwing up, by the explosion, a refreshing shower-bath over all the ladies and gentlemen who stood upon the pier, to their great surprise and satisfaction. It is obvious that such grenades might be dropped by ladies from the upper windows and roofs of houses into the streets of London, in the event of an enemy entering for the purpose of sacking the Metropolis of the world.

I am, Sir, yours, &c,

J. NORTON.

Rosherville, September 4th. 1860.

AN ORDNANCE REMINISCENCE.

Sir,—When the late Field-Marshal Beresford was Master General of the Ordnance, I had an interview with him on the subject of my percussion rifle shell, for the purpose of blowing up ammunition waggons, and submitted to him that the Select Committee in their official report admitted that the shell would "answer my purpose of blowing up ammunition waggons." His Lordship answered, "Yes; but how the devil are we to carry them?" I replied, that as only a few of the shells could

ever be required, that few could easily be taken care of, so that there would be no danger in carrying them. His Lordship's manner was kindly towards me. I stated that I was within a few yards of him when, at the battle of Albuera, he was attacked in the midst of his Portuguese staff-officers by a single Polish Lancer, who was instantly cut down. His Lordship, by the manner of pronouncing the name of his Satanic majesty, evidently wished to let me see that he was a countryman of mine. The fear of carrying percussion rifle shells does not apply to carrying my rifle spinsters.

I am, Sir, yours, &c.

J. NORTON.

Rosherville, Setember 11th.

RAPID LOADING AND FIRING.

To the Editor of "The Morning Advertiser."

Sir,—The plan of rapidly loading and firing double-barrel fowling pieces, as practised recently by the New Zealanders, proves that they are a thinking as well as brave people. This method of loading rapidly was practised by the French many years ago, even when the flint lock was the universal one. It necessitated the opening or breaking of the cartridge before inserting into the musket. I have long ago tried this plan, but found that it was not fully efficient. For the last 23 years I have been using what I call my gossamer cartridges. These do not require to be opened or broken before insertion into the fire-arm as the fire from the percussion cap is sufficient to pierce and fire them. This operation is ensured to a certainty by placing a small portion of gun-cotton in the bottom of the cartridge, where the fire from the cap acts on it. This plan of

mine is now well understood by the members of the Gravesend Volunteer Artillery.

I am, Sir, yours &c.,

J. NORTON.

Rosherville, September 15th.

Horse Guards,

22nd June, 1860.

I am fully prepared to bear testimony, and give evidence to the facts, as stated in the Memorial of John Norton, Esq., late Captain in the 34th Regiment to that effect, that when quartered with him at Woolwich in the year 1823, he, Captain Norton invented and exhibited an Elongated Expanding Shot and Shell, identical in principle with the present Minié Bullet.

At the above period, being in the same Regiment, I very frequently accompanied Captain Norton in his Rifle practice, with his new Bullet, at Woolwich, and other quarters, and I can testify to have, then, seen him with his Rifle Shell, (in order to exemplify and prove his invention) explode small bags of gunpowder placed behind pieces of board to represent a tumbril. And from that day to this, I have never had any doubt in my mind, of Captain Norton having been the original inventor of the new Principles, as applied to Fire-Arms, which have been since, under certain modifications, introduced into the Armies of Europe under the name of the Minié Bullet.

(Signed,)

RICHARD AIREY,
Q. M. General.